1878pmae.pro

KG
11366
v.802

Close Companions.

Harvard College Observatory

Time Service.

October 18. 1877 to May 1. 1879

E. W.

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1878phae.proj.1806w

Noon.	p.m.	0^h	$= 0^d.00$
		1	$= 0.04$
		2	$= 0.08$
		3	$= 0.13$
		4	$= 0.17$
		5	$= 0.21$
		6	$= 0.25$
		7	$= 0.29$
		8	$= 0.33$
		9	$= 0.38$
		10	$= 0.42$
		11	$= 0.46$
	a.m.	12	$= 0.50$
	1	13	$= 0.54$
	2	14	$= 0.58$
	3	15	$= 0.62$
	4	16	$= 0.67$
	5	17	$= 0.71$
	6	18	$= 0.75$
	7	19	$= 0.79$
	8	20	$= 0.83$
	9	21	$= 0.87$
	10	22	$= 0.92$
	11	23	$= 0.96$
Noon	12	24	$= 1.00$

$\phi = 42° 22' 48''.0$

	Long	Corr. to R.A. mean ⊙
H.C. obs. E. mash	$= 0^h\ 23^m\ 41.11$	$-3^s.890$
W gr.	$= 4\ 44\ 31.01$	$+46.739$

Switches in Boarding Clock Room.

		Effect.
A_1 B_1	Losing 2s.4 per hour 394	Loses 0s.04 in 1m
A_2 B_2	394	usual rate.
A_3 B_3	394	gains 0s.06 in 1m

Effect of adding weights to pend. bob, Bond 394
determined before the magnet was put in place.

Add.	1 gramm.	$= +0^s.027$ per hour $= 0^s.65$ per day.
	2 ———	$0.054 = 1^s.30$ per day
	3 ———	$0.081 = 1^s.94$ per day
	4 ———	$0.108 = 2.59$ " "
	5 ———	$0.135 = 3.24$ " "
	6 ———	$0.162 = 3.89$
	7 ———	$0.189 = 4.54$
	8 ———	$0.216 = 5.18$
	9 ———	$0.243 = 5.83$
	10 ———	$0.270 = 6.48$
	20 ———	$0.540 = 12.96$

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12.98 76.93 75.693 27.854 115

12.16

3.4 182 27

6

27

27.854 73.52

55.27 75. 75.69.

.115

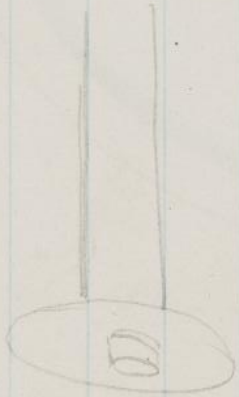
12.98

27

13.25

27

13.52

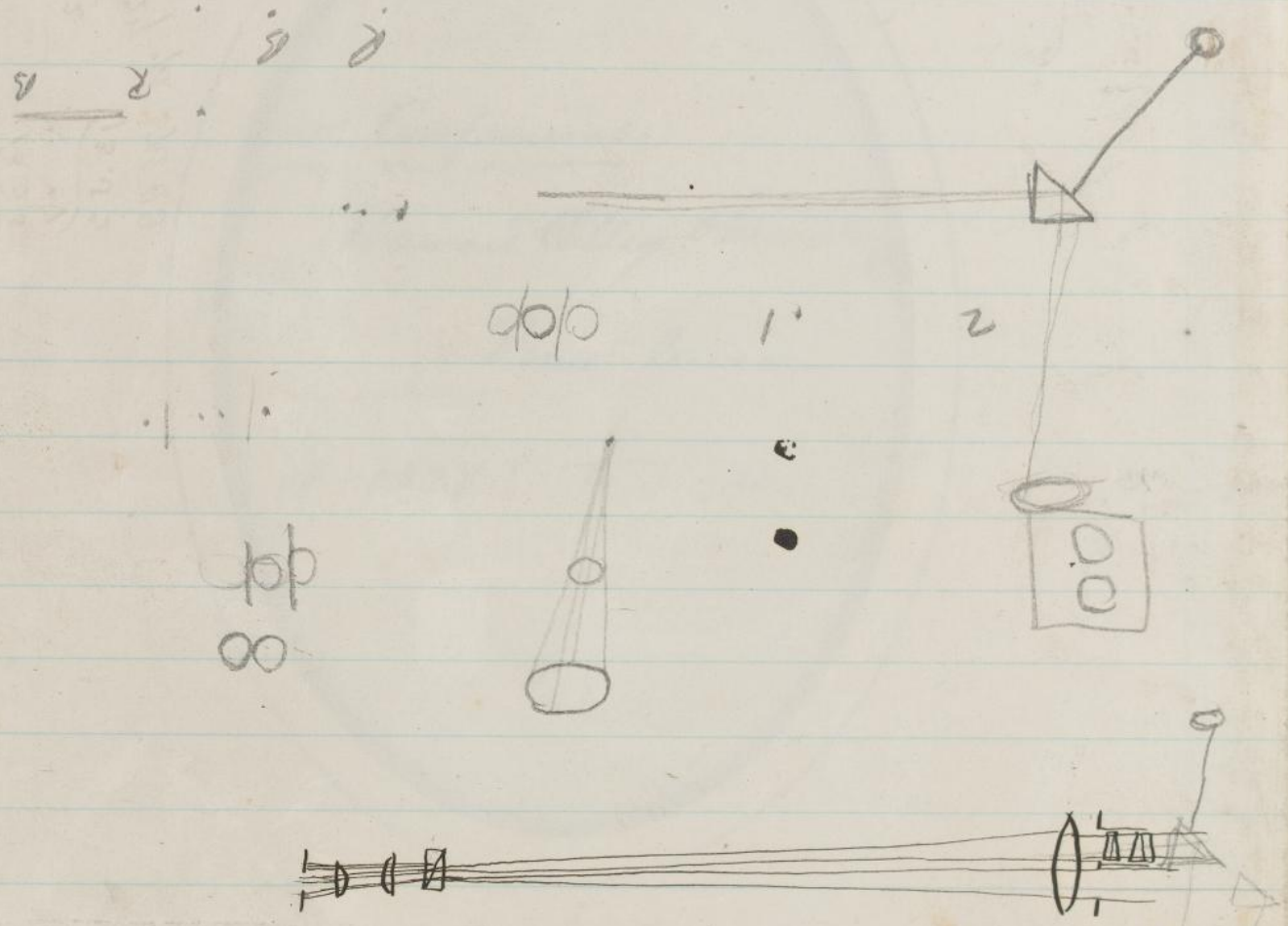


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1878phae.proj.180ew

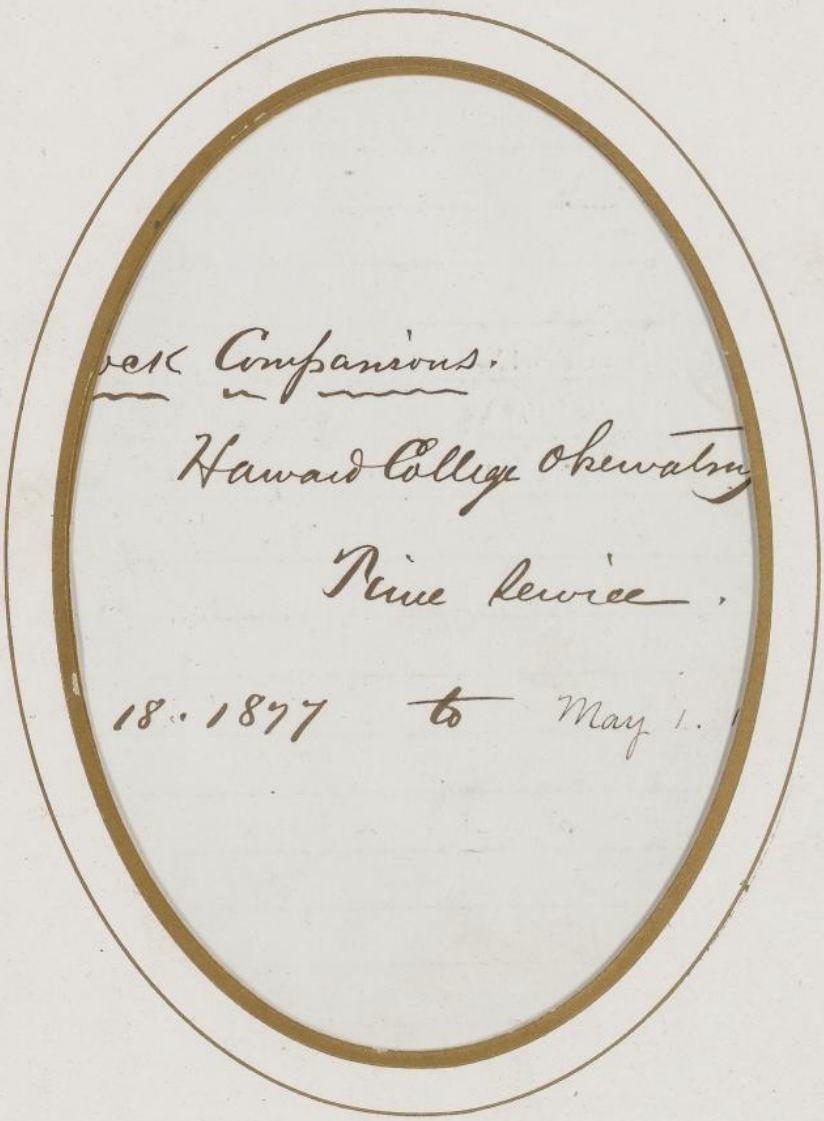
1878phae.proj.1806w

3 56.56 7 53.12
1923 15.97 27 12.55
3 56.56
1927 12.53



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1878phae.proj.18066

Clock Companions.

Harvard College Observatory

Time Service.

October 18. 1877 to May 1. 1879.

L. W.

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1870phae.proj.180GW

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$\delta = 65^\circ 34'$

$\alpha = 22\ 45\ 23.91$

45.2
47.7
50.2
52.7
55.2
57.6
0.2
2.6
5.2

3146
180
4966

9 | 54.95 55,18
23.91 31.27

23.91

3 31.04

2.20

3 31.04 + 2.20n

3 29.63 + 0.26n

1.41 1.94 n

1.94 | 1.410 | -.73
1358
520

n = -.73
26
438
146
189

δ 14 33

α 22 58 45.03
15.40
29.63

11.1
13.2
15.3
17.6
19.8
77.0
15.40

3 29.63

0.26

3 29.63 - .19 + 92

3 30.36
15
3 30.51

73
91
73
665
6643
26
92

1878phae.proj.1806w

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0 28 5

3 21.60

25 43.40

36.0

52.6

6.5

59.1

43.40

52.6

6

58.6

1 30
5
6 50

1 20
5
60 0

73
86
438
584
6378

3 30.22 - 73 + .92 = 3 30.40

3 30.15 - 63 + 92 = 3 30.45

3 30.41

1878phae.proj.1806

1878phae.proj.1806M

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α Lus. Mim. $\quad 75°10'$ $\quad -7°14'$ E. Coronae $\quad 45°15'$ ϕ Herculis

	53	1.1	16	5	24.0
48	48.0	3.3			27.0
	53.7	5.16			29.9
	58.5	8.0			32.9
	3.6	10.3			35.9
	8.9	5)28.3			5)49.7
	13.6	5.66	35.44		29.94
	18.9	α = 15 52		16	5
	23.6		α =	16	4
	28.3				
	257.1				
	180				
9	077.1				
47	8.57				

α = is 48 31.27.

July 2.4

~~387.30~~

37.30 P.

30.22 T

~31.49 T

ϕ $\quad 0 = 37.30 + 4.78n + (47+n)$

$0 = 30.22 + .8145n + "$

$0 = 31.49 + 1.009n + "$

$0 = 61.71 + 1.5154n + 2(")$

$0 = 30.855 + .7577n + "$

P. $0 = 37.300 + 4.7800n$ "

$0 = 6.445 + 4.0223n$

$n = -1.60$

$0 = 30.855 - 1.212 + \Delta t + n$

$0 = 29.643 + \Delta t + n.$

$0 = 29.643 + \Delta t \quad 1.12$

$\Delta t = -30.76$

$= 31.1$

rate +.34

$n = 1.42$

$b = -.25$

$\sec \phi = 1.353$

$\tan \phi = .9117$

$-1.458 \; 72$

$+1.120$

1970phee.proj.18064

1878phae.proj.1806M

Jeremy Jordan

Jordan.
Jordan.
Jordan.
Jordan.

J.

Frank Waldo

Frank Waldo

18 52 58.44
1 41.30
18 51 17.14
10 27 4.36
8 24 12.78
1 22.60
50.18
70.00
19.92
15.50
4.42

1 44,01
38.64
25.37
2.68

38 64
2.68
1 41.32

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1878phae.proj.1806W

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1878phae.proj.1806w

Abbreviations.

1327	is Sideral clock Woodham 1327, called formerly "South Clock".
312	is " " Bond 312. " " "East Clock"
3451	is " Bd. Circuit Chronometer, Woodham 3451.
236	is " Chronometer, Bond 236.
394	is the mean time Standard Clock, Bond 394. Called formerly "North Clock")
1263	is the common watch "Montandon 1263."
1436	is the mean time pocket chronometer belonging to L. Waldo.
151	" " " " " " Barraud 151 belonging to the observatory.
	(1436 is "Johnson 1436")
R	is the "Ritchie" mean time clock purchased by Prof. Winlock for purposes of showing Central.
E	is the "Ellicott" clock belonging to Prof. Lovering.
⊙	H.C. obs. R.A. mean time
L.W.	Lewis Waldo.
A.S.	Arthur Searle.
W.U.	Winslow Upton.
F.W.	Frank Waldo

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1878phae.proj.1806m

1877. Oct. 18.

In the following pages the separate lines are generally as follows:

(Sidereal clock) = (Observer / Mean Time Clock)
± (Δt)
(True s.t.)
− (R.A. mean ☉)
⊕ (s.t. Interval)
− (Reduction to m.t. Int.)
∴ (True mean time) = (True mean time / Error Mean Time clock)

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1878phae.proj.1806w

1877. Oct. 17.d87 ⊙ 13h 45m 9.07 L. M.
19d.2h

3451 394

16 58 24.5 = 2 5 10.0
— 7.3
16 58 17.2
13 53 2.2
2 5 15.0
0 20.5
2 4 54.5 14.5
+ 15.5.5

Oct. 18.d40
18.d87

11 40 32.0 = 21 48 0.0
— 7.1
35 40 24.9
13 49 5.63
21 51 19.27
3 24.83
21 47 44.44 44.44
+ 15.56

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1878phae.proj.1806M

1877. oct. 19. 87 d

L. sr.

	3451			394			1327		
11	5	24.0	=	21	9	0.0			
				21	11	0.0	=	21	11	0.0
		− 7.4						− 2	2.9
11	5	16.6						11	7	16.1
									−	0.3
								11	5	15.8

11	5	16.6				
	5	15.8				
	5	15.8				
∴ 11	5	16.1	=	21	9	0.0
⊙ 13	5	3	2.2			
21	12		13.9			
	3		28.4			
21	8		45.1			

45.1

14.1 ∴ 394 = −1.0 at 9.25 Km.

	1327			394	
11	56	25.0	=		0.0
	−2	2.9			
11	54	22.1			
		+ 1.3			
11	54	23.4			
⊙ 13	53	2.2			
22	1	20.2			
	0	36.5			
22	57	43.7			

A, B, for 10m made

394 0.0 in error

as per following page

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1878phae.proj.1806M

1877. Oct. 19. 92 L. Tr.

			1327	394
12	22	30.0	=	0.0
	− 2	2.6		
12	20	27.4		
13	53	2.2		
22	27	25.2		
	3	40.7		
22	24	44.5		44.5
				+ 15.5

			1327	394
Oct. 20. 87	11	13	18.0 =	0.0
	−2	2.6		
		1.6		
	−2	4.2		
25	11	13.8		
13	56	58.74		
21	14	15.06		
	3	28.75		
21	10	46.31		
11	15	22.0 =		0.0
		2.5		
		2.1.6		
		5.1.0		
		8.0		
35	15	14.0		
13	56	58.74		
21	18	15.26		
	3	29.40		
	14	45.46		

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1878phae.proj.18067

Oct. 20-87 ∴ 394 has a losing rate, assume it the 1:00 Sunday. Lw.

Removed 2 grammes. 1327

10.7 = 7.0

Oct. 21.85 ~~14.33~~ 17.4 4.4

345.1 1327

10 34 10.7 = 10 26 7.0

− 26.0 = − 2 5.9

24.7 = 10 34 1.1

10 41 33.7 = 10 43 30

− 8.5 = 2 5.9

10 41 25.2 = 10 24 24.1

24.1

25.2

144

10 41 24.8 10 41 24.8

∴ Sun 345.1 = + 7.9

345.1 394 + 32

10 46 16.0 = 20/8 42 0.0

− 7.9

10 46 8.1

34

14 0 55.3

20 45 12.8

5 240

20 41/32 48.8

44.5

4.3

Moved 394 + 45.0 Am added of grammes.

and A_3 B_3 for 5 m.

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1878phae.proj.1806w

77. Oct. 21. 86 — 3451 — 394 — Lw

11 9 15.5 = 9 5 0.0
− 7.9

24
11 9 7.6
35
14 0 55.3
21 8 12.2
3 27.76
21h 4m 44s.44 — 44.44
15s.56 ∴ Eun 0s.0

21.40 Eun = 17.90
And Eun 3451 is + 10s.14 rate + 0s.80
" 1327 in 21m 6s.9h " + 1s.60 } Prob. unreal/gramm. Oct 22.87 }

1327 — 394

77 Oct 22d. 87

11	28.	14.0 =	0.0
	2	6.96	
	2	7.72	
35	26	6.28	
	4	51.84	
14	~~0~~	~~55.3~~	
	21	14.44	
21	~~25~~	~~11.0~~	
	3	~~30.55~~	
		28.75	
		45s.69	
21	21	40.45	
11	32	17.5 = 21	24 0.0
		10.14	
		10.39	
		53	
35			
11	32	6.97	
14	0	~~55.3~~	
	4	51.84	
	27	15s.13	
21	~~31~~	~~10.7~~	
	~~3~~	~~31.5~~	
	3	~~30.88~~	
	2	~~39.2~~	24 23. 44.25
		~~4.92~~	
		44.25	

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1878phae.proj.1806m

1327 3451

11 42 43.0 = 11 40 45.5
2 7.72 10.53
11 40 35.28 11h 40m 34.597

1327 394

11 52 18.0
2 7.72

35
11 50 10.78
14 4 51.84
21 45 18.94
3 33.84
21h 41m 45.510

3451

11 54 21.0 = 21 46 0.0
10.53

35 54 10.47
14 4 51.84
21 49 18.63
3 34.44
4 43.911

3451

11 57 21.5 = 0.0

1327

12 4 20.0 = 21 53 0.0
2 7.72
36 1 12.28
14
21 4 51.84
21 57 20.44
3 35.8

53m 44.56

44.6
15.54

Original last 0.0

Elem at 10.Nm = 0.50 $A_3 B_3$ 100s

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1878phae.proj.1806M

74. Oct 23d.46 S.W.

	3451			394			1327	
0	48	27.5	= 10	38	0.0			
		− 10.45						
			10	40	0.0	= 0	52	26.0
0	48	17.05					2	8.29
14	8	48.40					0	50 17.71
							14	8 48.40
10	39	28.65					10	41 29.31
	1	44.76						1 45.09
	37	43.89						44.22
		+ 0.33						= 44,22
		44.22						0.28

∴ A, B, for 7^{4m}

77 Oct. 23d.87

	3451			394			1327	
10 22	46	5.5	= 20	34	0.0	= 10	48	4.0
		− 30.0			30.0			− 30.0
10 22	45	35.5	= 20	33	30.0	= 10	47	34.0
		∓ 10.4					2	9.0
10	45	25.1	=			= 10	45	25.0
∴ 10	45	25.0	= 20	33	30.0			
34								
14	8	48.4						
20	36	36.60						
	3	22.50						
					14.10			
		14.10			15.90	∴	Fast	0.4

∴ A_8 B_8 for 8^m

11	9	8.0	=	20	55	0.0
	2	9.0				
35	6	59.0				
10	8	48.4				
14	45	25.0				
20	58	10.6				
	3	26.1				

$20^h\ 54^m\ 44.^s5$

∴ 0.5 Error

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1878phae.proj.18066

1877 Oct 23d. 87 S.W.

1327 394

2 9.09
1.4
-2^m $10.^s4$

11 26 8.0 = 21 8 0.0

− 2 10.4

24
35 23 57.6

14 8 52.29
3.89
14 8 48.40

21 15 9.2
3 28.9
11 40.3

14 12 48.84
3.89
14 12 44.95
35 23 57.6

21 11 12.65
3 28.25

21 7 44.40

and as the Error of 1327 = $\pm 0^s.1$ we may say

21 7 44.5

$\therefore$ Error 394 = $15^s.5 = 0^s.00$

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1878phae.proj.1806w

27. 00. 25.87

1327 394 L. Tr.

11 26 5.0 = 21 5 0.0

2 12.1

11 52.9

35

14 16 41.50

21 07 11.4

3 29. 2
7.6

21 13 42.2
3.8

2 8.3
3.8
2 12 1.5
2.5
12.5
25
3.75

11 31 6.0

2 12.1

11 28 53.9

35

14 16 41.5

21 12 12.4

3 28.4

9m 44s.0

Irrthum is nun corrigirt. A' B' für 8m

1327 394

11 58 11.0 = 36m 0.0

2 12.1

35 55 58.9

14 16 41.5

21 39 07.4

3 32.8

44.6

i. Error dieser Position 0.3.0

1878phae.proj.18066

77. vch. 26.87 1327 3944 3444 L. M.

11	10	0.0	=	20	44	0.0
	2	13.6				
11 55	7	46.4				
24	20	38.1				
20h	47m	8.s3				
	3	24.8				
20h	43m	44.s0				A.B. for 6m

11	46	6.0	=
	2	13.6	
35	43	52.4	
14	20	38.1	
21	23	14.3	
	3	30.2	
21h	19m	44.s1	

12	14	11.0	
	2	13.6	
36	11	57.4	
14	20	38.1	
21	51	19.3	
	3	34.8	
21h	47m	44.s5	∴ 0.s0 from 10 A.m.

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1878phae.proj.1806W

1 Oct 27.42

3451 394 L. 77

$0^h\ 49^m\ 15^s.0 = 10^h\ 24^m\ 0^s.0$

$-\ 14.32$

$24^h\ 49^m\ 0^s.68$

$14\ \ 24\ \ 24.61$

$10^h\ 24^m\ 26^s.07$

$1\ \ 42.30$

$10^h\ 23^m\ 43^s.77$ 43.77

$16^s.23$

$\therefore 394 = +16^s.23$

Bnd 394 then should have a corrective weight added to pendulum, say to make it lose $0^s.4$ per day nearly. $\therefore 0^{gr}.5$ must be removed, which is done and A, B, for 15^m

1327 394

$1\ \ 33\ \ 23.0 = 11\ \ 3\ \ 0.0$

$-\ 14.83$

$25\ \ 33\ \ 8.2$

$14\ \ 24\ \ 34.6$

$18^h\ \ 8\ \ 33.6$

$1\ \ 49.5$

$11^h\ \ 6^m\ \ 44^s.1$ 44.6

44.6

44.1 15.9

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1878phae.proj.1806W

11 Oct. 28.42

L. M.

3451 1327

32.7

19.8
1.62
16.42

15.4
17.3

58.5
15.4
13.1

34.5

14.32
-1.05
15.37

34.5
16.4
18.1

30.0
16.4
13.6
28.5
+ 14.9

3451 394 1327

20
8 51 33.0 = 6h 22 0.0
20 − 30 − 20.0
8h 51m 03.0 = 6 21 30.0
8
14 28 31.17 14.32
6
8h 22m 31.83 15.68

1 2.66

6h 21m 29.17
14.85
14.32

6 25 0.0 = 20 58 35.0
3 30.57
20h 55m 04.43
5 48.15
+ 16.28

8 51 03.0
− 14.85
8 50 48.15

1327

21 10 37.0 = 6 37 0.0
4 −16.28
21 +06 20.72
14 28 31.17
6 38 48.95
1 5.93
40 43.6
43.62

1327 Evidently not set back 2m but ahead.

For reduction see next page.

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1878phae.proj.1806w

Mock. 18.42

3451 394 1327

20 51 03.0 = 6 21 30.0

6 25 0.0 = 20 58 35.0

− 3 30.57

− 14.85 20 55 4.43

20h 50m 48s.15 50 48.15

14 28 31.77 Δ sun 1327 = +4m 16s.28

6h 22m 16s.38

1 2.63

6h 21 13.75 = 21 30.0

∴ 394 = + 16.25

20h 55m 4s.43
− 4 48.15
16 28
48.15
20 50 16.28
14 28 31.77
6h 22m 16s.38
44.51

6 25 0.0 = 20 58 35.0

− 4 16.28

20 54 18.72

14 28 31.77

6 25 46.95

1 3.20

24 43.75 24 43.75

+ 16s.25

15.50

0s.75
+ .25
1.00

A, B, for 20m

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1878phae.proj.1806W

77 Oct 28.87

2451

11h	40m	0.5			
11	42	0.5	=		
		−4 15.0			
11	41	45.5			
35					
14	28	31.17			
21	13	13.33			
	3	28.58			
		44.75			
		44.33			

1327.

11h	44m	2.5			
		−17.1			
11	43	45.4			
35					
14	28	31.17			
21	15	13.23			
	3	28.90			
	11	44.33			

44.5 giving 3451 + 1327 Equal weight ∴ 1327 has been disturbed by 77.A12. moving back 4 $\frac{m}{f}$

∴ Error 10 Am 2.5.0

77 Oct 29.87

1327				394				1341		
12	1	3.0	=	21	25	0.0				
		16.3		21	26	0.0	=	12	2	1.5
		2.3								14.85
		18.6								16.0
12	0	44.4							2	45.5
12	0	45.3			29	0.0			5	2.0
		x4.7								16.0
12	0	44.9			29	0.0	=	12	4	46.0
									4	0.66
									12	0 45.34

36 0 44.59

14h 32m 27.73

21 28 16.82

3 31.0

21 25 45.58

44.5 = 394

1.3 slow and giving 394 full half weight.

assume that 394 is 0.7 slow

$\Delta_3 B_3$ for 10m

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1878phae.proj.1806w

27 Oct 20 30.47

3451 394 1327

1 47 16.5 = 11 9 0.0

— 30.0 −30.0

1 48 33.0 = 1 48 35.0

— 17.57

1h 48m 15.43 48 15.43

19.57

1 47 16.5 = 11 9 0.0

30.0 30.0

25h 46m 46.5 = 11 8 30.0

14 36 24.3

11h 10m 22.2

— 17.6

+ 49.8

2.4

11 10 4.6

1 49.8

11 8 14.8

30.0

15.2 ∴ 394 is slow 0.3 $A_3 B_3 .5^m$

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1878phae.proj.1800W

77 Oct. 30.d 87 3451 394 1327

11 17 50 = 20 38 0.0

12.57
+ .65
18.22

11h 35 17m 31s.78
14 36 24.29
20 41 7.5
3 23.3
37 44.2

20 42 37 0.0 = 11 21 53.0
19.57.3
20.40
11 35 21 32.6
14 36 24.3
20 45 8.3
3 24.0
41 44.s3

44.3
+ 0s.2 ∴ A, B, for 5m

1327
- 11 38 56.0
20.4

11 38 35.6
35
14 36 24.3
21 2 11.3
3 26.7
44.6 ∴ A_2 B_2 for 50 s/a 10 Aug 0s.0 Sun's

1878phae.proj.1806w

1377 3944.

Oct. 31. 8/ 11 40 54 = 20 57 0 A. S. ob

15.25

12 11 59 = 0

10 Am

∴ 394 fast at 15.5

Error last 0.5.0

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1878phae.proj.1806W

77. ~~Oct~~ Nov. 1st

1327 3451 L. M.

0 23 0.0 = 0 22 57.0

[Oct 30.4 Sun's Rate]

2d

19.57
3.30
~~22~~.87

22.87
.82
23s.69 = 1d.87

17.57
2.62
20.19
0.66
20.85 = 1d.87

22m ~~43~~ 13
37s.13

36s.81

Nov. 1d. 87

1327 394 3451

11 38 49.5 = 0.0 = 11 38 46.5
23.7
20.85

11 38 25.8 = 0.0 = 11 38 25.65
25.65

∴ 11 38 25.7 = 0.0
3.5
14 44 17.4
20 54 8.3
3 25.8
~~3.0~~

20 51 42s.8 ? Assume this the 43s.8 ∴ 394 is 0s.7 fast

1327 3451

11 47 52.0 = 0.0 11 54 50.0 = 0.0
23.7 20.9

35 47 28.3
14 ~~35~~ 44 ~~25.7~~ 17.4
~~21~~ ~~10~~ ~~2.6~~
3 ~~28.~~ ~~21~~
~~4 45~~

11 54 29.1
35
14 44 17.4
21 10 11.7
3 28.1
21 6 43s.6

21 4 10.9 ∴ A. B. for 15m
3 27.1 4)70
17m

21 1 43s.8

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1878phae.proj.1806w

Nov 1. 87

2451

L. M.

12 0	11	53.2
36		20.9
36	11	32.3
14	44	17.4
21 h	27 m	14.5 9
	3	30.9
21	23 m	44.5 0

1327

12	35	1.0
		13.8
		~~20.9~~
36	34	~~40~~ 37.7
14	44	17.4
		19.8
21	50	~~22.7~~
	3	24.6
		45.2
		~~48.0~~
		~~45.0~~

45.2 ∴ Slow 0.7

12	58	4.0
		23.9
36	58	40.1
14	44	17.4
22	14	22.7
	3	38.6
22 h	11 m	44.5 7

∴ Error last Fast 0.3

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1878phae.proj.1800M

1877. Nov. 2d. 8J 1327 3451 S. T.

11 28 47.0 = 0.0

30.4 − 25.34 0.0 = 11 27 43.5

3.5 1.65 8 25 4 95 5 17 5 19.57 25.34 − 22.15

11 28 21.66 1.81 3.5 65 5 32 1 45 85 17.57 22 1 5

21.51 27 21.5 3.5 + .16 28 21.51

11 28 21.56

35

14 48 13.95

20 40 7.65

3 23.15

20h 36m 44.s50 ∴ 394 is right at 9 A.M.

0.s0 Signal sent 10 Am.

77. Nov. 3d. 45 3451 394

23 35 43.5 = 0.s0

− 22.01

23 35 20.s49

14 52 10.51

8h 43m 9.s98

1 25.70

8h 41m 44.s28

44.50

∴ 394 = 0.s22 Fast. ∴ A. R. fm 5m.

1327

23 58 51.0 = 0.0

− 26.8

23 58 24.2

14 52 10.5

9 6 13.7

1 29.48

9 4 44.s22

.50

0.s39

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1878phae.proj.1806W

97 Bw. $4^{\circ}.45$ 1327 394 L. M.

0 55 59.0 = 9 58 0.0

− 28.80

0 55 30.20

24.

14 56 7.06

9^{h} 59^{m} $23^{s}.14$

1 38.13

9^{h} 57^{m} $45^{s}.01$ $\frac{45.01}{14.99}$ ∴ 394 = $\bar{+}0^{s}.49$

3451 = 394

0 56 54.5 = 9 59 0.0

+ 30 30

0 57 24.5 = 9 59 30.0

− 24.05

0 57 0.45

14 56 7.06

10 0 53.39

1 38.44

14.95 $\frac{14.95}{15.05}$ ∴ 394 = $\bar{+}0^{s}.55$

∴ 394 is slow $0^{s}.5$ ∴ $A_3 V_3$ for 9^{m}

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1878phae.proj.1806W

77 Nov. 4d. 85 — 1327 394 L. M.

12 19 51.5 = 0.0

28.80
.92
− 29.72

17 19 21.78
36
14 56 7.06
21h 13m 14.s72
3 28.59
9 46.s13
44.13 +0.s4

3451

12 25 52.5

24.05
.62
24.67

36 25 27.73
16 7.06
14 ~~+3~~ ~~14.72~~
21 29 30.67
~~22~~ ~~+2~~ ~~+3.0~~
3 31.22
25 48.s45
44.45 +0.s05
35

1327

12 29 53.0 + 0.24
− 29.72 0.24
0.05
36 29 23.28 0.s21
14 56 7.06
21 33 16.22 ∴ 394 is 0.s24 fast.
3 31.86
44.s36 +0.24 ∴ A.B. for 5m

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1878phae.proj.1806w

1877 Nov. 5.9

1327

12	25	51
		− 31.39
12	25	19.61
15	0	3.62
21	25	15.99
	3	30.56
21	21	45.43

394 A. S.

21 22 0

Fast of Cambridge 14.67
Slow of Boston 0.9
Put on switches A_3 B_3
till about $21^h\ 54^m/_2$

13	2	56
		− 31.39
13	2	24.61
15	0	3.62
22	2	20.99
	3	36.64
21	58	44.35

0

15.65
Sent signal 0.1 fast.

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1878phae.proj.1806M

1877 Nov. 6.9 1327 394 A. S.

12 22 47 21 15 0

− 33.24

12 22 13.76

15 4 0.17

21 18 13.59

3 29.41

21 14 44.18 Fast of Cambridge 15.82

" " Boston 0.32

Put on switches A, B, for 8 minutes.

12 43 51 0

− 33.24

12 43 17.76

15 4 0.17

21 39 17.59

3 32.86

21 35 44.73 Fast of Cambridge 15.27

Slow " Boston 0.23

Put on switches A_3 B_3 for 3 minutes.

12 57 23 21 49 30

33.24

12 56 49.76

15 4 0.17

21 52 49.59

3 35.98

49 14.51 Fast of Cambridge 15.49

Sent no signal, city line not working. Western Union line working feebly. Sounder had to be adjusted before it would act at all.

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1878phae.proj.1806W

Comp. Sun 1327 mid.

1877 Nov. 7.9 1327 394. L. M.

12 5 41.0 = 20 54 0.0

1.85 / 5.5 / 9.25 / 5 / 6.475 / 4.5 = 29.80 / 6.48 / 35.28

− 35.28

12 5 5.72

36

15 7 56.73

21 57 9.00

3 25.95

3.22

20 53 43.05

3451

12 8 24.5 = 20 57 0.0

24.05 / 5.90 / 29.95 / 1.40 / 3.5 / 7.00 / 5.20 / 5.900 / 36

− 29.95

12 8 4.55

15 7 56.73

21 0 7.82

3 26.43

20 56 41.39

1327

12 24 44.0

− 35.07

24

36 24 8.91

15 7 56.73

21 16 12.18

3 29.07

21 12 43.11 ∴ 394 is fast 1.4 (?) of M.C.T.

Rad. m.t.

∴ $A_1 B_1$ by q^1 40m Alm.

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1878phae.proj.1806M

77 Oct. 7.9^d 1327 394 L.M.

12	47	48.0 =	0.0
24		− 24.0	
26	47	14.0	
15	7	56.73	
21	38	17.27	
	3	32.68	
21	34	44.6	∴ 394 is 0^s.1 slow

$t_3 B_3$ for 2^m

Signal Stat 0^s.0 Corr.

77 Oct 8.9^d 1327 394

12^h 16^m $40^s.0$ = 0.0

6.3 / 2.5 − 35.34

1.40 / 1.40 / .70 / 3.50 / 31.84 / 35.34

12^h	16^m	$4^s.66$	
36			
15	11	57.17	
		3.87	
15	11	53.28	
21	5	11.38	
	3	27.27	
21^h	4^m	$44^s.11$	

∴ 394 = $\frac{44.50}{0^s.39}$ fast ∴ A. B. for 10^m

13	3	48.0
		− 35.34
13	3	12.66
37		
15	11	53.28
21	51	19.38
	3	34.82
		$44^s.5$

∴ Signal Stat 0^s.0 Error.

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1878phae.proj.1806w

1327 — 3451

0 37 30.0 = 0 37 22.5

− 29.1

53.6 0 36 53.6

∴ 1327 = + 36.4

3451

0h 41m 35.5 = 0.0

− 29.1

24 41 6.4

15 15 49.84

9 25 16.56

1 32.6

9h 24m 44.0

0 45 43.5

− 36.4

24 45 7.1

15 15 49.8

9 29 17.3

33.25

44.0 ∴ 394 is 0.5 too fast.

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1878phae.proj.1806M

1327

Nov. 9. 87 12 47 43.0 = 0.0 L. M.

37.1

12 47 5.9

36
15 15 49.8

21 21 16.06

31.58

44.53

3451

12 48 35.3 = 0.0

49.6

12 48 05.9

15 15 49.84

21 32 16.06

31.69

44.37

∴ Eun 394 = + 15ˢ.47

∴ + 15ˢ.5

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1878phae.proj.1806w

1877. Nov. 11. 8 3451 S. M.

11 15 13.0 = 0.0

— 31.1

11 14 41.9

35

11 23 46.85

3.89

35 14 41.90

⊙ 15 23 42.96

~~4.94~~

19h 50m 58s.94

3 15.11

19 47 43s.83

1327

11 16 22.5

— 40.3

11 15 42.2

35

15 23 42.9

19 [illegible] 59m.3

3 15.3

44s.0 ∴ 394 = fact. 0s.6

A. R. for 10m

Signal sent 0s.0

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1878phae.proj.1806M

1877 Nov. 11.8

1327

12	52	39.0 ~~55~~.0	= 0.0
		− 40.4	
12	52	58.6	
36			
15	23	43.0	
21	29	15.6	
	3	31.1	
		44.5	

∴ Signal sent $0^s.0$ 10 Hrs.

Returned $0^s.4$

1327

1877 Nov. 12.8

12	14	30.0	
		− 40.4	
		− 41.9	
36	13	48.1	
15	27	39.5	
20	46	8.6	
	3	24.1	
20	42	44.5	∴ Error 394 = $0^s.0$

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1878phae.proj.1806w

Nov 13.4.77 L. Tr.

1327 394

1 41 43.0 = 10 8 0.0

— 43.74

∴ 10 7 44.36 — 0.0

3457

1 42 32.5

— 32.08

∴ 10 8 44.36 = 0.0

A, B4 for 2.5

Nov. 13.8.77. 1327

12	35	31.0 —	0.0	12	43	20.5	
		42.74				32.5	
		.85					
		43.6		12	42	48.0	
36	34	47.4		36			
15	31	36.1		15	31	36.1	
~~10~~	~~7~~	~~23.2~~		21	11	11.9	
~~26~~	~~25~~	~~24.2~~			3	28.25	
21	3	11.3					
	3	26.9					
20h	59m	44.5.4		21	7	43.5.6	?

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1878phae.proj.1806M

1827 394

Nov. 14d.8 13 29 37.0 = 21 50 0.0

− 45.2

42.74
2.5
45.2

13 28 51.8
37
15 35 32.6

21 53 19.2

3 35.1

21h 50m 44s.1

Giving 394 equal weight
Sun 1827 = 0s.2 ~~slow~~ fast.

A, B, 5m

2451 1327

Nov. 15d.47 22 11 50.0 = 6 ~~35~~ 0.0

− 33.70

22 11 16.30
15 39 29.18

6 31 47.14

4 .17

6 30 1m 43s.0

1327

22 10 13.0 = 6 29 0.0

22 11 16.30
2 0.33
22 9 15.97
22 10 13.

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1878phae.proj.1806W

Nov 15d · 8

3451

S. Tr.

12	40	13.5 =	20	57	0.0
		− 34.1			
12	39	39.40			
36					
15	39	29.18			
21h	0m	10s.22			
	3	26.44			
21h	56m	43s.78			

1327

12	51	28.0 =	21	8	0.0
	—	46.8			
12	50	40.2			
36					
15	39	29.18			
21	10	11.02			
	3	28.1			
		43s.9			

∴ 394 is +0s.6 fast.

A, R for 11m

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1878phae.proj.1806M

Pg Nov. 15.8

3451

L.W

13	15	19.5
		− 34.1
13	14	45.4
39		
15	39	29.2
21	35	16.2
	3	36.2
		44.0

3451

13	41	24.1
		− 34.1
37	40	50.0
15	39	29.2
22	1	20.8
	3	36.4
		44.4

Error cent 0.0

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1878phae.proj.1806w

1877. Nov. 16.8 3451 394 S.T.

12 46 11.5 = 8 59 0.0

− 34.8

12 45 36.7

26

15 42 25.74

21 2 17.0

26 44.6

3451 1327

12 47 30.0 = 12 47 43.0

− 34.83

12 46 55.17 55.17

47.83

∴ Error sent 0.5.0

44.4

16.8
15.4
1.4
1.7
2.38
34
57.8
42.74
28.52
47.83

17. Nov. 17.4 1327 Taken down for cleaning.

3451 394

0h 57m 11.5 = 9h 8m 0.0

− 35.74

24 56 35.76

15 47 22.30

9h 9m 14.46

1 29.97

9h 7m 44.50

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1878phae.proj.1806W

1877. Nov. 18.4

L. M.

	3451			394	
1h	35m	14.s0 =	9h	42m	0.s0
		− 36.80			
25	34	37.20			
15	51	18.85			
9h	43m	18.s35			
	1	35.56			
9h	41m	42.s8			

2	2	18.5	= 10	9	0.0
		− 36.80			
26	7	41.70			
15	51	18.85			
10	10	22.85			
	1	39.99			
	8	42.s86			

∴ 394 is 44.s86

∴ 394 is gaining 0.s6 per day.

∴ Removed ~~0gr..8~~ 1gram.

and put Second Landback Wheat.

	3451			394	
Nov 18.9	12	45	6.0 =	20	50	0.0
		− 37.3			
	36	44	28.7			
	15	51	18.85			
	20	53	9.85			
		3	25.30			
	20	49	44.s55			

36.80
0.5
37.3

∴ Signal rate 0.s0 Error.

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1878phae.proj.1806M

1877. Nov. 19.4 3451 394 L. M.

0 21 0.0 = 8 24 0.0

— 37.23

74 20 22.77

15 55 15.41

8 25 7.36

1 22.74

8M 23M 44.62

∴394 is gaining 0.24 per day.

1877. Nov. 19.8 3451 394

13 1 4.5 = 9 2 0.0 36.80

37.7 ? 4?

13 0 25.8

37

15 55 15.4

21 5 10.4

3 27.3

21.2 1M 43.4

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1878phae.proj.1806w

1877 Nov. 20.^{5}4 3451 394 S. M.

0 59 2.5 = 8 58 0.0

−37.72

24 58 24.72

15 59 11.97

8 59 12.75

1 28.34

57 44^{s}.41 ∴ 394 is gaining 0^{s}.21 per day.

Mem. when 1327 is returned,

Remove from 394 0 grams.3

1877. Nov 20. 8 3451 394 S. M

13 54 9.5 = 9 51 0.0

− 37.97

13 53 31.53

37

15 59 11.97

21 54 19.56

3 35.32

50 44^{s}.24

Should be 44.31 ∴ assume Error to be +0^{s}.2

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1878phae.proj.1806W

1877. 3451 394 S. W. 18

Nov. 21.5 $14^h\ 3^m\ 7.^s5 = 21\ 56\ 0.0$

$-\ 38.5$

14 2 29.0
38
16 3 8.53
21 59 20.47
3 36 13
$21^h\ 55^m\ 44.^s24$

1327

Nov 22.0 $16\ 19\ 51.0 = 0\ 13\ 0.0$ 1327

22.8 37 $13\ 56\ 23.0 = 21\ 46\ 0.0$ $21\ 32\ 59.6 = 21\ 33\ 0.0$

22 $20\ 36\ 32.0 = 21\ 33\ 0.0$ ∴ Assume 1327 is gaining $0^s.3$ / day.

3 32.4
21 32 59.6
3451

Nov. 22.8 $1\ 58\ 3.0 = 21\ 47\ 0.0$ $37.^s72\ \ 5.^s0$ $1.2\ \ 2.4$ $38.9\ \ 1.2$

$-\ 38.9$
$-\ 40.3$ by α Bootis.
134

25 59 24.1
16 7. 5.1
9 50 19.0
1 37.0
9 48 42.0 ∴ 394 = 4^s slow fast. ?
1.4
40.6

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1878phae.proj.1806W

1877. Nov 22d.8 S.W.

	3451		=	394	
14	31	8.5	=	22	20	0.0
		−40.3			
14	30	28.2			
38					
16	7	5.1			
22	23	23.1			
	3	40.1			
22	19	43.0			
		44.5			

2.5] + 1.5 in
0.3 0.3 per day gaining.

∴ Removed 0 gram 5

Set back ~~0.2~~ 2.0

	3451				
15	4	14.0	=	22	53	0.0
		−40.3			
15	3	33.7			
39					
16	7	5.1			
22	57	28.6			
	3	45.6			
		43.0			

			3451			
15	39	19.7	15	44	22.5	
		−40.3			−40.3	
15	38	39.4	15	43	42.2	
39			39			
16	7	5.1	16	7	5.1	
23	31	34.3	23	36	37.1	∴ 394 = −0.5
	3	51.2		3	~~52.40~~	
		43.1			~~5.2~~	
					45.1	

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1878phae.proj.1806w

1877. Nov. 22.9

2451 1327

15 56 40.0 = 15 55 0.0

− 40.4

15 55 59.6

∴ 1327 = +0ˢ.4

1877. Nov. 23.9d

2451 394

13 14 54.5 = 21 0 0.0

− 41.4

13 13 13.1

37

16 11 1.6

21 2/3 11.5

x.8

20ʰ 59ᵐ 44ˢ.7

1327

13 16 13.5 = 21 2/2 0.0

− 0.8

13 16 12.7

37

16 11 1.6

21 5/3 11.1

27.3

21ʰ 1ᵐ 43ˢ.8

13 16 13.5
2 0.3
13 14 13.2
13 14 54.5
41.3

∴ Error is assumed to be unknown, and no signal sent.

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1878phae.proj.1800W

1877 1327 Sep 4

Nov 24.9

13	41	13.0	=	21	23	0.0
		3.4				
37	41	9.6				
16	14	58.1				
21	26	11.5				
	3	20.7				
21	22	40.5 8				

Rate of 1327 is entirely unknown.

+0.4
3.0

13 41 13.0

3451

assum rate = 0.5 8

13	42	54.	13	42	54.0 =	21 24 0.0
	− 1	0.2				
13	42	53.8		−	41.9	
41	13.0					
	40.8		37	42	12.1	
			16	14	58.1	
			21	27	14.0	
				3	30.9	
			21	23	43.5 1	

40.5 27
1.46
40.93
41.9

1877. Nov 25.5 2

3451 Error Nov. 22.9 = 40.27

Rate 0.3 8 ± 0.5 2

Nov 22.9	3451 = +40.5 27	1327 = −40.00
23.9		= − 41.3
24.9		= − 42.8
25.2		= − 43.0
2.3		3.0

∴ a probable estimate would place 3451 as having the error + 43.5 0 & rate + 0.5 9 per day.

Nov. 25.5 2

1327 + 0.5 0 & rate + 0.5 0 per day.

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1878phae.proj.1806W

1877. Nov 25.2 3451 394

21 47 15.5 = 5 27 0.0

rate = +0.9 — 43.0

21 46 33.5

16 18 54.8

5 27 38.7 44.0

0 37.7 +16.0

53.7

1327

21 47 32.5 = 5 28 0.0

rate = +0.8 — 0.0

21 47 31.5

16 18 54.8

37.7

5 28 37.7 27 43.9

0 53.8 16.1

21 50 33.0 =

∴ assume Nov 25.9 Error 3451 = −43.7 } and take the mean.

" 1327 = + 0.0 }

Removed 2 grammes.

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1878phae.proj.1806M

1877. Nov. 25.^{d}9

3451				394		
14	23	1.0	=	22	0	0.0
		− 43.7				
14	22	17.3				
38						
16	18	54.8				
22	3	22.5				
	3	36.8				
22	0	45.7				

∴ 394 is 1^{s}.2 slow

1327				294		
14	22	17.0	=	22	0	0.0
		+ 0.0				
14	22	17.0				
38						
16	18	54.8				
22	3	22.2				
	3	36.8				
22	0	45.^{s}4				

394 is 0^{s}.9 slow

1327				3451			
14	20	40.0	=	14	21	24.0	∴ 394 is

Replaced 294.

Assume 394 1^{s}.0 slow

16^{h} @ 0^{s}.054 = 0^{s}.9 + 0^{s}.5
− 0^{s}.4

Leaving

∴ Correct 394 0^{s}.7 and assume it to be right.

By adding 29 grammes until 5 P.M.

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1878phae.proj.1806W

1877. Nov. 26. 9

L. M.

	3451			1327	
13	2	35.5 =	13	1	50.0
13	3	10.5 =	13	2	25.0
		− 45.07			
13	2	24.43			24.43
					+ 0.57
					− 0.43

	1327			394	
13	4	0.0 =	20	38	0.0
		− 0.57			
13	3	59.43			
16	22	51.31			
20	45	8.12			
		23.32			

$20^h\ 37^m\ 44^s.80$ ∴ 394 = slow $0^s.30$

	3451			394	
13	4	45.5 =	20	38	0.0
		− 45.07			
13	3	59.43			
16	22	51.31			

A_3 B_3 for 5^m

13	47	52.7
		− 45.1
37	47	7.6
16	22	1.3
21	24	146.3
	3	30
21^h	20^m	45.9

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1878phae.proj.1806M

1877. Mar 27.9

1327

14	29	9.5
		+ 0.6
14	28	8.9
38		
16	26	47.9
	22	51.3
22	6	17.6
	3	34.3
22	2	40.3
		+ 1.2
22	2	41.5

1327

15	6	15.6
		+ 0.6
39	6	16.2
16	36	47.9
	22	51.3
	40	28.3
23	43	24.9
		42.9
	3	43.3
	26	45.4
		41.6
		41.5

3457

14	33	57.0
		46.3
14	33	10.7
38		
16	26	47.9
	22	51.3
	7	22.8
22	10	19.4
	3	37.4
22h	4m	45.4
		41.5

1327

∴ 3457 is slow 0.9

Had much trouble with the clocks today owing to the control switch not being in order, and owing to a mistake in taking out the R.A. Mean ⊙. Signals stopped 10h 1m to 11.30 until I.N. perfectly satisfied himself the clock error was small.

Last Comparison

1341

3457

16	9	11.65
40		46.30
40	8	25.35
16	26	47.87
23	46	37.48
	3	52.9
		44.6

Signal sent 10h 11m

0.0

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1878phae.proj.1806M

Nov 28d.5 1877 3451 1327 L.M.

4	29	22.5	= 4	28	35.0
4	30	5.5	= 4	29	18.0
		+.05			
∴ 4	30	5.55	= 4	29	18.0
		+ 46.7			
4h	29	18.9			18.9
Nov 28d.5					− 0s.9
		22.5			
		− 46.7			
		35.8			− 0.08

Nov. 29d.4 1327 394

2h	17m	1.0s	= 9h	41m	0.0s
		−1.2			
26	16	59.8			
16	34	41.0			
9h	42m	18.8			
	1	35.4			
9h	41	43.4			
		+3			

3451 394

2	29	51.5	= 9	53	0.0
		− 47.5			
26	29	4.0			
16	34	41.0			
9	54	23.0			
	1	37.4			
9h	52m	45.6			

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1878phae.proj.1806w

1877. Nov. 29d.9 1327 394 L. M.

2	35	4.0	= 9	59	0.0
		− 1.3			
26	35	2.7			
16					
26	34	41.0			
10	0	21.7			
	1	38.4			
10	58	$43.^{5}_{2}$			

∴ 394 is fast $1.^{5}_{2}$

Removed 3 grammes.

13	22	51.5	= 20	45	0.0
24		− 1.4			
37	22	50.1			
16	34	41.0			
20	48	9.1			
	3	24.5			
20	44	$44.^{5}6$			

1327 3451

13	46	25.0	= 13	47	13.5
				−	$48.^{3}0$
				46	$25.\frac{5}{2}$

10.0

58.5
48.0
$10.^{5}5$

1878phae.proj.1806M

2451 2494.

Nw. 29.9 13^{h} 59^{m} $46.^{s}0$ = 21^{h} 21^{m} $0.^{s}0$ L.M.

— 48.76

37 58 57.94

16 34 41.00

21 24 16.74

3 30.39

21 20 $46^{s}.35$

1327 2451

13 46 25.0 = 13 47 13.5

— 48.3

25.0 25.2

∴ 1327 is slow $0^{s}.2$

13 22 51.5 = 20 45 0.0

+ 0.2

37 22 51.7

16 34 41.0

20 44 10.7

3 ~~34.6~~

~~46.9~~

20^{h} 45^{m} $46^{s}.2$ ∴ 2494 is $1^{s}.7$ slow

44.5

$1^{s}.7$

Moved + $2^{s}.0$

Losing $0^{s}.3$

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1878phae.proj.1806W

Nw. 29.9.1877. L.M.

14 38 2.0 = 22 .0 0

+0.2

14 38 2.2

38

16 34 41.0

22 3 41.2

3 36.85

44°.60

Signal sent 0s.0 sun.

Nw. 30.2 1877

1327 394

21h 31m 10s.0 = 4h 52m 0s.0

+0.1

21 31 10.1

16 38 37.54

4 52 32.56

0 47.92

4 51 44.64

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1878phae.proj.1806M

1877. Nov. 30.9 S. M.

1327 394

14 28 57.0 = 21 47 0.0

− 0.4

38 28 56.6

16 38 37.54

21 50 19.06

3 34.67

46 44.4

3451 394

14 28 46.0 = 21 46 0.0

− 49.5

38 27 56.5

16 38 37.54

21 49 18.96

3 34.49

46 44.5

10 lines

∴ 394 Ks error.

1877 Dec 1.4 3451 1327

2 34 50.0 = 2 34 0.0

− 49.03

∴ 2 34 0.97 ∴ 1327 = − 0s.97

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1878phae.proj.1806w

1877 Dec 1.^{d}4 3451 394 L. M.

2	49	48.0 =	10	5	0.0
		− 49.03			
26	48	59.0			
16	42	34.1			
10	6	24.9			
	1	39.3			
10^{h}	4^{m}	45.^{s}6			

1327 394

2	54	59.0 =	10	11	0.0
		+ 1.0			
26	55	0.0			
16	42	34.1			
10	12	25.9			
	1	40.3			
10^{h}	10^{m}	45.^{s}6			

∴ 394 is Sloro 1.^{s}1

A_2B_3 10^{m}

The switches are not in use, but the corresponding currents were used.

1877. Dec 2.^{d}4

1327 = 3451

1	33	30.0 =	1	34	21.4
1	34	4.0 =	1	34	55.4
				− 49.84	
			1	34	5.56
				34	4.00
					− 1.56

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1878phae.proj.18066

Dec 2.4 1877.

Lat.

	3451	=	394
1	40 33.0	=	8 52 0.0
1	41 33.0	=	8 53 0.0
	— 49.84		
28	40 43.16		
16	46 30.66		
8	54 12.50		
	1 27.51		
8^{h}	52^{m} $45^{s}.0$		

∴ A_3B_3 for 10^{m}

	3451		394		1327	
1877 Dec 2.8	13 28	28.0 =	20 33 0.0	=	13 22	36.0
		− 50.1				+ 1.9
	13 22	37.9			13 22	37.9
	37					
	16 46	30.66				
	20 36	7.24				
	3	22.50				
	20 32	$44^{s}.74$				

∴ 394 is $0^{s}24$ slow.

13	32	29.5
		− 50.1
37	31	39.4
16	46	30.66
20	44	8.74
	3	23.82
		4.08
20	40	44.66

Let it gain for 4^{m}

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1878phae.proj.1806w

1877 Dec 3.3 1327

21	48 ~~49~~	58.0 0.0	=	4	58	0.0
		+ 2.2				
21	49	0.2				
16	50	27.2				
4	58	33.0				
	0	48.9				
4	59	44.1				

Lit 394 Line for 10m

1877 Dec 3.4 1327 = 394

1	21	33.0	=	8	30	0.0
		+ 2.12				
25	21	35.12				
16	50	27.2				
8	31	7.9				
	1	23.7				
8	29	44.2				

$\frac{44.2}{15.8}$

Lit 394 Line for 6m

3451 = 394

1	17	25.0	=	8	25	0.0
		− 50.7				
1	16	34.3				
	5	0.82				
1	21	35.12				
1	21	33.0				

∴ Sun 1327 = + 2.12

25	16	34.3
16	50	27.2
8	26	7.1
	1	22.9
	24	44.2

$\frac{44.2}{15.8}$

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1878phae.proj.1806w

1877 Dec 3d.9

Lw

1327 ~~394~~ 3451

14 51 58.0 = 14 32 46.5

+ 2.42

32 0 .42

14 35 15.0 = 14 36 8.5

+ 2.42 − 51.1

17.42 17.4

3451 294

14 31 36.0 = 21 37 0.0

− 51.1

38 30 44.9

16 50 27.2

21h 40m 17.7s

3 33.0

21h 36m 44.7s gain for 3m

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1878phae.proj.1806w

1877 Dec. 4.9

13	27			39	4
13	6	24	20	9	0
		3			
13	6	27			
16	54	23.78			
20	12	3.22			
	3	18.56			
20	8	44.66		15.34	Put on wires to make clock gain for 2 minutes
14	51	41		0	
		3.02			
14	51	44.02			
16	54	23.78			
21	57	20.24			
	3	35.81			
21	53	44.43		15.57	Sent error 0.1 fast.

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1878phae.proj.1806w

1877. Dec 5.9 3451 394

14h 24 57m 34.s5 = 21h 54m 0.s0
− 52.7
− 3.6z

38	56	41.8
16	58	20.34
21	58 7	20.46
	3	35.8
21	53	44.7

1827

14 55 37.5 = 21h 54m 0.s0
+ 3.6z

38	55	41.1
16	58	20.34
21	57	20.77
	3	35.8
	53	45.0

44.5
44.7
45.0

Error = 44.s7
∴ + 15.s3

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1878phae.proj.18066

		3451				1327	
1877 Dec 6.d8	14	22	11.5 =	14	21	13.0	
			− 58.62				
	14	21	17.88				
			13.00				
			4.s88	∴ 1327 = − 4.s88 Dec 6.d8			

		3451					
14	22		26.0 =	21	16	0.0	
			− 53.62				
38	21		32.38				
17	2		16.89				
21	19		15.5				
	3		29.57				
21h	15m		45.s93				

		1327					
14	31		29.0 =	21	26	0.0	
			+ 4.88				
38	31		33.88				
17	17		16.89				
21	29		17.0				
	3		31.2				
21	25		45.s8				Removed 0.gr. 5
			44.5				
			1.s3				and Made clock gain for 20m

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1878phae.proj.1806M

Dec 6.9.1877 15 8 32.5 — 53.62 Σ m. obs

15 7 38.88

39
17 2 16.89

22 5 22.0

3 37.4

m 1 44.8 ∴ 394 is slow fast 0.4

Mat. clock gain 0.4.

Sum 0.0

Dec 7.8.1877 3451 394

2 12 55.5 / 50.0 = 9 5 0.0 Σ m.
24

54.65

26 12 0.85

17 6 13.45

9 5 47.40

1 29.41

9 4 17.99

4 17.9

42.1

∴ 394 is 42.1 fast of N.C.
" 15.5/26.6 " " Boston

12 0.85
2 0.33

10 0.52

9 56.00

+ 4.52

1827 394

2 9 56.0 = 9h 3m 0.0

+ 4.52

2 10 0.95
26

17 6 13.45

9 3 46.90

1 29.08

9 2 17.82
13

17.95

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1878phae.proj.1806M

		3451				1327	
	2	14	49.0 =	2	13	50.0	
			54.65				
	2	13	54.35			54.35	
						+ 4.52	
∴	1327	=	—			4.35	

		3451				394	
1877 Dec 7.84	2	49	27.5 =	9	41	0.0	
			— 54.65				
	16	48	32.85				
	17	6	13.45				
	9	42	19.40				
		1	35.38				
	9	40	44.50				

		3451					
Dec 7.8	13	26	12.0 =			0.0	
			— 55.1				
	13	25	16.9				
	17	6	13.45				
	20	19	3.45				
		3	19.71				
28h		15	43.74				

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1878phae.proj.1806W

1877 Dec 7.8 δ

1327

L. M.

13	31	13.5	=		0.0
		4.97			
17	31	18.47			
3					
17	6	13.45			
20	25	5.02			
	3	20.70			
20	21	44.32			
		− 2			
20	21	44.1			

	3451				1327	
13	35	44.5	=	13	34	45.0
	−	55.1			+	4.8
13	31	49.4	=	13	34	49.8

∴ + 15.9 = error 394. Error 0.4

1877. Dec 7.8 δ

1327

14	14	21.0	=	21h	5m 0.0
	+	4.8			
38	14	25.8			
17	6	13.5			
21	8	12.3			
	3	27.8			
11	4	44.5			

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1878phae.proj.1806w

1877. Dec 8. 4 Lw

	3451.		=	1327.	
3	30	30.5	= 3	29	25.0
3	31	5.5	= 3	30	0.0

	3451.			394.	
3	32	37.0	= 23	20	0.0

1877 Dec 9.4 3451 = 394

4	13	40.5 =	57	0.0
	— 1 —	0.55		
~~28~~	12	39.95		
17	14	6.57		
10h	58m	32s.38		
	1	47.88		
10h	55m	44s.50		

	3451			1327	
4	19	46.1	= 4	18	40.0
		21.1			15.0

4	19	46.1	
	1	0.55	
4	18	45.55	∴ 1327 = — 5s.55
~~28~~ 17	14	6.57	
11	4	38.98	
	1	48.9	
11	2	50.0	
		5.6	
		55.6	

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1878phae.proj.1806M

1877. Dec 10.8 3451 = 394 S.W.

14 50 25.5 = 20 32 0.0

− 1 1.9 3.4

14 49 23.6

1327 = 394

14 49 19 = 20 32 0.0

5.8

+ 4.8

14 49 24.8

0.55
+1.40
+1.95

5.55
26
5.81

3451 1327

6.5 = 0.0

1327 = 394

14 57 20.0 = 0.0

24 + 5.8

38 57 25.8

19 14 6.6

21 43 19.2

3 33.5

24 39 45.7

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1878phae.proj.18060

From Dec 10.8 T.d. L.W.

		1327		394	
15	9	22.0	= 20	52	0.0
24		+5.8			
39	9	27.8			
17	14	6.6			
21	55	21.2			
	3	35.5			
21	51	45.7			

∴ 394 = −1.5 2 by 1327.

		3451	
15	14	29.2	
15	16	29.5	
		1.0	
−	1	+.9	
15	15	29.6	
39			
17	14	6.6	
22	1	21.0	
	3	36.5	
	57	44.5 5	
		+9	
	57	45.4	

L. W. being unable to discriminate between the observations & computations, the different indications of the clock & the chronometer, accepts the chronometer, since it agrees with 394 & with itself.

10 AM 0.5 Error.

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1878phae.proj.1806W

Dec 18.0 To determine whether the discrepancy is due to 3451 or to 1327 we have

	3451			=	1327	
Temp changing Room – 70°F	14	50	25.5	= 14	49	19.0
	18	57	11.7	= 18	56	5.0
		~~6.7~~				~~0.0~~
	4^h	6^m	$46^s.2$	= 4	6	46.0
	26^h	46^m	$7^s.1$	= 26^h	45^m	$0^s.0$
	7^h	48^m	$55^s.4$	= 7^h	48^m	$55^s.0$

Temp 70°F ∴ 3451 gains $0^s.05$
" 30°F ∴ 3451 " $0^s.05$ } on 1327 per hour.

	7	48	55.4	> 7	48	55.0
		3451.			1327.	
Dec 18.3	2	46	7.1	= 2	45	0.0
		1	1.4			+ 6.1
	2	45	5.7	= 2	45	6.1

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1878phae.proj.1806w

Dec 10. 4 1877 .8

1327 394 Lyr.

15	7	18.0 =	21	46	0.0
		+ 6.1			
39	7	24.1			
		+ 3			
39	7	24.4			
17	18	3.3			
21	49	21.1			
	3	34.5			
21h	45m	46.6			

3451

15	14	26.2
	− 1	1.7
39	13	24.4
17	18	3.3
21	55	21.1
	3	35.5
21	51	45.6

5.55
52
26
6.33
1 1.7
18.0

1327 = 3451

0.0 = 1 7.5

1827

15	19	20.0	∴ 394 is 2s.00 slow
+		6.3	
39	19	26.3	in 20a ∴, 394 loses 1s.0 per day
17	18	3.3	added eqn. 6
22	1	23.0	
	3	36.5	Moved 394 + 2s.0
22	57	46.5	and Rect Sigma 0s.0

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1878phae.proj.1806W

1877. Dec 11.4 3451. 394. Lw

3	37	26.5	=	10	13	0.0
	− 1	1.4				
3	36	25.1				
27						
7	21	59.7				
10	14	25.4				
	1	40.65				
18h	12m	44s.75				

3451 1327

4	48	40.0	=	4	47	31.9 ~~40.0~~
5	15	43.0	=	5	14	34.9
	1	1.4				
	14	41.6				41.6

∴ 1327 = + 6.7

Dec 11.9 1327 394

15	10	12.0	=	21	45	0.0
		+ 6.98				
39	10	19.0				
17	21	59.7				
~~10~~	~~14~~	~~25.4~~				
~~8~~	~~55~~	~~83.6~~				
21	48	19.3				
	3	34.3				
	44	45.0				

gain
∴ 394 must + 0s.5

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1878phae.proj.1806M

11h 4m

1877. Dec 12d.4 3451 394 Liv.

15 12 21 = 21 46 — 0.0

— 61.60

15 11 19.4

39

~~10~~ ~~14~~ ~~25.4~~

17 21 59.7

21 49 19.7

3 34.5

45 45.2

3451 394

Cam'd 394 b gain 0s.5

and sent the signal 0s.0

1877. Dec 12d.4

3451. 1327

1h 20m 49s.5 = 1h 19m 40s.0

1 1.7

1 19 47.8 47.8

~~2.2~~

∴ Corr'n 1377 = — 7s.8

1 23 33.5 = 24.0

1 1.7

22 31.8 31.8

∓ 7s.8

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1878phae.proj.1806W

S. T.

Dec 12d 4

	3451			1327			394	
1	27	1.5	= 1	25	52.0	= 7	59	0.0
	− 1	1.7		+	7.8			
1w	25	59.8	= 1	25	59.8	= 7	59	0.0
			25					
			17	25	56.24			
			8	0	3.56			
				1	18.64			
			8	58	44.92		44.92	
							+ 15.08	

Gained for 10m

Dec 12d.9

	1327			394	
14	39	1.0	= 21	10	0.0
	+	8.1			
38	39	9.1			
17	25	56.24			
21	13	12.86			
	3	28.58			
21	9	44.28			

44.3 / 15.7 ∴ 394 = +0s.2

Lost for ~~Gained~~ for 5m

Signal sent 0s.0

	3451		
14	43	11.7	=
	2.1		
	−1	+9	
		9.4	
		9 +8	

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1878phae.proj.1806M

Dec 12.9 1327 3451 SW.

	1327			3451				
	14	49		15	= 14	49	25.0	
		+ 0		8.1				
	14	49		23.1			23.1	
							1.9	

Dec 13.4

	3451				1327			
			0.0 =				49.0	
3	15	35.0 =	3	15	24.0			
	—	2.67						
3	15	32.33		15	32.33			
					8s.33			

∴ Eun 1327 = − 8s.33

	1327			3451		394			
3	19	6.0 =	3	19	17.0 =	9	48	0.0	
	+ 8.33			− 2.67					
3	19	14.33 =	3	19	14.33 =	9	48	0.0	
27									
17	29	52.80							
9	49	21.53							
	1	36.55							
9h	47m	44s.98							44.98
									15s.0

∴ 394 is slow 0s.5

Ns Correction to determine rate in a yr.

Observed again on IX January 10th

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1878phae.proj.180GW

1877. Dec 13d.9 S. W.

	3451			394	
14	33	8.00 =	21	0	0.0
		+ 2.87			
24					
38	33	10.87			
17	29	52.80	21	59	41.11
21	3	18.07			− 5.74
	3	26.96	21	59	35.37
21	59	41.11			+ 14.63

	1327				
214	35	57.00 =	21	3	0.00
		+ 8.63			
38	36	5.63			
17	29	52.80			
21h	6m	12.83			
	3	27.44			
21h	3m	45.39			45.39
					+ 14.61

Error 394 12d.9 = 0s.00
13.4 = − 0.48
13.9 = − 0.89

∴ 394 is losing 0s.9 per day.

Added 1d.2 and 15m make 394 gain.

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1878phae.proj.1806W

1877 dec 13.9 3451 394 S.W.

15 12 13.50 = 21 39 0.0

− 20 − 20.

15 11 53.50 = 21 38 40.0

39

17 29 52.80

21 42 0:70

3 33.30

21 38 27.40

− ~~5.734~~ 2.887

21 38 ~~21.66~~

24.53

24.53
15.5.47

− 2.87

15 11 53.50 = 21 38 40.0

39 50.63

17 29 52.80

21 41 57.88

3 33.29

21 38 24.54

24.54
15.3.46

1877 dec 13.9

∴ 394 is 0.5.04 slow

Regnal rent 0:0 Error.

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1878phae.proj.1806W

1877 Dec. 14.9

Jrtl.

1327

14 39 31

9.23
14 39 40.23
17 37 45.92
2 58 5.69
29.18
9 2 23.49
15.50
38.99

394

9 2 40
38.99
+ 1.01 Error.

Control kept on for 20m

3451

14 38 3.5
37 59.96
Error + 3.54

394

9 1 0
16.51
2 59 16.51
29.45
2 59 45.96
17 37 45.92
14 37 59.96

3451

15 - 15 - 40.5
3.60
15 36.90
37 45.92
2 22 9.02
23.28
8 14.16
15.50

394

9 38 30
29.76
+ .24

15 17 38
9.25
17 47.25
37 45.92
2 19 58.67
22.93
40 24.26
15.50
39.76
40.
Error + .24

40 40

Control on for 6m

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1878phae.proj.1806W

Dec. 14.9

3451

15 29 43
3.60
29 39.40
37 45.92
8 6.52
20.99
52 14.47

394

9 52 30
29.97
Error + .03

Wtk.
∴ losing rate of control is $^{5}.04$ per minute

Signal $\frac{5}{0.0}$ Error.

Dec. $15.\frac{3}{4}$

1327

1 21 37
1 21 56.75
+ 19.75

~~mistake of 10^{5}~~

394

7 ~~43~~ ^{3}40
14.94
4 1 15.89
7 44 10.83
17 37 45.92

7 42 0
14.94
42 45.06
1 15.81
7 44 0.87
17 37 45.92
21 46.79
37

Error of 1327 + 9.79

3451

1 25 11
3.45
1 25 7.55
17 37 45.92
07 47 21.63
1 16.57
19 46 45.06

394

7 46 20
7 46 5.06
+ 14.94

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1878phae.proj.1806W

Will

1877, Dec. 15.4

1327			394			3451			394		
3	11	25	9	32	30.	3	14	49	9	35	40
	11	34.75			15.08			3.47	35		25.08
		9.75		1	33.75	3	14	45.53			14.92
			9	33	48.83	17	37	45.92			15.50
			17	37	45.92	9	36	59.61			−.58
						1		34.53	Not corrected		

Dec. 16.3

3451			394		
0	16	26.5	6	33	50
		3.86			35.50
0	16	22.64			14.50
17	41	42.48	394 is 1.00 slow		
6	34	40.16	Control on from		
	1	4.66	6 41 to 7 6		

Dec. 16.34

3451			394		
2	2	52.5	8	20	0
		3.86		19	44.07
2	2	48.64			15.93
17	41	42.48			15.50
8	21	6.16	Error		+.43
	1	22.09			
8	19	44.07			

1327			394		
2	4	8	8	21	30
					15.93
			8	21	14.07
				1	22.34
			8	22	36.41
			17	41	42.48
			2	4	18.89
					8.
Error of 1327					−10.89

3451	2	50	14.8
1327	50	0	
			14.8

Control on 11m

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1878phae.proj.1806W

W.L.

Dec. 16.8

3454			394			1327			394		
13	39	57.5	7	55	10	13	40	2	7	55	30
		4.06						− 11.42			
13	39	53.44				13	40	13.42			
17	45	39.04				17	45	39.04			
4	5	45.60				4	5	25.62			
		40.26						40.21			
54	54.66							14.59			
	10							30			
	15.34							15.41			
	50							50			
	− 16							− 9			

Adopted −14

Control on 2.5 mv

Dec. 16.9

3451			394		
15	6	21.50	9	21	20
		4.07			
		17.43			
17	45	39.04			
2	39	21.61			
		26.11			
9	21	4.50			
		20			
		15.50			

Signal 0.5 Error.

3451			394			1327			394		
13	40	54	7	52	10	13	42	27	7	54	0

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1878phae.proj.1806w

W.U.

	3451			394		1327			394	
1877 Dec. ~~16.8~~ 17.3	1	37	5	7	50	20	1	38	29	7 52 0
			4.26						11.95	
	1	37	0.74				1	38	40.95	
	17	45	39.04				17	45	39.04	
	7	51	21.70				7	53	1.91	
		1	17.22					1	17.50	
	7	50	4.48					51	44.41	
			20					51	60	
			15.52						15.59	

Error of 394 +.04 on old rate v. opp. page

17.8

	3451			394		1327			394	
	13	40	54	7	52	10	13	42	27	7 54 0
			4.46						12.49	
	13	40	49.54				13	42	39.49	
	17	49	35.59				17	49	35.59	
	4	8	46.05				4	6	56.10	
			40.76						40.45	
		5	54.71					53	44.35	
			15.29	on old rate					15.65	

	3451									
17.8	14	41	44	7	52	50	14	43	37	7 55 0
			5.18						11.91	
	14	41	38.82				14	43	48.91	
	17	49	35.59				17	49	35.59	
	3	7	56.77				3	5	46.68	
			30.79						30.43	
			34.02					54	43.75	
			50						60	
			15.98						16.25	

Error of 394 +.48
.75
Adopted +.66

Control on 15m
Signal 5.0 Error

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1878phae.proj.1806N

	3451	394	1327	394	Wll.
Dec. 17.3	1 37 5	7 50 20	1 38 29	7 52 0	
	4.81	3.93		16.07	
	1 37 0.19	16.07		7 51 43.93	
	17 45 39.04			1 17.49	
	7 51 21.15			17 45 39.04	
	1 17.22			1 38 40.46	
	7 50 3.93			29.	
				Error 1327 11.46	

A very rapid rise of Barometer occurred on 17th, probably causing the marked change in the clock rates. Meridian Circle obs. show rate of 1327

Dec. 15.3 - 16.3 −0.86

16.3 - 7.3 −0.66

	1327	394	3451	394
Dec. 18.3	1 30 3	7 ~~39~~ 44 40	1 33 41.5	7 43 0
		15.36	5.25	
		7 39 24.64	1 33 36.25	
		1 15.47	17 49 35.59	
		17 49 35.59	7 44 0.66	
		1 30 15.70	1 16.02	
		3	42 44.64	
		12.70	60	
			15.36	
			Error −.14	

32 27 - 1327

32 45 - 3451

18

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1878phae.proj.1806w

1877, Dec. 18.8 3451 394 1327 394 Wll.

13	41	41	7	49	0	13	47	3	54 40
		5.46						13.32	
		35.54				13	47	16.32	
17	53	32.15				17	53	32.15	
4	11	56.61				4	6	15.83	
		41.27						40.34	
	48	44.66	Error	−.16			54	24.51	1327 45 0.1
		60		−.01				40	
		15.34		−.08	Adopted			15.49	3451 45 17.

3451			394			1327			394
14	52	22.5	8	59	30	14	48	38	8 56 0
		5.48						13.37	
		17.02						46.37	
17	53	32.15				17	53	32.15	
3	1	15.13				3	4	45.78	
		29.69		−.06				30.27	
	59	14.56		+.01				44.49	
		30						60	
		15.44		−.02	Error			15.51	Signal 5.0 Error.

19.3 3451 394 1327 394

1	57	11.5	8	2	30	1	58	52	8 4 30
		5.68						13.96	
1	57	5.82				1	59	5.96	
17	53	32.15				17	53	32.15	
8	3	33.67				8	5	33.81	
	1	19.22					1	19.55	+.05
	2	14.45					4	14.26	+.24
		30						30	
		15.55						15.74	+.14 Error

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1878phae.proj.1806N

Dec. 19.8

3451		394		1327		394	
13	54 9.5	7	57 30	13	54 59	7	58 40
	5.89				14.56		
	54 3.61				55 13.56		
17	57 28.71			17	57 28.71		
4	3 25.10			4	2 15.15		
	39.88				39.69		
	57 14.78				58 24.54		
	30	Err	−.28		40		
	15.22		−.04		15.46		
			−.16				

1327 0.0
3451 20.7

15	26 24.5	9	29/54 30	15	28 4	31	30
	5.92				14.64		
	26 18.58				18.64		
17	57 28.71			17	57 28.71		
2	31 10.13			2	29 10.07		
	24.77		−.14		24.44		
	29 14.64		+.13		31 14.37		
	30		.00		34		
	15.36				15.63		

Signal 0.0 Errr.

A.S.

Dec. 20.8 Rate of S. Clock (F.1327), by meridian circle observations of β Cassiop. Dec. 18 and Dec. 20, is 1.22 a day, losing. This agrees with rate assumed above between Dec. 18.8 and Dec. 19.8 (1.24). Error at 20h mean time today therefore assumed to be 15.8; at 22h, 15.9; slow.

F.1327			B.394	
13	48	42 15.8	19	48 30
13	48	57.8		
17	57	28.7		
19	51	29.1		
	3	15.2		
19	48	13.9	Fast 16.1	

Put on battery and tested result between 9½ & 10 A.M.

20.9	15	54 3		30	
		15.9			
	15	54 18.9			
	17	57 28.7			
	21	56 50.2			
		3 35.7			
	21	53 14.5	Fast 15.5		Sent signal 0.0

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1878phae.proj.1806w

1877 Dec. 21.9	F. 1327		B. 394	No observations. Rate of S. Clock
	15 37 25		21 33 0	assumed as yesterday
		17.1		(two large according to
	15 37 42.1			next observations).
	18 1 25.27			
	21 36 16.83			
	3 32.36			
	21 32 44.47		Fast 15.5	Signal sent 0.s0
1877 Dec. 23.8	14 1 29		19 49 30	
		17.65		
	14 1 46.65			
	18 9 18.39			
	19 52 28.26			
	3 15.36			
	19 49 12.90		Fast 17.s1	Put on battery and
				tested result occasionally
Dec. 23.9	16 12 22		22 0 0	
		17.7		
	16 12 39.7			
	18 9 18.39			
	22 3 21.31			
	3 36.80			
	21 59 44.51		Fast 15.5	Signal sent 0.s0

Wound clocks B 394 and B 312; removed deliquesced chloride of calcium, opened jar of dry chloride of calcium and filled the saucers. Corked the jar and put it into the clock-room, so that if any air gets in, it may be air that needs drying.

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1878phae.proj.1006

Ast.

1877 Dec. 24.9		F. 1327		B. 394	
	⊕	16	12	17	21 56 0
				18.6	
		16	12	35.6	
		18	13	14.95	
		21	59	20.65	
			3	36.14	
		21	55	44.51	Fast 15.5 Signal sent 0.0
Dec. 25.9		16	27	14	22 7 0
				19.5	
		16	27	33.5	
		18	17	11.51	
		22	10	21.99	
			3	37.95	
		22	6	44.04	Fast 15.96
Dec. 26.3		3	18	30	8 56 30
				20.12	
		3	18	50.12	
		18	21	8.07	
		8	57	42.05	
			1	28.09	
		8	56	13.96	Fast 16.04 Put on battery for ten minutes.

Signal sent "fast 0.6" value resulting from the first computation, in which the rate of F. 1327 was assumed to be less.

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1878phae.proj.1806w

1877 Dec. 26.9 F. 13 27 B. 3 9 4

16 7 36 21 43 30

20.77

16 7 56.77

18 21 8.07

21 46 48.70

3 34.09

21 43 14.61 Fast. 15.39 Put on battery 2m; wound clocks B 3 9 4 & B 312; chloride of calcium not much deliquesced; found two more saucers of deliquesced chloride of calcium; emptied and refilled them; sent signal 0s.0

16 26 39 22 2 30

20.77

16 26 59.77

18 21 8.07

22 5 51.70

3 37.21

22 2 14.49 Fast 15.5

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1878phae.proj.10066

1877 Dec. 27.8 Z. 1327 B. 394 A.S.

14 37 46 20 10 0

21.2

14 38 7.2

18 25 4.63

20 13 2.57

3 18.73

20 9 43.84 Fast 16.2 Put on battery

Dec. 27.9 16 18 3 21 50 0

21.25

16 18 24.24

18 25 4.63

21 53 19.61

3 35.16

21 49 44.45 Fast 15.5 Sent signal 0.0

Dec. 2

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1878phae.proj.1806W

1877 Dec. 28.8		F. 1327	B 394		
	14	0 35	19	29 0	
		22.0			
	14	0 57.0			
	18	29 1.19			
	19	31 55.81			
		3 11.99			
	19	28 43.82	Fast 16.2		Put on battery
Dec. 28.9	16	31 0	0		
		22.07			
	16	31 22.07			
	18	29 1.19			
	22	2 20.88			
		3 36.63			
	21	58 44.25	Fast 15.75		Signal sent fast 0.2
Dec. 30.9	16	18 48	21	39 0	
		24.15			
	16	19 12.15			
	18	36 54.30			
	21	42 17.85			
		3 33.35			
	21	38 44.50	Fast 15.5		Signal sent 0.0

The rate assumed for the S. Clock (F. 1327) was too large, as appeared from the observations of the following evening.

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1878phae.proj.18066

AS

1877 Dec. 31.5	F. 1327	B 394	F. 3451
		10 48 30	5 30 54
			2.2
			5 30 51.8
			18 40. 50.86
			10 50 0.94
			1 46.49
		Fast 15.5	10 48 14.45

The winding of the clocks was delayed this forenoon by the pressure of other work. B 394 stopped at 0h 5m, showing that it had only two hours to spare at its regular time for winding which seems too small. Decided to wind clocks Thursday evening instead of Thursday morning until L. W. takes charge of them again. Telephone tried without success; then telegraphed to Stearns & George in the usual way to tell Bond to put on clock and send some one to start ours, it being thought by Prof. Pickering that this would be safest. Clock accordingly started, (by Mr. Acton), but the Boston clock being on the line, B. 394 had to be compared as above with F. 3451 instead of with F. 1327. B. 394 did not get upon the line again till about noon Jan. 1, when Prof. Pickering, being in Boston, called at Bond's to get it done.

F. 3451 had been standing still for several days, but had been started again towards the end of December. The error assigned to it above resulted from a comparison between it and F. 1327 at the time.

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1878phae.proj.1806W

1877 Dec. 31.9 F. 1327 B. 394 F. 3451

21 32 30 16 16 39

2.37

16 16 36.63

18 40 50.86

21 35 45.77

3 32.28

Fast 16.5 21 32 13.49

Put on battery and tested result from time to time. Bond clock on the line and not acting on our sounders, so that F. 3451 (previously compared with F. 1327) was used in the comparisons as yesterday. No signal sent; line not working till noon; See p. 99.

B. 394 F. 3451

1877 Dec. 31.9 22 14 20 16 58 37

2.5

16 58 34.5

18 40 50.86

22 17 43.64

3 39.15

Fast 15.5 22 14 4.49

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1878phae.proj.1806M

A.S.

1878 Jan. 1.4 7.1327 B.394

5 23 51 10 38 0

24.94

5 24 15.94

18 44 47.42

10 39 28.52

1 44.76

10 37 43.76 Fast 16.2 Battery put on next morning and result tested.

Jan. 1.9 16 34 11 21 46 30

25.45

16 34 36.45

18 44 47.42

21 49 49.03

3 34.58

21 46 14.45 Fast 15.5 Signal sent 0.0

Jan. 2.3 2 55 22. 8 6 0

25.86

2 55 47.86

18 48 43.98

8 7 3.88

1 19.79

8 5 44.09 Fast 15.9 Brought back by battery to 15.5

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1878phae.proj.1806w

1878. Jan. 2.9

F. 1327	B 394
16 5 45	21 14 14
26.35	
16 6 11.35	
18 48 43.98	
21 17 27.37	
3 29.28	
21 13 58.09	Fast 15.9
	Put on battery

F. 3451	B. 394
16 13 31	21 21 30
Hence F. 3451 fast	
of F. 1327	28.91
F. 1327 assumed slow	26.35
F. 3451 " fast	2.56

B 394	F 3451
0	16 50 7.5
	2.56
	16 50 4.94
	18 48 43.98
	22 1 20.96
	3 36.47
Fast 15.5	21 57 44.49
Signal sent 0.0	

No observations with meridian circle by regular observers after Jan. 1. Evening of Jan. 2 cloudy; no good star coming conveniently next morning; evening of Jan. 3 too bad seeing for regular work; next morning cloudy. Prof. Pickering concluded on the evening of Jan. 3 to continue equatorial work and trust to the clock-rate for the correction next day. Clocks wound up and chloride of calcium renewed. One small weight taken off pendulum of B. 394.

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1878phae.proj.1806w

1878 Jan 3.4 F. 1327 B. 394 A.S.

4 41 34 9 48 0

26.86

4 42 0.86

18 52 40.54

9 49 20.32

1 36.54

9 47 43.78 Fast 16.2 Brought back by battery to 15.5

Jan. 3.9 16 17 58 21 22 30

27.0 Mean rate Dec. 23 to Jan. 1 used in estimating error this morning.

16 18 25.0

18 52 40.54

21 25 44.46

3 30.64

21 22 13.82 Fast 16.2

F. 3451

21 24 0 16 19 57.5

Hence F. 3451 fast of F. 1327 29.25; or, with adopted rate of F. 1327, 2.25 fast. Clock room cold last night.

Battery put on.

B. 394 F. 3451

20 16 44 22

2.25

16 44 19.75

18 52 40.54

21 51 39.21

3 34.88

Fast 15.67 21 48 4.33

Battery taken off soon afterwards. No signal sent today.

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1878phae.proj.1806W

1878 Jan. 4.3 F. 1327 B 394

3 42 20 8 45 0

27.4

3 42 47.4

18 56 37.1

8 46 10.3

1 26.2

8 44 44.1 Fast 15.9

Battery put on for a few minutes next morning to lessen presumed error. Star afterwards observed by J. F. M. showed that the error of F. 1327 was larger than that assumed above.

Jan. 4.9 16 28 45 21 29 20

28.7

16 29 13.7

18 56 37.1

21 32 36.6

3 31.8

21 29 4.8 Fast 15.2 Battery put on for 6 minutes.

16 42 57 30

28.7

16 43 25.7

18 56 37.1

21 46 48.6

3 34.1

21 43 14.5 Fast 15.5 Signal sent 0.0

F. 3451 B 394

16 52 39.5 40 Hence F. 3451 fast of F. 1327

31.0.

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1878phae.proj.1806

A.S.

1878 Jan. 5.4		F. 13 27	B 394		
	5	14 29	10 13 0	Observations this evening give	
		28.79		F. 1327 a smaller rate than that	
	5	14 57.79		indicated by star observed the previous morning.	
	19	0 33.66			
	10	14 24.13			
		1 40.65			
	10	12 43.48	Fast 16.5	Battery put on	
				Battery off	
	5	51 56	10 50 20		
		28.8			
	5	52 24.8			
	19	0 33.66			
	10	51 51.14			
		1 46.79			
	10	50 4.35	Fast 15.65		
Jan. 5.8	15	4 6	20 1 0		
		29.2			
	15	4 35.2			
	19	0 33.7			
	20	4 1.5			
		3 17.2			
	20	0 44.3	Fast 15.7		

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1878phae.proj.1806W

1878 Jan. 6.4			F. 1327			B 394	
	4	34	18		9	29	0
			29.9				
	4	34	47.9				
	19	4	30.2				
	9	30	17.7				
		1	33.4				
	9	28	44.3	Fast 15.7	Battery put on for five minutes.		
Jan. 6.9	16	55	49.		21	48	30
			30.5				
	16	56	19.5				
	19	4	30.2				
	21	51	49.3				
		3	34.9				
	21	48	14.4	Fast 15.6	Battery put on for 3½ minutes.		
					F. 3451		
				21 58 0	17	5	56
	17	7	21	22 0 0	Hence F. 3451 fast		
			30.5		of F. 1327 35.33		
	17	7	51.5				
	19	4	30.2				
	22	3	21.3				
		3	36.8				
	21	59	44.5	Fast 15.5	Signal sent 0.0		

Renewed chloride of calcium & wound clocks B 394 and B 312. Took off another small weight from pendulum of B 394.

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1878phae.proj.1806W

A.S.

1878 Jan. 7.4

		7.1327	B. 394		
5	12	19	10	3	0
		31.38			
5	12	50.38			
19	8	26.78			
10	4	23.60			
	1	39.02			
10	2	44.58	Fast 15.4		

Battery put on for 2 minutes.

Jan. 7.9 Line not working. 7.3451 fast of 7.1327 $37^s.5$ as found by direct comparison and also by coincidences of both with mean time clock in clock-room.

B 394			7.3451		
21	31	30	16	43	18.5
					5.4
			16	43	13.1
			19	8	26.8
			21	34	46.3
				3	32.1
		Fast 15.8	21	31	14.2

Battery on about 10 minutes

21	59	40	17	11	33.5
					5.4
			17	11	28.1
			19	8	26.8
			22	3	1.3
				3	36.7
		Fast 15.4	21	59	24.6

Line still not working. No signal.
No current at either sounder in E. Transit Room.

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1878phae.proj.1806w

1878 Jan. 8.3 F. 1327 B 394

2 10 44 6 58 0

32.5

2 11 16.5

19 12 23.33

6 58 53.17

1 8.62

6 57 44.55 Fast 15.45 Evening cloudy. Next morning partly clear, but stars not seen with mer. circle.

Jan. 8.9 16 42 6 21 27 0

33.41

16 42 39.41

19 12 23.33

21 30 16.07

3 31.38

21 26 44.69 Fast 15.3 After transit of α Herculis ($17^h 9^m$), which could not be seen, put on battery 3 minutes and sent signal 0.0

17 19 32.0 22 4 20

33.4

17 20 5.4

19 12 23.33

22 7 42.07

3 37.51

22 4 4.56 Fast 15.44

F. 3451

22 9 0 17 24 52.5

Hence F. 3451 $39^s.73$ fast of F. 1327.

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1878phae.proj.1806

A.S.

1878 Jan. 9.3 J. 1327 B 394

4 22 30 9 5 30

34.45

4 23 4.45

19 16 19.89

9 6 44.56

1 29.57

9 5 14.99 Fast 15.0 Battery put on 6 minutes

Jan. 9.8 15 25 18.

35.17

15 25 53.17

19 16 19.89

20 9 33.28

3 18.16

20 6 15.12 Fast 14.9 Battery put on 18 minutes

J. 3451

20 9 30 15 29 0

This comparison made before putting on battery. J. 3451 fast of J. 1327 41.5

Jan. 9.9 21 54 30 21 54 30

35.3

17 14 10.3

19 16 19.89

21 57 50.41

3 35.90

21 54 14.51 Fast 15.5 Signal sent 0.0

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1878phae.proj.1806w

1878 Jan. 10.3 F. 1327 B. 394

2	12	3	6	51 30
		35.8		
2	12	38.8		
19	20	16.45		
6	52	22.35		
	1	7.56		
6	51	14.79	Fast 15.2	

Put on battery 4 minutes, wound clocks B 394 & B 312, and replaced one small weight on pendulum of B 394. Chloride of calcium seemed not to need renewing.

Jan. 10.9

16	50	10	21	27 14
		36.6		
16	50	46.6		
19	20	16.45		
21	30	30.15		
	3	31.42		
21	26	58.73	Fast 15.3	
			21	32 10

No observations; considerable meteorological changes. Probably the large rate last determined for F. 1327 may not have been fully maintained. Adopted rate 1.s4

F. 3451

16 55 50.5

Hence F. 3451 fast 4

F. 1327 43.s69.

Put on battery 5 minutes.

17	16	0	21	53 0
		36.6		
17	16	36.6		
19	20	16.45		
21	56	20.15		
	3	35.65		
21	52	44.50	Fast 15.5	

Sent signal 0.0

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1878phae.proj.1806v

1878 Jan. 11.9 · F.1327 B.394 AS

17	6	53	21 40 0	Observations this morning
		37.25		give the clock a smaller
17	7	30.25		rate than that assumed yesterday.
19	24	13.01		
21	43	17.24		
	3	33.51		
21	39	43.73	Fast 16.3	Put on battery at $21^h 44^m$

17	17	35	21 50 40	
		37.25		
17	18	12.25		
19	24	13.01		
21	53	59.24		
	3	35.27		
21	50	23.97	Fast 16.0	Left battery on till $22^h 3^m$;
				then sent signal 0.0

22	18	30.	22 18 30	
		37.27		
17	46	7.27		
19	24	13.01		
22	21	54.26		
	3	39.84		
22	18	14.42	Fast 15.58	

F.3451

22 32 40 18 0 28

Hence F.3451 fast of F.1327 45.67

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1878phae.proj.1806w

1878 Jan. 12.3 F. 1327 B 3924

5	31	55	10	3	0
		37.76			
5	32	32.76			
19	28	9.57			
10	4	23.19			
	1	39.01			
10	2	44.18			

Fast 15.8 Battery put on about 5 minutes

Jan. 12.8

15	30	33	20	0	0
		38.3			
15	31	11.3			
19	28	9.6			
20	3	1.7			
	3	17.1			
19	59	44.6			

Fast 15.4

Jan. 13.3

4	22	39.	8	50	0
		38.8			
4	23	17.8			
19	32	6.1			
8	51	11.7			
	1	27.0			
8	49	44.7			

Fast 15.3

F. 3451

8	20	40	4	14	6

Hence F. 3451 fast of F. 1327

48.5

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1878phae.proj.1806w

1878 Jan. 13.9 F. 1327 B 394 F 3451 A.S.

21 38 10 17 13 44.5

Hence F. 3451 fast of F. 1327 49.82

17 14 15 21 39 30

39.4

17 14 54.4

19 32 6.1

21 42 48.3

3 33.4

21 39 14.9 Fast 15.1 Battery put on for 10 minutes (perhaps the time was incorrectly taken or remembered, as the effect was large).

17 35 48 22 1 0

39.4

17 36 27.4

19 32 6.1

22 4 21.3

3 37.0

22 0 44.3 Fast 15.7 Signal sent fast 0.2

Wound clocks B 394 and B 312. Renewed chloride of calcium.

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1878phae.proj.1806W

1878 Jan. 14.9 F. 1327 B 394 A.S.

17 16 10 21 37 30

40.32

17 16 50.32
19 36 2.68
21 40 47.64
3 33.10
21 37 14.54 Fast 15,5 Sent signal 0.0

Jan. 15.8 1327 394 W.U.

15 31 38 7 48 20
41.26 20.19
15 32 19.26 − .19 Control on 3m
19 43 55.79 Main line not working during
4 11 36.53 the day nor in the early morning,
41.22 but found working when signal
7 48 4.69 was sent at 10 AM. W.U. line
in order.

17 15 05. 9 32 30 | 1327 24m 0s
41.34 14.82 | 3451 24 53.7
17 15 46.34 15.18 | Error of 1327 −41.4
19 43 55.79 − .32 | Error of 3451 + 12.3
2 28 9.45 Control on 6m
24.27 3451 394
14.82 17 41 42.5 9 57 10
12.3
41 30.2
19 43 55.8 Signal sent 0.0
2 2 25.6
30.1
54.5

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1878phae.proj.1806w

Jan. 16.3 3451 394 1327 394 Brll.

~~2 57 24 7 12 20~~

3 3 25 7 18 20 3 [5] 6 41 7 [22] 21 30

16.50 40.78

7 18 3.50 3 7 21.78

1 11.96 19 43 55.79

19 43 55.79 7 23 25.99 Main line not working this afternoon.

3 3 11.25 1 12.65

25 7 22 13.34

Error + 13.75

4 50 28 9 6 0

40.89 58.95

4 51 8.89 + 1.05 Error.

19 43 55.79

9 7 13.10

1 29.65

5 43.45

3451 − 1327 = 54.5

40.9

Error of 3451 13.8

Jan. 16.8 1327 394 3451

15 26 42 7 40 30 7 30 38 7 43 30

41.41 29.23

15 27 23.41 Error +.77 Wrong rate used

19 47 52.35

4 20 28.94

42.67

7 30 13.73

3451 − 1327 + 55.4

41.2

Error of 3451 = + 14.2

16 43 55 57 30

41.20 29.37

44 36.20 Error + .63 Error corrected and signal 5.0 sent.

19 47 52.35 Both lines working.

3 3 16.15

30.02 Batteries in poor condition. Put

13.87 in order.

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1878phae.proj.1806M

1878. Jan. 17.3

1327	394	3451	394
3 17 29	7 29 20	3 20 5.5	7 31 0
42.09	20.47	51.37	15.03
			7 30 44.97
3 18 11.09	−.47	14.13	1 14.05
19 47 52.35			19 47 52.35
7 30 18.74	Control on for 8m		3 19 51.37
1 13.77			Direct Comp.
29 4.97			3451 − 1327 +56.2
			1327 −42.1
			Error of 3451 +14.1

Jan. 17.8

1327	394	3451	394
15 36 49	7 ~~47~~ 46 40	38 26.5	7 ~~48~~ 47 20
42.66	39.91	14.32	20.32
	+.08		+.32
37 31.66		38 12.18	3451 − 1327 = 57.4
19 51 48.91		51 48.91	1327 42.7
4 14 17.25		4 13 36.73	3451 +14.7
41.66		41.55	Control on 2m
46 24.41		47 4.82	

+.08 Adopted, as rate of 3451 not well determined and direct comparison with 1327 shows it to be about +.6

17	14	15	9	23	50
		42.73		50.02	
17	14	57.73	−	.02	
19	51	48.91			
2	36	51.18			
		25.70			
	23	34.52			

Signal $\frac{S}{O}$ Error

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1878phae.proj.1806w

Jan 18.3

3451			394			1327			394		
3	16	21.5	7	23	20	3	20	44	7	28	40
		6.34			15.36			43.21			24.64
			7	23	4.64						15.36
		+15.16		1	12.79	3	21	27.21			−.14
	19	51	48.91	19	51	48.91	19	51	48.91		
	3	16	6.34	7	29	38.30					
					1	13.66					
				7	28	24.64					

W.W.

Control on 2m

Jan. 18.8

1327			394					
15	38	14	7	43 48	10	3451 − 1327		59.45
		43.78			9.88			43.78
15	38	57.78			+.12	3451 + 15.67		
19	55	45.47						
4	16	47.69						
		42.07						
7	43	54.38						

Control on 2m

17	15	40	9	21	20
		43.85			
17	16	23.85			
19	55	45.47			
2	39	21.62			
		26.11			
9	21	4.49			

Signal O.S Error

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1878phae.proj.1806W

1878 Jan. 19.3

1327	394	3451	394
4 0 55	8 4 50	4 5 16	8 8 10
44.81	34.74	0.36	15.26
4 1 39.81	15.26	+15.64	8 8 54.74
19 55 45.47	Error of 394 −.24		1 20.15
8 5 54.34			19 55 45.47
1 19.60	Dif. Comp. 3451 − 1327	60.45	4 5 0.36
8 4 34.74		44.81	
	Error of 3451 +15.64		Control on 4m

W.H.

	1327	394	3451	394
20.8	15 40 33	7 38 40	15 44 37.5	7 41 40
	46.82	39.70	16.37	40.52
	15 41 19.82	+.30	15 44 21.13	−.52
	20 3 38.59		20 3 38.59	
	4 22 18.77		4 19 17.46	Double Dif. of 1327 394 +.02
	42.97		42.48	
	38 24.20		41 25.02	

3451 comp. rej. as 3451 was not round on the 20th
Control on 6.m

17	17	9	9	15	0
		46.90			
17	17	55.90			
20	3	38.59			
2	45	42.69			
		27.31			
9	14	44.46			

Signal 0.0 Error.

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1878phae.proj.1806w

1878 Jan 21.9

L.W.

		1327			394
17	10	3.0	=	21	4 0.0

134
2.5
268
67
335

3.35
44.76
24 +48.11
41 10 51.11
20 3 38.59
21 7 12.52
3 27.6
21 3 44.9

∴ 44.9
15.1 ∴ 394 is 0.4 slow.

Giving 394 & 1327 Equal weight
Gain 0.2

18 11.2
24 +48.1
42 2 59.3
20 3 38.6
21 59 20.7
3 36.1
45 44.6

Equal dist 0.0 Error.

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1878phae.proj.1806W

1878 Jan 22d 4 S. M.

	1327		394	
5	~~46~~ 6 = 9		38	0.0
		+ 48.60		
		47.		
5	46	54.60		
29		8		
20	7	35.14		
9	39	18.46		
	3	34.9		
	36	44.5	∴	Made 394 Lose for 15m

22d.9	17	42	5.0 = 21	32	0.0
			47.50		
			0.56		
	17	42	53.06		
	41				
	20	7	35.14		
	24	35	17.92		
		3	32. ~~56~~ 2		
			45.7		
	21h	31m	~~55.56~~	∴	394 is ~~fast~~ slow 1.2.

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1878phae.proj.18066

1878 Jan 28.5 4

2 m.

	Prob 1327			Bnd 394	
h	m	s			
7	29	20.00 =	11	17 22	0.0
24		+48.57			
31	30	8.57			
20	11	31.70			
11	18	36.87			
	1	51.17			
11	17	45.70	,		45.70
					14.30

∴ 394 is 1.5 2 too slow. adtens

Chr. 2451

7	35	0.0 =	7	36	9.5
7	35	38.0 =	7	36	57.5
		+ 48.65			
7	36	36.65			36.65
				+	20.85

Jan 28.9

	1327		394.
18	16	4.0	
		48.57	
24		.56	
42	16	53.13	
20	11	31.70	
22	5	21.43	
	3	37.1	
22 W	1 W	44.3	and giving 394 Equal weight we have Part 0.5 1.

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1878phae.proj.1806w

1878. Jan 24.4 1327 394 L.N.

5 38 55.0 = 9 24 23 0.0

50.14

29h 39m 45s.14 = 0.0

19 20 15 28.26

10h 24m 16s.88

9 1 42.8 44.44

2 44.44 44.44

9 22 44.44 ∴ 394 = 0s.06 fast.

Mems. owing to Chron. shute having zero at 1s instead of 0s.0 as L. N. supposed, these clock errors are 1s wrong the corrected Sunday Jan 26.

L. N.

1327. 3451.

5 48 30.0 = 5 49 41.2

22.0 38.2

50.2

5 49 10.2 49 10.2

20.0

1878 Jan 24d9 1327 394

17 31 50 50.1 = 21 14 0.0

24 +50.7

41 32 40.8

20 15 28.36

21 17 12.54

13 29.23

21 18 43s.31

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1878phae.proj.1800W

1878 Jan 24.9 d 1327 •• 394 L.M.

17	54	54.0	= 21	37	0.0
		+50.7			
41	55	44.7			
20	15	28.26			
21	40	16.44			
	3	33.01			
21	36	43s.43		36	43.43

add 1s for cmotion as shown p. 122

+ 1.00

+ 44s.43

1878 Jan 25.9 Even uncertain. No signal. Sw.

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1878phae.proj.1806w

1878 Jan. 27. d 3

SW.

h	1327 m	s		h	394 m	s
4	20	22.0	=	7	53	0.0

+ 51.14
+ 4.00

28	21	17.14
20	27	17.93
7h	53m	59.s21
	1	17.65
7h	52m	41.s56

41.56
18.s64
15.50
3.14

Which makes 394 3.s14 fast of by 1327.

We must assume 1327 is right – though it is very likely not so, since 394 has an unknown gaining rate.

Set 394 back 4.s0 and made it gain for 15m remove 1.5 gramme.

84	53	31.0	=	8	26	0.0

+ 55.14

4	54	26.14
28		
20	27	17.93
8	27	8.2
	1	13.1
8h	26m	45.s1

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1878phae.proj.1806N

Jan 27.d. 9 1327 L.M.

17				
~~18~~	39	58.0 = 21	30	0.0
		55.14		
24		.66		
~~42~~ 41	40	53.80		
20	27	17.93		
21	13	35.87		
	3	28.64	?	

17	58	39.0 = 21	30	0.0
24		55.8		
41	59	34.8		
20	27	17.93		
21	32	16.87		
	3	31.70		
21	29	45.17		45.1
				144.9

∴ Bond 394 is 0s.6 slow.

10 Am Brought it up 0s.5

∴ 10 Am Bmd 394 slow 0s.3

No Signal received owing to uncertainty however.

Jan 28.4 1327 394 L.M.

7	25	49 =	10	~~24~~ 0.0
		53.78		
	~~2~~	~~58.68~~		
7	26	42.78		
31				
20	31	14.48		
10	~~5~~ 5	28.3		
	1	47.4		
10h	53m	40s.9		

Let Bmd 394 Back 4s.0

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1878phae.proj.1806W

1878 Jan 28.9 L.M.

	1327			394	
17	46	34.0 =	21	14	0.0
24		53.78			
		0.52			
41	47	28.30			
20	31	14.48			
21	16	13.82			
	3	29.07			
21	12?	44.75 =			44.75

∴ Rond 394 is slow $0^s.25$

1878 Jan 29.4 L.M.

	1327			394	
5	46	31.0 = 9		11	0.0
	+	55.03			
29	47	26.03			
20	35	11.04			
9	12	15.0			
	1	30.5			
9^h	10	44.5			44.5

∴ 394 is correct. $15^s.5$

1327 = 3451

		13.0	=		35.2
6	32	38.0	=	48	55.2
		+ 55.0			
6	33	28.0		33	28.0

∴ Eun 3451 = + $27^s.2$

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1878phae.proj.1800W

Jan 29.d 9 1327 394 L. M.

17	53	29.0 =	21	16.	0.0
24		+ 55.7			
41	54	24.7			
20	35	11.0			
21	19	13.7			
	3	29.6			
21	15	44.1		44.1	15.9

3451 394

18	54	~~53.5~~ 54.0 =	21		0.0
		+ 27.8			
18	4	~~21.8~~ 26.2			
24					
42	4	26.2			
20	35	11.6			
21	29	15.2			
	3	31.2			
21	25	44.6		44.6	16.6

16 hh. ∴ Error 394 Sheet 0s.4 fast.

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1878phae.proj.1806W

1878 Jan 30.4 L.M.

1327 394

6 30 22 = 9 17 0.0

56.9

6 31 28.9

30
20 39 7.6

9 52 21.3

1 37.0

9h 50 44.3

.1

1878 Jan 30.9d

1327 394

18 13 26.0 = 21 32 0.0

24 56.70

42 14 22.7

20 39 7.60

21h 35m 15.5.10

3 32.2.03

38 42.5.9 42.9

Rate 1327 + 0.8

21 31 43.7 43.7 16.3 :. +0.8

44.4

Equal east 0.6 fast.

Really 0.0 ! L.M.

18 31 29.0 =
24 57.5

42 32 26.5

20 39 7.6

21 52 18.9

3 35.0

24 48 43.9

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1878phae.proj.1806W

1878 Jan 31.4 3451 1327

16.5 = 50

4 3 36.5 = 4 2 10

56.70
1.3

3 8.0 4 3 8.0

.0054
.54
4²
38 9 9

1327 74

1878 Feb. 0

21 24 0.0 56.70

21 25 0.0 32.0
30.4
1.6
1.3
1.3
2.1
56.7
58.8

21 26

20 47

0 h 39

0 h 39 4 42.6

0 h 39 4 17.2

1327 1327

25.2

13.2

3 56.36
50.83
25
1
46 47.39
3.89

30.8 = Sum 3451 Feb. 1.0

28.5 = " " Jan 31.4

Put 394 Back 2.5.0
after comparing rates for 30 back.

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1878phae.proj.180dw

1878 Jan 31.4 3451 1327

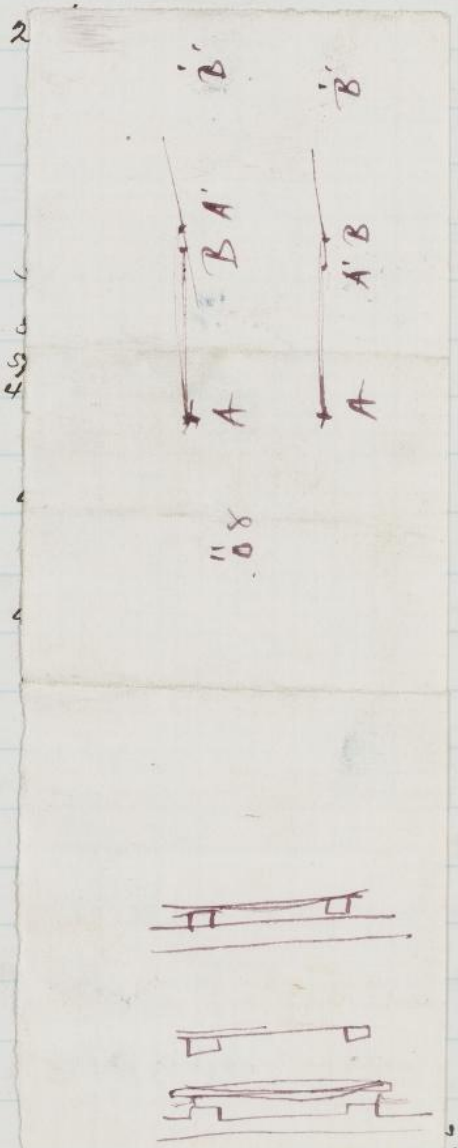
16.5 = 50

4 3 36.5 = 4 2 10

56.70
1.3

3 8.0 4 3 8.0

2



1327

1878 ~~Jan~~ Feb 1.0

21 24 0.0 56.70

21 25 0.0

21 26

20 47

0h 39m

0h 39m 42.6

0h 39m 17.2

1327 1327

25.2

13.2

1.8 = Error 3451 Feb 1.0

28.5 = " " Jan 31.4

Put 394 Back 2.0

after comparing rates for 3 nights.

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1878phae.proj.1806w

1878 Jan 31.4

3451 — 1327

16.5 = 50

4 3 36.5 = 4 2 10

56.70
1.3

3 8.0 4 3 8.0

28.5

1878 Feb 1.0

1327 — 394

21 24 51.0 = 0 39 49 0.0 — 56.70

21 25 51.0 = 0 40 50 0.0

+ 59.0

21 26 49.8

20 47 9.7

0h 39m 49s.1

6.5

0h 39m 42s.6

+ 2

0h 39m 42.8

1327

7 =

59.0
66.0
25.2
30.8

45
59.0
104.0
44.0
13.2
30.8

42.6
17.5
1327
25.2

13.2

30s.8 = 3m 34s.51 Feb 1d.0

28s.5 = " " Jan 31.4

Put 394 Back 2s.0

after comparing rates for 3d fuck.

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1878phae.proj,1806w

~~Jan~~ 1878 Feb 1.^{d}9 1327 394 L.N.

18	9	[~~19.~~ 17.]	= 21	20	0.0
		56.70			
		1.30			
		.65			
		~~1.30~~			
		~~59.65~~			
24					
42^h	10^m	17^s.65			
20	47	0.71			
21^h	23^m	16^s.94			
	3	30.23			
21^h	20^m	[46^s.71]			

1327 394

18	21	17.0 =		32	~~32.0~~ 30.0
		56.7			
		1.3			
24		1.3			
		0.6			
42	22	16.9			
20	47	0.7			
21	35	16.^{s}2			
	3	32.2			
21^h	31^m	~~44~~^{s}.0		44^s.0 ∴	394 = + 0^s.5

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1878phae-proj.18000

1878 Feb 2.4

1327 394

L. W.

4	12	53.0 = 7	22	0.0	
		61.16			By Eun 61.16 / 60.47 / 0s.69
28	13	54.16			
20	50	57.27			
7h	22m	56s.99			
	1	12.57			
7h	28	44s.42			3.73 / 44.42 / 15s.58 / 16.27
		− 0.69			
		43.73			

1327 3451

4h	14m	10s =	4h	15m	41s	
4	14	39 = 60.27	4	16	10 / 39.47	
4	15	40.2		15	40.2	
		4.53	∴ Eun 3451 =		+ 29.38 / + 30.52	

* Bnd 394 Fast Feb. 2.4 + 15s.58

Putback " 1. + 2.00

+ 17.58

Fast Jan. 33.24 29.4 + 15.50

∴ gain in 4.0 = + 2s.08

∴ Daily rate = + 0s.52

0s.027 for 1 from 24 / 1.08 / 0s.648 per day.

∴ Feb 2.4 Removed 1 gramme.

16.27 / 2 / 18.27 / 15.50 / 4 | 2.77 / + 0s.69 per day.

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1878phae.proj.1806W

1878 ~~Aug~~ Feb 3d 4

1327 394 L.m.

4h	56m	55s.0 =	8h	2m	0s.0
		61.92			
28	57	56.92			
20	54	53.82			
8h	3m	3s.10			
	1	19.14			
8h	1m	43s.96			

43.96
+ 16s.04

1878 Feb. ~~4d.4~~
3.9

1327 394 L.m.

19	~~46~~ 3	18.5 =	22h	39m	0s.0
		62.6			
24					
43h	27m	21s.1			
20	54	53.8			
22	~~42~~ 4	27.3			
	3	43.~~62~~ 2			
38		44s.1			

+ 15s.9
+ ~~16s.4~~

1327 3451

~~6.6~~ ~~82.0~~

+63.16

		55.0			29.6
6	13	32.0 =	6	15	6.6
		63.16			
6	14	35.16		14	35.16

∴ Sum 3451 = + 31s.44

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1878phae.proj.1806W

1878. Feb^{d}. 4 3451 394

6 19 38.0 = 9 19 0.0

31.44

30 19 6.56

20 58 50.38

9^{h} 20^{m} 16^{s}.18

3 56.56

16 33 43.95

1

Schedule

Monday.

13

A.M.

1878 Feb 4^{d}.9 18 20 6.45 – 7.00 Toilet.

24 7.15 – 8.15 Observatory work.

42 21 8.15 – 9.00 Breakfast.

20 58 9.00 – 12.00 Observatory work

21 2

08.2

21 1

1878 Feb 5^{d}.4 6 21

0^{s}.0 Error.

132

30 2 3.41

21 2 46.94

9^{h} 20^{m} 16^{s}.47

1 31.78

9^{h} 18^{m} 44^{s}.7

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1878phae.proj.1806w

1878. Feb 4d. 94 3451 394

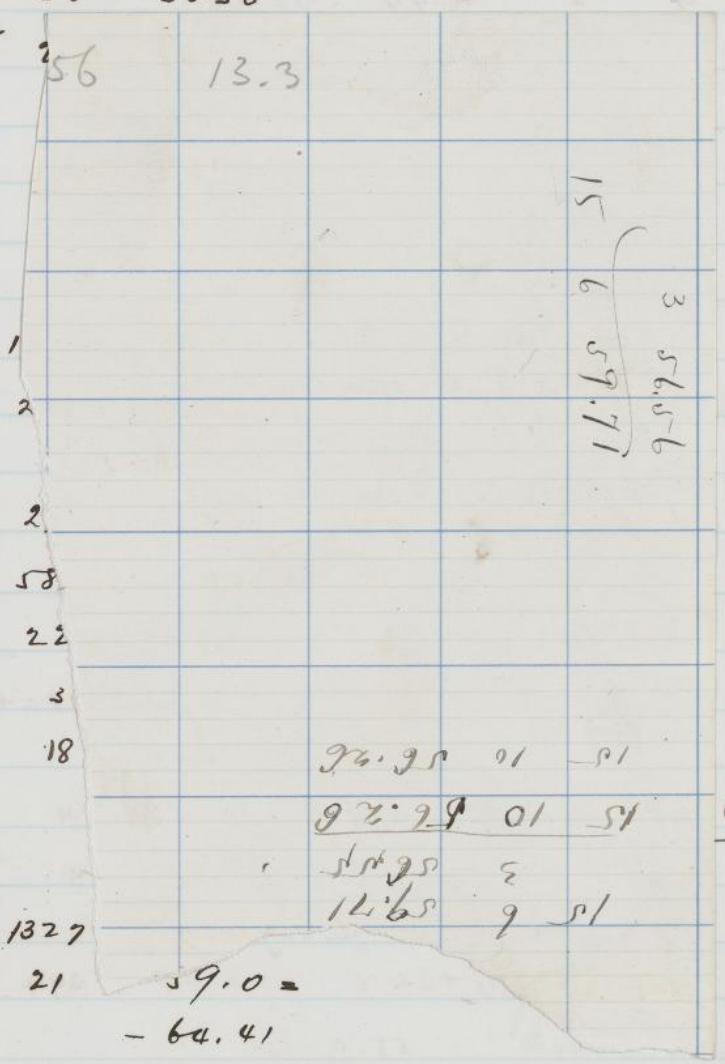
6 19 38.0 = 9 19 0.0

31.44

30 19 6.56

20 58 50.38

9h



1878 Feb 4! 9 18

24

42

20

21

21

1327

0s.0 Error.

1878 Feb 5.4d 6 21 9.0 =

− 64.41

30 23 3.41

21 2 46.94

9h 20m 16s.47

1 31.78

9h 18m 44s.7

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1878phae.proj.1806w

1878. Feb 4d.94 3451 394

6 19 38.0 = 9 19 0.0

31.44

30 19 6.56

20 58 50.38

9h 20m 16s.18

1 31.78

18 44s.40

1327 394

1878 Feb 4!9 18 20 1.0 = 21 19 0s.0

24 + 63.81

42 21 4.81

20 58 50.38

21 22 14.43

3 30.05

21 18 44s.4

10 Lyr. Signal sent 0s.0 Error.

1327 394

1878 Feb 5d.4 6 21 59.0 =

− 64.41

30 23 3.41

21 2 46.94

9h 20m 16s.47

1 31.78

9h 18m 44s.7

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1878phae.proj.1806w

1878. Feb. 5.9

1327 394 L. M.

18h	39m	0.s0 =		0.s0
		+ 4.41		
18	39	4.41		
24				
42				
21	2	46.94		
21h	36m	17.s47		
	3	32.36		
21h	42m	45.s1 4		

18	51	2.0 =		0.0
24		4.41		
42	51	6.41		
21	2	46.94		
21h	48m	19.s47		
	3	34.33		
21h	44m	45.s14	∴ 394 = +	14.s9

		+16.3	5.s4	
394 =		+14.9	5.s9	

∴ Rate 1327 = 0.s0 per day?

3°.4	394	= +16.s0
4.4		= 15.6
5.4		= +15.3

∴ 394 is losing 0.s3 per day.

∴ 394 = slow 0.s2

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1878phae.proj.1806M

1878. Feb 6.4 — 1327 — 394 — L. M.

5 49 20 = 8 41 30.0

4.37

29 49 24.37

21 6 53.50

8h 42m 50.87

1 25.62

8 40 25.25

15.20

15.25

14.75

15.50

0.75

∴ 394 = slow 0s.75

Add 0.4 grammes. V $H_3 B_3$ for $13\frac{24}{n}$

L. M.

1878. Feb. 6.9 — 1327 — 394

18 23 53.0 = 21 14 0.0

24 + 4.35

42 57.35

21 6 48.50

21h 17m 13.85

0 29.23

21h 17m 44.62

Signal sent 0s.0 Error owing to slight uncertainty about 1327 and having fore-shaw.

L. M.

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1878phae.proj.1806W

1878 Feb 7.4 1327 394 L.W.

7	49	5.0	= 10	37	0.0
24		4.21			
31	49	9.21			
21	10	40.05			
10	38	29.16			
	1	44.60			
	36	44.56			

+15.5

7.9 1327 394 L.W.

19	4	56.0	= 21	51	0.0
24		4.16			
43	5	0.16			
21	10	40.65			
21^h	54^m	$20^s.11$			
	3	35.31			
21^h	50^m	$44^s.80$			

Give equal weight to 394. Error flow $0^s.1$.

1878 Feb. 8.9

	1327		=	394		
18^h	31^m	$47^s.0$	= 21	14^m	$0^s.0$	L.W.
24		+ 4.06				
42^h	31^m	$51^s.06$				
21	14	36.61				
21^h	17^m	$14^s.45$				
	3	29.25				
21^h	13^m	$45^s.20$				

Give equal weight to 394 flow $0^s.3$ adds 0.2 gramme.

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1878phae.proj.1806M

1878. Feb. 10.d 4 1327 L. M.

3h	20m	10.s0 =	5h	394 57m	0.s0
2.4 / 3.		4.21			
		+ 3.6			
27	20	13.6			
21	22	29.7			
8h	57m	43.s9			
	0	58.6			
5	56	45.s3			45.3

14.s7 Equal weight to 394
slow 0.s4
Gain fr 7.m

1878. Feb 10.d 9 1327 394 L. M.

18	41	41.0 =	21	16	0.0
24		+ 8.5			
42	41	44.5			
21	22	29.7			
21	19	14.8			
	3	29.6			
21h	15m	45.s2			

14.s8 ∴ 394 is slow 0.s8 by 1327

1327

18	45	41.7	=	20	0.0
24		+ 3.5			
42	45	45.2			
21h	22	29.7			
21h	23m	15.s5			
	3	30.2			
21	19	45.3			

Giving Equal weight to 394
394 slow 0.s4

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1878phae.proj.1806W

1878. Feb 11.4 L. W.

1327 394

) 6 43.0 = 9 39 0.0
+ 1.54

3/1 6 44.54

21 26 26.27

9h 40m 18s.27

1 35.07

9h 39m 43s.2

43.2

16s.8 ∴ 394 = +1s.3.

Remove 0gr.2 and lost 1s.3.

18

1327 394

1878. Feb 11.d9 18 41 38.0 = 21 12 0.0 L. W.

24

- 1.54
+ .37

- 1.17

42h 41m 36s.83

21 26 26.27

21h 15m 10s.56

3 28.90

21h 11m +4s.66

+ 2.34

44s.00

18 52 40.0

+ 1.2

42

52 41.2

21 26 26.8

21 26 14.9

3 30.7

21 22 44s.2

Signal sent 0s.2 too fast.

m m

R. W.

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1878phae_proj.1806M

1878 Feb. 12.9 1327 394 L.W.

	19	3	38.0 =	0.0
		24	+ 0.54	
·67				
33				
100	43h	3m	38.s54	
1.54				
	21	30	22.83	
	21h	33m	15.s71	
		3	31.86	
	21h	29	43.s85	43.9
				16.1 ∴ 394 Fast 0.s3

Equal weight to 394.

1878. Feb 13.d4 1327 L.W.

	7	42	43.0 =	0.0
			+ 0.76	
	7	42	43.76	
31				
	21	34	19.38	
	10h	8m	24.s38	
		1	39.66	
	18h	6m	44.s7	44.7
				15.s3 ∴ Error = − 0.s2

Feb 13.9 1327 394

	18	52	33.0	=	21	15 0.0
			+ 0.53			
	43	52	33.53			
	21	34	19.38			
	24h	18m	14.s15			
		3	39.42			
			~~4.93~~			
	21h	14m	44.s74			∴ Error 394 = Slow 0.s

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1878phae.proj.1806w

1878. Feb 14.4 d

1327 394 Liv.

8 20 46.0 = 10 41 0.0

+ 0.37

32 20 46.37

24 38 15.94

10h 42m 30s.43

1 45.26

10 40 45.17

∴ 394 = slow 0s.7

1327 3451

8 31 0.0 = 8 31 43.5

+ 0.37

8 31 0.37 0.37

∴ 3451 = + 43s.13

Chron 394 Gain for 10 hr.

1327 394

14d.9 19 7 32.0 = 21 27 0.0 Liv. 18.

24 + .11

43 7 32.11 = 21 27 0.0

21 38 15.94

21h 29m 16s.17

3 31.21

21h 25m 44s.96

3451

19 12 16.5 = 0.0

24 − 43.71

43 11 32.79

21 38 15.94

21 33 16.85

3 31.86

21h 29m 44s.98 ∴ 394 is slow 0s.5.

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1878phae.proj.1806W

1878. Feb 15.4 1327 394 L. M.

6^h 26^m $25^s.0$ = γ

30
21 38 − 15.94

8^h 48^m $9^s.06$

1 26.52

8^h 46^m $42^s.54$

6 53 28.0

30
~~21~~ ~~38~~ ~~15.94~~

42 12.49

~~9 8~~ ~~15~~ ~~12.06~~

1 ~~30.95~~

~~13 41 1~~

9^h 11^m $15^s.51$

1 30.30

9^h 10^m $45^s.2$ Cannot 394 to gain for m.

1878. Feb 15.9 1327 394 L. M.

19 21 30.0 = 21 26 0.0

24 − 0.43

43^h 21^m $29^s.87$

21 42 12.5

21^h 39^m $17^s.2$

3 32.8

24^h 35^m $44^s.4$ 35 44.4

$15^s.6$ Signal Resh $0^s.6$ Error.

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1878phae.proj.1806w

1878. Feb 7. d 4

345 Γ 394 L. IV.

3	40	32.0	= 5	49	0.0
		− 46.64			
27	39	45.36			
21	50	5.60			
5h	49 m	39.76			
5h	48	42.5			

1.17
3.51
43.13
46.64

137.7

3	41	47.0	= 5	51	0.0
		− 0.80			
27	41	46.2			
21	50	5.60			
5h	51 m	40.6			
5h	50 m	43.0			

117
37
80

By 345 Γ 394 is fast 17.5

1327 394 " " 17.0

394 394 " " ?

Assume that 394 is fast 1.2

Battery L low for 25 m

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1878phae_proj_1806N

1878 Feb 17.d 9 3451 394 L.M.

	19	14	6.5	= 21	20	0.0
46.64 .58 47.22	24		-47.22			
	43	13	19.28			
	21	50	5.60			
	21	23	13.68			
	21h	3m	30.22			
		19m	48.46			
			1327			
	19	15	21.0	= 21	22	0.0
-0.80 -1.00			1.00			
	43	15	20.00			
	21	50	5.60			
	21	25	14.40			
		3	30.54			
	21h	21m	43.s86			
			+.4			
			44.2			
			15.8			

By 1327 the sun is 16s.1

Giving 394 Equal weight 394 = ± 0s.3

10 Am., Renaud 0s.3

1.8 .54

16s.4 = ± 0.04 .54 ± 0.58

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1878phae.proj.1806W

1878 Febr. 18.4 3451 394 L. M.

20 52 11.5 = 9 16 0.0

1327

9	55	26.0 = 10	0	0.0	
24		− 0.44			
31	55	25.56			
21	54	2.16			
10^h	1^m	$23^s.40$			
	1	38.51			
9^h	59^m	$44^s.9$		44.9	$15^s.1$

Slow $0^s.4$?

31	55	25.56
	3	0.50
	52	25.06

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1878phae_proj_1806N

1878 Febr. 18d 9 — 1327 — 394 — d.m.

19	4	+30.0 16.0	=	24	7	0.0
24		− 1.00				
43h	4m	15.00				
21	54	2.16				
22h	10m	12.84				
	2	28.28				
	6	44.96				

∴ Signal sent 0.0 giving 394 Equal Right.

1878 Febr. 19d 4 — 3451 — 394 — d.m.

7	44	7.0	=	9	44	0.0
	15	2.46 15.22				
7	59	9.46				
	58	22.07				

∴ 3451 = + 47.4

1327

7	58	23.0	=	9	59	0.0
24		−0.93				
31	58	22.07				
34	57	58.7				
10h	0m	23.4				
	1	38 4				
9h	58m	45.0				

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1878phae.proj.1806W

1878 Feb. 19.d 9 1327 394 L.M.

19				21	19	30.0
24	20	45.0 =				
		− 1.06				
43 h	20 m	43.s95				
21	57	58.71				
21 h	22 m	45.s24				
	3	30.14				
	19 m	15.s1				15.1
						14.9

and giving

1878 Feb 20.d 4 3457 1827 L.M.

7	24	37.5 =	7	23	50.0
					− 1.20
	23	48.80	7	23	48.80
		+ 48.s70			
		48.26			

47.40
+.86
48.26

1327 394

7 h	25 m	14.s00 =	9 h	22 m	0.s0
		− 1.20			
37 h	24 m	12.s80			
22	1	32.28			
9 h	23 m	17.s52			
	1	32.27			
	21	45.s2			14.s8

∴ 394 is slow 0.s3 giving 394 equal weight.

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1878phae.proj.1806M

1878.

Feb 20.d 9

1327 — 394 — L.M.

19	15	11.0	=	21	10	0.0
24	(assume)	− 1.54				
43h	15m	9s.46				
22	1	55.28				
21h	13m	14s.18				
	3	28.58				
21h	9	45s.6				

9.4
4.0
2.0
1.54

45.6 giving 394 Equal
+ 14s.4 weight slow +0s.5

3451 — 394

19	23	0.0	=	21	18	0.0
24		− 48.7				
43h	22m	11s.3				
22	1	55.3				
21h	20m	56s.0				
	3	29.85 73				
21h	16m	46s.27				
21	15	16.0				
	3	28.9				
		47s.1				

47.40
.86
.43
48.69

3451 — 394

19	29	1.0	=	21	23	0.0
24		− 48.7				
43h	28m	12s.3				
22	1	55.3				
21h	26m	17s.0				
	3	30.7				
24	22	46.3		22	46.3	

+ 15s.7

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1878phae.proj.1806W

1878 Feb. 21.9^d L. M.

1327			394		
19^h	28^m	0^s.0 =	21^h	19^m	0^s.0
24		− 1.8			
23^h	27^m	58^s.2			
22	5	51.8			
21^h	22^m	6^s.4			
	3	30.3			
		36.1			

.94
6
.16
1.69

1327.			394.		
19^h	41^m	11^s.0 =	21^h	19^m	0^s.0
		− 1.8			
24					
+19	41	9.2			
43					
22	5	51.8			
21^h	35^m	17^s.4			
	3	32.89			
		~~35.1~~			
21^h	32^m	45^s.2			

Giving 394 equal weight
394 = slow 0^s.3.

added 2 grammes Feb 21.5 Set remains until Feb 22.4

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1878phae.proj.1806w

1878. Feb. 22d.4 1327 394 1878

		6h 46m 0.s0	=	8	35	0.0
19.4		24	− 2.1			
3						
.4						
1.2						
.9		30	45 57.9	=	8h.	35m. 0.s0
2.1						
		22	9 48.4			
		8h	36m 9.s5			
			1 24.5			
			24 45.s0		24	45.0

W.U.

Feb 22d.9 19 18 3.2 = 9 5 0.0

− 2.3 0.25

19	18	0.9	Giving 394 equal weight
23	13	44.94	394 slow 0.s1
2	55	44.04	corrected and
		28.79	Signal 0.s0 sent.
4		44.75	2 grammes taken off.

W.U. line not working at 10. A.M., working all right at 10.45 A.M.

Feb 24.4 = + 2.67 Rate +0.35

0.52 .17

∴ Error 22d.9 = + 2.s15 .52

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1878phae.proj.1806W

1878. February 24.4

L. W.

	1327		394	
7h	26m	30.0 = 9	7	30.0
		− 2.67		
31	26	27.33		
22	17	41.49		
9	8	45.84		
	1	29.99		
9h	7m	16s.94		16.11
				+ 13.9
7	37	2.0 = 9	18	0.0
		− 2.67		
31	36	59.33		
22	17	41.49		
9	19	17.84		
	1	31.62		
9	17	46s.22	46.2	+ 13s.8

Moved 394 + 2s.0

Evidently 394 is losing, and Feb. 24d.9
The sum will be 0s.0 ± 0s.07 about.

L. W.Hs.

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1878phae.proj.1806M

1878. Feb 25.9 1327 394 11.44

19	42	5	9	17 10
		3.~~75~~ 20		9.49
19	42	1.~~85~~		+ 0.51 Error of 394
22	25	34.60		
2	43	32.~~97~~ 80		7 grammes taken off
		26.79		at 9 36 returned
9	16	~~47.04~~ 53.99		at 12 45

25.9

20	14	0.2	9	49 0
		3.2		48 59.5
20	13	57.0		+ 0.5 Error of 394
22	25.	34.6		Signal to vent
2	11	37.6		
		21.6		
9	48	44.0		

26d.0 1327 3451

		9.0 =			50.5
23	4	44.0 =	23	5	25.5
		- 3.23			
23	4	40.8		4	40.8
				+	45.7

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1878phae.proj.1806W

1878 Feb. 26.4 d

L. M.

3451 = 394

7	27	33.5 =	9	0	0.0
		− 44.72			
31	26	48.78			
22	25	34.60			
9h	1m	14.18			
8h	59m	45.17			

1327 394

7	28	52.0 =	9	2	0.0
	2	0.33			
7h	26m	51.67			
22	26	48.78			
		+ 2.90			

3451 1327

8	44	31.7 =	8	43	50.0
		− 44.7			− 2.9
		47.0			47.1

Add 2 gramme de pennadal
10 A.M.,

1878 Feb 26.9

1327 394

19	59	55.0 =	9	31	0.0
24h		3.1			
43h	59m	51.9			
22	25	34.6			
21h	34m	17.3			
		82.03			
24h	30m	45.3			

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1878phae.proj.1806M

1327 3944

20h 10m 57.s0 = 0.0

24 − 3.1

44h 10m 53.s9

22 25 34.6

21 45 19.8

3 33.8

21h 41m 45.s5

3451

20 18 40.0 = 21 49 0.0

− 45.1

44 17 54.9

22 25 34.6

21h 53m 20.s3

3 35.0

21h 48m 45.s3

1.0
0.8
0.0
1.8
0.s6

Going equal night 1327
3944
and 3451

Error = slow 0.s6

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1878phae.proj.1806W

1878 Feb 27.4d

L. M.

1327 394

7h 51m 52.s0 = 9 24 0.s0

− 3.25

44.72 31 51 48.75

2.90
1.35
3.25 22 29 31.15

9h 22m 17.s60

1 32.2

9h 20m 45.s4

Added 3 grammes 9h 30m

1327 394

Feb 27.9 19h 56m 50s = 21h 24m 0.s0 L. M.

24 − 3.7

43h 56m 46.s3

22 29 31.15

21h 27m 15.s15

3 30.88

21h 24m 44.s27

Removed 3 grammes.

Error 394 Fact 0.s1

Correct 0.s1

and sent signal 0.s0 in error.

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1878phae_proj_1806M

1878. Febr. 28.4d 3451 394 L. M. obs.

7	33	27.0 =	8	58	0.0
		− 47.75			
31	32	39.25			
22	33	27.71			
8	59	11.54			
		28.33			
8	57	43.21	57	43.21 / 16.8	∴ 394 = +1.3

1327 394

7	50	47.0 =	9	16	0.0
	32	39.25			
	18	2.63			
	50	41.88			

∴ 1327 = + 5.12

3451 1327

8	5	0.0 =	8	4	17.0
		47.75			− 5.12
					4.76
8	4	12.25 =	8	4	12.24
					11.88

394

7	50	49.0 =	9	16	0.0
		− 5.12			
31	50	41.88			
22	33	27.71			
9h	17m	14.17			
	1	31.28			
	15	42.89			43.25 / 16.75
		+ 36			

3451

8h	18h	34.5 =	9	43	0.0
		− 47.75			
8	17	46.75			
8	20	52.0	9	46	0.0
	3	49.49			
	17	51.51			
		46.75			
		4.76			

Rattled Remainder 3 gr. and − 2.5.0

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1878phae.proj.1806W

1878. Feb. 28d.9 L.M.

1327 394

		46.0			
19	56	56.0 =	21	21	0.0
24		+ 5.00			
43 h	56	41.00			
22	33	27.71			
21	23	13.29			
	3	30.21			
		43.99			

3451

20	0	51.0 =	21	23	0.0
		− 48.5			
19 h	59 m	42.5			
43					
22	33	27.71			
21	25	14.79			
	3	30.55			
		44.24			

1327

20	7	49.0 =	21	31	0.0
24		− 5.00			
44	7	44.00			
22	33	27.71			
21 h	34 m	16.29			
	3	32.02			
21	30	44.27			

∴ 394 is fast 0.s2

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1878phae.proj.1806W

r.

1878 ~~Feb~~ Mch. ^{d} 4 3451 394 L.M.

7 15 21.5 = 8 36 0.0

47.75 / 1.5 / 49.2

24 − 49.2

31^{h} 14^{m} 32^{s}.3

22 37 24.26

8^{h} 37^{m} 8^{s}.04

1 24.~~88~~ 71

3 43.~~46~~ 33 43.33 + 16^{s}.67

1327
~~394~~

7 39 42.0 = 0.0

4.76 / 50 / 5.26

24 − 5.26

31 39 36.74

22 37 24.26

9^{h} 2^{m} 12^{s}.48

1 28.82

9^{h} 0^{m} 43^{s}.66 Removed ~~10~~ 5 grammes.

1878 Mch ^{d} 9

1327 394

19 54 44 = 21 14 0.0

24 − 5.6

43^{h} 54^{m} 38.^{s}4

22 37 24.26

21^{h} 17^{m} 14^{s}.14

3 29.24

21 13 44.9

3451

19 57 28.0

24 − 50.0

48 56 38.0

22 37 24.26

21^{h} 19^{m} 13^{s}.74

3 29.57

21 15 44.17

44.9 / 15.4

∴ assume 394 = +44^{s}.5

Lobes 7.75 grammes

15.8

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1878phae.proj.1806w

1878 March 2d.4 L.W. 18

1327 394

7 0 34.0 = 8 18 0.0
24 − 5.76
31 0 28.24

22 41 20.82
8 19 07.42
1 21.75
8 17 45.67

45.67
+ 14.33

+15.0 } −0.7
+14.3 }

3451

7 2 18.0 = 8 19 0.0
− 50.75
31 1 27.25
22 41 20.82
8 20 6.43
1 21.92

8 18 44.51

44.51
+ 15.49

15.8 } −0.3
15.5 }

1327 = +14.33 > 1.2
3451 = +15.5
9.8
+14.9

0.5 in 10th
= 0.05 in 1th.

about 1.25 :: there is now in bob 7.75+1.25 = 9.0 gr.

1878 March 3d.4 1327 394

3 48 0.0 = 5 2 0.0
− 6.26
27 47 53.74
22 45 17.37
5 2 36.37
0 49.57
47.80

− Mean ⊙ =

3451 394

3 47 44.0 = 5 1 0.0
− 52.25
27 46 51.75
5 1 34.38
0 49.40
44.98

45.0
15.0

1327 = +13.34 > 1.7
3451 = +15.0
8.3
Mean = 14.1

3 52 0.5 0.0
− 6.26
27 51 54.26
5 6 36.89
0 50.29
46.06

46.66
13.34

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1878phae.proj.1806w

1878 March 8d.4

d.f. N.

adopted 10 grammes as the weight to be permanently on 394.

This date in pend. bobs 10 grammes. = 9gr + 1gr.

added 3 grammes to be removed at 3d.9.

		3451			394	
20	21	26.5	=	21	32	0.0
		− 50.5				
44	20	36.0				
22	45	17.37				
21	35	18.63				
	3	32.20				
21	37	46s.43				

46.43 / 13s.57 ∴ 394 = slow 2s.0

		3451				
20	27	27.5	=	21	38	0.0
		− 56.5				
20	26	37.0				
	2	0.33				2m
20	28	37 33				
20	28	43.0	=	21	40	0.0

∴ 3451 = + 5s.7

20	28	43.0				
		− 5.7				
44	28	37.3				
22	45	17. 4				
21	43	19.9				
	3	33.51				
21	39	46.4				

+ 13s.6 ∴ 394 = slow 2s.0

1s.7

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1878phae.proj.1806w

1878. Mch. 4.4 L.M.

		1327			394		
	7	39	31.0 − 5.96	=	8	49	0.0
*	31	39	25.04				
	22	49	13.92				
	8	49	11.12				
		1	26.69				
	8	47	44.43				
		3451					
	8	32	25.0 − 51.42	=	9	41	0.0
	32	31	33.58				52m
		52	8.54				
	32	39	25.04				
			31.00				

4.4 : Corr 1327 = + 5s.96

	32	31	33.58	=	9	41	0.0
	22	49	13.92				
	9h	42m	19s.66				
		1	40				
			44 s 26				
	9h	30	45.82				44.26
			.44				+ 15s.74

*	31	39	25.04	=	8	49	0.0
	22	49	13.92				
	8	50	11.12				
		1	26.86				
	8	48	44.26			48	44.26
							+ 15s.74

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1878phae.proj.1806W

1878. Mch 4d.9 dim.

	1327			394	
20	25 (26)	37,0 = (6.2)	21	34 (35)	0.0
44	26	30.8			
22	49	13.92			
21	37 (3)	16.88 (32 52)			
	53	44s.36			44.3

+ 15s.7

	3451			394	
20	25	22.0 = (− 51.7)	21	32	0.0
44	24	30.3			
22	49	13.92			
21	35 (3)	16.28 (32.20)			
	31	44s.18			44.2

+ 15s.8

1878 Mch 5d.4

	3451			394	
8	51	25.0 = (− 52.66)	9	56	0.0
32	50 (1)	32.34 (0.16)			
	1327			394	
8	51	32.50			
8	51	39.0 = (+ 0.16)	9	57	0.0
∴ Corr	1327	= + 6s.50			
32	51	32.50			
22	53	10.47			
9	58	22.03 (1)			
		38.03			

9h 59m 44s.00 ∴ 394 = + 0s.50

∴ 394 is gaining 0s.2 ± per day. ∴ Have permanent weight = 9gr.75

Remove 2gr. until Mch. 5d.9

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1878phae.proj.1806w

1878 Mch 5.9 Sid. Tr.

1327 394

20 16 32.0 = 21 20 0.0
− 6.7
20 16 25.3

3451 394
20 17 19.5
− 53.2
20 17 26.3

1327 394

20 23 33.0 = 21 27 0.0
− 6.7
20 23 26.3

3451

20 24 19.5
− 53.2
20 23 26.30
44
22 53 10.47
21h 30m 15s.83
3 31.38
21 27 44s.5

44.5

∴ 394 is right.

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1878phae.proj.1806w

1878. March 6d. 9 . S. M.

1327 394

20	1	26.0 =	21	1	0.0	
		− 6.9				
44	0	19.1				
22	57	7.03				
21	4	12.07				
	8	29.97				
21	59	45.15				+ 15.03
		44.97				

3451 394

20	4	14.0 =	21	3	0.0	
		− 53.8				
44	8	20.2				
22	57	7.03				
21	6	12.17				
	3	27.43				
	2	44.74				+ 15.26

394 equalweight + 15.5

∴ 394 = ++ slow 0.5 2

3451 394

20	58	20.0 =	21	48	0.0	
		− 55.90				
44	57	24.10				
23	1	3.58				
~~21~~	~~10~~	~~40.05~~				
~~22~~	~~46~~	~~44.05~~				
	~~8~~	~~53.94~~				
21	56	20.52				
21	51	20.52				
	3	34.82				
21	47	45.5 7		47	45.7	

14.5 3 ∴ 394 = slow 1.5 2

added 2.25 grammes.

3451 ~~1327~~ 1327

		20.6			~~20.~~ 32.0	
21	1	40.6	21	0	52.0	
		− 55.90		0	44.7	
21	0	44.70			7.5 3	

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1878phae.proj.1806w

Mch 7d.9 — 3451 — 394 — L.M.

21	5	22.0 =			0.0
		− 55.90			
45	4	26.10			
23	1	3.58			
22	3	22.52			
	3	36.80			
		45.72			

Mch 8d.9 — 3451 — 394 — L.M.

20	43	14.5 =	21	34	0.0
		− 57.39			
44	42	17.11			
23	5	0.13			
21	37	16.98			
	3	32.52			
21	34	44.46			

44.5
15.5 ∴ 394 has 0s.0 Error.

Mch 9d.4 — 3451 — 394

18	18	8.5 =	9	7	0.0
		− 57.48			
32	17	11.02			
23	8	56.68			
9	8	14.34			
	1	29.81			
9m	6m	44.53			

3451 — 1327

8	19	11.0 =	8	18	21.0

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1878phae.proj.1806W

March 10d.4 L. M.

	3451	1327	394
6h	6 43.5 =	6 5 53 = 6 52	0.0
	− 58.45		
	6 5 45.05	45.05	
20	5 45.05	7.95	
23	12 53.24		
6h	52m 57.81		
	1 7.63		
6h	51m 44.2	6 51 44.2	

∴ ~~Add 0.4 removed at 10 hrs.~~
Removed 0.2 qr.
~~10 hrs. puk 9.75 qr for sum. night.~~

March 10d.9 L. M.

	1327	394	
20	21 14.0 =	9 5	0.0
	− 8.07		
44	21 5.93		
23	12 53.24		
21	8 12.7		
	3 27.76		
21	4 45.0		

	3451		
20	24 5.25	21	7 0.0
	−58.92		
44	23 6.33		
23	12 53.24		
21	10 13.1		
	3 28.09		
21	6 45.0		

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1878phae.proj.1806w

1878 March 11d.9 L.W.

	1327			394	
20	32	12.0 =	21	12	0.0
		− 8.31			
7.95					
.24					
.72					
8.31					
44	32	3.69			
23	16	49.79			
21	15	143.90			
	3	28.90			
21h	11m	45s.00			

Add 30 grammes for 30m.

	3451			394	
20	27	23.5 =	21	6	0.0
.97					
.97					
.48					
2.42	1	0.87			
58.45	20				
60.87	44				
97	23	16	49.79		
59.90	21h	9m	12s.84		
		3	27.92		
	21h	5m	44s.9		

18

1878 March 12d.9 L.W.

	3451			394	
20	14	59.0 =	20	51	0.0
		0.87			
44					
20	14	58.13			
23	20	46.35			
20	54	11.78			
	3	35.47			
20	50	46.31			

Should 3451 have a rate of 1s.2 the error of 394 would be slow 1s.2.

	1327			394	
20	16	6.0 =	20	52	0.0
		8.55			
44					
20	15	57.45			
23	20	46.35			
20	55	11.10			
	3	25.63			
20	51	45.47			

Should 1327 have a rate 40s.6 instead of +0s.24 394 would be in Error 0s.00

(See Feb. 14 . 26 etc.)

∴ Assume 394 is slow 0s.4

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1878phae.proj.1806W

1878. 13.d 9 March

S. W.

	1327		394	
19	14	53.0 =	19	47 0.0

assume Rate 1327 = +0.s5

10.4
13.9
3.5
0.5
1.75
7.95
24 9.70 − 9.70

43h 14m 43.s30

23 24 42.90

19h 50m 0.s40

3 14.95

19h 49 45.s45

Slow 0.s95 by 1327

Adds 30 grammes for 1h.

1878. 14.d 9 March

L. W.

	1327		394	
20	25	1.0 =	20	53 0.0
	− 10.2			
44	24	50.8		
28	28	39.45		
20h	56m	11.s35		
	3	25.80		
20h	52m	45.s55		

	1327			
20	28	1.5 =	20	56 0.0
	− 10.2			
44	27	51.3		
28	28	39.5		
20	59	11.8		
20h	55	26.3		
		45.s5		

Adds 3 grammes 1h

Signal 0.s0 Error.

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1878phae.proj.1806W

Mch 15.4

L.N.

3451 = 1327

7 56 14.7 = 7 56 22

51.7 58

7 57 11.7 = 7 57 19.

− 10.5

8.5 7 57 8.5

∴ 3451 = + 3.2

3451 394

9h 38m 2.0 = 10 4 0.0

− 3.77

33 37 58.23

23 32 36.00

10h 5m 22.23

1 39.17

10 2 43.06 3 43.06

16.94 = + 1.4

Cancelled 4.5. leaving 10 gr. too much in the feeds, both after 10 hrs.

5h ② 0.29 per hr = + 1.35

9 44 10.0 = 10 10 0.0

− 5 − 59.0

9 38 11.0

37 58.23

Error 1327 = + 12.77

9 43 57.23

3/3

23 32 36.00

10 11 21.23

1 40.15

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1870phae.proj.1006W

Mch 15d 4. 1878. 1327 L.M.

9	44	10.0 = 10	10	0.0	
	6	0.98			
9	38	9.02			
9	27	~~10.98~~ 58.23			
1327 = +	0	10.99			
9	43	59.21			
33					
23	32	36.00			
10	11	23.21			
	1	40.15			
10	9	43s.06			

43.06
+ 16.94

16.94
15.50
1s.44

∴ Set 394 back 2s.0
And added 2 grammes the amount
at 8.30 P.M.

Mch 15d 9. 1878. 1327 394

21h	15m	5s.0 =	9h	39m	0s.0
24		− 11.07			
45 h	14m	53s.93			
23	32	36.00			
21h	42m	17s.93			
	8	33.35			
21	38	44s.6			

∴ Signal Clock 10h 38m 0s.0

3451

3.77 21	15	58.0 =	9	40	0.0
		− 4.2			
45	15	53.8			
23	32	36.0			
21	43	17.8			
	2	33.5			
21h	39m	44s.3			

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1878phae.proj.1806W

1878 March 16d.4 L.M.

1327 = 394

10.79 8h 26m 58.5s = 8h 49m 0.0s
0.57
11.36 − 11.36

32 26 44.14

23 36 32.56

8 50 11.58

1 26.86

8h 48m 44s.7

44.7
+ 15.3

1878 March 17d.9 L.M.

1327 394

21 1 57.0 = 9 18 0.0

0.57
.57
.28 24 − 12.21
1.42
10.79
12.21 45h 1m 44s.79

23 40 29.11
21h 21m 15s.68
3 29.90

21h 17m 45s.78

∴ 394 = + 1s.3 by 394.

Kuelberg 1178

21 11 9.50 = 21 28 12.0
−12.08

0.28 21 31 15.68
0.28 40 29.11
0.14 28 15.68
0.58
11.50
+12.08

21 11 56.42

23 40 29.11

21 31 27.31

3 31.57

21 27 45.74

∴ added 30 grammes for 40m
Rest liquid about 0s.4
added to 1 gramme weight now 11gr.

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1878phae_proj.1806

1878 March 18.9 1327 394 L.M.

21	12	54.5 =	21	25	0.0
24		− 12.78			
45	12	41.72			
23	44	25.67			
21h	28m	16.s05			
	3	31.5			
21	24	44.5			

∴ 394 0.s0 Error.

1878 March 19.9d 1327 L.M.

21	2	49.0 =	21	11	0.0
	3	0.49			
21	5	49.49			

3451

21	5	44.5 =	21	14	0.0
		− 8.45			
21	5	36.05			
		49.49			
∴ 1327 =		+ 13.s44			

21	5	44.5
		− 8.45
21	5	36.05
45		
23	48	22.22
21h	17m	13.s83
	3	29.24
		44.s59

.0.s0

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1878phae.proj.1806W

1878. March 20d.4 LW.

3451 394

9 45 50.0 = 9 52 0.0

− 9.58

33 45 40.42

23 52 18.77

9h 53m 21.s65

1 37.20

9h 51m 44.s45

Beautifully!

3451 1327

10h 1m 52.s5 = 10h 1m 57.s0 = 10h 8m 0.s0

− 9.58

10 1 42.92 1 42.92

∴ Eqn 1327 = + 14.s08 March 20d.4.

March 21d.9 3451

+11.35

21 1 38.7 = 21 2 0.0

− 11.35

21 4 39.0 = 21 5 0.0

− 11.35

21 4 27.65

45

23 56 15.32

24 8 12.33

3 27.76

44.s5

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1878phae.proj.1800W

1878. March 22.9 L.M.

	1327			394	
20	49	36.0 =	20	46	0.0
		− 15.68			
20	49	20.32			
0	0	11.88			
20	49	8.44			
	5	24.63			
	45	43.81			

	3451			394	
20	52	32.8	= 20	49	0.0
		− 12.53			
20	52	20.27			
0	0	11.88			
20	52	8.39			
	2	25.13			
20	48	43.26			

11.35
1.18
13.53

50 64
50 64
25 32
1.25 1.60
14.08
15.68
14.08
1.25
15.3

3451 Ran 32 hrs yesterday before rounding, ∴ is unreliable.

Giving 1327 its probable rate 0.5 +
we have sum 394 = + 15.9
and giving 394 equal weight = 15.7

	3451			394	
9 h	55 m	32.0 s =	8 h	50 m	0.0 s
24		−11.75			
32	55	20.25			
8	4	8.43			
8	50	11.82			
	1	26.84			
8	49	44.98			

	1327		=	394	
8 h	59 m	36.0 s	= 8 h	54 m	0.0 s
	4	0.~~00~~			
	56	~~35.54~~ 65			
8	55	35.35			
	55	20.25			

∴ 1327 = + 15.10

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1878phae.proj.1806W

Mch 23.d 4

1327 394 L.M.

8 59 36.0 = 8 54 0.0

− 15.10

8 59 20.90
4 8.43

~~1 28.36~~

8 55 12.47

1 27.67

8 53 44.80

15.10
11.75
3.35

340 = 30.6 ∴ 1327 = + 3.s4

1327 394

9 ~~36~~ 42.0 = 9 21 0.0

− 15.16

9 36 26.90
4 8.43

9 32 18.47

1 33.75

9 20 44.s72

20 44.72

15.s28 ?

15.20 ?

15.02 ?

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1878phae.proj.1800W

March 24.9 d

1327 394 L. M.

21	54	40.0 =	21	43	0.0
		− 15.61			
		24.39			
0	8	4.99			
21	46	19.40			
	3	37.00			
21	42	45.40			

54 / 17 / 51 / 15.10

∴ Assume 394 = Slow 0ˢ.4

March 25.9

3451 394 L. M.

21	43	33.5 =	21	28	0.0
		− 17.81			− 30.0
		47.81			
21	42	45.69 =	21	27	30.0
0	12	1.54			
21	30	44.15			
	3	31.45			
21	27	12.70			
		+2.30			
		15.00			

15.00 ∴ 394 = slow 0ˢ.5

Added 0 gr. 5

Giving 394 ¼ weight

Signal sent slow 0ˢ.4

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1878phae.proj.1806w

March 26d.5 1878. L.M.

	3451			394	
11	30	50.0	= 11	13	0.0
~~11~~		− 16.30			
~~35~~	30	33.70			
0	15	58.10			
11	14	35.60			
	1	50.50			
11	12	45.10		12	45.10

∴ Slow 0s.6

	1327			394	
11	31	51.0	= 11	14	0.0
	1	0.16			
11	30	50 84			
11	30	33.70			

∴ 1327 = + 17s.14

March 26d.9.1878 1327 394 L.M.

22	6	35.0	=	0.0
		− 17.4		
22	6	17.6		
0	15	58.10		
21	50	59.50		
	3	34.65		
21	46	44.85		
		5.0		

∴ 394 = Slow 0s.3

∴ allow the 0d.5 to remain until
March 27d.9.

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1878phae.proj.1806W

March 27.9 L. W.

	1327			394	
21	39	27.0 =	21	16	0.0
21	40	27.0		16	0.0
		— 18.0			
21	40	9.0			
0	19	54.65			
21	20	14.35			
	3	29.72			
21	16	44.63			

0.66
24
0.9
17.14
18.04

∴ 394 = $0^s.0$ Error

Removed 0 gr. 5.

March $28^d.9$ L. W.

	1327			394	
21	37	23.0 =	21	10	0.0
		− 18.5			
21	37	4.5			
0	23	51.2			
21	13	13.3			
	3	28.6			
		$44^s.7$			

−18.0
.5

Owing to uncertainty from cloudy weather
Signal sent $0^s.0$

Added 0 gr. 25

L. W.

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1878phae.proj.1806W

March 29.d 8

L.M.

	3451			394	
20	44	14.0 =	20	13	0.0
		− 21.60			
20	43	52.40			
	27	47.75			
20	16	4.65			
	3	19.22			
20h	12m	45.s43			

Check	20	57	16.0 =	20	26	0.0
			− 21.60			
	20	56	54.40			
		27	47.75			
	20	29	6.65			
		3	21.35			
		25	45.30			
Corr. for E to West position Transit Axis			− 0.30			
			45.00			

∴ Chron 394 is slow 0h.0m.5
during bCloudyWeather.
adds 1 gramme.

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1878phae.proj.1806M

March 30.d4 L.M.Ob.

3451 394

9	41	21.5 =	9	8	0.0
	−	22.42			
9	40	59.08			
0	31	44.31			
9	9	14.77			
	1	29.98			
9	7	44.s79			

∴ 394 = + 15.s21

1327 394

9	43	18.0 =	9	10	0.0

312 = 394

	23					
9	~~27~~	59.0 =	8	55	0.0

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1878phae.proj.1806w

March 31.4d

	h	3457			394	L.M.
8	11m	3.5s	= 7h	34m	0.0	
		− 30			−30.	
8	10	33.5	= 7	33	30.0	
0	35	40.86				
7	34	52.69				
		− 24.35				
7	34	28.34				
	1	14.44				
7	33	13s.90				

Removed 29 grammes.
Refl. 1 at 10 Aft.

8	59	11.5	= 8	22	0.0
	− 30s.			21	30.0
− 0	35	40.86			
		− 24.35			
0	36	35.21			
8	22	36.29			
	1	22.33			
8	21	13.96			13.96
					16.04

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1878phae.proj.1806W

April 1.d 9 1327 394 d. m.

22 26 16.0 = 21 37 0.0

3451. 1327.

22 22 21.0 = 21 39 0.0

1178 394

22 35 15.0 = 21 52 8.0

− 8.92

22 35 6.08

39 7.42

0 43 33.97

22 66 28.66

21 51 32.18

3 45.50

3 35.86

21 56 28.66

3 35.48

21 52 52.18

✓

− .20
2.5
40
10
50

+ 8.92

0 42 37.86
5.89

0 43 32.97

0 39 41.31
1.89

0 39 37.42

22 45 8.5 = 22/10 2 0.0

− 8.98

22 44 59.52

39 37.42

0 43 33.97

22 5 22.10

22 1 25.55

1 44.97

15.03

22 5 22.10
3 27.18

22 1 44.97

Giving 394 1/3 weight

15.5
15.0
15.0

15.2

∴ Slow 0.2

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1878phae.proj.1806W

1878 April 20.9 L.W.

Kueberg 1178 394

22h	35m	2.5s =	21h	48m	0.0s
		− 8.7			
22	34	53.8			
0	43	23.97			
21h	51m	19.83			
	3	34.82			
21h	47m	45.0s			

∴ 394 slow 0.5.2

April 3d.4 3451 394

10	15	15.5 =	9	26	0.0
		− 27.97			
10	14	47.53			
	26	4.27			
10	40	51.80			

1327

10	41	13.0 =	9	52	0.0
	40	51.80			

∴ 1327 = + 21.20

3451			1327		
10	15	15.5	10	41	13.0
		− 27.97			− 21.20
10	14	47.53	10	40	51.80
0	57	59.08	0	57	59.08
	47	30.35		47	30.53
9	22	50.45	9	48	55.72
		+ 32.20			
9	27	17.00	9	53	24.17
	1	32.92		1	37.20
9	28	44.08	9	51	41.97

4410

∴ Run 394 = + 0.5

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1878phae.proj.1806W

April 3d.9 1327 394 L.W.

21 30 0.0 = 20 39 0.0

− 21.46

21h 29m 38.s54

0 47 30.53

20 42 8.0

3 23.47

20h 38m 44.s51

3451

21 40 9.0 = 20 49 0.0

− 28.57

21 39 40.43

0 47 30.53

20 52 9.90

3 25.13

20h 49m 44s.77

44.51
44.51
44.77
179
44s.60 + 15.40

Signal sent 0s.0 Error.

Added the 1gr m. Removed last night.

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1878phae.proj.1806W

April 4d.9

~~3451~~ ~~1327~~ 394 S.W.

22 12 13.0 = 21 17 0.0

− 29.78

27.97
1.81
29.78

22 11 43.22
0 51 27.08
21 20 16.14
3 29.74
24 16 46.40

1327 = 394

22 14 5.0 = 21 19 0.0

− 21.95

22 13 43.05
0 51 27.08
21 22 15.97
3 30.06
21 18 45.91

1327 = 394

22 25 7.0 = 21 31 0.0

− 21.95

22 24 45.05
0 51 27.08
21 38 17.97
3 32.03
~~46.43~~

21h 30m 45s.94

45.9
45.9

E. Wind & Rain storm. S.W. has noticed in many cases that such a storm always disturbs the rates & runs of 1327 and perhaps also those of 394.

45.9
44.5

Equal weights gives Slow. 0s.7
about 1 gram.

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1878phae.proj.1806W

April 5d.9 S.W

1327 394

22h 44.m 6.s0 = 21 45 0.0

− 22.32

22h 43m 43.s68

0 55 23.63

21h 48m 20.s05

3 34.33

21h 44m 45.s72 Slow 0s.6(?)

3.4
2.5
1.02
.10
1.12
21.20
22.32

Assuming that 394 was slow 0s.7 april 4d.9
it certainly is not slow for 5d.9 the same amount
with an increase of 2 grams added.
∴ Time uncertain. No Signal sent.

3451 = 394.

April 7d.9 20 44 51.00 Sw.

− 35.11

20 44 15.89 = 19 38 0.0

1 3 16.74

29 40 59.15 observations in our fund. axis

3 14.95 ∴ Signal sent +0s.2.

19 37 44.s2

3451 1327

37.6 = 26.0

21 59 56.6 = 21 59 45.0

− 35.1

21 59 21.5 21.5/4

+ 25.s65

1878phae.proj.1806W

April 8°.4

	3451			394	
12	32	27.6 =	11	23	0.0
		− 37.01			
12	31	49.59			
	1	0.16			

	1327		394	
12	31	15.2 =	11	22	0.0
	30	49.43			
∴ 1327 =	+	25.77			

April 8.9 d

	1327		394		S.W.
23	59	59.0 =	21	49	0.0
		− 24.1			
		25.77			
23	59	34.9			
1	1	13.3			
23	52	21.6			
	3	24.95			
	48	46.7			
		− 1.8			
	48	44.9			

∴ Signal Rate 0°.4 slow.

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1878phae.proj.1806

April 9d.9 S. M.

1327 394

23h 1m 56.s1 = 21h 47m 0.s0

1.4
25.7
27.1

27.1

23 1 29.0

1 11 9.85

21 50 19.15

3 34.65

46 44.50 ∴ Signal Rent 0.s0 Error.

1327 394

April 10d.9 22 15 46.0 = 8 57 0.0 S. M.
8.4
2.5

-28.04

8.4 = 25.77
8.4 = 21.20
5 4.57
0.91
1.82
45
2.27
25.77
28.04

22 15 17.96

1 15 6.40

21h 0m 11.s56

3 26.45

21 56 45.s1

"Fast day" — Cloudy weather — and since this error depends on the clock 1327 only it may be uncertain by almost its whole amount. No Signal Rent.

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1878phae.proj.1806w

1878. April 12d. 9

S.W.

3451 394

21	22	50 =	~~19~~ ~~20~~	86	0.0
		− 45,48			
21	22	4.52			
1	23	0.51			
19	59	4.01			
	5	16.43			
19	~~58~~	47.58			

47.58
12s.42

∴ 394 = − 3s.58

1327 394

21	25	33. =		59	0.0
	− 3	0.49			
21	22	32.51			
		4.52			

∴ 1327 = + 28s.00

3451 394

~~27~~ 1	59	26.0 =	20	32	30.0
		− 45.48			
~~27~~ 1	58	40.52			
1	23	0.51			
20	35	40.01			
	3	~~32.~~ ~~25~~ 43			
		~~7.76~~			
20	32	17.58			

17.58
+ 12s.42

Should be 15s.50
is 12.42
slow 3s.6 !

Set ahead 4s.0

Equal rest + 0s.4

Some unaccountable influence – and which block

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1878phae.proj.1806

1878. April 14d. 9 5. m.

1327 394.

22	8	32.0	=		0.0
22	9	32.0	=	20	35 0.0
		− 29.0			
22	9	3.0			
1	30	52.62			
20	38	10.38			
	5	22.83			
20	34	47.55			

$12^s.45 + 2^s.00$

$+ 14.45$

Aus added 2 grammes.

April 12d. 9. 394 = $+12^s.42$ $1^s.30$

$+ \underline{4.00}$ 4

$16^s.42$ 5.20

$- \underline{5.20}$

$-11^s.22$

The clock is now running with 12.7s grammes.

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1878phae.proj.1806W

1878. april 15.9 1327 394 S.W. 1

21h	51m	23.s0 =	20	13	0.0	
		- 29.5				
21	50	53.5				
	34	49.18				
20	16	4.32				
	3	19.22				
20	12	45.10			45.10	

+14.90

~~Removed 0.5 grammes.~~

Signal sent slow 0.s3

3451 394

april 16d.4. 9	55	43.0 =	8	15	0.0	S.W.
		- 52.10				
9	54	50.90				
1	38	45.73				
8	16	5.17				
	1	21.26				
8	14	43.s91				

43.91 / 16.s09 ∴ 394 fast 0.s6

3451 1327

9	57	25.5 =	9	57	4.0	
		- 52.10				
9	56	33.40		56	33.40	

+ 30.s60

Removed 1.5 grammes.

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1878phae.proj.1806M

1878. April 16d.9 1327 394 S.W.

23	27	35 =	21	45	0.0	
		−30.90				
23	27	4.10				
1	38	45.73				
21	48	18.37				
	3	34.32				
21	45	44.05				44.05

3451 394

23	30	57.5 =	21	48	0.0
		−53.90			
23	30	4.50			
1	38	45.73			
21	51	18.77			
	3	34.82			
	47	43.95			

43.95

Mean = 44.00 ∴ 394 = fact 0.5

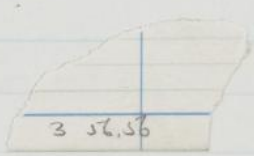
43.91

21 45
8 15
13h 30m

·5 ·65
45 ·32
2 | ·97
0.50

Removal of 1.5 gr = −0.1 in 13h.5

∴ Signal sent +0.7.



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1878phae.proj.1806w

1878. april 17d.4 3451 394 S. W.

11	36	57.5 =	9	52	37	0.0
		−53.4				
11	36	4.1				
1	46	22.28				
9h	53m	41.82				
	1	37.16				
9	52	14.66				

3451 394

april 17d.9

28	14	52.5 =	21	27	0.0	S.W.
		54.1				
		58.4				
23	13	~~54.6~~				
1	42	42.3				
27	31	56.1				
	3	37.53				
		44.87				

; Signal sent 0s.0 Err.

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1878phae.proj.1006w

1878. april 18.9 (18.9 struck through) 1327 394 L.M.

23	37	31.0 =	21	47	0.0	
		− 32.23				
23	36	58.77				
1	46	38. 83				
21	50 49	19.94				
	3	34.66				
	45	45. 28 44				

Signal Sent
Slow ~~Fast~~ 0ˢ.5
~~Added 1 Gramme~~.

1878. april 19.4 Sw.

	3451			394		
11	55	55.0 =	10	3	0.0	
		− 55.27				
11	54	59.73				
1	50	35.39				
10	4	24.34				
	1	39.01				
10ʰ	2ᵐ	48ˢ.33	2	44.33	∴ 394 = + 0ˢ.17 = 0ˢ.8	

	3451			1327			394	
23	59	44.5 =	23	59	21.0 =	21	5	0.0
		− 56.0						
24	58	48.5		58	48.5			
1	50	35.4			+ 32.5			
24	8	13.1						
	3	37.8						
		~~5.5~~						
24ʰ	4ᵐ	45ˢ.3						

∴ 394 = − 0ˢ.8.

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1878phae.proj.1806w

April 21d.4

S.W

	3451			394	
10	28	35.5 =	8	28	0.0

	3451			1327	
10	30	46.5 =	10	30	22.0
		− 58.76			
10	29	47.74		29	47.74
			0	4	34.26

April 21d.9

	1327			394	
23	49	23.0 =	21	47	0.0
		− 34.38			
23	48	48.42			
1	58	28.50			
21	50	19.92			
	3	34.66			
21h	46m	45.26			

∴ 394 = slows 0s.7

Added 1 gramme.

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1878phae.proj.18007

April 22d.9 S.W.

	1327			394	
23	22	14.0 =	21	16	0.0
		− 35.2			
23	21	38.8			
2	2	25.05			
21	19	13.75			
	3	29.56			
21	5	44.2			

·62
·31
0.93
34.26
35.19

Removed 1 gr.
Signal sent Flash $0^s.1$.

April 23d.9 S.W.

	1327			394	
23	24	10.0 =	21	14	0.0
		− 35.81			
23	23	34.19			
2	6	21.61			
21	17	12.58			
	3	29.23			
21	13	$43^s.35$			

62
93
155
34,26
35.81

∴ 394 = +1s.1 by 1327
giving 394 equal weight
we have
394 = +0s.6.

23	30	11.0			
		− 35.81			
23	29	35.19	21.9	−0s.7	> 1s.0
2	6	21.61	22.9	+0s.3	
21	23	13.58	23.9	+1s.1	> 0s.8
	3	30.21			1.4
24h	19	$43^s.37$			

·62
2·5
1·24
31
1·55
34.26
35.82
·62
36.44

Removed grain one.

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1878phae.proj.1806w

1878. april 24.9 S.W.

	3451			394	
23	35	8.3 =	21	21	0.0
		− 36.44			
23	34	31.86			
2	10	18.16			
21	24	13.70			
	3	30.38	giving 394 half Weight.		
21	20	43.32			
		Signal sent +0^{s}.6			

23	45	10.0 =	21	31	0.0
		− 36.44			
23	44	33.56			
2	10	18.16			
21	34	15.40			
	3	32.03			
21	30	43.37			

1878 april 25^{d}.9

23	44	6.0 =	21	26	0.0
		− 37.06			

36.44
.62
37.06

23	43	28.94	
2	14	14.72	
	~~3~~	~~53.~~	
21	29	14.22	
	3	31.20	
21	26	43^{s}.62	Signal sent +0^{s}.6.

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1878phae_proj_1806W

1878 April 26.9 S. W.

	1327			394	
24	8	6.0 =	21	46	0.0
		− 37.68			
24	7	28.32			
2	18	11.27			
21h	49m	17s.05			
	3	34.49			
21h	45m	42s.56			

37.06
.62
37.68
1.24
38.92

Error probably 0s.8 fast – but No Signal sent. Cloudy weather for 5½ days. Removed .75 gram.

	1327			394		
April 28d.9	23	0	49.0 =	20	31	0.0 510.
			− 38.92			
	23	0	10.08			
	2	26	4,38			
	20	34	5,70			
		3	22.17			
	20	30	43s.5			

Error probably 0s.5 fast. allowed 0.75 gram. Remain off No Signal sent this morning owing to cloudy weather for 7.5 days.

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1878phae.proj.1806w

1878. April 29.9d 1327 394 S.W.

23 50 54.0 = 21 17 0.0

38.92
+ .62
39.54

− 39.54

23 50 14.46
2 30 0.94
21 20 13.52
3 29.72
21h 16m 43s.80

No Signal Sent
0.7 gram still remain off.

1329 394

1878. April 30.9d 23 58 52.0 = 21 20 0.0 S.W.

21.4
9.5

− 41.2

12°.9 to 21°.4 = 0s.74
3.4 to 21.4 = 0.72
∴ assume rate = 0s.73

9.5
285
665
6s935
34.26
+ 41.2

23 58 10.8 = 21 20 0.0
2 33 57.5
21 24 183.8
3 30.4
21 20 42s.9

0.7 gram still remains off
Heavy fog & rain for 10 days.

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1878phae_proj_1806M

1878. May 1d.4

3451 394 S.W.

13h	11m	31.0s	=	~~20~~ 10h	31m	0.0s
13	13	31.5	=	10h	33m	0.0s
	1	5.57				
13	12	25.93				
2	37	54.05				
10	34	31.88				
	1	43.94				
10	33	47.94				
		44.5				
		3.9 4				

47.94
Slow 44.5
3.5 4

1327 394

13	16	3.2	=	10	36	0.0
					3m	0.49

13	11	31.0	=	10	31	0.0
	− 1	5.57				
13	10	25.43				
2	37	54.05				
10	32	31.38				
	1	43.62				
~~10~~	~~30~~	47.s76				

Set ahead 4.s0
Leave 09.7 off.

3451 1327

May 1d.9.

13	16	3.2	51.0 =		22.0
	3	0.49	66.0	+	36.9
13	13	2.71	7.0		8.9
13	12	25.93		+	35.

Sum 1327 = + 36.78

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1878phae.proj.1806W

1878. May 1d.9.

1327 394

23 40 42.0 = 20 59 0.0

− 39.90

23 40 5.10

2 37 54.05

21 2/3 11.05

26.77

3451

44m 20.5 43m 49

1 36.9 1 5.8

56.9 54.9

35.

36.9

11.9

4.0

5.9

9.9

21 58 44.28 ∴ 394 = +0.52.

1878. May 2d.9 S.W. obs.

1327 394

24 18 45.10 = 21 33 0.0

2 41. 50.61

21 36 54.39

− 37.28

21 36 17.16

3 32.35

21 32 44.8 ∴ 394 = −0.52.

Added 1 gram.

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1878phae_proj.1800W

1878 May 3d.5. S.W.

	3451			394	
14	34	36.0	= 11	46	0.0
	−1	7.83			
14	33	28.17			
	5	0.82			

	1327			394	
14	39	6.0	= 11	51	0.0
14	38	28.99			
	0	37.01			

1878 May 8d.9 S.W.

	1327			394	
24	45	45.0	= 22	56	0.0
		−37.85			
24	45	7.2			
2	45	47.2			
21	59	20.0			
	3	36.14			
21	55	43.9			
		44.6			

2.5
0.4
1.00

Signal 0s.0 Error
Rem. 1 gramm.

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1878phae.proj.1806W

1878. May 5.2d 1327 394 S.W.

7 25 46.01 = 4 31 0.0

37.35
0.17
−37.52

− 37.52

7 25 8.48

2 53 40.28

4h 31m 28s.20

0 44.47

4 30 43s.73 = 43.73

+ 16s.27 44.6 = 3?.9

15.50 43.7 5.3

− 0s.77 0s.9 = 1?.3

Remove 1 gramme for rate.

1.3)0.90(69
78
120

= 0s.7 per day.

∴ It must be brought up 0s.064 per hour

to correct 0s.77 by 7 hrs.

∴ Remove 1.8 grammes until 7h 30m.

Compare at 7.30 hrs and if right add 1.8 grammes.

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1878phae.proj.1806W

May 5d. 8

1. 1327 — 3954

22. 51 — 19.1 = 19 — 55 — 0.0

− 39.69

48.41

22 50 — ~~40.07~~

2 53 — 40.28

19 57 — ~~59.8~~ 00.13

3 — 16.6

19h ~~53m 48.50~~

38.08
23
38.31

22 51 — 19.1

− 38.31

22 50 — 40.79

2 53 — 40.28

19 57 — 0.51

3 — 16.1

44.4

May 5d. 8

3451 = 1327

31.5 = 0.0

23 35 — 42.5 = 23 35 — 11.0

− 38.31

34 — 32.7

+ 1m — 09.8 — 23 34 — 32.69

1

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1878phae.proj.1806w

May 6d. 3 S.W.

X

Fr 1327 = Bmk 394

9h 24m 3.s0 = 6h 25m 0.s0

25 3.0 = 26 0.0

May 6d. 5. S.W.

1327 394

14 5 21.0 = 11 5 0.0

May 6d. 9

1327 394

0h 0m 27.s0 = 8h 59m 0.s0

− 38.88

38.08
.80
38.88

23 59 48.12

2 57 36.83

21 2 11.39

3 26.78

20 58 44.s61

∴ Signal sent 0.s0

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1878phae.proj.1800W

May 7.d 0

S.W.

Comparison of Chronometers sent for Transit of ☿ from Bonds.

1327				Bond 332. (s.t)	
4	53	35.0 =	4	48	~~26.0~~ 21.0
4	54	17.0 =	4	49	3.0
4	54	54.0 =	4	49	40.0

1327				Bond 503 (m.t.)	
4	56	20.0 =	1	54	11.0
		− 38.9			
✓	56	50.0	1	54	41.0
					− 38.9
4	~~56~~ 55	41.1			
3	1	33.4			
1	54	7.7			
	0	18.7			
1	53	49.0			49.0
					+ 22.5 0

1327				Bond 440 (m.t.)	
4	57	48.0 =	1	56	1.5
5	4	2.0 =	2	2	14.5
		− 38.9			
5	3	23.1			
3	1	33.4			
2h	1m	49.7s			
	0	19.95			
2	1	29.7			29.7
					+ 44.8

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1878cfhae.proj.1806W

~~1878. May 7.9~~ 1327 3451

May 7d.0 5 0 25.0 = 5 0 56.5

5 1 20.0 = 5 1 51.5

Fr. 1327. 394

May 7d.9 24 26 28.0 = 21 21 0.0

40.23

− 39.74

24h 25m 48s.26

3 1 33.39

21 24 14.47

3 30.38

21h 20m 44s.1 43.h

Rem ~~add 20~~ qr. inde 10h 30m ~~add~~

Remove 0.5 qr.

May 8d.4 1327 394

13h 21m 36s.0 = 10h 14m 0s.0

− 40.73

13 20 55.27

3 5 29.94

10 15 25.33

1 40.82

10h 13m 44s.51

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1878phae_proj.1806W

May 8d.9 1327. 394. S.W.

40.73
·45
41.18

24h 42m 28.0s = 21h 33m 0.0s
− 41.2

24 41 46.8
3 5 29.94
21h 36m 16.86
3 32.35
21h 32m 44.51 ∴ Signal 0s.0

May 9d.9 1327 394

·90
45
1.35
40.73
42.08

0 25 22.0 = 21 12 0.0
− 42.08
24h 24m 39.92
3 9 26.50
21 15 13.42
3 28.90
24h 11m 44.52

May 10d.4 3451 394

11 38 45.0 = 8 24 0.0
11 38 − 14.68 30.32
3 13 23.06
8 25 7.26
1 22.74
8h 23m 44.5

3451 1327

37.5 = 5.0
12 25 52.5 = 16 20.0
− 14.68
25 37.82 37.82

∴ Eun 1327 = + 42s.18

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1878phae.proj.1806w

1878. May 10d.9 S. W.

	1327			394	
42.18	0	48	22.0 = 21	32	0.0
.37					
42.55			− 42.55		
	24	47	39.45		
	[illegible]	13	38.06		
	21h	34m	16.s39		
		3	32.03		
	21	31	44.s36		

~~Hath~~ Signal 0.s0 Error
Giving 394 Equal Nights

1878. May 12.9 S. W.

	1327			394	
0.73	0	47	16.0 = 21	22	0.0
2.11					
.73					
.37			− 44.0		
1.83	24	46	32.0		
42.18	3	21	16.2		
44.01	21	25	19.s8		
0s.2		3	30.55		
.3					
0s.6	21h	21m	49.s3	∴ 394 is slow 0s.8 by 1327.	
=					
	0	53	17.0	Giving 394 53m assume 1327 is	
				394 is slow 0s.4.	
.027	0.4 | 105		in 1h.		
	27/130		30gr. in 30m.	Added 30gr. until 10h 53m	

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1878phae.proj.1806M

1878. May 13d.4 Sw.

	3451			394		
13	59m	58s.0 =	10h	33m	0s.0	
		−17.78				
13	59	40.22				
3	25	12.73				
10	34	27.49				
	1	43.93				
10	32	43.56	∴	Remove 3 grammes until 10h.15 Am.		

	1327		=	394		
14	1	26.0	=	10	34	0.0
	1	0.16				
14	0	25.84				
13	59	40.22				
∴ 1327 =		+ 45s.62				

1878 May 13d.9

	1327			394			
0	42	12.0 =		21	13	0.0	S.W.
		− 46.1 =					
24	41	25.9					
3	25	12.7					
24h	16m	13s.2					
	3	29.1					
24h	12m	44s.1		And gaining. ∴ at 10.15 Am., at 10.15 Am. have 10.0 grammes in Pendy.			

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1878phae.proj.1806W

1878. May 14d.9 S. W.

	1327.			394.		
	24	54	11.0 =	21	21	0.0
13.4 / 1.5 / 1.45 / 45.62 / 47.07			− 47.07			
	24h	53m	23s.93			
	3	29	9.28			
			29.92			
	21	24	14.65			
		3	30.39			
	21h	20m	44s.3			

Equalweight to 394, and a fire in the clock room may have caused 1327 to alter its daily rate 0s.08.

Signal sent 0s.0 Error.

	1327			394			
d 1878 May. 15.9	1	16	12.0 =	21	39	0.0	0.98
13.4 / 2.5			− 48.08				
.98 / .98 / .80 / 2.76 / 45.62 / 48.08	25h	15m	23s.92				
	3	33	5.84				
	21h	42m	18s.08				
		3	33.35				
	21h	38m	44s.73				

44.73

∴ Signal sent 0s.0 Error — Giving 394 equal weight.

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1878phae.proj.1806w

1878. May 16d.4 L. W.

3451

38.0 = 4.0

13 26 51.0 = 13 27 17.0

− 21.70

13h 26m 29.s30 26 29.30

+ 0m 47.s70

1327 394

1878. May 16d.9 1 7 8.0 = 21 26 0.0 L. W.

− 48.10

25h 6m 19.s90

45.62 3 37 2.40

.98

.98

.98

.5

49.06 21h 29m 17.s50

3 31.21

21h 25m 46.s29 added 09.5 permanently.

∴ 394 must gain 44.50 +1.s8. added 2½ grammes until 10 pm. tomorrow.

Signal sent +1.s5.

1327 394

1878 May 17d.4 13h 32m 10.s0 = 9 49 0.0

~~4415~~

3451

18 33 44.5 = 9 51 0.6

13h 33m − 22.s83 13 33 21.67

21.67 2 0.72

3 40 458.96 13 ~~32~~ 21.51

9h 52m 22.s71 13 31 21.35

1 37.04 31 70.00

9 50 45.67 50 45.67

∴ Eun 1327 = 48.65

14.s33

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1878phae.proj.1806w

1878. May 17.9

1327 394

1h 39m 9.0s = 21h 54m 0.0s

— 49.12

25 38 19.88

3 40 58.96

21 57 20.92

3 35.80

21 53 45.12

1 45 10.0

— 49.1

25 45 20.9

3 40 58.96

27 4 21.94

3 36.95

22h 0m 45.0s

Slow 0.2

3451 1327

May 19.4 13 52 30.0 = 13 57 55.0 L.M.

0.7 = 26.0

18.7 = 44.0

50.7 = 16.0

— 25.30

25.40 25.40

+ 50.60

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1878phae.proj.1800w

1878 May 19.9 1327 394 L.M.

0	36	53.0	=	20	43	0.0
		− 51.08				
24	36	1.92				
3	48	52.07				
20	47	9.85				
	3	24.31				
	43	45.54				

1327 394

1	6	58.0	=	21	14	0.0
		− 51.08				
25	6	6.92				
3	48	52.07				
21	57	14.85				
	3	29.24				
21h	13m	45.s61				
		44.5				
		1s.1				

by 12 noon.

$2\frac{3}{4}$ hrs.

20 grammes emitted 11.15 Alles.

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1878phae.proj.1806w

1878. May 20d.9 1327 394 L.W.

1 13 55.0 = 4 17 0.0

− 52.1

25 13 02.9

3 52 48.6

4h 9m 44.3

3 29.7

44.6

44.6 ∴ Signal Sent 0.0 5m.

May 21.9 1327 394

0.0

22 58 30.0 =

−53.06

1.14
2.5
.98
.98
.50
2.46
50.60
53.06

22 57 36.94

3 56 45.18

19 0 51.76

3 6.90

56 44.8

Slow 0s.8?

Signal 0s.0

May 22d.4 1327 394

12h 0m 39.0s = 7h 59m 0.s0

1878phae.proj.1806w

May 22d.4 ~~3944~~ 3403 1327 L.W.obs.

35.0 = 0.0

12 3 0.0 = 12 3 25.0

1327 394

May 22d.9 1h 19m 51.0s = 21h 15m 0s.0 L.W.

19.4 54.0

~~55.06~~ .4

25h 18m 58s.0

4 0 41.7

21 18 16.3

3 29.4

21 14 45.8 ~~46.9~~

1327 394

98 3.5 1 32 53.0 = 21 28 0.0

54.03

50.60 25 31 58.97

2.94

-.49

54.03 4 0 41.74

21h 31m 17s.23

3 31.53

21h 27m 45s.70

∴ Slow 1s.2 ?

Which clock is in error?

May 22d.9 = 45.7

21.9 44.8

20.9 44.6

No signal sent — added

10 grammes until 12 noon.

The permanent weight should be 10gr.75

Jeudy.

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1878phae.proj.1806w

1878 May 23d.9

1377 394

19.4 1h 46m 52.5s = 0.0
4.5 25 − 55.0
.98
3.92
58.49
58.60
55.01

25 45 57.5
4 4 38.3
21 41 19.2
8 33.2
21h 37m 46.50

? I do not know what the sun of Ruth Clock is.

Diff.
Not signed dent – ~~10.75 gr. added~~
0.25 gr. added to Clock pend.
Mnown = 10gr.75

~~It is added 1 gramme.~~

3451 394

1878. May 24d.0 4h 37m 54.5s = D 29m 0.50
− 28.67

4 37 25.83
4 8 34.85
0 28 50.98
0 4.65
0h 28m 46s.33 46.33

∴ 12.30 moon added 3 grammes.

3451 = 18 27

4 ~~49~~ 50 25.6 = 5 50 52.0
− 28.67
4 ~~48~~ 49 56.93 49 56.93
+ 55.07

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1878phae.proj.1800W

1878. May 24.9 d

L. W.

1327. 394.

1h 39m 52.5 0.5 =

25 − 56.05

55.07
+.98
56.05

25 8 55.95

4 8 54.85

21h 30m 21.5.10

3 31.38

20h 26m 49.5.72
44.92.

1327

1 56 50.5.0

25 − 56.05

25 55 53.95

4 8 34.85

21 47 19.10

3 34.16

21 43 44.94

∴ 394 = slow 0.5 2.

3451 1327

May 25.4 17h 57m 43.9 = 12h 58m 10.5.0 L. W.
44.5.1
29.9
30.6 = 56.0

1878phae.proj.1806M

1878. May 26d.4 · 1327 3451 S.W.

13 38 0.0 = 13 37 33.7

40.0 13.7

46.58 32.12

∴ 1327 = + 58.42 40.58

56

1327 3394

1878 May 26d.9 0 32 31.0 = 0.0 S.W.

− 59.0

24 31 32.0

4 16 27.97

20 15 4.03

3 19.05

20h 11m 44.s98

44.98

+ 15.s12

∴ 394 Slow 0.s348

Observations until 11.15 Hm

1870phae.proj.1006w

1878. May 28d. 4 L. W.

3451 = 1327

13 39 53.2 = 13 40 20.0

−34,78

13 39 18.42 39 18.42

+ 61.58

.80

1327 394

23 ~~25~~ 26 15.0 = 18 58 0.0

−1 2.38

23 25 12.62

4 24 21.09

19 0 51.53

3 7.41

18 57 44.12

19h 0

1 1/4

44.12

~~Added~~

Removed 10gr. for till 8.15½m.

1878. May 29d. 9

1327 394

1h 5m 26s

0s.038

61.58
1.58
.80
63.76
63.95

1 14 31.0 = 20 42 0.0

63.76

25 13 27.24

4 28 17.65

20h 45m 9s.59

3 23.98

45.61

20h 41m ~~35~~ 77

6

20h 41m 45.50

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1878phae.proj.1806M

1878. May $29^d\ 8^h$

Clock Howard 191 has just been put up in its place in the ~~N~~ Northernmost pier in the clock-room. The top must not be taken off without loosening the connections (inside) with the screw cups (outside). The clock cannot be set for seconds except by stopping the pendulum, and the minutes are to be set independently.

~~29^d 8~~ 29^d 8^h 30m Slow of Bond 394 $0^s.3$

29^d 23^h 30 m " " " $\frac{5^s.8}{5^s.5}$

Lost on Bond 394 in 17^h =

∴ hourly rate in 394 = $-0^s.314$

hourly rate 394 losing = $-0^s.038$

∴ hourly rate 191 = $-0^s.352$ hourly.

Turned the rotating wheel 10° upward.

	3451	= (+0.06 per hour)	191		
2	10	39.0 =	21	38	20.0
		25.0			6.0
3	40	6.0 =	23	7	32.0
1^h	29^m	$27^s.0$ =	1^h	29^m	$12^s.00$
		-0.09			
1^h	29	26.91			
	0	14.655			
1^h	29^m	$12^s.25$			12.25

∴ 191 lost in $1^h.5$ $0^s.25$ = $-0^s.1$ hourly.

Moved the bob up $\frac{14}{60}$ of 1 pw.

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1870phae.proj.1006w

3451 191

4	14	20.5 =	23	40	4.0
5	22	5.5 =		47	38.0
	~~22~~	~~29.5 =~~		~~47~~	
		29.5 =			22
5	25	58.0 =	23	50	30.0

1h	11m	37.5 =	1h	10	26.0
	0	11.73			
1h	11m	25.57			
		− .07			
1	11	25.50			

5	33	44.5 =	24	59	20.0
4	14	20.5 =	23	40	4.0
1h	19m	29.0s =	1	19	16.0
		− 0.08			
1	19	28.92			
	0	13.02			
1	19	15.90 =	1	19	16.0

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1878phae.proj.1806W

Jan 1878. May 31. 9 1327 394 L-W.

	2h	22m	36.s0 =	21h	42m 0.0s
63.85		−1	5.43		
1.58					
65.43	26	21	30.57		
	4	36	10.76		
	24	45	19.81		
		3	33.84		
	21h	41m	45.s97		

Battery gain for 5m

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1878phae.proj.1806w

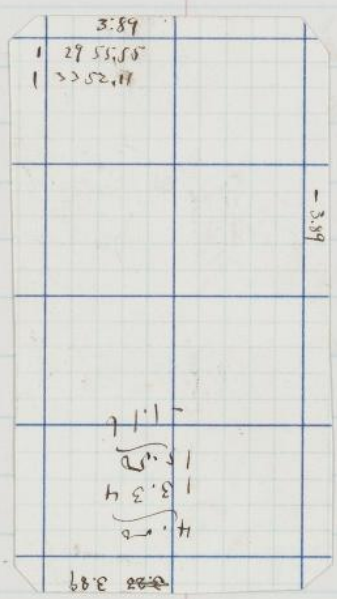
1878. June 1d.4 L.W.Obs.

3451 394

13h 24m 12s.5 = 8h 42m 16s.0

13h	23m	39.64
		32.86
4	40	7.32
8	43	25.54
	1	25.74
8	41	59.80

41 59.80
+16s.20
15.50
+0s.70 ∴ +0s.70 Berl. Time



3451 191

13 26 3.0 = 8 44 6.0 41m 59s.80
24 12.5 43 50.00 +1 50.20
1m 50s.5 +16s.00 43 50.00
−0.30 M.S.O.m.t.
1m 50s.20

1327 = 394

13 31 25.0 = 8h 49m 0s.0
6
9m 44s.0 m.t.
1s.10
6 45.10
9

13	23	32.86
	+	+8.24
13	30	17.96

30 17.96
Error 1327 = +1m 9s.04

Check 13 31 25.0 = 8h 49m 0s.0

	−1	9.04
13	30	17.96
4	40	7.32
8h	50m	10s.64
	1	26.83
8h	49m	43s.81

∴ check.

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1878phae.proj.1806w

1878. June 1d.4

L.W.Obs.

3451 394

13h 24m 12s.5 = 8h 42m 16s.0

13h	23m	39.64 32.86	
4	40	7.32	
8	43	25.54	
	1	25.74	
8	41	59.80	41 59.80
			+16s.20
			15.50
			+ 0s.70 ∴ + 0.70 Berl. Time

Signal No Error.

3451 191

13 26 3.0 = 8 44 6.0 41m 59s.80

24 12.5 43 50.00 +1 50.20

1m 50s.5 +16s.00 43 50.00

−0.30 H.C.O.m.t.

1m 50s.20

1327 = 394

13 31 25.0 = 8h 49m 0s.0

6

7m 44s.0 m.t.

6

7 1s.10

45.10

13 23 32.86

+ +8.24

13 30 17.96

30 17.96

Corr 1327 = + 1m 7s.04

Check 13 31 25.0 = 8h 49m 0s.0

	−1	7.04	
13	30	17.96	
4	40	7.32	
8h	50m	10s.64	
	1	26.83	
8h	49m	43s.81	∴ check.

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1878phae.proj.1806W

1327. 394.

1878 June 2d.2 8 52 36.0 = 4 7 0s.0 d.w.

−1 8.18

1.42 8 51 27.82
28
1.14
67.04 4 44 3.88
68.18

4h 7m 23s.94

4 06 40.52
43.42

43.42
+16s.58
15.50
1.08
Make it 10m.75 again
and use for 20m.

June 2d.9 1327 394

2h 4m 26s.0 = 21h 16m 0s.0

67.04 1 8.72
1.12
.56
68.72 26 3 17.28

4 44 3 88

21h 19m 13s.40

3 29.56

21h 15m 43s.74

30
04
1.20

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1878phae.proj.18061

1878. June 3.4 3451 1327. S.W.

14 32 5.1 = 14 32 32.0

14 53 31.1 = 14 53 58.0

− 42.57

14 52 48.53 52 48.53

1m 9s.47

0.61

1m 10s.08

1878. June 3.9 1327 394

2h 27m 27s.0 = 21h 35.m 0s.0 S.W.

− 1m 10s.08

2h 26m 16s.92

26

4h 48 0s.48

21h 38m 16s.49

3 70

21h 34m 32' 43s.79 34 43.8

16s.2

∴ +0s.7

1878. June 4.9 1327 394

2h 44m 28.0s = 21h 48m 0s.0

69.47

1.32

.61

71.30

− 1 11.30

26 43 16.70

4 51 56.99

21h 51m 19s.71

3 34.82

21h 47m 44s.89 44.89

15s.11

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1878phae.proj.1806W

1878 June 5.9 1327 394 Leo.

2 18 20.0 = 9 17 0.0

1.22 3.4
1.22 5.9
61
8.05

69.47
72.52

71.13
.61
71.74
.60
72.52
0.78

1 12.52
71.74
2h 17m 7.48
26h
4 55 53.45
21h 21m 13.93
3 29.89
21h 17 44s.04
+ 0s.78
21h 17m 44s.82

June 6.4 3451 1327 (Marcus) (Mich. Cr.)

14 46 33s.18 = 14 47 0s.0
45 48.87 1 17.13
14 45 48.87
+ 44s.31

3451 394

14h 49m 0s.0 = 9h 51m 0s.0
- 44.31
14 48 15.69
4 55 53.55
9 52 37.14
37.04
3451 50 45.10

50 45.10
+ 14s.90

191

14 49 53.5 = 9 51 52.0
49 - 44.31
14 50 9.19
4 55 53.55
9 53 15.64
37.58
9h 51m 38s.46

+ 38.46
+ 13s.54

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1878phae.proj.1806W

W.U.

June 7.0

1327		
4	10	35
	1	13.03
4	9	21.97
4	59	50.11
23	9	31.86
	3	47.64
23	5	44.22
		15.5
		59.72

394		
[23]		
11	6	0

Error of 394 +.28

June 7.9

3451	14	11.8
1327	14	40.
3451-1327		-28.2
1327		74.6
Error 3451		46.4

1327		
1	53	8.3
		74.59
1	51	53.71
5	7	43.23
3	15	49.52
	~~32~~	32.08
8	44	42.56
		15.50
		58.06

394		
8	45	0
		58.06
		+1.94

~~394~~ 1327		
~~8~~	~~45~~	~~0~~
2	3	20
		74.59
2	2	5.41
5	7	43.23
3	5	37.82
		30.41
8	54	52.59
		15.50
		8.09

394		
55	10	
		8.09
		+1.91

3451		
1	54	20.5

394		
8	46	40

Control on for 10 minutes but as there is no means of determining which clock has ~~gained~~ altered two seconds, decided to wait till further observations

No signal sent.

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1878phae.proj.1806w

June 7.9

	1327			394		
2	50	48	9	42	30	
	1	14.6			28.3	
2	49	33.4				
5	7	43.2			+ 1.7	= Error of 394 by 1327
2	18	9.8				
		32.6				
9	42	12.8				
		15.5				
		28.3				

Tried in vain to get stars with Mer. Circ.

5	41	46.1	33	0
	1	14.8		58.2
5	40	31.3		+ 1.8 = Error of 394 by 1327
5	7	43.2		
	32	48.1		
		5.4		
	32	42.7		
		15.5		
		58.2		

Observed contra mers. Prec. limb of sun with Russian transit giving error of 3451 assuming constants A & C from June 1, $+47^s.25$

3451	37 21.7	
1327	37 50	
3451 − 1327	28.3	This result seems to indicate that Bond 394 has gained 2°. 1327 is therefore assumed to be correct and 394 corrected $1^s.8$
Error of 3451	47.2	
	+ 75.5	

Control on for half an hour by W. H. before 2 P.M. & 1 hour additional in the afternoon by A. J. B 394 threw $16^s.0$ fast of mean time derived from 7 1327. Control on for about 1 hour in the evening & again about 1 hour next morning. B. 394 threw $15^s.2$ fast of mean time derived from 7. 1327.

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1878phae.proj.1806W

June 8.9 A.S.

3451 − 1327 = 28.83

1327		
2	5	27
	1	17.94
2	3	9.06
5	15	36.34
3	12	27.28
		31.53
8	48	4.25
		15.5

394		
8	49	20
		19.75

+.25 = Error of 394

June 9.5

3451 − 1327 = 28.83

June 9.9

3451		
2	6	8
5		19.42
		48.58

394		
8	50	30
		15.75
8	50	14.25
3	9	45.75
		31.17
3	10	16.92
5	15	36.34
2	5	19.42

3451	46	45.7
1327	47	15
3451 − 1327		29.3
		77.9
Error of 3451		48.6

From a number of comparisons made by A.S. June 9, it is clear that 394 has a large gaining rate — assumed to be .05 per hour. ~~20~~ 10.75 grammes ~~also~~ i.e. all the weights on the lot removed at 9 10 AM and at 10.45 AM ~~8.75~~ 7.00 grammes returned.

1327		
3	5	17
	1	18.0
3	3	59.0
5	15	56.3
2	11	37.3
		21.6
48		44.3

394		
9	49	0

Error of 394 +.2

Signal cut Error +.2

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1878phae.proj.1806W

		1327		394			W. U
June 9.9	3	55	~~26~~ 25.5	10	39	0	
		1	18.0				
	3	54	7.5				
	5	15	36.3				
	1	21	28.8				
		0	13.3				
			~~42.4~~				
	10	38	44.5				

7 grammes returned to pendulum.

June 10.4	14	25	9.9	9	~~7~~ 8 ~~4~~	0	
		1	18.8				
	14	23	51.1				
	5	15	36.3				
	9	8	14.8				
		1	29.8				
	9	6	45.0				

Error +.5 [should have been −.5]

4 grammes removed at 9.20 P.M

		1327		394			3451			394		
June 10.9	1	35	1.8	8	15	0	1	35	42.5	8	16	10
		1	19.6						49.8			
	1	33	42.2				1	34	52.7			
	5	19	32.9				5	19	32.9			
	3	45	50.7				3	44	40.2			
			37.0						36.8			
		14	46.3				8	15	56.6			
			15.5						15.5			
		15	1.8					16	12.1			

corrected 2ˢ and

9 grammes ~~left~~ left on the pendulum.

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1878phae.proj.1806w

		1327		394	
June 10.9	3	6	55.0	9	46 47 40
		1	19.6		
	3	5	35.4		
	5	19	32.9		
	2	13	57.5		
			21.9		
	9	46	24.4		
			15.5		
			39.9		

Signal to Error.

		1327		394	
June 11.4	14	55	11.2	9	33 0
		1	20.4		
	14	53	50.8		
	5	19	32.9		
	9	34	17.9		
		1	34.1		
	9	32	43.8		
			15.5		
			59.3		

Error +.7

3 grammes removed.

13 0.2 3451

13. 30 1327

29.8 Δ

30.5

50.7 Error 73451

June 11.9	1	18	54.7	7	55 0
		1	21.19		
	1	18 17	33.51		
	5	23	29.46		
	4	5	55.95		
			40.29		
	7	5 4	44.18		
			15.34		
			59.84		

Error of 394 +.16

5 grammes removed at 8.05 and at 9.05 6 grammes returned leaving 7 grammes on the pendulum.

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1878phae.proj.1806w

W.U.

	1327			394		
June 11.9	3	16	14.3	9	52	0
		1	21.3			
	3	14	53.0			
	5	23	29.5			
	2	8	36.5			
			21.1			
	9	57	44.6			

Signal no error.
W.U. line not working

L.M.

	1327			394		
June 12d.4	13h	25m	55s.0 =	8h	0m	0s.0
		1	22.18			
	13h	24m	32s.87			
	5	23	29.46			
	8h	1m	3s.41			
		1	18.83			
	18h	59m	44s.57			

L.W.

June 12d.9

	1327			394		
	2h	53m	9s.0 =	14h	26m	0s.0
80.52		1	22.93			
1.61	26h	51m	46s.07			
.90	5	23	29.46			
82.93	21h	28m	16s.61			
24|16|(67		3	31.04			
144	21h	24m	45s.57			
70						

12d.9

2	11	12.0	
	1	22.93	
27	9	49.07	
5h	23	29.46	
21h	46m	19.61	
	3	34.00	
21h	42m	45s.61	

Replaced 10.75 gr. 9h 59m Am.
Added 35 grammes
Until 11 AM.
Rem 11h. 28m
9 59
1h. 29s

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1878phae.proj.1806w

June 12.98

L. M. Obs

4 56 29.0 = 23h 28m 0s.0

−1 23.05

53 55 4.95

24 23 29.46

23h 31m 35s.49

3 51.25

23h 27m 44s.24

45.61

∴ 394 = +1s.37 by adding 35 grammes for 1.h5

∴ 394 = +0s.3 at 12h30

June 13d.4

L. M.

1327 394

12 27 42.0 = 0.0

12 26 17.97

+1m 24s.03

3451

12 20 12.0 =

12h 29m 18s.45

5

12 26 17.97

0.0

12 29 18s.45

5 27 26.02

7 1 52.43

1 9.11

43.33

3451 091

15 33 53.0 = 10 4 0.0

15h 32m 53.50

5 27 59.50

10h 5m 26.02

1 33.48

10 3 39.20

54.28

+5s.72

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1878phae.proj.1806w

June 13d. 9 1327 394 L.W.

1	9	47.0 =		0.0	
	−1	24.80			
25h	8m	22s.20			
5	57	26.02			
19h	40m	56s.18			
	3	13.46			
19h	37m	42s.72			
19h	37m	42s.72			

Set ahead 2s.0
Leave on 7.9n 0.

1327 394

2h	57m	7.0s =	21h	27m	0s.0
2h	57m	24.90			
26		42.10			
5	27	26.02			
21h	30m	16.08			
	3	51.57			
21h	26m	44s.71			

∴ 394 = slow 0s.2.

1327 394

1878 June 14d.4	15	4	7.0 =	21h	30m	0s.0	L.W.

3451 394 1327

15	4	37.0 =	9	3	0s.0 =	15	5	7.0

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1878phae.proj.18000

1878 June 14.9 L. M.

1327 394

$2^h\ 45^m\ 3^s.0 = 21^h\ 9^m\ 0^s.0$

84.03
1.70
.85
86.58

$-1\quad 26.58$

$2\quad 43\quad 36.42$

26

$5\quad 31\quad 22.58$

$21^h\quad 12^m\quad 13^s.84$

$-3\quad 28.41$

$21^h\quad 8^h\quad 45^s.43$

Abb 40 grammi 40 m.
Lavem 8 grammes.

$4\quad 9\quad 16.0 = 28\quad 33\quad 0.0$

$-1\quad 26.6$

$28\quad 7\quad 49.4$

$5\quad 31\quad 22.6$

$22^h\quad 36^m\quad 26^s.8$

$3^s\quad 42.2$

$22^h\quad 32^m\quad 44^s.6$

1878. June 15.4 L. W.

3451 N 191

$14\quad 44\quad 42.5 = 9\quad 7\quad 0^s.0$

$14\quad 47\quad 43.0 = 9\quad 10\quad 0.0$

-56.20

$14\quad 46\quad 46.80$

$9\quad 57.33$

$+2^s.67$

$5\quad 35\quad 19.14$

$9\quad 11\quad 27.66$

$,\quad 30.33$

$9\quad 9\quad 57.33$

3451 B 394

$14\quad 46\quad 31.0 = 9\quad 9\quad 0.0$

-56.20

$14^h\quad 45^m\quad 34^s.80$

$5\quad 35\quad 19.14$

$9^h\quad 10^m\quad 15^s.66$

$1\quad 30.14$

$9^h\quad 9^m\quad 45^s.52$

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1878phae.proj.1806w

	1327		345		394	
June 16d.4	15 11	3.0 =	15 10	33.0 = 9	29	0.0
				−57.19		
	9	35.82	15 9	35.82		
	+1m	27s.18				

15	9	35.82
5	39	15.70
9h	30m	20s.12
	1	33.43
9h	29	46.69

46.69

June 14d.9 44s.6

15.4 45.52 0s.9

16.4 46.69 .1s.17

Assume that 394 = +1s.2 per day = 2 gramms.

" Set 394 + 2s.0 add 2 gramms.

June 16.9

	1327			394	L.M.
3h	11m	59s.0 =	21h	29m	0s.0
	1	27.8			
27 5	10	31.4			
27	39	15.7			
	31	15.7			
	3	31.5			
	27	44.42			44.2

0s.3 fast.

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1878phae.proj.1806w

1327 394

1878. June 17.9 3 0 54.0 = 21 13 0.0 Sid. M.

1.05 53 1.58 87.18 88.76

1 28.76

26 2h 59m 25s.24

5 43 12.25

21h 16m 12s.99

3 29.07

21h 12m 43s.92

Rain 10gr. until 12 noon.

1327 394

June 18.9 3 9 53.0 = 21h 18m 0s.0 Sid. M.

24

1 29.7

87.18 3.2 91.4 — 1s.0 1.0 .5 2.5

31.4 29.7 1.7

87.18 2.5 9.7 — 27h 8m 21s.6 = 21h 18m 0s.0

5 47 8.8

21h 21m 12s.8

3 29.9

21h 17 42.9

21h 17m 1.7 44s.6

3451 1327

June 18.9 3 40 19.5 = 3 40 50.0

3h 39m 1 19.1 0.4 19.1 39 19.1

1m 30s.9

June 19.4 3451 1327 Sid. M.

15h 19m 2s.5 = 19h 19m 53s.0

19 47.5 20 18.0

1 1.78

15h 18 45.72 18 45.72

+ 1m 32.28

394

15 18 22s.5 = 0s.0

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1878phae.proj.1806W

June 19d. 9. 1878. L. M.

1327 394

4h 9m 0s.0 = 0s.0

1m 37s.7

1327

1878 June 20d. 0 ← 40 27.0 = 0h 44m 0s L. M.

19. 4 / 6 → 0s.82 1m 33.10

0s.1.37 / 822 → 32.28 / 33.10 → 1 30h 38m 53s.90

5 55 1.93

0h 43m 52s.0

0h 43m 0 7.2 / 44.8

44.8 / 15s.2

∴ 394 = Slow 0s.3 But. m. t.

= + 15s.2 H.C.O. mt.

B. 394. H 191.

78. June 20d. 0 0 — 49 0s.0 = 0h 48m 40s.0 L. M.

48 — 15s.20 / 44.80 48 44.80

∴ Err H 191 = — 4.80 (Slow H.C.O.).

1451 = 1327

1878 June 20d. 4 15 43 20.1 = 15 43 51.0 L. W.

44 14.1 = 44 45.0

15 −1 2.93

43 11.17 43 11.17

1m 33s.83

1327 = 394

1878. June 20d. 9 2h 55m 48s.0 = 20h 56m 0s.0

1 34.53

2h 54m 13s.47

26

5 55 1.93

20h 59m 11s.54

20h 3 / 55m 26.28 / 45s.26

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1878phae.proj.18067

1878. June 20d.9

3	59	58.0 =	0.0
	1	34.53	
27	58	23.47	
5	53	1.93	
22h	3m	21s.54	
	3	36.79	
7h	59m	44s.75	

as Eros 1327 may be 1m 24s.7 by taking
rate = 1s.6 Signal fast 0s.0 Eros.

1327 rate altered by π a.R.

78. June 21d.9 3451 L. M.

2h	7m	5.5 =	0.0
	− 1	4.9	
26	6	0.6	
5	58	58.5	
20h	8m	02s.1	
	3	47.9	
		+ 44s.8	

20d.4 62.93
21.9 1.3
.65
64.88

∴ Signal fast + 0s.3

1878 June 23d.4 3451 M. 191.

15h	51m	27s.5 =	9h 41m 42s.0
	− 1	7.52	
15	50	19.98	
6	6	51.60	
9h	43m	28s.38	
	1	35.58	
9	41	52.80	

41 52.80
− 10s.80

394

15h	54m	19s.5 =	9h 45m 0s.0
	− 1	7.52	
15h	53m	11s.98	
6	6	51.60	
9h	46m	20s.38	
	1	36.05	
9h	44m	44s.33	

44.33
+ 15s.67

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1878phae.proj.1806w

1878 June 28d.4 3451 1327

16h 17m 0s.0 = 16h 16m 5s.0
7.52
16 15 52.48 15 52.48

∴ Eqn 1327 = + 12s.52

1878. June 28d.9 3451. 394. Ed. M.

2h 48m 8s.0 = 20h 36m 0s.0
23°.4 = 67.52 9.7
68.2 26h 46m 58.3
6 6 51.6
20h 40m 6s.7
20h 36.3m 28.15
43.55
1.5
45.0

H. 191. B. 394.

H 191 is slow of B 394 = 26s.8

Eqn H191 = −11s.7
+15.5
+27s.2

0m 33s.2 = 1m 0s.0
+11.7
44.9 44.9

∴ By 191 394 = −0s.4
By 3451 394 = ~~++0~~ −0s.5 ?

1327

3 56 52.0 = 3 56 60.0
−1 9.7
55 42.3 42.3
17.7
12.5
+5s.2

1878phae.proj.1806W

1878 June 24d,14

S.W.

3451 394

16h 0m 19s.0 = 9h 47m 0s.0

−1 7.75

15h 59m 11s.25

6 10 48.16

9h 48m 23s.09

1 36.39

9 46 46.70

− 2.0

+ 44s.70

46.70

+ 13s.30

27.0

15.30

11.7

3451 191

15h 59m 50s.0 = 9h 46m 4s.0

15h 58m 42s.25

6 10 48.16

9h 47m 54s.09

1 36.39

9 46 17.70

17.70

− 13s.70

24d.9 3451. 394. S.W.

3 46 16.0 = 21 9 30 0.0

1 9.7

27 44 6.3

6 10 48.2

21 33 18.1

3 31.86

21h 29m 46s.24

1.5

.75

2.25

67.52

69.77

24.9

23.4

1.5

1.56

.78

67.52

+ 69.86

3451 394

4 10 20.0 =

1 9.7

28 9 10.3

6 10 48.2

21 58 22.1

3 35.98

21h 54m 46h.12

0.0

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1878phae.proj.1806w

1878. June 25d.4 Sid.

	3451			394
17h	32m	33s.0	= 11h	15m 0s.0
	−1	9.4		
17	31	23.6		
6	14	44.72		
11	16	38.88		
	1	50.~~93~~ 55		
		~~7.95~~		
11h	14m	48s.03		

ring in pendulum without stopping clock
191 turned upward 2 rev.
Set 394 + 4s.0.

June 25d.9 Sid.

4	16	15.5 =	0.0
	− 1	9.40	
28	15	06.10	
6	14	44.72	
22	0	21.38	
	3	36.30	
		45.0	

Slow 0s.5

1878 June 26d.4

	3451			R394	
16	16	35.0 =	9	55	20.0
	− 1	10.93			5.04
16h	15m	24.07			+ 14s.96
6	18	41.28			
9h	56m	42.79			
	1	37.75			
9	55	5.04			

R191

	3451			
16	15	16.5 =	9	53 30.0
	− 1	10.93		
16	14	5.57		
6	18	41.28		
9h	58	− 24.29		
	1	37.~~63~~		46.76
9	58	46.~~76~~		− 16s.76

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1878phae.proj.1806W

1878. June 26.9

	3 h	21 m	4.5 s =	0.0
		− 1	11.73	
70.93	27 h	19 m	52.77	
.80				
71.73	6	18	41.28	
	21 h	1 m	11.49	
		3	26.61	
	20 h	57 m	44.88	

1878. June 27.9 3451 394 L. M.

26.4	4 h	20 m	11.5 =	0.0
1.5		− 1	13.3	
1.6				
70.98	4 h	19 m	58.2	
73.3	28			
	6	22	37.8	
	21 h	57 m	20.4	
		3	35.8	
	21 h	53 m	44.6	

1.5

0.5

Signal sent 0.0 Sun.

1878 June 28.4 Lio.

3451 H191

15 h	56 m	37.0 = 9	26	56.0	
	− 1	12.8			
15	55	24.2			
6	26	34.40			
9	28	49.80	27	16.62	
	1	33.18		− 20.62	
9	27	16.62			

B 394.

15	54	26.0 = 9	25	20.0
	− 1	12.8		
15	53	13.2		
6	26	24.40		
9	26	38.80		
	1	32.73		
9	25	6.07		6.1
			+	13.9

+ 2.5 add to

10.75 Ganymed.

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1878phae.proj.1806w

Liv. 1

June 28 sep.

1327 3451

$16^h\ 20^m\ 49^s.0 = 16^h\ 22^m\ 38^s.2$

$21\quad 25.4 \qquad 16\quad 21\quad 25.4$

$\therefore 1327 = -36^s.4$

$4\quad 2\quad 41. = 4\quad 4\quad 30.0$

$3\quad 16^s.5 \qquad 1\quad 13.5$

$3\quad 16.5$

$-35^s.5$

3451 394

$4\quad 6\quad 4.0 = \qquad 0^s.0$

$-\ 1\quad 12.8$

$28\quad 4\quad 51.2$

$6\quad 26\quad 34.40$

$21^h\ 38^m = 16^s.80$

$3\quad 32.7$

$2^h\ 34^m\ 44^s.1$

$+0^s.7$

Rem 2 grammes.

3451

39.4 $6\quad 10\quad 20.5 =$ 0.0

$-\ 1\quad 15.72$

$18\quad 9\quad 4.78$

$6\quad 24\quad 27.52$

$11\quad 44\quad 37.26$

$1\quad 55.43$

$11^h\ 42^m\ 41.83$

ii Cheveis sympathetic

$+ 4^s.0$

3451 1327

$18\quad 1\quad 5.5 = \qquad 18\quad 9\quad 18.0$

$1\quad 15.72$

$18^h\ 9^m\ 49^s.78$

$9\quad 18.0 + 2^s$ mm 2gr.

$-35^s.78$

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1878phae.proj.1806W

1878. June 20. 3451 = B394 T. M.

XX 4 1 0.5
− 1 16.43
00.0 = 0.0

27 59 43.97
6 34 27.52
21h 25m 16.45
21h 3m 30.56
21h 21m 45.89

75.72
.71
76.43

1327 394

4 9 15.0 = 0.0
+ 30.6

31.78
1.2
30.6

28 9 45.6
6 34 27.5
21h 35m 18.1
32.2
21h 31m 45.9

∴ 394 = clock 1.4

Sit ahead 2.0
∴ = Fast 0.6

30.4 394 41.83
+ 4.0
+ 45.83

30.9 = 45.9 + 0.1

Sit ~~to~~

3451 394

8h 29m 43.7

75.72
1.2
76.9

8 1 16.9
28 26.8
6 38 24.1
251 50 02.7
18.0

+ 44.7

6 38 27.96
− 3.89
6 38 24.07

∴ Clock slow 0.2

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1878phae.proj.1806w

July 1st

3451 394

17 9 13.5 = 0.0

1 16.08

17 7 57.42

6 38 24.07

10 29 33.35

1 43.10

10 27 50.25

13 27.

18 8 32 = 0.0

6 38 24.07

11 30 7.93

1 53.03

11 28 14.9

45.4

3451 394

18 12 19 = 00.0

1 16.08

18 11 2.92

6 38 24.07

11 32 38.85

1 53.45

11 30 45.40

60

14.60

3451 394

3 45 53.5 = 0.0

1 16.24

3 44 37.26

6 38 24.07

21 06 13.19

3 27.42

45.77

60

14.23

15.50

-1.27

3451 394

2 22 40.5 = 0.0

1 16.20

2 21 24.30

6 38 24.07

19 43 00.23

3 13.80

46.43

60

13.57

15.50

-1.93

3451 394

4 15 58.00 = 0.0

1 16.25

4 14 41.75

6 38 24.07

21 36 17.68

3 32.33

45.35

60

14.65

15.50

-.85

Added 30 grammes at 19h 50m.

Took off 30 grams added 3.

4 40 1.5

1 16.26

4 38 45.24

6 38 24.07

22 00 21.17

3 36.30

44.87

60

15.23

15.50

-.27

Signal Error -.23

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1878phae.proj.1806w

July 2nd

3451

17 45 10.5
1 16.45
17 43 54.05
6 42 20.62
11 1 33.43
1 48.53
44.90
60
15.10
15.50
−.40

1327

17 52 26.
30.76
17 52 56.76
6 42 20.62
11 10 36.14
1 49.85
46.29
60
13.71
15.50
−1.79

1327.

1 51 45
−30.66
1 52 15.66
6 42 20.62
19 9 55.04
3 8.40
46.64
60
13.36
15.50
−2.14

3451

3 53 49
1 16.7
3 52 32.3
6 42 20.62
21 10 11.68
3 28.08
43.60
60
16.40
15.50
+.90

1327

4 17 7
30.62
4 17 37.62
6 42 20.62
21 35 17.00
3 32.20
44.80
60
15.20
15.50
.30
60
+

1180
120
136

4 29 9
30.62
4 29 39.62
6 42 20.62
21 47 19.00
3 43.98
6.02
44.80
60
15.20
15.50
−.30
+60
+30

Signal +.20

3451

2 2 32
1 16.65
2 1 15.35
6 42 20.62
19 18 54.73
3 9.87
44.86
60
15.14
15.50
−.36

1327

3 49 3
30.62
3 49 33.62
6 42 20.62
21 7 13.00
3 27.6
45.4
60
14.6
15.5
−.90

Mean −.30
giving chron ½ clock ⅔ weight.

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1878phae.proj.1806W

July 3d.

1327

15 38 59
− 30.42

15 39 29.42
6 46 17.19

8 53 12.23
1 27.35

44.88
60

15.12
15.50

−.38

adde 1 gramme.

1327

2 19 44
− 30.27

2 20 14.27
6 46 17.19

19 33 57.08
8 12.33

44.75
60

15.25
15.10

−.25

add 10 gramme for 1h.

1327

2 18 43
− 30.27

2 14 13.27
6 46 17.19

19 27 56.08
3 11.35

44.73
60

15.27
15.50

−.23

1327

4 5 1
− 30.25

4 5 31.25
6 46 17.19

21 19 14.06
3 29.56

44.50
60

15.54
15.54

1 0 0

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1878phae.proj.1806W

July 4th

1327

17 50 16.
− 24.76
17 50 40.76
6 50 13.75
11 00 27.01
1 48.20
38.81
60
21.69
15.50

1327

19 40 40
24.60
19 41 04.60
6 50 13.75
12 50 50.85
2 6.30
44.55
60
15.45
15.50
−.05

1327

1 50 40
−23.94
1 51 03.94
6 50 13.75
19 00 50.19
3 6.91
43.28
60
16.72
15.50
+1.22

2.12
37
1484
636
80.44
2.12
2.9×2
26.86
−23.94

1327

Lookoff. Equinox at 7h
rate of 1327. + 2.12

4 48 10
23.74
4 48 33.74
6 50 13.75
21 58 20.00
3 35.97
44.03
60
15.93
15.50
+.44 interp.
.3
+.41

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1878phae.proj.1806W

July 5th "

1327
16 49 8
22.70
16 49 30.70
6 54 10.31
9 55 20.39
1 37.52
42.87
00
17.13
15.50
+ 1.63

1327
17 2 10
22.70
17 2 32.70
6 54 10.31
10 08 22,39
1 39.68
42.73
60
17.27
15.50

1327
3 4 57
21.88
3 5 11.88
6 54 10.31
20 11 01.57
3 28.23
43.34
60
16.66
15.50
1.16

took off 6 grammes.

1327
3 9 51
21.88
29.12
3 10 12.88
6 54 10.31
20 16 02.57
3 19.21
43.36
60
16.64
15.50
+ 1.14

1327
4 16 2
21.80
4 16 23.80
1 54 10.31
21 22 13.49
3 30.44
43.05
60
16.95

1327
4 21 3
21.8
4 21 24.80
6 54 10.31
21 27 14.49
3 30.84
43.65
60
16.35
15.50
+ .85
Error .94

returned 8 grammes

+.85
-.15
signal. +.70

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1878phae.proj.1806W

July 6th

1327

16 47 7

20.74

27.74

1327

3 48 56

19.68

3 49 15.68

6 58 6.87

20 51 8.81

3 24.95

43.86

60

16.14

July 7th

1.90
1.71

1327

14 37 43.00

19.35

14 38 02.35

7 2 3.42

7 35 58.93

1 14.54

44.39

60

15.61

+.11

remainder 1 gr. +.64

1327

2 33 41

-18.38

2 33 59.38

7 2 3.42

19 31 55.96

3 12.00

43.96

60

16.04

+.54

1327

2 39 42

— 18.38

2 39 00.38

7 2 3.42

19 37 56.96

3 12.97

43.99

60

remainder 1 gr 16.01

at 19h 40m +.51

1327

4 50 4

18.20

4 50 22.20

7 2 3.42

21 48 18.78

3 34.32

44.46

60

15.54

+.04

4 56 5

18.20

4 56 23.20

7 2 3.42

21 54 19.78

3 35.30

44.48

60

15.52

+.02

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1878phae.proj.1806M

July 8

1327

2 22 37

-15.90

2 22 52.90

7 5 59.98

19 16 52.92

3 9.54

43.38

60

16.62

+1.12

1327

4 27 58

15.73

4 28 13.73

7 5 59.98

21 22 13.75

3 30.02

43.73

16.27

+.77

1327

2 28 38

-15.9

2 28 53 8.9

7 5 59.98

19 22 58.92

3 10.53

43.39

60.00

16.61

+1.11

1327

4 39 00

-15.73

4 39 15.73

7 5 59.98

21 33 15.75

3 31 83

43.92

16.08

+.58

Signal +5

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1878phae.proj.1806w

July 9th.

11	35	9			11	47	11	
			−14.86	2.10 / .8 / 1.680			14.86	
11	35	23.86	14.86	16.54	11	47	25.86	
7	9	56.54			7	9	56.54	
4	25	29.32			4	37	29.32	
			43.49				45.45	
			43.83				43.87	
			60				16.13	
			16.17				+.63	removed 1 gramme.
			+.67					

		1327	2.10 / .62 / 42 / 126 / 1.302			1327		1327
2	47	40			4	10	54	4 46 0
		13.56					13.44	13.40
2	47	53.56			4	11	07.44	4 46 13.40
7	9	56.54			7	9	56.54	7 9 56.54
19	37	57.02			21	1	10.90	21 36 16.86
	3	12.98				3	26.60	3 32.35
		44.04					44.30	44.51
		15.96	removed ± grammes at	119h 40m			15.70 removed ± grammes.	15.49
		+.46					+.20	15.50

replaced 9.5 grammes.

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1878phae.proj.1806W

		1327				1327	
July 10 Th.	17	36	7	Took of 5 gr. at 7 h.	3	59	51
			12.05	fut lack 3 grs.			11.0
	17	36	19.05		4	00	02
	7	13	53.10		7	13	53.10
	10	22	25.95		20	46	8.90
		1	41.97				24.15
			43.98				44.75
			16.02				15.25 replaced 2 gr. and
			15.50				15.50 added 10 grs for 1 hr
			+.52				−.25

4	48	59		
		10.92		
4	49	9.92		
7	13	53.10		
21	35	16.82		
	1	32.20		
		44.62		
		15.38		
		15.50		
		−.12	Took off 10 gr. at 22 h.	

Signal no error

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1878phae_proj_1806W

July 11

1327. removed 8 gr. at 4h

3	7	41	added	
		9		
3	7	50		
7	17	49.66		
19	50	0.34		
	3	14.95		
		45.39		
		14.61		
		15.50	added 20 grs.	
		−.90		

1327.

4	4	8	57.	
			8.866	
4		49	5.68	
7		17	49.66	
21		31	16.00	
		3	31.54	
			44.46	
			60	
			15.54	
			15.50	

removed 20 grs. +.04 orginal no error.

1327.

4	3	50		
			8.75	
4	3	58.75		
7	17	49.66		
20	46	09.09		
	3	24.15		
		44.94		
		60		
		15.06		
		15.50		
		−.44		

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1878phae.proj.1806W

July 12th

16	24	52	1	42	24	1	53	26
		-7.60			6.70			6.70
16	24	59.60	1	42	30.70	1	53	32.70
7	21	46.22	7	21	46.22	7	21	46.22
9	3	13.38	18	20	44.48	18	31	46.48
	1	28.98		3	0.33		2	52.30
		44.40			44.15			4.18
		60			60			
		15.60			15.85			
		15.50			15.50			
		+.10			+0.35 reversed signs.			

			wrong.			
	1327			1327		
5	17	0	5	16	0	
		6.40			6.40	
5	17	6.40	5	16	6.40	
7	21	46.22	7	21	46.22	
21	55	20.18	21	54	20.18	
	3	35.48		3	35.30	
		44.70			44.88	
		60			15.12	
		15.30				
		15.50				

Signal -.20 replaced 5 grammes

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1878phae.proj.1806w

July 13.

1327			1327.				1327		
4	45	53	16	59	53		17	5	54
		−4.80			−3.64				−3.64
4	45	57.80	16	59	56.64		17	5	57.64
7	25	42.78	7	25	42.78		7	25	42.78
21	20	15.02	9	34	13.86				6
	3	29.74		1					
		45.28							
		60							
		14.72							
		15.50							
		−.78							

added 3 grammes.

July 14

1327.			1327			1327		
17	5	54	3	8	34	4	31	48
		−3.64			−2.76			−2.65
17	5	57.64	3	8	36.76	4	31	50.65
7	29	39.34	7	29	39.34	7	29	39.34
9	36	18.30	19	38	57.42	21	2	11.31
	1	34.40		3	13.15		3	28.77
		43.90			44.27			44.54
		60.00			60			60
		16.10			15.73			15.46
		15.50			15.50			15.50

took off 5 grammes +.60 removed 5 grs. +.23 −.04 put back grs.

Sig. Worm

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1878phae.proj.1806M

July 15

1327.	1327.	1327
17 30. 56	17 36 57	3 50 39
− 1.05	− 1.02	−.04
17 30 57.05	17 36 58.02	3 50 39.04
7 33 35.89	7 33 35.89	7 33 35.89
9 57 21.16	10 3 22.13	20 17 3.15
1 37.85	1 38.82	3 19.38
43.31	43.31	43.77
60	60	60.
16.69	16.69	16.23
	15.50	15.50
removed 4 grammes. +1.19		removed 6 grams. + .73

1327.

5 19 54 :

+ .10

5 19 53.90

7 33 35.89

21 46 18.00

3 34.00

44.

60

16.00

15.50

replaced 9 grammes + 50
at 20h

Signal + H

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1878phae.proj.1806W

July 16 "

1327.

14 55 29 1.23

+1.00 2.20

14 55 28 1.00

7 37 32.45

7 17 55.55

11.76

43.79

60

16.21

15.50

+.71

1327

18 46 7

.72

18 46 6.28

7 37 32.45

11 8 33.83

1 49.52

44.31

60

15.69

15.50

+.19

1327

3 45 36

1.42

3 45 34.58

7 37 32.45

20 8 2.13

3 17.90

44.23

60

15.77

15.50

remained 7 grammes. +.27

1327

4 57 48

1.58

4 57 46.46

7 37 32.45

21 20 14.01

3 29.70

44.31

60

15.69

15.50

Error of 1327. +.19

Signal no error.

5 34 54

1.60

5 34 52.94

7 37 32.45

21 57 19.95

35.80

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1878phae.proj.1806W

July 17

1327.

16 44 45 1.85 .52 8 2.45

2.45

16 44 42.55

7 41 29.00 + 33.02 / 33.25

9 3 13.55 1.25 / 34.50

1 28.97

44.58

60

15.42

15.50

−.08

3451

17 7 20

1 34.50

17 5 45.50

7 41 29.00

9 24 16.50

1 32.33

44.17

60

15.83

15.50

+.33

3451

17 32 24

1 34.5

17 30 49.5

7 41 29.00

9 49 20.50

1 36.55

43.95

60

16.05

15.50

+.55

1327.

18 58 7

2.98

18 58 4.02

7 41 29.00

11 16 35.02

1 50.82

44.20

60

15.80

15.50

+.30

1327.

3 56 36

3.90

3 56 32.10

7 41 29.00

20 15 3.10

19.05

44.05

60

15.95

15.50

+.45 removed 9 grammes

1327.

4 15 39

3.81

4 15 35.19

7 41 29.00

20 34 6.19

3 22.17

44.02

13.98

15.50

.48

15.50

+.10

Signal in error.

Replaced 9 grammes at 22h

3451. 19 6 39.5

394. 00.0

394. 21 17 30.2

191. 21 16 13.

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1878phae.proj.1806W

July 15 H.D.

15	42	33	2.86	15	42	33		3	52	34	
			4.76 1.90			4.76				6.80	
			4.76								
15	42	25.24		15	42	28.24		3	52	28.30	
7	45	25.56		7	45	25.56		7	45	25.56	
7	56	59.68		7	57	02.68		20	7	2.64	
	1	18.14			1	18.15			3	17.73	
		.54				44.53				44.91	
						60				60	
						15.47				15.08	
						15.50				15.50	
						-.03				-.42	

3	58	35		5	31	50					
		5.80				5.92					
3	58	29.20		5	31	44.08					
7	45	25.56		7	45	25.56					
20	13	3.64		21	46	18.52					
	3	18.73			3	34.00					
		44.91				44.52					
		60				60					
		15.09				15.48					
		15.50				15.50					

added 11 grammes. -.41 took off 10 gr. -.02

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1878phae.proj.1806M

July 19th

1327

18 1 54 2.86	18 1 54	4 7 34 .088
6.92 2.08	7.08	7.92 9.5 440
18 1 47.08 2.08	18 1 46.92	4 7 26.08 .8360
7 49 22.12 6.92	7 49 22.12	7 49 22.12 .08 .92
10 12 24.96	10 12 44.80	20 18 3.96
1 40.33	1 40.33	3 19.54
44.63	44.47	44.42
60	60	60.
15.37	15.53	15.58
15.50	15.50	15.50
−.13	+.03	+.08. removed 1 gramme

5 1 43

8

5 1 35

7 49 22.12

21 12 12.88

3 28.41

44.47

60

15.53

added 1 gramme? 15.50

+.03

191. 22 11 18.15

394. 12 40.0

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1878phae.proj.1806W

July 20th 1327.

5 42 48

10.35

5 42 37.65

7 53 18.68

21 49 18.97

3 34.49

44.46

60

15.54

15.50

+.04

July 21st 1327.

16 5 31 .091

11.29 10.3 273 910

16 5 19.71 .94 10.35 11.29

7 57 15.23 .091 13

8 08 04.48 273 91 1.183

1 19.95 11.29 12.47

44.53

60

15.47

15.50

−.03

191 = 21 32 13.5

394 = 21 33 40

1327.

5 15 42

12.47

5 15 29.53

7 57 15.23

21 18 14.30

3 29.40

44.90

60

9.05

15.10

2.18

15.50

1.18

−.40 added 20 grammes

12.41

1327

5 52 48

12.53

5 52 35.47

7 57 15.23

21 55 20.24

3 35.49

44.75

60

15.25

15.50

−.25

05

−.20

replaced

took off 20 grammes at 22h 5m

Signal − .2

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1878phae.proj.1806w

July 22nd 1327 H.M.

19	4	59	5	7	39
		14.35			15.30
19	4	44.65	5	7	23.70
8	1	11.79	8	1	11.79
11	3	32.86	21	6	11.91
	1	48.70		3	27.43
		44.16			44.48
		60			60
		15.84			15.52
		15.50			15.50

Removed 1 gramme, +.34 +.02 replaced 1 gramme

July 23d 1327. 394

17	55	16.0 =	30.0	4	12 28
		16.43			17.39
17	54	59.57		4	12 10.61
8	5	8.35		8	5 8.35
9	49	51.22	20	7	2.26
	1	36.63		3	17.15
	48	14.59			44.51
		30.			60
		~~15.49~~			15.49
		15.41			15.50
		15.50			+.01 Signal Ne error
		-.09			

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1878phae.proj.1806W

July 24th

1327.

18	7	46	4	24	28	5	17	37
		18.75			−19.68			19.77
18	7	27.25	4	24	8.32	5	17	17.23
8	9	4.91	8	9	4.91			~~2.54~~
9	58	22.34	20	15	3.41	8	9	4.91
1		38.00		3	19.05	21	8	12.32
		44.34			44.36		3	27.84
		60			60			44.48
		15.66			15.64			60
		15.50			15.50			15.52
		+.16			+.14			15.50

~~Passage~~ removed 5 grs. removed 5 grs. just back 5 grs. +.02

191 = 22.48 41.7

Signal. No. Error.

394. = ~~22~~ 50 14.0

July 25th

1327.

19	0	53	19	55	2	4	31	27
		20.47			20.54			21.20
19	0	32.53	19	54	41.46	4	31	05.80
8	13	1.46	8	13	1.46	8	13	1.46
10	47	31.07	11	41	40.00	20	18	4.34
	1	46.08		1	54.96		3	19.54
		44.99			45.04			44.80
		60			60			60
		15.01			14.96			15.20
		15.50			15.50			15.50
Error of 394.		−.49			−.54	added 10 grs.		−.30

removed at 21h 50m

Signal no error

added 2 grammes

.071
93
213
639
.6603
54
21.20

1878phae.proj.1806w

July 26th 11.

1327

17 31 36 20.47

22.47 2.00

17 31 13.53 22.47

8 16 58.02

9 14 15.51

1 30.80

44.71

60

15.29

15.50

−.21 ~~added~~ + grains.

1327

4 0 20

23.35

3 59 56.65

8 16 58.02

19 42 58.63

3 13.80

44.83

60

15.17

15.50

−.33

−.17 taking mean.

added 3 grs.

5 37 36

23.50

5 37 13.50

8 16 58.02

21 20 14.48

3 29.74

44.74

60.00

15.26

15.50

−.24

.17

−.07 Removed 3 grs at 21h30m

19h = 21 31 42.1 Signal ons error. Hdg. not working.

39h = 21 33 20

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1878phae.proj.1800W

July 27

1327

4	28	23		4	28	23		8	51	6
		25.38				25.50				25.87
4	27	57.62	24.63	4	27	57.50		8	50	40.13
8	20	54.58	.87	8	20	54.58		8	24	51.14
20	7	3.04	25.50	20	7	2.92		0	25	48.99
	3	17.73	37		3	17.73				4.20
		45.31				45.19				44.79
		60				60				60
		14.70				14.91				15.21
		15.50				60				15.50
Added 7 gramms.		−.80				15.60				−.29
191 = 20 11 60 = 394: 10 12 40						−.59		removed 2 grs at 9th July 28.		

.087
4.3
261
348
.3741

July 28th

1327

20	16	59		4	41	23		5	48	34
		27.18				28.06				28.15
20	16	31.82		4	40	54.94		5	48	5.85
8	24	51.14		8	24	51.14		8	24	51.14
11	51	40.68		20	16	3.80		21	23	14.71
	1	56.58			3	19.21			3	30.23
		44.10				44.59				44.48
		60				60				60
		15.90				15.41				15.52
		15.50				15.50				15.50
		+.40	(added 4 grs.			−.09				+.02 removed 2 grs

Signal no error.

191 = 21 27 17.4

394 = 21 29 60.0

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1878phae.proj:1806w

July 29th

1327.			1327.			D. M.		
17	8	26	4	36	20	5	47	32
		29.29			30.88			30.50
17	7	56.71	4	35	49.60	5	47	1.50
8	28	47.69	8	28	47.69	8	28	47.69
8	39	9.02	20	7	1.91	21	18	13.81
	1	25.05		3	17.73		3	39.40
		43.97			44.18			44.41
		60			60			60
		16.03			15.82	191 = 21 37 47.5		15.59
		15.50			15.50	394 = 21 39 32		15.50 replaced 10
removed 2 grammes. +.53					+.32 removed 8 grammes.			+.09 grammes 21h 35

July 30th.

1327.			1327.			1327.		
18	30	38	4	49	20	5	1	22
		31.40			32.34			32.46
18	30	6.60	4	48	47.66	5	0	49.60
8	32	44.25	8	32	44.25	8	32	44.25
29	57	22.35	20	16	3.41	20	28	5.35
	1	37.85		3	19.21		3	21.17
		44.50			44.20			44.18
		60.00			60			60
		15.50			15.80			15.82
		15.50			15.50			15.52
		+.00			+.30			+.30 removed 8 grammes.

Signal no error. $\frac{-33}{-02}$ replaced 7 gram at 22h.

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1870phae.proj.1006W

July 31st 1327. 3451 P.M.

18	42	38	18	45.59	4	53 19	6	1 30
		33.36				34.25		34.35
18	42	4.64			4	52 44.75	6	0 55.65
8	36	40.80			8	36 40.80	8	36 40.80
10	5	23.84			20	16 03.95	21	24 14.85
	1	39.16				3 19.22		3 30.40
		44.68				44.73		44.45
		60				60		60
		15.32				15.27		15.55
		15.50				15.50		15.50
added 1 gramme.		−.18			added 10 grammes.		−.23	+.05

191 = 21 26 12.7 = 394 = 21 28 00 Removed 10 grammes at 21h 20m

August 1st 1327. 1327. Signal .00

17	18	22		4	53	17
		35.56				36.60
17	17	46.44		4	52	40.40
8	40	37.36		8	40	37.36
8	37	9.08		20	12	3.04
	1	24.71			3	18.50
		44.37				44.54
		60				60.
		15.63				15.46
		15.50				15.50
		+.13				−.04 Signal W Error. E

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1878phae.proj.1806w

August 2nd

	1327.	1327 Waltham.
19	46 45	19 18 37 = 00
	38.14	37.89
19	46 6.86	19 17 59.11
8	44 33.92	8 44 33.92
10	01 32.94	10 33 25.19
	1 48.38	1 43.76
	44.56	41.43
	60	60
	15.44	18.57
	15.50	But according to rate of Waltham it should be 19.00 ... 1327 is .4 slower that it should be, i.e. its δ Δt should be increased by .2. But giving half weight to 1327, we would increase its δ Δt by .1 seconds
	— .06	

	1327.	1327.
4	58.16	6 16 29
	38.98	39.10
4	57 37.028	6 15 49.90
8	44 33.92	8 44 33.92
20	13 3.10	21 31 15.98
	3 18.72	3 31.53
	44.38	46.45
	60	60
	15.62	15.55
	15.50	15.50
	+ .12 Mercury 5 grammes.	+ .05 Sun.
	21h 20 added 5 grammes	Signal No error.

191	21	16	19.9
394	21	18	14.0

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1878phae.proj.1006W

August 3d

6 43 32

41.33

6 42 50.67

8 48 30.48

21 54 20.19

3 35.32

44.87

60

15.13

15.56

−.37 added 1 gr. at 24h removed 1 gr. at 9h

August 4th

1327

5 13 14 40.14

2.24

− 43.40 1.02

5 2 30.60 43.40

8 52 27.03

20 10 03.57

3 18.22

44.35

60

15.65

15.50

+.15 removed 5 grammes at 20h 30m

replaced 5 grammes at 10h

6 15 26. 43.50

6 14 42.50

8 52 27.08

21 22 15.47

3 30.02

45.45

60

14.55

15.50

−.95

~~removed 5 gram at 21h 35m~~ −.87

added 3 grammes.

6 15 26. 43.50

6 14 42.50

8 52 27.03

21 22 15.47

3 30.10

45.37

60

−14.63

−15.50

−.87 S.C.

−.20 M.J.C.

−.5

Signal −.5

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1878phae.proj.1806W

August 5th

12	42	30	19	22	36	19	34	38
		44.05			44.72			44.73
12	42	45.95	19	21	51.28	19	33	53.27
8	56	23.59	8	56	23.59	8	56	23.59
3	46	22.36	10	25	27.69	10	37	29.68
	0	37.09		1	42.46		1	44.40
		45.27			45.23			45.18
		60			60			60
		14.73			14.77			14.82
		15.50			15.50			15.50
removed 3 grs		+.77			−.73	93.		−.68
					added 3 grs	.837		
						.88		

5	2	11	6	19	24
		45.61			45.72
5	1	25.39	6	18	38.28
8	56	23.59	8	56	23.59
20	5	12.80	21	22	1 4.69
	3	17.41		3	30.10
		44.39			44.59
		60			60
		15.61			15.41
		15.50			15.50
		+.11 removed 8 grs.			−.09 added 5 grs.
					Signal no error.

2451a 6 24 41.6

1327 = 6 24 25

304 = 21 28 30

191 = 21 26 29.5

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1878phae.proj.1806W

August 6 Th. Cr.

1327

19 38 36
46.96
19 37 49.04
9 0 20.14
10 37 28.90
44.44
44.46
60
15.54
15.50
+.04

1327 M.M.V.C.

19 47 34 = 00

1327

5 33 14
47.89
5 32 26.11
9 0 20.14
20 32 5.97
3 21.83
44.14
60
15.86
15.50
+.36 removed 8 grammes

6 9 20
47.95
6 8 32.05
9 0 20.14
21 8 11.91
3 27.73
44.18
60
15.82
15.50
+.32

6 56 28
48.02
6 55 39.98
9 0 20.14
21 55 19.84
3 35.48
44.36
60
15.54
15.50
+.14
added 8 grammes ch 11 Le
Signal +.1

1327
3401
394
191

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1878phae.proj.1806w

August 7 1327

20	42	45		5	18	10		6	43	24	
		49.15	.092			49.92				50.03	
			8.42								
20	41	55.85	.726	5	17	20.08		6	42	33.97	
			46								
			.772								
9	4	16.70		9	4	16.70		9	4	16.70	
11	37	39.15		20	13	53.38		21	38	17.27	
	1	54.30		3	18	78		3	32	70	
394: 21 53 20		44.85				44.65				44.57	
191: 21 51 147		60				60				60 00	
		15.15				15.35				15.43	
		15.50				15.50				15.50	
add 1 gramme.		−.35				−.15	add 5 grs.	Tm. 59m 22s at 21h 25m		−.07	

August 8th 1327.

Signal No error

17	26	10		4	57	4		6	25	19	
		51.0				52.12				52.27	
17	25	19.0		4	56	11.88		6	24	26.73	
9	8	13.26		9	8	13.26		9	8	13.26	
8	17	5.74		19	48	58.62		21	16	13.47	
	1	21.43			3	14.70			3	29.12	
		44.31				43.92				44.35	
		60				60				60	
		15.69				16.08				15.65	
		15.50				15.50				15.50	
		+.19 ~~Tm. 1 gramme~~		Tm. 10 grammes.		.58				+.15	

added 10 grammes at 21h 50m

Signal No error

19 3451 3 0.5 = − 394 20

191 394

21 55 22.3 = 57 30

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1878phae.proj.1806W

August 9th

1327			1327			1327		
19	20	27	5	50	11	6	31	18
		53.46			54.41			54.45
19	19	33.54	5	49	16.59	6	30	23.52
9	12	9.82	9	12	9.82	9	12	9.82
10	7	23.72	20	37	6.77	21	18	13.70
		39.50		3	22.65		3	29.40
		44.22			44.12			44.30
		60			60			60
		15.78			15.88			15.70
		15.50			15.50			15.50
removed 1 gramme.		+.28	removed 9 grs.		+.38			+.20

34 51 = 1327

6 37 13.5 = 6 36 00

7 7 24

54.53

7 6 29.47

9 12 9.82

21 54 19.65

3 35.26

44.39

60

15.61

15.50

added 9 grammes 11.

Liquid 7m error.

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1878phae.proj.1806w

August 10 Hh m.

6 16 14

56.65

6 15 17.35

9 16 6.37

20 59 10.98

3 26.30

44.68

60

15.32

15.50

−.18

August 11 Hh m.

19	33	26	5	42	7	6	43	17
		58.43			59.43			59.53
19	32	27.57	5	41	07.57	6−	42	17.47
9	20.	2.93	9	20	2.93	9	20	2.93
10	12	24.64	20	21	4.64	21	22	14.54
	1	40.32		3	20.12		3	30.02
		44.32			44.52			44.52
		60.00			60			60
		15.68			15.48			15.48
		15.50			15.50			15.50
		+.18			−.02	Signal No Error.		−.02

~~1827~~

394. 21 27 24 B.

191. 21 25 9 H.

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1878phae.proj.1806W

Aug. 12 H.P. M.

	1327			1327				
20	18	32	5	46.	6	6	41	15
	1	60.80			61.75			61.84
20	17	31.20	5	45	4.25	6	40	13.16
9	23	59.48	9	23	59.48	9	23	59.48
10	53	31.72	20	21	4.77	21	16	13.68
	1	47.05		3	20.03		3	29.10
		44.67			44.74			44.58
		60.00			60			60
		15.33			15.26			15.42
		15.50			15.50			15.50
		-.17	added 10 grammes.		-.24	removed 10 grammes at 21h 40		-.08

Liquid No error.

B. 394 = 21 53 28

H. 191 = 21 31 10.6

August 13th

20	43	34	5	50	5	7	0	14
		63.66			64.65			64.77
20	42	30.34	5	49	0.35	6	59	12.23
9	27	56.04	9	27	56.04	9	27	56.04
11	14	34.30	20	21	4.31	21	31	16.19
	1	50.50		3	20.04		3	31.63
		43.80			44.27			44.56
		60			60			60
		16.20			15.73			15.44
		15.50			15.50			15.50
removed 2 grammes.		+.70	removed 5 grammes.		+.23	added 7 grs.		-.06

Liquid. No error.

B 21 16 56

H. 21 14 26.7

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1878phae.proj.1806w

August 14.

	132 Y.		132 Y.		
	20 35 32		6 15 8		7 5 16
	66.08		67.10		67.20
	20 34 25.92		6 14 0.90		7 4 8.80
	9 31 52.59		9 31 52.59		9 31 52.59
	11 2 33.33		20 42 8.31		21 32 16.21
	1 48.52		3 33.58		3 31.66
	44.81		44.73		44.55
	60		60		60
	15.19		15.27		15.45
	15.50		15.50		15.50

Added 1 gr. .31 added 11 grs. −.23 removed 10 grammes. −.05. Equal Wo error.

B 394 = 21 39 00

H 191 = 21 36 38.05

August 15th

	19 41 21		5 58 13		
	68.40		69.40		
	19 40. 12.60		5 56 53.60		
	9 35 49.15		9 35 49.15		
	10 4 23.45		20 21 4.45		
	1 39.02		3 20.04		
	44.43		44 41		
	60		60		
	15.57		15.59		
	15.50		15.50		
	+.07		+.09 removed 2 grs. Added 2 grammes at 21h 35m		

Signal Wo error.

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1878phae.proj.1806w

Aug. 16 1327.

19 27 17 — Found 3451 run down, and reset it 2 3/5 slow.

		70.92	6	11	4	
19	26	~~6~~.08		1	72.06	
9	39	45.70	6	9	51.94	
9	46	20.~~8~~8	9	~~46~~ 37	~~20.38~~ 45.70	
	1	36.08	20	30	6.24	
		44.~~7~~72		3	21.52	
		60			44.72	
		15.~~78~~ 70			60	
		15.50			15.28	
		+.20			15.50	
Removed 1 grammes.					−.22	

Back 394 ought to be by its own rate about +10.

∴ Taking a mean between the two we have.

Error 394 = −.06.

returned 1 grammes.

Logicals to be corrected.

Aug. 17th

20	5	22	
		73.48	
20	4	08.52	
9	43	42.26	
10	20	26.26	
	1	41.64	
		44.62	
		60	
		15.38	
		15.50	
		−.12	

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1878phae.proj.1806w

August 18th

1327.			1327.			1327		
14	3	21	18	58	10	6	5	0
	1	15.28		1	15.83		1	16.48 / 17.15
14	2	5.72	18	56	54.17	6	1	43.02 / 42.85
9	47	38.81	9	47	38.81	9	47	38.81 38.81
4	14	26.91	9	11	15.36	20	14	4.21 4.04
	0	41.70		1	30.30		3	18.88 18.88
		45.21			45.06			45.13 45.16
		60			60			60 60
		14.79			14.94			14.67 14.84
					15.50			15.50 15.50
			add 1 gramme.		− .56			− .83 −.66
								add 1 gramme.

3451

6 8 25.5

7 36 15 B. 21 57 00

1 17.32 H. 21 54 28.1

7 34 57.68

9 47 38.81

21 47 18.77

3 34.15

44.62

60

15.38

15.50

−.12 Removed 17 grammes at 9h 55m.

Signal, raw error.

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1878phae.proj.1806W

Aug. 19th.

	1327		1327	
17	28	53	6	9	59
	1	18.36		1	19.71
17	27	34.64	6	8	39.29
9	51	35.37	9	51	35.37
7	35	59.27	20	17	3.92
	1	14.70		3	19.40
		44.57			44.52
		60			60
		15.43			15.48
		15.50			15.50
		−.07			−.02

Signal ran error.

Aug. 20 1327

21	16	29	6	20	59	7	49	14
	1	21.42		1	22.52		1	22.68
21	15	7.58	6	19	36.48	7	47	51.32
9	55	31.92	9	55	31.92	9	55	31.92
11	19	35.66	20	24	4.56	21	52	19.40
	1	51.30		3	20.40		3	34.96
		44.36			44.16			44.44
		60			60			60
		15.64			15.84			15.56
		15.50			15.50			15.50
		+.14			+.34			−.06

ran. 18 grammes.

Signal ran error. replaced 10 gre at 20h.

B 21 12 42

H. 10 5.15

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1878phae.proj.1806M

Aug 21st

1327.			1327.			1327		
19	12	7	6	28	59	7	28	9
	1	23.75		1	24.92		1	25.03
19	10	43.25	6	27	34.08	7	26	43.97
9	59	28.48	9	59	28.48	9	59	28.48
9	11	14.77	20	28	5.60	21	27	15.49
	1	30.30		3	21.20		3	30 89
		44.47			44.48			44.60
		60			60			60
		15.53			15.60			15.40
		15.50			15.50			15.50
		+.03			+.10			−.10
					Removed 5grs.			added 5grammes.

394 = 21 44 14

191 = 41 35

Signal no Error.

Aug 22. 1327.

20	51	22	6	18	56
	1	26.37		1	27.47
20	49	55.63	6	17	28.53
10	3	25.03	10	3	25.03
10	46	30.60	20	14	3.50
	1	45.92		3	18.90
		44.68			44.68
		60			60
		15.32			15.42
		15.50			15.50
		−.18			−.08

−.08 Signal no error.

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1878phae.proj.1806W

Aug 23d

1327			1327		
19	25	6	6	46	59
	1	28.75		1	29.95
19	23	37.25	6	45	29.05
10	7	21.59	10	7	21.59
9	16	15.66	20	38	7.46
	1	31.06		3	22.86
		44.60			44.60
		60			60
		15.40			15.40
		15.50			15.50
		−.10			−.10

2.6
1.28
1.20

Added ½ grammes

removed gr. at 3 P.M.

Signal no error.

Aug 24 ~~th~~ d

3451			1327		
17	44	7	17	46	48
		−13.48		1	31.10
17	44	20.48	17	45	16.90
10	11	18.14	10	11	18.14
7	33	2.34	7	33	58.76
	1	19.21		1	14.38
					44.38
					60
					15.62
					15.50
					+.12

		10	33
		17	46
		16	47
		7	13
			70
			.73
			2.52
			1.79
			31.10
		1	32.90

B	8	7	52.35
H		5	8

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1878phae.proj.1806w

Aug. 25th

1327.

10	33	35
	1	32.90
10	32	2.10
10	15	14.70
0	16	47.40
		2.75
		44.65
		60
		15.35
		15.50
		−.15

1327.

19	59	9
	1	33.34
19	57	35.66
10	15	14.70
9	42	20.96
	1	35.50
		45.46
		60
		14.54
		15.50
		x .96

1327.

19	6	10
	1	33.35
19	4	36.65
10	15	14.70
9	49	21.95
	1	36.55
		45.40
		60
		14.60
		15.50
		−.90 added 3 grammes.

1327

6	12	50
	1	34.45
6	11	15.55
10	15	14.70
19	56	00.85
	3	~~16.00~~ 3.17
		44.85
		60
		15.15
		15.50
		~~+.85~~
		− 35

6	25	52
	1	34.45
6	24	17.55
10	15	14.70
20	09	2.85
	3	18.06
		44.79
		60
		15.21
		15.50
		added 7 grammes. − .29

7	27	2
	1	34.35
7	25	27.45
10	15	14.70
21	10	12.75
	3	28.10
		44.65
		60
		15.35
		15.50
		−.15

Received 10 grammes at 21h 45m
Signal Lantern

☉ 394 : 21 53 40

☿ 191 : 21 50 51.3

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1878phae.proj.1806W

Aug. 26 ″

1327

20 57 16	6 24 50	7 36 2
1 36.12	1 37.15	1 37.28
20 55 39.88	6 23 12.85	7 34 24.72
10 19 11.25	10 19 11.25	10 19 11.25
10 36 28.63	20 4 1.60	21 15 13.47
1 44.27	3 17.25	3 28.90
44.36	44.35	44.57
60	60	60
15.64	15.65	15.43
15.50	15.50	15.50
+.14	+.15	−.07
	removed 5 grs.	add 5 grammes at 21h 10m Signal no Error.

Aug. 27 ″

1327	1327	1327
20 46 13	6 14 47	7 39 1
1 38.80 11/95	1 39.84	1 40
20 44 34.20 5/104	6 13 07.86	7 37 21
10 23 7.81	10 23 7.81	10 23 7.81
10 21 26.39	19 49 59.35	21 14 13.19
1 41.82	3 15.00	3 28.71
44.57	44.35	44.48
60	60	60
15.43	15.65	15.52
15.50	15.50	15.50
−.07	+.15 from 5 grs.	+.02 add. 5 grs. Signal no Error.

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1878phae.proj.1806M

Aug. 28th "

1327	1327	1327
19 50 2	6 47 51	8 18 6
1 41.20	1 42.64	1 42.80
19 48 20.80	6 46 08.36	8 16 23.20
10 27 4.36	10 27 4.36	10 27 4.36
9 21 16.44	20 19 4.00	21 49 18.84
1 21.94	3 19.70	3 44.44
44.50	44.30	44.40
60.	60	60
15.50	15.70	15.60
	15.50	15.50
	Run 8 grs. +.20	+.10 added 7 grammes 4th 22h.
		Signal to-morrow.

Aug 29th "

1327	1327.	
21 17 15	6 26 46	6 50 50
1 44.20	1 45.23	45.25
21 15 30.80	6 25 00.77	6 49 4.75
10 31 00.92	10 31 00.92	10 31 00.92
10 44 29.88	19 53 59.85	20 18 3.83
1 45.67	3 15.60	3 19.54
44.21	44 25	44.29
60	60	60
15.79	15.75	15.71
15.50	15.50	15.50
		+.21
Error 394 +.29	+.25	Run 5 grs.
Run'd 10 gr.	Run 5 grs.	

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1878phae.proj.1806w

Aug. 29th m.

7 56 1

1 45.38

7 54 15.62

10 31 00.92

21 23 14.70

3 30.25

44.48

60

15.55

15.50

+.05 Signal No. Error.

added 6 gra.

394 B. = 21 27 16

191 H. = 21 24 19.5

Aug 30th m

19 56 00	6 39 47	7 39 57.
1 46.77	1 48.00	1 48,12
19 54 13.23	6 37 59.00	7 38 8,88
10 34 57.47	10 34 57.47	10 34 57.47
9 19 15.76	20 3 1.53	21 3 11.41
1 31.60	3 17.08	3 26.92
44.16	44.45	44.49
60	60	60
15,84	15.55	15.51
15.50	15.50	15.50
+.34	+.05	+.01 added 1/2 gr.

Signal no error

removed 1 grammes. added 1/2 gr.

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1878phae.proj.1806M

Aug 31st U.

1327.

20h 57 9	
1 48.13	
20 55 20.87	
10 38 54.02	
10 16 26.85	
1 41.00	
45.85	
60.00	
14.75	
15.50	
−1.35	

Aug 3 Sept 1st U.

10 47 26	
1 49.27	
10 45 36.73	
10 42 50.57	
0 0 2 46.16	
.45	
2 45.71	
60	
44.29	
15.50	
−1.21	
191 = 10 37 31	
394 = 10 40 30.15	

Add 2 grammes.

September 1st

10h 59 28	20 49 6	6 14 39	7 50 54	
1 49.30	1 50.50	1 51.50	1 51.65	
10 57 38.70	20 47 15.50	6 12 47.50	7 49 2.35	
10 42 50.57	10 42 50.57	10 42 50.57	10 42 50.57	
14 48.13	10 4 24.93	1929 56.93	21 6 11.78	
2.35	1 39.11	3 11.72	~~3 6 38.79~~	
14 45.78	45.82	45.21	3 27.35	
60	60	60	44.43	
14.22	44.18	44.99	60	
15.50	15.50	15.50	15.57	
−1.28	−1.32	−.71	15.50	
removed 2 grammes.	added 4 grammes.	added 15 grammes.	.+07	
			rem 18 gre.	
			Signals 20. Errors	

B. 21 14 00

H. 21 10 56

1327 8 8 25

3451 8 6 35.2

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1878phae.proj.1806W

Sept 2 1327.

22	9	16	7	4	45			
	1	53.10		1	54.13			
22	7	22.90	7	2	50.87			
10	46	47.13	10	46	47.13			
11	20	35.77	20	16	3.74			
	1	51.47		3	19.21			
		44.30			44.53			
		60			60			
		15.70			15.47	B.	20 21	26.3
		15.50			15.50	H.	20 18	22

rem. 1 gramme. +.20 added dip. −.03 Signal 20. error.

Waltham Clock		Waltham	
20 36m	0.50	20	36 10.54
	2.52		1 53.00
	4.52	20	34 17.54
	6.54	10	46 47.13
	8.55 −	9	47 30.41
	10.55 <		1 36.25
	12.54 −		54.16
	14.55		40.00
	16.56		15.84
	18.56		15.50
	20.57		+.34
	21		
	46		
20 36	10.54		

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1878phae.proj.1806M

Sept. 3d ". 1327.

21	5	4	7	15	45
	1	55.52		1	56.62
21	3	08.48	7	13	48.38
10	50	43.68	10	50	43.68
10	12	24.80	20	23	4.70
	1	40.32		3	20.35
		+4.48			44.45
		60			60
		15.52			15.55
		15.50			15.50
		+.02			+.05

Signal No. Error.

* 20.15 B

21 2 11 H.

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1878phae.proj.180GW

Sept. 4th

1327.		1327		1327	
20 8 53	2.53 / 110 / 4	7 21 45		8 29 56	
1 58.10		1 59.24		1 59.35	
20 6 54.90		7 19 45.76		8 27 56.61	
10 54 40.24		10 54. 40.24		10 54 40.24	
9 12 14.66		20 25 05.52		21 33 16.37	
1 30.47		3 20.80		3 31.85	
44.19		44.72		44.52	
60		60		60	
15.81		15.78		15.48	
15.50		15.50		15.50	
Err. 394. +.31		— .32		— .02	remark 5 gr.
removed 2 grammes.		added 7 grammes.		Signal no error.	

B. 394 = 21 21 14.5
H. 191 = 21 18 3

126

Sept. 5th

1327		3451		1327.	
18 59 40					
2 00.52		19 6 47		7 8 41	
18 57 39.48		5.90		2 01.78	
10 58 36.79		19 6 41.10		7 6 39.22	
7 59 2.69		~~7 59 2.69~~		10 58 36.79	
1 18.55		~~8 07 38.41~~		20 8 02.43	
44.14		~~1 19.95~~		317.90	
60		10 58 36.79		44.53	
15.86		8 08 04.31		60	
15.50		1 19.95		15.47	
+.36		44.36		15.50	
		60		— .03 added 1 gr. Signal no error.	
		Rem 2 gr. at 10h 11m.		21 37 44.15	
				30	
				14.15	

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1878phae.proj.1806W

Sept. 6th

1327

20 42 56 6 58 38.

2 3.62 2 4.65

20 40 52.38 6 56 33.35

11 2 33.35 11 2 33.35

9 38 19.03 19 54 00.00

1 34.73 3 15.60 B 26.4

44.30 44 40 H. 21 16 10

60 60 ~~B. H.~~

15.70 15.60

15.50 15.50 Signal No Error.

+.20 +.10 added signal 21h30m

(run. 1gr)

Sept. 7th

1327. 1327.

20 56 57

2 6.53 ~~2 9.10~~

20 54 50.47

11 6 29.90

9 48 20.57

1 36.37

44.20

60

15.80

15.50

+.30

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1878phae.proj.1806W

Sept 8th

11 13 19	21 7 58	7 23 40
2 8.23	2 9.10	2 10.33
11 11 10.77	21 5 48.90	7 21 29.67
11 10 26.46	11 10 26.46	11 10 26.46
44.31	9 55 22.44	20 11 3.21
12	1 37.52	3 18.47
44.19	44.92	44.74
60	60	60
15.81	15.08	15.26
15.50	15.50	15.60
+.31	−.42	−.24
Rem. 1 gr.	added 2 gre.	added 5 grammes.

1327

8 37 52

2 10.45

8 35 41.55

11 10 26.46

21 25 15.09

3 30.48

44.61

60

15.39

15.50

−.11

347 B. 21 51 20.4

191 H. 21 48 50.0

Signal No error

removed
Added 5 gre at 21h 45m.

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1878phae.proj.1806W

Sept. 9th.

3451	1327	1327	
22 17 8.5	7 21 38	8 28 49	8 34 50
12.85	2 12.79	2 12.90	2 12.92
22 16 56.15	7 19 25.21	8 26 36.10	8 32 37.08
11 14 23.01	11 14 23.01	11 14 23.01	11 14 23.01
11 2 33.14	20 5 2.20	21 12 13.09	21 18 14.07
1 48.48	3 17.42	3 28.48	3 29.45
44.66	44.78	44.64	44.62
60	60	60	60
15.34	15.22	15.36	15.38
15.50	15.50	15.50	15.50
-.16	-.28	-.14	-.12
	added 10 grs.		rem 10 grs at $\frac{21\ 45}{2}$
			Signal sent 10 Sept

H ~~21 21 11.8~~ = — — 34 B

H — — ~~3 10~~ = 21 22 32.8 B

Sept 10th

20 35 49	7 52 41	
2 13.90	2 13.03	
20 33 35.10	7 50 26.97	
11 18 19.57	11 18 19.57	
9 15 15.53	20 32 06.40	
1 31.00	3 21.85	
44.53	44.55	
60	60	
15.53	15.45	
15.50	15.50	
+.03	-.05	Signal rec'd

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1878phae.proj.1806W

Sept 11th

1327.

18 33 27
2 15.97
18 31 11.03
11 22 16.11
7 8 54.92
1 10.28
44.64
60
15.53
15.50
−.17

1327.

7 37 37
2 17.22
7 35 19.78
11 22 16.11
20 13 03.67
3 18.75
9 44.92
60
15.08
15.50
−.42

1327 ~~3451~~

8 51 49
2 17.35
8 49 31.65
11 22 16.11
21 27 15.54
3 30.90
44.64
60
15.36
15.50
−.14

Neither of the lines working.

Tim. 10 grams at 21h 50m

394 B = 21 49 16.15

191 H. = 21 45 48.00

Added 10 grammes.

No. Signal no Error.

Time ball not dropped.

Sept. 12th

1327.

15 37 56
2 18.03
15 35 37.95
11 26 12.67
4 9 25.28
40.85
44.43
60
15.57
15.50
+.07

3451

15 44 54.5
15.55
15 44 38.95
11 26 12.67
4 18 26.28
42.37
43.91
60
16.09
15.50
+.59

1327

22 40 6
2 19.05
22 37 46.95
11 26 12.67
11 11 34.28
1 50.08
44.20
60
15.80
15.50
+.30

1327.

7 42 36
2 19.96
7 40 16.04
11 26 12.67
20 14 3.37
3 18.88
44.49
60
15.51
15.50
+.01

Tim: 1 grammes.

Signal no Error

B 21 14 16

H. 10 46.1

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1878phae.proj.1806W

Sept. 13th

1327.

20	30	43	7	56	37
	2	24.50		2	22.66
20	28	24.50	7	54	14.34
11	30	9.22	11	30	9.22
8	58	12.28	20	24	5.12
	1	28.13		3	20.52
		44.15			44.60
		60			60
		15.85			15.40
		15.50			15.50
rem. 1 gr.		+ .35			− .10.

B 21 43 48.5 T
H. 21 40 16.0
No. Signals on H. Co.

added 5 gr. at 23h. Signal No. 3 mor.
rem. 5 gr. at 24h 21h.

Sept. 14th

1327.

22	51	5
	2	24.55
22	48	40.45
11	34	05.78
11	14	34.67
	1	50.50
		44.17
		60
		15.83
		15.50
		+ .33

Amount now in the pendulum = +0.75
added 1 gr. at 8h. 24h.

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1878phae.proj.1806W

Sept. 15th

1327.			1327.			1327.		
21	1	46	7	48	33	8	55	44
	2	27.06		2	28.24		2	28.37
20	59	18.94	7	46	47.6	8	53	15.63
11	38	2.33	11	38	2.33	11	38	2.33
9	21	16.61	20	8	2.43	21	15	13.30
	1	31.90		3	17.90		3	28.80
		44.71			44.53			44.50
		60			60			60
		15.29			15.647			15.50
		15.50			15.50			15.50
		-.21			-.03			+.00

added 1 graiume. | | | | | | | | | true. 1 gramme.

B. 21 24 34

H. 21 20 57.

Signal No Error

Sept. 16th

1327			1327						
20	12	36	~~28~~ 8	3	34				
	2	29.56		2	30.82				
20	10	6.44	~~20~~ 8	1	3.12				
11	41	58.88	11	41	58.88				
8	28	7.56	20	19	4.24				
	1	23.224		3	19.70				
		44.324			44.84				
		60			60	21	31	16.1	B
		15.68			15.46			37	H
		15.50			15.50			39.1	
true. 1 gr.		+.18	add. 1 gr.		-.04				

Signal no error.

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1878phae.proj.1806w

September 17th 1327.

21 7 44
2 32.10
21 5 11.90
11 45 55.43
9 19 16.47
1 31.62
44.85
60
15.75
15.50
.35
added 1 gramme.

1327.

8 12 34
2 33.22
8 10 00.78
11 45 55.43
20 24 55.35
2 20.53
44.82
60
15.18
15.50
+.32
added 10 grammes.

1327.

9 26 46
2 33.35
9 24 12.65
11 45 55.43
21 38 17.22
3 32.75
44.47
60
15.53
15.50
.03 Term 10 grs.
Signal No. Error.
394= 18.0
191= 20 10 36.55

Sept. 18th 1327

20 37 37
2 34.48
20 35 02.52
11 49 51.99
8 45 10.53
1 26.03
44.50
60
15.50
15.50
.00

8 10 32
35.65
8 9 56.35
11 49 51.99
20 20 4.36
3 19.95
44.41
60
15.59
15.50
+.09 Term 2 grs. Signal No Error.
Add 2 grs. at 21h 45m

B 7.3
H. 21 50 24.0
B. 394 = 31 32 55.6
H. 191 = 32 29 12

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1878phae.proj.1806W

Sept. 19th

1327	1327.	1327	
20 28 34	8 14 31	9 27 43	9 52 47
2 36.84	2 38.03	2 38.15	2 38.20
20 25 57.16	8 11 52.97	9 25 4.85	9 50 08.80
11 53 48.54	11 53 48.54	11 53 48.54	11 53. 48.54
8. 32 08.62	20 18 4.43	21 31 16.31	21 57 20.26
1 23.90	3 19.54	3 31.58	3 35.78
44.72	44.89	44.73	44.48
60	60	60	60
15.28	15.11	15.27	15.52
15.50	15.50	15.50	15.50
— .22	add.10gr. — .39	—.23	+.02

Signal No error.
rem. 10gr.

Sept. 20th

1327	1327.	1327	1327
12 48 16	20 57 37	8 24 31	9 26 41
2 38.60	2 39.33	2 40.48	2 40.58
12 45 37.40	20 54 57.67	8 21 50.52	9 24 00.42
11 57 45.09	11 57 45.09	11 57 45.09	11 57 45.09
0 47 52.31	8 57 12.58	20 24 54.43	21 26 15.33
7.85	1 28.01	3 20.68	3 30.72
44.46	44.57	44.75	44.61
60	60	60	60
15.54	15.43	15.25	15.39
15.50	15.50	15.50	15.50
+.04	—.07	—.25	—.11

rem 10 grammes at 21h 50m

added 10gr.

Signal No Error.

B 21 20 22.1
H 21 16 34

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1878phae.proj.1806W

Sept. 21st

1327.

19 24 20

2 41.58

19 21 38.42

12 1 41,64

7 19 46.78

1 12,08

44.70

60

15,30

15,50

~~added 1 gramme~~ 20.

added 1 gr at 21h (MT)

1327.

21 59 44

2 44.25

21 56 59.75

12 5 38.20

9 51 21.55

1 36.85

44.70

60

15,30

15,50

-.20

1327.

21 59 44

8 35 29

2 45,34

8 32 43.66

12 5 38.20

20 27 05.46

3 21.01

44,45

60

15,55

15,50

+.05

Signed No error.

Sept. 22nd.

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1878phae.proj.1806W

Sept. 23d.

1327		1327		
20 17 25		8 46 29		
2 46.36		1 48.45		
20 13 38.64		8 44 41.55		
12 9 34.75		12 9 34.75		
8 4 03.89		20 35 06.80		
1 19.30		2 22.32		
44.59		44.48	B. 21 29 6.15	
60		60	H. 21 25 11	
15.41		15.52		
15.50		15.50		
−.09		+0.2	Signal No Error.	

Sept 24th

1327		1327	
19 51 19	93 13 1209	8 47 27	
2 48.43		2 49.63	
19 48 30.57		8 44 37.37	
12 13 31.31		12 13 31.31	
7 34 59.26		20 31 06.06	
1 14.50		21.68	
44.72		44.38	
60		60	
15.28		15.62	
15.50		15.50	
−.22		+.12	Signal No error.

add 1 gramme at 8h 20m — run 6 grammes

add 5 grammes at 21h 30m

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1878phae.proj.1806w

Sept 25th "

1327.

23 54 57	9 7 28	9 32 32
2 50.35	2 51.09	2 51.14
23 52 06.65	9 4 36.91	9 29 40.86
12 17 27.86	12 17 27.86	12 17 27.86
11 34 38.79	20 47 09.05	21 12 13.00
1 53.85	3 24.32	3 28.35
44.94	44.73	44.65
60	60	60
15.06	15.27	15.35
15.50	15.50	15.50
−.44	−.23	−.15
added 1 gramme.	added 10 grammes.	

Sept. 26th "

1327	2 50.35 1.85 1 52.20		Then 10 grammes at 21h 40m
23 9 47	1327.	3451	1327
2 52.20	7 56.10	7 51 55.5	8 52 23
23 6 54.80	2 52.80		2 52.90
12 21 24.42	7 58 21.20		8 49 30.10
10 45 30.38	12 21 24.42		12 21 24.42
1 45.75	19 31 56.78		20 28 5.68
44.63	3 12.00		3 21.15
60	44.78		44.53
15.37	60		60
15.50	15.22		15.47
−.13	15.50		15.50
	−.28		−.03
	added 10 grammes.		Signal No Error
			Then . 19 grs

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1878phae.proj.1806W

Sept 27 H.B.

1327

20	16	16	9	26	27	9	32 28	
	2	54.60		2	55.92		2	55.90
20	13	21.40	9	23	31.08	9	29	32.10
12	25	20.97	12	25	20.97	12	25	20.97
7	48	00.43	20	58	10.11	24	04	11.13
	1	16.67		3	26.13		3	27.00
		43.76			43.98			44.13
		60			60			60
		16.24			16.02			15.87
		15.50			15.50			15.50
		+.76			+.52			+.37

Sum 2 grammes. Sum 10 grammes.

10	19	36	10	19	36			
	2	56.96		2	56.85			
10	16	39.05	10	16	39.15			
12	25	20.97	12	25	20.97			
21	51	18.99	21	51	18.18			
	3	34.70		3	34.78			
		44.37			44.43			
		60			60			
		15.47			15.57			
		15.50			15.50			
		+.17			+.07			

Added 10 great 22d Regul McMillan

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1878phae.proj.1806W

Sept. 28th

1327

20 54 21

2 56.90

20 51 24.10

12 29 17.52

8 22 06.58

1 22.20

44.38

60

15.62

15.50

+.12

Sept. 29th

1327

21 26 25 8 15 12

2 59.19 3 00.20

21 23 25.81 8 12 11.80

12 33 14.07 12 33 14.07

8 50 11.74 19 38 57.73

1 26.80 3 13.15

44.94 44.58

60 60

15.06 15.42

15.50 15.50

+.44

Added 2 grammes

Mean 2 grs at 21h 30m

Equal no error.

B 21 34 8.8

H. 59.0

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1878phae.proj.1806W

Sept 30 D II

1327

21 35 24 8 48

3 01.17 3 02.18

21 32 22.83 8 0 55.82

12 37 10.63 12 37 10.63

8 55 12.20 19 23 45.19

1 27.64 3 10.73

44.56 44.46

60 60

15.44 15.54

15.50 15.50

−.06 +.04 Signal No. Error.

Oct. 1 21 II

1327

21 24 20 8 21 8 8 33 10 9 56 24

3 03.02 3 3.88 3 3.9 3 4.03

21 21 16.98 8 18 4.12 8 30 6.1 9 52. 19.97

12 41 07.18 12 41 07.18 12 41 07.18 12 41 07.18

8 40 9.80 19 36 56.94 1948 58.92 21 11 12.79

1 25.19 3 12.80 3 14.75 3 28.22

44.61 44.14 44.17 44.57

60 60 60 60

15.39 15. 15.83 15.43

15.50 15.50 15.50

−.11 +.33 −.07

Sum 10 pos. add 10 pos.

Original No. Error.

21 28 14.5 B

00.0 H

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1878phae.proj.1806W

Oct. 2nd 1327

21	38	20		21	50	22		8	22	43.5		8	23	7
	3	4.40			3	4.46				42.21			35.00	
21	35	15.60		21	47	17.89		8	22	01.29		8	20	2.00
12	45	3.74		12	45	3.74		12	45	3.74		12	45	3.74
8	60	11.86		9	02	13.85		19	36	57.55		19	34	58.26
	1	26.88			1	28.83			3	12.82		8	20	2.00
		45.01				45.02				44.73		12	45	3.74
		60				60				60		19	34	58.26
		14.99				14.98				15.27			3	12.50
		15.50				15.50				15.50				45.76
		-.51				-.52				-.23				

added 2 grs.

8	52	11	
	3	5.03	assumes 3451 to be correct.
8	49	5.97	Added 5 grs. at 20h 10m
12	45	3.74	
20	4	2.23	Signal will be no error at 10 alle.
	3	17.23	Run 5 grs at 22h 30m
		45.00	
		60	
		15.00	
		15.50	
		-.50	

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1878phae.proj.1806W

Oct. 3d

1327			1327			1327				
		$-\frac{1}{2}$m.								
21	2	11	22	2	21	8	28	50	8	35 6
	3	06.54		3	06.64		3	07.60		3 7.6
20	59	04.46	21	59	14.36	8	24	57.40	8	31 58.39
12	49	0.29	12	49	0.29	12	49	0.29	12	49 0.29
8	10	4.17	9	10	14.07	19	35	57.11	19	42 58.10
	1	20.20		1	30.10		3	12.70		3 13.75
		43.97			43.97			44.41		44.35
		60			60			60		60
		16.03			16.03			15.59		15.65
		15.50			15.50			15.50		15.50
		+.53			+.53			+.09		+.15

Rem 2 grammes

Rem 24 grs.

Signal no Error

Oct. 4th

1327			3451			1327 + $\frac{1}{2}$m				
19	33	55	19	39	32	8	40	5	10	16 21
	3	08.68			44.58		3	9.81		3 .10
19	30	46.32	19	38	47.42	8	36	55.19	10	13 21
		56.84	12	52	56.84	12	52	56.84	12	52 56.84
6	37	49.48	6	45	50.58	19	43	58.35	21	20 14.16
	1	05.15		1	06.45		3	14.05		3 29.73
		44.33			44.13			44.25		44.43
		60			60			60		60
		15.67			15.87			15.75		15.57
		15.50			15.50			15.50		15.50
		+.17			+.37			+.25		+.07

Rem 5 grs.

add. 5 grs.

Signal no Error

m 1220 | 1091
216 | 4
40 | 1.81
.82

1878phae.proj.1806W

Oct. 5th 1327.

20	4	58	10	44	23.00
	3	10.82		3	12.25
20	1	47.18	10	41	10.75
12	56	53.39	12	56	53.39
7	4	53.79	21	44	17.36
	1	09.60		3	33.65
		44.19			43.71
		60			60
		15.81			16.29
		15.50			15.50
		+.31			+.79

Tau. 2 qtr.

3451

Oct. 6th 1327

18	59	45	19	11	21
	3	13.10			47.20
18	56	31.90	19	10	33.80
13	0	49.95	13	0	49.95
5	55	41.95	6	9	43.85
	0	58.30		1	0.55
		43.65			43.30
		60			60
		16.35			16.70
		15.50			15.50
		+.85			+1.20

1327.

21	36	11
	3	13.35
21	32	57.65
13	0	49.95
8	32	07.70
	1	23.90
		43.80
		60
		16.20
		15.50
		+.70

Tau. 1 qr.

B S 22 00

H 17 34.15

1878phae.proj.1800W

Oct. 6th

1327

7	26	49	10	21	18	
	3	14.20		3	14.15	
7	23	34.80	10	18	03.85	
13	0	49.95	13	0	49.95	
18	22	44.85	21	17	13.90	
	3	0.65		3	29.24	
		44.20			44.66	
		60			60	
		15.50			15.34	
		15.50			15.50	
		+.30			−.16	

Run 8 grs. Added 10 grs. for 35m

Signal No Error.

Oct. 7th

1327			½	1327			3451			1327				
19	34	49		8	55	1	9	4	35.5	9	4	58.10		
	3	14.94			3	16.00			48.35		3	16.08		
19	31	34.06		8	51	48.90	9	3	47.15	9	44	53.92		
13	4	46.50		13	4	46.50	13	4	46.50	13	4	46.50		
6	26	47.56		19	46	58.60	19	59	00.65	21	40	7.42		
	1	3.25			3	14.40		3	16.39		3	32.97		
		44.31				44.20			44.26			44.45		
		60				60			60			60		
		15.69				15.90			15.74			15.55		
		15.50				15.50			15.50			15.50		
		+.19				+.40			+.24			+.05		

~~Run 1 gr.~~ Run. 10 grs. added 9 grs

Mean + 35

Signal No Error.

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1878phae.proj.1806W

Oct. 8th

1327			1327		
21	36	7	8	46	58
	3	17.12		3	18.06
21	32	49.88	8	43	39.94
13	8	43.06	~~13~~	~~24~~	~~6.82~~
8	24	6.82	~~19~~	~~19~~	33.12
	1	22.56	13	8	43.06
		44.26	19	34	56.88
		60		3	12.48
		15.74			44.40
		15.50			60
rem. 1gr.		+.24			15.60
					15.50
					+.10.
					rem 2grs.
					Add 2 grammes

Signals No. Error

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1870phae.proj.1806W

Oct. 9

1327.

20	7	51	8	~~7~~ 8	55
	3	19.03		2	20.14
20	4	31.97	8	~~3~~ 6	34.86
15	12	39.61	13	12	39.61
6	51	52.36	19	~~23~~	55.25
	~~0~~	~~47.25~~		3	15.68
	1	7.54			44.57
		44.82			60
		60			15.43
		15.18			15.50
		15.50			-.07
		-.32			Signal blow no error.

added 1 gramme. *

Oct. 10 th

1327.

			8	57	56
0	30	32		3	22.32
	3	21.55	8	54	33.68
0	27	10.45	13	16	36.17
13	16	36.17	19	34	57.51
11	10	34.28		3	13.05
	1	19.80			44.46
		44.48			60
		60			15.54
		15.52			15.50
		15.50			+.04
		+.02			Signal No error.

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1878phae.proj.1806W

Oct. 11th

1327				1327	
22	46	13	9	33	0
	3	23.50		3	24.57
22	42	49.50	9	29	35.78
13	20	32.72	13	20	32.72
9	22	16.78	20	9	2.76
	1	32.12		3	18.06
		44.66			44.70
		60.00			60
111.7		15.34			15.30
2.34		15.50			15.50
		−.16			−.20

added 5 grs

21 41 30.1 B

36 52.0 H

rem. 5 grs. at ~~8.30~~ 21h 30m

Signal no error

Oct. 12th

1327		
11	14	15
	3	26.80
11	10	48.20
13	24	29.37
21	46	18.93
	3	34.03
		44.90
		60
		15.10
		15.50
		−.40

added 1 gramme.

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1870phae.proj.1806W

Oct. 13th

1327

23 33 17
3 28.50
23 29 48.50
13 28 25.82
10 1 22.68
~~+ 48.35~~
~~44.33~~
1 38.50
44.18
60
15.82
15.50
+ .32

Trem. 1 gramme.

1327

8 43 48
3 29.35
8 40 18.65
13 28 25.82
19 11 52.83
3 8.63
44.20
60
15.80
15.50
+.30

Trem 10 gra.

1327.

9 41 58
3 29.45
9 38 28.55
13 28 25.82
20 10 2.73
~~3.09~~
3 18.27
14.46
60
15.54
15.50
+.04

add. 10 grs.
Signal No. Error.

Oct. 14th

1327

1 18 33
3 30.82
1 15 02.18
13 32 22.38
11 42 39.80
55.15
44.65
60
15.35
15.50
-.15

1327.

9 21 53
3 31.57
9 18 21.43
13 32 22.38
19 45 59.05
3 14.30
44.75
60
15.25
15.50
+.25

added 10 grs.

B. 19 54 00.5 Trem 10 grs. ah 20h 30m
H 49 15.0

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1878phae.proj.18066

Oct. 15

1327

23 58 18
3 31.60
23 54 46.40
13 36 18.93
10 18 27.47
1 41.40
46.07
60
13.93
15.50
(−1.57)

1327

0 59 28
1 18 58.84
13 36 18.93
11 42 39.91
1 55.12
44.79
60
15.21
15.50
−.29
add 1 gramme

B 19 23 20
H. 28 8,1

24 | 1 40 | .058
120 8
200 464

1345-1

1 19 57.5
58.66

9 20 16.5
59.12
9 19 17.38
13 36 18.93
19 42 58.45
3 13.75
44.70
60
15.30
15.50
.20
added 10 gra.
Rem. 10 gra ab 20h 30m
Signal no Error

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1878phae.proj.1806W

Oct. 16th

1327.			1327					
22	5	57	9	23	49			
	3	34.80		3	33.77			
22	2	22.20	9	20	13.23			
13	40	15.49	13	40	15.49			
8	22	6.71	19	39	57.74			
	1	22.33		3	13.31			
		44.38			44.43			
		60			60			
		15.62			15.57			
		15.50			15.50	20	10	42.5 B.
		+.12			+.07		51	H.

xxm. 1 gr. Signal no Error.

Oct. 17th

1327.			1327.					
					+½~			
20	17	37	9	36	49	10	6	54.00
	3	36.75		3	37.90		3	37.95
20	14	00.25	9	33	11.10	10	3	16.05
13	44	12.04	13	44	12.04	13	44	12.04
6	29	48.21	19	48	59.06	20	19	4.01
	1	03.80		3	14.78		3	19.70
		44.41			44.28			44.31
		60			60			60
		15.59			15.74			15.69
		15.50			15.50			15.50
		+.09			+.24			+.19

xxm 10 gr. added 5 gr.

Signal no Error.

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1878phae.proj.1806W

Oct. 18th.

1327		1327		1327.	
22.	50 00	10	0 51	11	6 2
	3 39.11		3 40.11		3 40.20
22	46 20.89	9	57 10.89	11	2 21.80
13	48 8.60	13	48 8.68	13	48 8.68
8	58 12.29	20	9 2.21	21	13.12
	1 28.13		3 18 10		3 28.80
	44.16		44 11		44.32
	60		60		60 B 21 49 6.5
	15.84		15.89		15.68 H 9.0
	15.50		15.10		15.50
	+.34		+.39		+18 Signal No. Error.

Gram. 1 gramme. gram 9 grs. added 9 grs. at 21h45m

Oct. 19th

1327.

23 54 9

3 41.30

23 50 27.70

13 52 5.15

9 58 22.55

1 37.98

44.57

60

15.43

15.50

-.07

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1970phae.proj.1666W

Oct. 20th

1327		1327		1327	
14 18 32	106	23 41 5		9 32 43	
3 42.61	25	3 44.0		3 44.96	
14 14 49.39	131	23 37 21.0		9 28 58.04	
13 56 1.71		13 56 1.71		13 56 1.71	
18 47.68		9 41 19.29		19 32 56.33	
3.11		1 35.25		3 12.16	
44.57		44.04		44.27	
60		60		60	
15.43		15.96		15.93	
15.50		15.50		15.50	
-.07		+.46		+.23	
		Sum. 19 grades.		Sum. 19 grd.	

1327		1327	
10 20 51		10 31 53	
3 45.05		3 45.07	
10 17 5.95		10 28 7.93	
13 56 1.71		13 56 1.71	
20 21 4.24		20 32 6.92	
3 20.03		3 21.83	
44.21		44.39	
60		60	
15.79		15.61	
15.50		15.50	
+.29		+.11	

added 8 grs.

Signal No. Error.

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1878phae.proj.1806W

Oct. 21 eh. 1327

22	12	49 +½	9	48	44.
	3	46.03		3	47.08
22	9	2,97	9	44	56.92
13	59	58.26	13	59	58.26
8	9	04.71	19	44	58.66
	1	20.20		3	14.15
		44.51			44.51
		60			60
		15.49			15.49
		15.50			15.50
		-.01			-.01

Signal No. Error

Oct. 22 eh. 1327

21	29	40	9	59	44
	3	48.28		3	49.43
21	25	51.72	9	55	54.57
14	3	54.82	14	3	54.82
7	21	56.90	19	51	59.75
	1	12.50		3	15.10
		44.40			44.65
		60			60
		15.60			15.35
		15.50			15.50
		+.10			-.15

ad. 10 grs.
Sum. 10 grs. ah 20. 25
Signal No. Error.

H 19 27 1.4
B 8.0

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1878phae.proj.1806W

Oct. 23d

3451					3451		
19	51	40.5		37.6 (3451)	10	00	00.5
	1	08.4	10	20 (1327)		1	9.15
19	50	32.1		17.65 (3451)	9	58	56.35
14	7	51.37	10	00 (1327)	14	4	51.37
5	42	40.73	3	51.50	19	50	59.58
	0	56.13	9	8.50		3	15.05
		44.60		17.65			44.53
		60	Emschon.	+ 6 9.15			60
		15.40					15.47
		15.50					15.50
		−.10					−.03

Neither line working at 6 Pm. added 1 gr. m = 10 gre.

rem 1 gr. m = 10. gre.

Signal no Error

at 19h 30m neither line working, but H.Co. line commenced about 20h 20m. PW.

Oct. 24th

1327				1327		
22	17	44	10	7	41	10 13 47
	3	52.53		3	53.60	3 53.60
22	13	51.47	10	3	47.40	10 9 48.40
14	11	47.93	14	11	47.93	14 11 48.93
8	2	03.54	19	51	59.47	19 58 50.47
	1	19.00		3	15.28	3 16 25
		44 54			44.26	44.27
		60			60	60
		15.46			15.80	15.73
		15.50			15.50	15.50
		−.04			+.30	+.23

m = 10 gre.

rem 4 gr.

added 4 gr.

m = 10

B H2

H. 21 16 29.5

1878phae.proj.1806w

Oct. 25

1327			1327			1327		
21	12	31	10	6	39	11	41	55
	3	54.63		3	55.80		3	55.95
21	8	36.37	10	2	43.20	11	37	59.05
14	15	44.48	14	15	44.48	14	15	44.48
6	52	51.89	19	46	58.72	21	22	14.57
	1	7.59		3	14.52		3	30.10
		44.30			44.20			44.47
		60			60			60
		15.70			15.80			15.53
		15.50			15.50			15.50
		+ .20			+ .30			+ .03
		~~Tim 1 gr.~~			rem. 8 grs.			added 8 grs.
					r = 2 grs.			r = 10

Oct. 26

3451		
22	33	59
	1	12.98
22	32	46.02
14	19	41.04
8	13	04.98
	1	20.73
		44.25
		60
		15.75
		15.50
		+ .25

Signal No. Error.

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1878phae.proj.1805W

Oct. 27

3451			1327			1327		
		$+\frac{1}{2}$.						
14	49	1.40	20	27	20	10	3	35
	1	13.85		3	59.05		4	00.30
14	48	26.15	20	23	20.95	9	59	34.70
14	23	37.60	14	23	37.60	14	23	37.60
	24	48.55	5	59	43.35	19	35	57.10
		4.12		0	58.97		3	12.58
		44.43			44.38			44.52
		60			60			60
		15.57			15.62			15.48
		15.50			15.50			15.50
		+.07			+.12			−.02

B 34.35

H. 20 4 15.00

Signal No Error.

added 50 grs to Howard 191 at $20^h 10^m$.

Comparison after adding the weight.

B. 40.4

H. 21

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1878phae.proj.1806W

Oct. 28th 1327 4.11.

21	38	30	10	21	36	
	−4	1.25		4	2.45	
21	34	28.75	10	17	33.55	
14	27	34.16	14	27	34.16	
7	06	54.59	19	49	59.39	
	1	9.89		3	14.88	H.C.O. line not working. No current.
		44.70			44.51	
		60			60	
		15.20			15.49	
		15.50			15.50	
		−.30			−.01	Signal Co error.
		added 1 gr.			min. 1 gr.	
		r = 11 grs.			r = 10 grs.	

B 20 9 50.5

H. " 9 55.0

H+ 4.5. But according to former rate, H should have been − 21.70 if no weight had been added to the pendulum.

∴ 50 grammes caused H to gain 26.2^{s} in 24^{h}.

∴ 1 gramme caused H to gain $.524^{s}$ in 24^{h}.

∴ 1 " " " " $.022^{s}$ in 1 hour.

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1878phae.proj.1805W

Oct. 29 "

1327

23°	51	50	10	15	33
	4	3.30		4	4.17
23	47	46.70	10	11	28.83
14	31	30.72	14	31	30.72
9	16	15.98	19	39	58.11
	1	31.15		3	13.36
		44.83			44.75
		60			60
		15.17			15.25
		15.50			15.50
		−.33			−.25

added 1 gramme.

π = 11 grs.

added 4 grs. at 20h

Signals will be no. Error.

π = 15 grs.

B 20 12 00.0

H = 20 12 2.5

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1878phae.proj.1806W

Och 30h

1327.

22	4	30	
	4	5.25	
22	0	24.75	
14	35	27.28	
7	24	57.47	
	1	12.90	
		44.57	
		60	
		15.43	
		15.50	
		+.07	

1327.

10	32	34	34351 = 10	45 42.65
	4	6.40+.20	1327 = 10	48 30
10	28	27 60 +.20		
14	35	27.28 + ~~20~~	10	45 42.65
19	53	00 53 2 +20		1 19.10
		~~15.40~~		
		~~+5.27~~		44 25.55
		14.92 +20		48 30
		15.50		4 06.45
		-.58 + 20		

added 10 grs. adding ~~20~~ for dif bet each.
m = 20 ogre.

H. = 20 2 0.3 22|2.30 22 24 48

B = 20 2 0.0 528|2 30 43 48 15 28 24 158

2112 1880

added 4 grs to Howard. Howard then will be ~~-1~~ at 20h 30m Och. 31st

1327 + ½.

11	8	40
	4	6.60
11	4	33.50
14	35	27.28
20	29	06.22
	3	21 45
		44.77
		60
		15.23
		15.50
		+.27

From 4 grs. From 6 grs. on 23h W = 10 grs.
Signal will be no error

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1878phae.proj.1806W

October August 31

1327			1327		
		-1/3 m.			-20s
23	3	38	10	33	32
	4	7.62 +.40		4	8.67
22	59	30.78	10	29	23.33
14	39	23.84	14	39	23.84
8	20	6.94	79	49	59.49
	1	21.89		3	4.91
		44.65			44.58
		60			60
		15.35			15.42
		15.50			15.50
		-.15			-.08
		added 1 grammes.			~~added 5 grs~~ Signal No. Error.
		W = 11.			

B 20 00 00.5
H 20 00 00.

Main line not working when the signal was sent. But working at 5 P.M.

3451 = 10 55 47.5
H = — — 00.

10	55	47.5
	1	20.45
10	54	27.05
14	39	23.84
20	15	3.21
	3	19.05
		44.16
		60
		15.84
		15.50
		+.34

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1878phae.proj.1806w

Nov. 1st

1327.

0	44	53
	4	9.32
0	40	43.68
14	43	20.39
9	57	23.29
	1	18

1327.

1	2	56
	4	9.35 +40
0	58	46.65
14	43	20.39
10	15	26.26
	1	40.80
		45.46
		60
		14.54 +40
		15.50
		-.96 +40

-.56 added 2 grains.

mm = 12.

3451

20	48	26
	1	21.20
20	47	05
14	43	20.39
6	4	44.61
	59	35
	44	26
		60
		15.14
		15.50
		-.46

1327.

10	34	30
	4	10.45
10	30	19.55
14	43	20.39
19	46	59.16
	3	14.41
		44.75
		60
		15.25
		15.50
		-.25

3451

10	41	43
	1	21.71
10	40	21.29
14	43	20.39
19	57	00.90
	3	16.10
		44.80
		60.00
		15.20
		15.50
		-.30

added 8 grs at 20h.

12	0	44
	4	10.60
11	56	33.40
14	43	20.39
21	13	13.01
	3	28.55
		44.46
		60
		15.54
		15.50
		+.04

mm 9 grs.

11 11 49 = 3451

or = 191

added 20 grs to H. 191.

Signal No. Error.

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1670phae.proj.1666W

Nov. 1st 3451

11 11 49

1 21.85

11 10 27.15

14 43 20.39

20 24 06.76

3 21.01

45.75

60

14.25

15.50

H= − 1.25 Decr. 20.gre.ah 23h 5.5m H Thin about +.1 of B

Nov. 2nd 3451

23 51 53

1 22.85

23 50 30.15

14 47 16.95

9 03 13.20

1 28.95

44.25

60

15.75

15.50

+.25

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1878phae.proj.1806W

November 3d

1327.

15	15	14
	4	3.10
15	11	00.90
14	51	13.48
0	19	47.42
		3.28
		44.14
		60
		15.86
		15.50
		+.36

3451

15	36	28.5
	1	23.83 +xm
15	35	04.67
14	51	13.48
0	43	51.19
		7.10
		44.09
		60
		15.91
		15.50
		+.41

1327

0	14	43
	4	14.0
	10	29
14	51	13.48
9	19	15.52
	1	31.52
		44.00
		60
		16.00
		15.50
		+.50

1327

0	32	46
	4	14.0
	28	32
14	51	13.48
9	37	18.52
	1	34.45
		44.07
		60
		15.93
		15.50
		+.43

mean 1 gramme.
m = 9

1327

10	43	27
	4	14.92
	10	39 12.08
14	51	13.48
19	47	58.60 xm
	3	14.60
		44.08
		60
		16.00

added 1 gr.
mean 9 gre at $19^h 50^m$

1327.

10	55	29
	4	14.92
	10	51 14.08
14	51	13.48
00	00	00.60
	3	16.55
		44.05
		60
		15.95
		15.50
		+.45

Effect of 9 gre ramp for $2^h 48^m$ = −.03 m = 4 gre. +.06

1327.
Subtracting 3451

11	25	34
	4	14.90
	11	21 19.10
14	51	13.48
20	30	5.62
	3	21.50
		44.12
		60
		15.88
		15.50
		+38

added 3 gre .24

Equal mean

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1878phae.proj.1006W

Nov. 4 [illegible]

1327.

0	0	39 +½	10	31	23
0	18	42		4	16.65
4	4	15.90	10	27	6.35
0	14	26.10	14	55	10.04
14	55	10.04	19	31	56.31
9	19	16.06		3	12.00
	1	31.70			44.31
		44.36			60
		60			15.69
		15.64			15.50
		15.50			+.19 +.19
		+.14			mean of pairs −.14
					m−b +.05 Error 394

Signal for Error.

added 9 Gr. at 2h 45m mean of last

A 9 30 00.55 During the months of Sept. Oct. & ~~Nov.~~

B 9 30 00. in The "Clock case" the temperature was Max. 75. min. 62

Set max & min Nov 5 at, max, 68½ min 69

39.6 = 3451

30. = 1327

10 49

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1878phae.proj.1806W

Nov. 5 1878

1327

23 16 29	23 58 36	10 44 23
4 17.62	4 17.58	4 18.48
23 12 11.38	23 54 18.42	10 40 04.52
14 59 6.60	14 59 6.60	14 59 6.60
8 13 4.48	8 55 11.82	19 40 37.92
1 20.76	1 27.70	3 13.38
44.02	44.02	44.54
60	60	60
15.98	15.88	15.46
15.50	15.50	15.50
+.48	+.38	+.04
ran 2 grs. rr = 8 grs.		added 1 gr.
	added 1 gr. at 2h	rr = 9. grs

H 8 25 00.4

B 18 25 no.

Signal No. Error.

Signal Rec'd at 20h 15m

Nov. 16 1878

1327.

22 56 24	10 58 23 +1/3	11 36 29
4 19.00	4 19.85	4 20.90
23 52 5	10 54 38.15	11 32 09
15 03 03.15	15 03 03.15	15 03 03.15
7 49 1.85	19 51 0.00	20 29 5.85
1 16.83	3 15.20	3 21.35
45.02	44.80	44.50
60	60	60
14.98	15.20	15.50
15.50	15.35	15.50
-.52	-.30	+.00
Added 1½ grs.	added 20 grs.	ran 20 grs. at 20h 30

at 8h H = 8 00 1.4

B =

Signal No error.

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1878phae.proj.1006W

Nov. 4 ☆

1327

2 4 52	11 31 26
4 21.06	4 21.73
2 0 30.94	11 27 4.27
15 6 59.71	15 6 59.71
10 53 31.23	20 20 4.56
1 47.08	3 19.92
44.15	46.64
60	60
15.85	15.36
15.50	15.50
+.35	−.14

Signal No Error.

ran 2 grs. added 3 grammes.

Ran. 1 gr. 27 = 10 grs.

Nov. 8 ☆

1327

1 41 46	10 59 18	4 22.68
4 22.68	423.33	1.50
1 37 23.32	10 54 54.67	4 24.20
15 10 56.26	15 10 56.26	15 10 56.26
10 26 27.06	19 43 58.41	3 56.55
1 42.66	3 13.85	15 14 59.81
44.40	44.56	
60	60	
15.50	15.44	
15.50	15.50	
.00	−.06	

Signal No Error.

2 14.5 3451

11 5 5 1327

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1878phae.proj.1806w

Nov. 9 ^{h}

1327.			3451		
22	30	12	22 42	0.1 = 1327	+.9
	4	24.20	9.0	3451	+.9
22	25	47.80	~~4 2 0.1~~ 33.4		+.7
15	14	~~5~~ 52.81	~~B~~ 5.6		rate H=+.1
7	10	~~5~~6.00	0.1	Err.	H +1.2.
	1	10.60	4 24.5	Err. of 1327 / Jan 3451.	
		~~4~~3.40			
		60	H-B = .75	∴ B = +.35	
by 1327.		+15.60	+15.90 by 3451		+ 15.85 by H, 91

Took off 1 grain at 8^{h} 15^{m}.

Nov. 10 ^{h}

1327.			1327			1327		
0	43	32	11	1	15	11	32	19
	4	26.15		4	26.93		4	26.96
0	39	05.85	11	2	48.07	11	27	52.04
15	18	49.36	15	18	49.36	15	18	49.36
9	20	16.49	19	43	58.71	20	9	2.68
	1	31.80		3	14.05		3	18.12
		44.69			44.66			44.56
		60			60			60
		15.31			15.34			15.44
		15.50			15.50			15.50
		−.19			+.16			−.06
Added 1 gr.			Added 10 gr.			New. 10 gr.		
H = 10 gr.						Equal No. Error.		
H − B = 1.2. ∴ H = +1.4								

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1878phae.proj.1906W

Nov. 11 PK II.

1327.		1327.	
23 37 18		11 11 13	
4 27.82		4 28.70	
23 32 50.18		11 6 44.30	
15 22 45.92		15 22 45.92	
8 10 4.26		19 43 58.38	
1 20.26		313.97	
44.00		44.41	
60		60	
1600		15.59	
1550		15.50	
+.50		4.09	Signal No. Error.
new 2 gre.		~~new~~	added 1 gr.
			added 1 gr at 4h.

Nov. 12 PK II

3451		3451		3451	
0 4 31.5		1 22 44.5		11 15 22½	
1 39.44		1 39.54		1 40.40	
0 2 52.06		1 21 04.96		11 13 41.60	
15 26 42.47		15 26 42.47		15 26 42.47	
8 36 9.59		9 54 22.49		19 46 59.13	
1 24.53		1 37.40		3 14.54	
45.06		45.09		44.59	
60		60		60	
14.94				15.41	
15.50				15.50	
-.56		+.59		-.09	new 2 gre at 20h 30m
adde 2 gre.				Signal No Error.	

H = +1.55

11 30 55.55 = 3451

45 = 1327

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1878phae.proj.1806w

Nov. 13.

1327.			1327			3451	
23	54	16	11	16	8.	11	27	20.5
	4	30.70		4	31.42		1	42.34
23	49	45.30	11	11	36.58	11	20	38.16
15	30	39.03	15	30	39.03	15	30	39.03
8	19	06.27	19	40	57.55	19	49	59.13
	1	21.75		3	13 40		3	14.93
		44.52			44.15			44.20
		60			60			60
		15.48			15.85			15.80
		15.50			15.50			15.50
		−.02			.35			+.30

H − B = 5

Trw. 9 grs.

1327 +4/3

12	57	16
	4	31.46
17	58	44.54
15	30	39.03
20	28	05.51
	3	21.20
		44.31
		60
		15.69
		15.50
		+.19

+19

added 6 grs. −12

+.07 at 27h.

m = 7 gr. added 3 grs at 23 hr.

Signal No. error.

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1878phae.proj.1906W

Nov. 14 1327

2	7	35		11	14	5		12	2	13	
	4	32.10			4	32.58			4	32.64	
2	3	02.90		11	9	32.42		11	57	40.36	
15	34	35.58		15	34	35.58		15	34	35.58	
10	28	27.32		19	34	56.84		20	23	04.78	
	1	42.92			3	12.50			3	20.33	
		44.40				44.34				44.45	
		60 00				60				60	
		15.60				15.66				15.55	
		15.50				15.50				15.50	
		+.10				+.16				+.05	

34 35.58
356.50
38 32.14

Tem. 1 gr. Tem 5 gre. added 5 gre.
H-B = 0.5 rr = 9

1327. 3451 Signal No error.

Nov. 15

1	36	27		1	38	40.5		11	31	5	
	4	33.38			1	45.25			4	33.92	4 34.00
1	31	53.62		1	36	55.25		11	26	31.08	
15	38	32.14		15	38	32.14		15	38	32.14	
9	53	21.48		9	58	23.11		19	47	58.94	
	1	37.78			1	38.08			3	14.62	
		44 30				45.03				44 32	
		60 00				60				60	
		15 80				14.97				15.68	
		15.50				15.10				15.50	
		+.30				−.53				+.18	+8 +18
		rr = 9								Tem 5 gre. for 45m	+19
										394 = −.01	

rr = 9. Signal No Error

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1878phae.proj.1806W

Nov. 17

1827		1827.		1827	
16	28 51	11	41 1	12	16 7
	4 35.50		4 36.57		4 36.62
16	24 15.50	11	36 24.43	12	11 30.39
15	46 25.26	15	46 25.26	15	46 25.26
0	37 50.24	19	49 59.17	20	25 5.13
	6.22		3 14.97		3 20.80
	44.02		44.20		44.33
	15.98		60		60
	15.50		15.80		15.67
	+.48		15.50		15.50
	rem 1 gr.		+.30		+.17
	m = 9 gre.		rem. 9 gre.		.12 +.05

add 6 gre. Orginal No. Error.
add 3 gre. " " "

Nov. 18.

1827			
22	4 44 +½	11	49 00
	4 37.15		4 37.90
22	0 06.85	11	44 22.10
15	50 21.82	15	50 21.82
6	09 45.03	19	54 00.28
	1 00.68		3 15.68
	44.35		44.60
	60		60
	15.65		15.40
	15.50		15.56
	+.15		-.10
			+.4 -.06 rem, 2 gre.

added 3 gre. Orginal No Error.
m = 10 gre.

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1878phae.proj.1906W

Nov. 19.

1327. +½			1327. −1/3		
21	32	36	11	55	58
	4	38.43		4	38.99
21	27	57.58	11	51	19.01
15	54	18.38	15	54	18.38
6	33	39.20	19	57	00.63
	1	4.57		3	16.14
		44.63			44.49
		60			60
		15.37			15.37
		15.50			15.50
		−.13			+.01

Signal No Error.

Nov. 20.

3451			3451			3451 +½		
18	5	16	3	10	45.50	11	56	12
	+1	55.04		1	55.80		1	56.65
18	3	20.96	3	8	49.70	11	54	15.45
15	58	14.93	15	58	14.93	15	58	14.93
2	5	6.03	11	10	34.77	19	56	00.52
	0	20.58		1	49.85		3	16.00
		45.45			47.92			44 5/8
		60			60			60
		14.55			15.08			15.48
		15.50			15.50			15.50
		−.95			+.42			−.02

added 2 grammes.

Then 2 gra. Signal No Error

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1878phae.proj.1806W

Nov. 21.

1327.			1327.			1327		
0	5	54	0	35	59	12	10	53
	4	39.23		4	39.27		4	39.77
0	1	14.77	0	31	19.73	12	6	13.23
16	2	11.48	16	2	11.49	16	2	11.49
7	59	3.29	8	29	8.24	20	4	1.74
	1	18.49		1	23.48		3	17.24
		44.80			44.76			44.50
		60			60			60
		15.20			15.24			15.50
		15.50			15.26			15.50
		−.30			−.26			.00

added 1 gramme.

B − H = B⁵ (H⁵).

Sun. 10 gr. Signal No Error

W. W. line not working.

Nov. 22.

1327			1327			1327			3457	−½
~~27~~	~~21~~	~~23~~	21	17	23	12	2	49	12	29 12.5
21	17	23		4	40.24		4	40.80		
	1	13.70	21	12	42.76	11	58	8.20		
21	16	09.30	76	06	08.04	16	06	08.04		
16	06	08.04	5	6	34.72	19	52	00.16		
5	10	01.26		0	50.15		3	15.38		
	0	50.80			44.57			44.78		
		.46			60			60		
					15.43			15.22		
					15.50			15.50		
					−.07			−.28		

added 5 gr. took off 5 gr. ½ barometer at 20h 30

−.28 B − H = .11

−.28

0

0

−.09

−.06

−.03

Signal No Error

Both Howard & Bond 191 say that ~~Howard~~ Bond is not out more than .1 and as there was a great change in the during the night I will give each observ = weight.

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1878phae.proj.180SW

Nov. 23. 1327.

2 11 9

4 42.22

2 6 26.78 .067

16 10 04.60 .103

9.56 22.18 201

37.68 670

44.50 .6901

60

15.150

15.150

.00

rem 1 gr. ab 22h.

B-H = 1.6

Nov. 24 1327. 1327. +1/2 1327.

21 22 19 1 44 93 12 8 45

4 43.35 4 43.82 4 44.50

21 17 35.65 1 44 19.18 12 4 00.50

16 14 01.16 16 14 01.16 16 14 01.16

5 3 34.49 9 30 18.02 19 49 59.34

0 49.74 1 33.52 3 14.94

44.75 44.50. 44.40

60 60 60

15.25 15.50 15.60

15.150 15.150 15.150

−.25 .00 +.10 rem signal

.05 added 1 gramme.

added 1 gramme. +.05 Signal No Error.

B-H = 1.8

1327. = 45.65 15.15

3451.= 12 17 44.5 34.5

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1878phae.proj.1806W

Nov. 25

	1327 −1/3			1327.	
2	8	3	12	24	45
	4	45.44		4	46.10
2	3	17.56	12	19	58.90
16	17	57.72	16	17	57.72
9	45	19.84	20	2	01.18
	1	35.83		3	16.85
		44.01			44.83
		60			60
		15.99			15.67
		15.50			15.50
		+.49			+.17

added 2 ~~Error~~ 3 grs.

B−H = 1.8. But B−H should be 2.1

1327 1253 15.2
3451 55.0

and giving half weight to H. we have the Error of 13 39 +5.00. Signal No Error.

Nov. 26.

	1327			1327 − 1/4			1327.	
1	29	54	12	15	40	12	44	45
	4	46.22		4	46.77		4	46.80
1	25	07.78	12	10	53.23	12	39	58.20
16	21	54.27	16	21	54.27	16	21	54.27
9	3	13.51	19	48	58.96	20	18	3.93
	1	29.00		3	14.70		3	19.54
		44 51			44.26			44.39
		60			60			60
		15.49			15.74			15.61
		15.50			15.50			15.50
		−.01			+.24			+.11

Two 9 grs.

add 9 gr at 25.30

B−H = 2.4

Signal No Error.

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1878phae.proj.1806W

Nov. 27.

13 27. -½

0 36 42

4 47.40

0 31 54.60

16 25 50.83

8 6 3.77

1 19.55

44.22

60

15.78

15.50

+.28

no signal to day. Thanksgiving Day.

rem 1 gr.

Nov. 28.

1327.	1327.	1327 -¼
3 48 1	12 37 38	14 1 52
4 48.75	4 49.25	4 49.32
2 43 12.25	12 32 48.75	13 57 2.68
16 29 47.39	16 29 47.39	16 29 47.39
10 13 24.86	20 03 01.36	21 27 15.29
1 40.48	3 17.08	3 30.84
44.38	44.28	44.45
60	60	60
15.62	15.72	15.55
15.50	15.50	15.50
+.12	+.22	+.05 added 7 gre.
	rem 7 gre.	n = 10

Signal No Error.

Last Signal at 23h 10m.
was engaged in other work and
forgot that 23h.

F.P.

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1878phae.proj.1806w

Nov. 29.

1327			1327		
2	23	54	12	35	34.
	4	49.18		4	49.60
2	19	4.82	12	30	44.40
16	33	43.95	16	33	43.95
9	45	20.87	19	57	0 0.45
	1	35.87		3	16.10
		45.00			44.35
		60			60
		15.00			15.65
		15.50			15.50
		−.50			+.15 +.15

H. U. not working

added 2 gre. — Run 12 gre $\frac{-13}{+.02}$ Signal No Error.

m = 12 gre. — add 12 gre at $20^h 30^m$

altered H. so th was +1 R of B.

Nov. 30.

1327.

13	13	37
	4	50.64
13	8	46.36
16	37	40.51
20	31	05.85
	3	21.67
		4 4.18
		60
		15.82
		15.50
		+.32

Run 1 gr.

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1878phae.proj.1806W

Dec'ber 1st

1327.	1327	×3451
2 47 51	12 35 28	13 0 58.5
.4 57.65	4 52.11	2 17.8
2 42 59.35	12 30 35.89	12 58 40.7
16 41 37.07	16 41 37.07	16 41 37.07
10 01 22.28	19 48 58.82	20 17 3.63
1 38.45	3 14.70	3 19.37
43.83	44.12	44.26
60	60	60
16.17	15.88	15.74
15.50	15.50	15.50
+.67	+.38	+.24
B-H = 0.5		
Run 1 gr.	Run. 8 gre.	-.20

at 21h. +.04 Signal not to be

add 10 grs. at 21h. no error.

Dec. 2

3451.	1327	1327	W. U. not working
22 35 33.5	22 42 8	12 37 26 +¼	3451
2 18.65	4 52.60	4 53.26	12 36 53 +¼
22 33 14.85	22 37 15.40	12 32 32.74	2 19.88
16 45 33.63	16 45 33.63	16 45 33.63	12 34 33.12
5 47 41.22	5 51 41.77	19 46 59.11	16 45 33.63
0 56.95	0 57.57	3 14.50	19 48 59.49
44.37	44.20	44.61	3 14.82
60	60	60	44.67
15.63	15.80	15.39	60
15.50	15.50	15.50	15.33
+.13	+.30	-.11	15.50
+.21		-.14	-.17
B-H = .15	Run 1 gramme.		

added 10 grs. for -25

-.14
+.10
-.04 Signal not to be

added 1 gr. at 26h

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1878phae.proj.1806M

Dec. 3.

1327 -½m.			1327 -¼.			3451		
4	32	3	12	50	25.	12	57	54.5
	4	54.06		4	54.46		2	22.03
4	27	08.94	12	45	30.54	12	55	32.47
16	49	30.19	16	49	30.19	16	49	30.19
11	37	38.75	19	56	00.35	20	06	02.28
	1	54.18		3	15.90		3	17.57
		44.57			44.45			44.71
		60			60			60
		15.63			15.55			15.29
		15.50			15.50			15.50
		+.07			+.05	+.05		+.21
						+.1		

mean +.13

Run 5 grs for 20 m.

+.13
−.07
+.06 Signal No Error

Dec. 4

1327 -¼			×3451 -¼			1327 -⅓		
22	8	57	12	53	51.5	12	57	23
	4	54.90		2	24.13		4	55.61
22	4	2.10	12	51	27.37	12	52	27.39
16	53	26.75	16	53	26.75	16	53	26.75
5	10	35.35	19	58	00.62	19	59	00.64
0	50	50.75		3	16.24		3	76.35
		44.60			44.38			44.29
		60			60			60
		15.40			15.62			15.71
		15.50			15.50			15.50
		−.10			+.12	+.16		+.21

Run 10 grs. for 25 minutes.

+.16
−.12
+.04

Signal No Error

H − B = 1.05

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1878phae.proj.1806W

Dec. 5

1327			1327			3451		
		-1/2						+1/2
22	27	57	12	44	18	12	43	48
	4	56.06		4	56.75		2	26.23
22	23	00.94	12	39	21.25	12	41	21.77
16	57	23.31	16	57	23.31	16	57	23.31
5	25	37.63	19	41	57.94	19	43	58.46
	0	53.25		3	13.64		3	13.90
		44.40			44.30			44.56
		60			60			60
		15.60			15.70			15.44
		15.50			15.50			15.50
		+.10			+.20			-.06

+.07

-.09 Rem 5 grs for 40m

-.02 Signal no Error.

Dec. 6.

1327			1327.			1327.		
								-1/2
2	25	33	12	55	17	13	31	23
	4	57.60		4	58.12		4	58.15
2	20	35.40	12	50	18.88	13	26	24.85
17	1	19.85	17	1	19.85	17	1	19.85
9	19	15.55	19	48	59.03	20	25	5.00
	1	31.60		3	14.75		3	20.60
		43.95			44.30			44.40
		60			60			60
		16.05			15.70			15.60
		15.50			15.50			15.50
		+.55			+.20			+.10

∴ Rem 2 grs. Rem 5 grs. add 5 grs at 20h25m

H-B = .75 +10

-.05

+.05 Signal No Error

add 2 grs at 21h30

1878phae.proj.1806W

Dec. 7 h

1327.

1 40 23

4 58.65

1 35 24.35

17 5 16.41

8 30 07.94

1 23.55

44.39

60

15.61

15.50

+.11 H − B = 1.9 (?). sun 1 gr. at 22h. m = 9 grs.

Dec. 8

1327. −1/3

2 33 29.00

4 59.85

2 28 29.15

17 9 12.97

9 19 16.18

1 ~~29~~ 31 29.57

44.61

60

15.39

15.50

−.11 add. gr.

H − B = 2.2

1327 +1/2

13 5 13

5 00.37

13 0 12.63

17 9 12.97

19 50 59.66

3 15.20

44.46

60

15.54

15.50

+.04

Signal No Error.

Signal sent at ~~22~~ 23 h

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1878phae.proj.1806W

Dec. 9. 1327 -½ 1327 -⅓ 44.

22	25	45	13	13	11
	5	00.78		5	01.52
22	20	44.22	13	8	9.48
17	13	9.53	17	13	9.53
5	07	34.69	19	54	59.95
	3	50.39		3	15.70
		44.40			44.25
		60			60
		15.60			15.75
		15.50			15.50
		+.10			+.25

25

rem approx. -.25

for 35 sec. +.02 Signal No Error.

rem 3 sec. for 1½ h

Dec. 10. 1327 3451 +½

22	17	41	13	32	48
	5	01.93		2	38.4
22	12	39.07	13	30	9.6
17	17	6.09 ~~2.86~~	19	17	6.70
4	55	32.98	20	13	3.5
	0	48.42		3	18.80
		4456			44.78
		60			60
		15.44			15.30
		15.50			15.50
		-.06			-.20

H.C.O. line not working.

-.29

add ~~23~~ sec. for 3 h ~~00~~ +.24 Signal No Error.

0.04

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1878phae.proj.1806M

Dec. 11.

1327 +½			3451			1327 −½			1327		
21	44	33	21	46	9.5	2	38	21	13	42	10 +¼
	5	3.05		2	38.77		5	3.10		5	3.62
21	39	29.95	21	43	30.73	2	33	17.90	13	37	6.38
17	21	2.65	17	21	2.65	17	21	2.65	17	21	2.65
4	18	27.30	4	22	28.08	9	12	15.25	20	16	3.73
	0	42.43		0	43.00		1	30.40		3	19.25
		44.87			45.08			44.85			44.48
		60			60			60			60
		15.13			14.92			15.15			15.52
		15.50			15.50			15.50			15.50
		−.37			−.58			−.35			+.02

added 2 gr.

H−B = +1.8

H = 1.5

Signal No Error
H.C.O. line not working
Rem. 2 grammes

Dec. 12.

1327.			1327.		
1	47	9. −½	13	24	4
	5	4.27		5	4.85
1	42	4.73	13	18	59.15
17	24	59.21	17	24	59.21
8	19	5.52	19	53	59.94
	1	21.~~86~~ 37		3	15.58
		44.20			44.36
		60			60
		15.80			15.64
		15.50			15.50
		+.30			+.14
		Rem. 1 gr.			Rem. 5 grs. for 30m +.08
					+.06

H − B

H = +1.3

H.C.O. line not working Signal Ns Error.

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1878phae.proj.1806W

Dec. 13. 1327.

3	11	20
	5	5.58
3	6	14.42
17	28	55.77
9	37	18.65
	1	34.52
		44.13
		60
		15.87
		15.50
		+.37

Trw. 1 grame.

1327.

13	42	4
	5	6.40
13	36	57.90
17.	28	55.77
20.	08	2.13
	3	17.88
		44.25
		60
		15.75
		15.50
		+.25

Trw 5 grs. for 1h 5m +2.5 −.24 +.01

Added 1 gr. Signal No Error.

Dec 15

1327 +½			1327 −⅓			1327		
17	47	42	2	40	9	13	18	54
	5	6.86		5	7.22		5	7.65
17	42	35.14	2	35	1.78	13	13	46.35
17	36	48.88	17	36	48.88	17	36	48.88
0	5	46.26	8	58	12.90	19	36	57.47
		1.02			1.28.14			3 12.83
		45.24			44.76			44.64
		60			60			60
		14.76			15.24			15.36
		15.50			15.50			15.50
		−.74			−.26			−.14

A−B=

−.14

Added 3 grammes. Trw 2 grs. w=1 gr. added 5 grs for 40m +1.0

−.04

A−B=+1.0 5

Signal No Error.

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1878phae.proj.1806M

Dec. 16.

1327	1327.
1 59 59	13 35 54
5 8.75	5 7.33
1 54 50.25	13 30 44.67
17 40 45.44	17 40 45.44
8 14 4.81	19 49 59.23
1 20.98	3 14.93
43.90	44.30
60	60
16.10	15.80
15.50	15.50
+.60	+.20 +.20
rem 2 grs.	rem. 8 grs. for 40m -.19
B-H = .5	added to grs. +.01 Signal No Error.
	m = 10 grs

Dec. 17.

1327	1327.
2 51 5	13 42 52
5 9.90	5 10.43
2 45 55.10	13 37 41.57
17 44 42.00	17 44 42.00
9 01 13.10	19 52 59.57
1 28.67	3 15.43
44.43	44.14
60	60
15.57	15.86 +.31
15.50	15.50 -.18
+.07	+.36 +.18
	rem. 12 grs. for 40m -.12
B-H = .3	rem. 3 grs. for ½h +.06 Signal No Error

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1878phae.proj.1806W

Dec. 18. 1327 1327 F.W.

4	17	16	13	42	49 +1/2	
	5	10.70		5	11.03	
4	12	05.30	13	37	37.97	
17	48	38.56	17	48	38.56	
10	23	26.74	19	48	59.41	
	1	42.14		3	14.84	
		44.60			44.57	
		60			60	
		15.40			15.43	
		15.50			15.50	
		-.10			+.07	Signal No Error.

B-H = 5.5

Dec. 19. 1327. 1327. 1327 +1/2

5	15	22	13	45	46	13	56	48
	5	11.70		5	12.02		5	12.02
5	10	10.30	13	40	33.98	13	51	35.98
17	52	35.12	17	52	35.12	17	52	35.12
11	17	35.18	19	47	58.86	19	59	00.86
	1	50.95		3	14.66		3	16.50
		44.23			44.20			44.36
		60			60			60
		15.77			15.80			15.64
		15.50			15.50			15.50
		+.27			+.30			+.14
		Rem. 19.						Rem. 9 gre.

B-H = 1.8

for 30m Signal No Error.

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1878phae.proj.1806w

Dec. 20.

1327.	1327 +1/2	3451. +1/2.
4 29 11	13 47 43	14 0 30
5 12.60	5 12.95	
4 23 58.40	13 42 30.05	
17 56 31.68	17 56 31.68	
10 27 26.72	19 45 58.37	
1 42.70	3 14 33	
44.02	4 4 04	
60	60	
15.98	15.96	
15.50	15.50	
+.48	+.46 rem. 9 gr.	+.48 = .2 by 191.
rem 1 gr.	B.H = 1.00 S	+.1
	2h 25m added 10 gr.	-.14
		-.06 Signal 2s Error.

Dec 21.

1327.	1327	3451.
2 35 49 -1/3		
5 13.44	2 30 35.56	3 5 39.5
2 30 35.56	18 00 28.24	2 59.6
17 52 35.12	8 30 07.32	3 2 39.9
8 38 00.44	1 23.48	18 00 28.24
1 24.86	+3.84	9 2 11.66
5.58	60	
	16.16	
2 45	15.2 = 3451	15.00
	30 = 1327	+.66
45.2		rem .2 gr.

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1878phae.proj.1806W

Dec. 22

	1327	3451 −1/2	1327
2	35 46	13 54 24.5	14 1 38
	5 13.2	3 00.62	5 13.40
2	30 32.8	13 51 23.88	13 55 24.60
18	4 24.8	18 4 24.8	18 4 24.80
8	26 8.0	19 46 59.08	19 50 59.80
	1 22.92	3 14.46	3 15.12
	45.08	44.62	44.68
	60	60	60
	14.92	15 38	15.32
	15.50	15.50	15.50
	−.58	−1.12	−.15 .18

added 2 grs. — run 2 grs. ~~added~~ 2 grs. also added 10 grs for 30 m

m = 12 grs. — −.15 +.14 −.01 Signal No Error.

B − H = .7

Dec. 23

	1327 ÷1/2	1327. +1/3
4	58 5	14 5 35
	5 13.45	3 13.65
4	52 51.55	14 2 21.35
18	8 21.36	18 8 21.36
10	44 30.19	19 53 59.99
	1 45.50	3 15.67
	44.69	44.32
	60	60
	15.31	15.68
	15.50	15.50
	−.19	+.18 run 10 grs. for 30 m
		−.14
		+.04 Signal No Error.

B − H = +1.2

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1878phae.proj.1806M

Dec. 24th "

1327.

14 59 40

3 14.10

14 56 25.90

18 6 17.91 18 12 17.92

20 50 7.99 20 44 7.98

3 3 23.80

4 4.08

60

15.82

15.50 No. Regial today. Christmas.

+.32 rem. 1 gramme.

Dec. 25th "

1327. 1327

4 52 57 14 24 30

5 13.87 5 14.0

4 47 43.13 14 19 16

18 16 14.48 18 16 14.48

10 31 28.65 20 3 1.52

1 43.48 3 17.08

45.17 44.44

60 60

14.83 15.56

15.50 15.50

−.67 added 3 gr. +.06

B−H=+1.4 rem. 2 gr.

Regial No Error

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1878phae.proj.1805W

F.W.

Dec. 26

1327 − 1/3			1327. + 1/3.		
3	2	34	14	24	26
	5	14.06		5	14.15
2	57	19.94	14	19	11.85
18	20	11.04	18	20	11.04
8	37	8.90	19	59	00.81
	1	24.60		3	16.47
		44.30			44.49
		60			60
		15.70			15.60
		15.50			15.50
		+.20			+.10
		rem. 1gr.			rem. 1gr. for 1 h. −.08
					+.02 Signal No Error.

B−H= 1.5

Dec. 27.

1327			1327		
2	0	20 +1/3	14	17	21
	5	14.30		5	14.40
1	55	5.70	14	12	06.60
18	24	07.60	18	24	07.60
3	30	58.10	19	47	59.00
	1	23.75		3	14.57
		44.35			44.43
		60			60.00
		15.65			15.57
		15.50			15.50
		+.15 rem. 1gr.			+.07. Signal No Error. added 1gr.

2°0 44. 3451

51.1 = 1327

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1878phae.proj.1806W

Dec. 29.	1327.		1327. $-\frac{1}{1}$	
	2 14 14		14 43 17	
	5 14.80		5 14.90	
	2 08 59.20	5 08 59.20	14 38 02.10	
	18 31 58.72	18 32 0.70	18 32 00.70	
	7 37 00.48	7 36 58.50	20 6 1.40	
	1 14.88	1 14.86	3 17.50	
	45.60	43.64	43.90	
	60	60	~~60~~ 60	
	14.40	16.36	16.10	
	15.50	15.50	15.50	+.86
				−.80
	−1.10	+.86 rem. 3 grs.	+.60	+.06 By Bond 394
				+.60 By 1327
		B − H = +3.7.	B − H = 3.1	−.10 By H
				3 | .56
				+.07 [?]
				−.16 leave off 39. f. [illegible]
Dec. 30	1327.	1327.	1327	
	2 41 14	14 32 10	14 44 12	.01 Signal No Error.
	5 13.95	5 13.93	5 13.9	3451.
	2 36 00.05	14 26 56.07	14 38 58.1	14 52 15
	18 35 57.26	18 35 57.26	18 35 57.26	3 14.80
	8 0 0 2.79	19 50 58.81	20 3 00.84	14 49 00.70
	1 18.63		3 17.08	18 35 57.26
			~~3 46.57~~	
	44.16		~~4.27~~	20 14 02.94
	60		43.76	~~20 24 54.32~~
	15.84		1327 has 60	3 18.88
	15.50		evidently changed 16.24	44.06
	+.34		its rate & I 15.50	60
	rem 1 gr.		do not used it .74	15.94
	B − H = +3.2		This morning.	15.50
			Bond +.10	+.44
			3451 +.44 ~~rem 10 grs.~~	
			Howard .00 rem 5 grs for $1^h 30^m$	
			3 | .54	
			+.18	
			−.20	
			−.02 Signal No Error.	

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1878phae.proj.1905W

Dec. 31

1327			1327. +1/4		
1	40	59	14	39	6
	5	12.70		5	12.05
1	35	46.30	14	33	53.95
18	39	53.82	18	39	53.82
6.	55	52.48	19	54	0 0.13
	1	8.15		3	15.64
		44.33			44.49
		60			60
		15.67			15.51
		15.50			15.50
		+.17			+.01
		rem 1 gr.			added 1 gr.

Signal No Error.

B-H- 3.00

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1878phae.proj.1806M

Jan. 1, 1879.

1327. +½		3451 −½		1327	
2 18 00		14 42 8.5		14 46 2	
5 11.40		3 17.5		5 10.80	
2 12 48.60		14 38 51.0		14 40 56.20	
18 43 50.38		18 43 50.38		18 43 50.38	
7 28 58.22		19 55 00.62		19 57 00.82	
1 13.62		3 15.70		3 16.10	
44.60		44.92		44.72	
60		60		60	
15.40		15.08		15.28	
15.50		15.50		15.50	
−.10		−.42	−.35	−.28	B−H = 3.5

min. 61.6
max. 70.3

added 10 grs. for 1.h 10.m

−.35
+.31
−.04 Equal No Error

Resch. max, 63.4.
min, 63.7

Jan. 2nd

1327 +⅓		3451. +½		1327 −⅓		~~B − H = 3.5~~ 3451 −⅓	
2 23 56		2 29 5		14 39 56		14 48 6	
5 10.15		3 18.0		5 9.50		3 18.7	
2 18 45.85		2 28 47		14 34 46.50		14 44 47.3	
18 47 46.94		18 47 46.94		18 47 46.94		18 47 46.94	
7 30 58.91		7 38 00.06		19 46 59.56		19 57 00.36	
1 13.93		1 15.10		3 14.30		3 16.04	
44.98		44.96		45.26		44.32	
60		60		60		60	
15.02		15.04		14.74		15.68	
15.50		15.50		15.50		15.50	
−.48		−.46		−.76		+.18	Ch. 345
−.47	Sid. el. ch.	add 2 grs.		Instr. use.		+.15	by B 394
.00	Book 394	B − H = 3.9				+.16	
−47						−.14	
±23	added 1 gr.						

Sig. No. Error +.02

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1878phae.proj.1905W

Jan 3d 11h

3451 + 1/8.	1327.	1327
0 28 41.5	5 19 20	14 51 55
3 20.27	5 11.47	5 11.30
0 25 21.23	5 14 08.53	14 46 43.70
18 51 43.50	18 51 43.50	18 51 43.50
5 33 37.73	10 22 25.03	19 55 00.20
0 54.66	1 41.95	3 15.64
43.07	43.08	44.56
60	60	60
16.93	16.92	15.44
15.50	15.50	15.50
+1.43	+1.42	−.06
Rem 5 grs.		added 5 grs. Signal No Error.
B-H: 4.4		

Jan 4.

1327.
2 27 49
5 11.16
2 22 37.90
18 55 40.06
7 26 57.84
1 13.23
44.61
60
15.39
15.50
−.11

Rem. 19 grs.

(must be added (?)

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1878phae.proj.1806w

Jan. 5

	1327.		1327-1/4
4	30 5	15	3 49
	5 11.55		5 11.48
4	24 53.45	14	58 37.55
18	59 36.61	18	59 36.61
9	25 16.84	19	59 00.94
	1 32.60		3 16.38
	44.24		44.56
	60		60
	15.96		15.44
	15.50		15.50
	+.26		−.06 Sig. No Error.

W = 9 gre. add 1 gr. W. 10 gr.

B − H = +3.85 added 10 grammes to H 191, at 20h 10m in order to bring it up to 0.0

Jan. 6

	1327. -1/2		
4	13 58	15	5 45
	5 11.42		5 11.35
4	8 46.58	15	0 33.65
19	3 33.17	19	3 33.17
9	13.41	19	57 00.48
	1 29.25		3 16.16
	44.16		44.38
	60		60
	15.84		15.62
	15.50		15.50
	+34 W. 1 gr.		+.12 Signal No Error.

W. 10 gr from H, and added 1 gr.

W. 10.04 gre. for 30m

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1878phae.proj.1905W

F.W.

jan. 7th.

1327	1327 +½
6 30 16	15 3 40
5 10.53	5 10.50
6 25 05.45	14 58 29.50
19 7 29.73	19 7 29.73
11. 17 35.72	19 50 59.87
51.00	3 15.20
44.72	44.67
60	60
15.28	15.23
15.50	15.50
-.22	-.27

-.17
added 10gre for 30m +.14 -.03

Signal No Error.

B-FF-S1.0

3451

jan. 8

1327 -½	3451 + ¼	1327 15 11 37 +½	15 13 56.5
4 19 50	4 18 8		3 29.06
5 9.80	3 28.25		15 10 27.44
4 14 40.20	14 14 39.75		19 11 26.29
19 11 26.29	19 11 26.29		19 59 01.15
9 3 13.91	9 3 13.46		3 16.43
1 28.91	1 29.00		44.72
95.60	44.46		60
60	60		15.28
15.00	15.54		15.50
15.50	15.50		-.22 by 3451
-.50	+.04		+.18 by 394
			2 [illegible].04
			-.02 from mean

did not use this as 1327 has been irregular in its rate.

F.W.

Signal No Error.

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1878phae.proj.1806M

Jan. 9

3451			3451 . -1/2	
4	48	11 +1/4	15 21 55.5	
	3	29.92	3 30.72	I have not relied on 132 y because it has evidently changed its
4	44	41.08	15 18 24.78	rate. But I have given 3451 and 394
19	15	22.85	19 15 22.85	each half weight until this morning.
9	29	18.23	20 03 01.93	
	1	33.34	3 17.00	Did not rely on 191 because the
		44.89	44.93	weights had been shifted in order
		60	60	to bring it up to 394. But now
		15.11	15.07	I find that 394 & 191 agree pretty
		15.50	15.50	nearly and disagree with 3451.
		-.39	by 3451 -.43	By 394 and 191 (taking the mean) 394
by 394.		+.25	394 +.40	is +.85
		=-.14	=.01	by -.43 by 3451
mean Error.		-.07	.40	+.40 by mean of all.
B-H=		+1.5	=.40	Rem. 10 grs for 1 hr 30 m.
	3451		3451 .00	Signal No Error.
Jan. 10		+1/2	-1/3	
1	23	35.	15 9 51.8	1327.
	3	32.70	3 33.90	15 35 33
1	20	02.30	15 6 17.60	5 11
19	19	19.41	19 19 19.41	15 30 22
6	00	42.89	19 46 58.19	19 19 19.41
	0	59.14	3 14.35	20 11 02.59
		43.75	43.84	3 18.40
		60	60	44.19
		16.25	15.16	60
		15.50	15.56	15.81
		+.75	-.56	15.50
			by.	+.31
		rem 2 grs.		+.27
B-H=+.75			rem 8 grs for h +.04	Signal No Error.

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1878phae_proj_1806W

Jan 12

	1327		1327 *
5	6 42	+.4	15 29 24
	5 11	−.35	5 11
5	1 31	+.05 by 394.	15 24 13
19	27 12.53		19 27 12.53
9	34 18.47	.33	19 57 00.47
	1 34.07	2	3 16.10
	44.40	+.66 Err of 191.	44.37
	60		60
	15.60		15.63
	15.50		15.50
	+.10		+.13 rem. 10 gre for 30 m.
		34. μ	F.13

Jan 13

	1327	3451. $-\frac{2}{3}$ m.	+.00 Signal No. Error. $\frac{1327}{2}-\frac{1}{2}$
0	44 55	4 15 55.5	15 34 21
	5 11	3 37.3	5 11.45
0	39 44	4 12 18.2	15 29 9.55
19	31 9.09	19 31 9.09	19 31 9.09
5	8 34.91	8 41 9.11	19 58 00.46
	0 58.56	1 25.24	3 16.16
	44.35	43.87	44.30
	60	60	60
	15.65	16.13	15.70
	15.50	15.50	15.50
	+.15	+.63 Err of 394.	+.20 Rem 10 gre for 30 m.
		rem. 2 gre.	−.14
		H-B=.6	+.06 Signal No Error.

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1878phae.proj.1806w

Jan. 14

1327 +½		1327 +½	
5	45 40	15	30 16
	5 11.25		5 11.30
5	40 28.75	15	25 4.80
19	35 05.65	19	35 05.65
10	5 23.10	19	49 59.45
	1 39.28		3 14.95
	43 82		44.20
	60		60
	16.18		15.80
	15.50		15.50
	+.68		+.30
			+.09
			+.68
	Rem. 2 grs. m. 8.		+.30
			+.43
H-B = +.8			+.25 +.25
H = +1.5			+.27 Rem 3 grs = 5 gr. for 2 hrs.
			-.27
			.00 Signal No Error.

January 15

1327 +¼		1327 +⅓	
5	28 33	15	35 13
	5 11.25		5 11.25
5	23 21.75	15	30 01.75
19	39 2.19	19	39 2.19
9	44 19.56	19	50 59.56
	1 35.76		3 15.16
	43.80		44.40
	60		60
	16.20		15.60
	15.50		15.50
	+.70		+.10
			Signal No. Er
	Rem 3 grs.		-.06 3 grs for 3 h
			+.04 Added 2 grs for 2 h 30 m
			Error 394

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1878phae.proj.180GW

Jan. 16.

3451	1327 +½
+ 48 54.50	15 43 11
3 42.80	5 11.90
4 45 11.70	15 37 59.10
19 42 58.74	19 42 58.74
9 02 12.96	19 55 00.36
1 28.83	3 15.84
44.17	44.52
60	60
15.87	15.48
15.50	15.50
+.37	-.02

Mem 1 gr.

H-B = 1.5

Jan. 17

1327	3451
6 26 36	15 41 07	15 45 40
5 12.05	5 13.15	3 45.57
6 21 23.95	15 35 54.85	15 41 54.43
19 46 55.30	19 46 55.30	19 46 55.30
10 34 28.65	19 48 59.55	19 54 59.13
1 43.95	3 14.83	3 15.73
44.70	44.72	43.40
60	60	60
15.30	15.28	16.60
15.50	15.50	15.50
-.20	-.22	+1.10 by H. +.35
+.10 by 191		-.22 by 1327 -.22
mean -.05 & added 1 gr.		2 11.3
N = 10 gr.		+.06 Sig. Int. Error

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1878phae.proj.1806w

Jan. 18

3451 +1/2

1 48 20
3 45.80
1 44 34.20
19 50 51.86
5 53 42.34
0 58.04
44 30
60
15.70
15.50
+.20
m = 9 gre.

" w/ 20h (m.g). I added 1 gr. to B.
" " " " took off 1 gr from H.

Jan. 19.

	1327			1327 -1/2	
5	39	22	15	42	1
	5	13.90		5	14.20
5	34	8.10	15	36	46.80
19	54	48.42	19	54	48.42
9	39	19.68	19	41	58.38
"	1	34.90		3	13.58
		44.78			44.80
		60			60
		15 22			15.20
		15.50			15.50
		w = 10 gr −.28			−.30
H − B = +1.9			by 3/4		−.10
			Mean.		−.20

add 10 gr for 40m

+18

−.02 Signals No Errors.

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1878phae.proj.180GW

Jan 20

1327		1327		
5 42 19		15 43 58		
	5 14.58		5 14.88	14.88 / 65 / 15.53
5 37	4.42	15 38	43.12	
19 58	44.98	19 58	44.98	
9 38	19.44	19 39	58.14	
	1 34.74		3 13.32	
	44.70		44.82	
	60		60	
	15.30		15.18	
	15.50		15.50	−.32 / +.26 / −.06 Signal No Error.
	−.20		−.32	

H-B = 16 added 10 gr. for 30m + 4 gr for 1½ hrs.

Jan 21

1327 −1/4		1327. +1/4		
5 29 13		15 48 55		
	5 15.25		5 15.53	25 / 60 / 85
5 23	57.75	15 43	39.47	
20 2	41.54	20 2	41.54	
9 21	16.21	19 40	57.93	
	1 31.90		3 13.50	
	44.31		44.43	
	60		60	
	15.69		15.57	
	15.50		15.50	
	+.19 Run 19 gr.		+.07	
	W = 9 gr.		−.03 1 gr. off for ½.	
			+.04 Signal No Error.	

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1878phae.proj.1806W

Jan 22

1327 +½

3	18.	48
	5	15.85
7	13	32.15
20	6	38.09
7	6	54.06
	1	10.00
		44.06
		60
		15.94
		15.50
		+.44

Item 2 gr

1327 ~~+½~~

16	8	55
	5	15.54
16	3	39.46
20	6	38.09
19	57	01.37
	2	16.10
		45.27
		60
		14.43
		15.52
		-.77

add 3 0 grs for +6m

3 L.81
.27
2
.54

-.77
+.54
-.23
+.20 add 5 gr for 1½h
-.03

Signal Vs Error.

Jan. 23.

1327 +¼

7	12	23
	5	15.88
7	7	07.12
20	10	34.65
10	56	32.47
	1	47.60
		44.87
		60
		15.13
		15.50
		-.37

H-B = S.25

added 20 shots for Tens. of # 1916.

1327 +¼

16	9	51
	5	15.97
16	4	35.03
20	10	34.65
19	54	00.38
	3	15.64
		44.74
		60
		15.26
		15.50
		-.24 added 10 grs. for .40 m
		+.18
		-.06 Signal Vs Error.

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1878phae.proj.1800W

jan. 24.

1327. +1/3	1327	1327	
7 12 19	16 9 47	16 9 47	
5 16.18	5 16.30	5 16.60	
7 7 02.82	16 4 30.70	16 4 30.40	
20 14 31.21	20 14 31.21	20 14 31.21	
10 52 31.61	19 49 59.49	19 49 59.19	
1 46.95	3 14.94	3 14.94	
44.66	44.55	44.25	
60	60	60	
15.34	15.45	15.75	+25
15.50	15.50	15.50	-.02 Sig. no Er.
-.16	-.05	+25 ~~Equals No Error~~ Sum 10 gra. for th	

jan. 25

1327		
5 27 58	5 41 0	
5 17.38	5 17.38	
5 22 40.62	5 35 42.62	
20 18 27.77	20 18 27.77	
9 4 12.85	9 17 14.85	
1 29.15	1 31.25	
43.70	43.60	
60	60	
16.30	16.40	
15.50	15.50	
+.80	+.90	Sum 2 gra.
B-H. = .4		added 2 gra at 24th

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1878phae.proj.1806W

Jan. 26

1327 +1/3		1327		1327	
4	15 43	4	34 46	16	17 42
	5 18.12		5 18.13	5	18 18.48
4	10 24.88	4	29 27.87	16	12 23.52
20	22 24.32	20	22 24.32	20	22 24.32
7	48 00 .56	8	07 3.55	19	49 59.20
	1 16.71		1 19.75		3 14.95
	43.85		43.80		44.25
	60		60		60
	16.15		16.20		15.75
	15.50		15.50		15.50
	+.65		+.70		+.25
					−.18
					+.07

grm. weight from H at $20^h 30^m$

grm 10 gra for 40m

Signal no Error.

m = 9 gra.

run 2 gra.

H-B = .25

Jan 27

1327 −1/2		1327	
8	6 18	16	17 39
	5 18.95	5	19.20
8	0 59.05	16	12 19.80
20	26 20.88	20	26 20.88
11	34 38.17	19	45 58.92
	1 53.72		3 14.30
	44.45		44.62
	60		60
	15.55		15.38
	15.50		15.50
	+.05		−.12
			+.11
			−.01

added 2 gra for 2h.

Signal no Error.

m = 9 gra.

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1878phae.proj.1800W

Jan. 28.

1327	+1/3	1327.	3451.	-1/3
70 20 7		16 23 36	16 47 26.5	
5 19.60		5 19.70	4 5.9	
7 14 47.40		16 18 16.10	16 43 20.6	
20 30 17.43		20 30 17.43	~~20 30 17.4~~	
10 44 29.97		19 47 58.64	20 13 3.2	
1 45.62		3 14.60	3 18.78	Mean line not marked
44.35		44.07	44.5	3451 = ±.0
60		60	60	394 ±.6
15.65		15.93	15.5	mean ±.05
15.50		15.50	15.5	Signal No. Error.
+.15		+.43	+.0	as this agrees with 394.

Weight = 9 grs.

Jan 29

3451	+1/3	3451	-1/4
2 23 1.5		16 23 30.5	
4 7.2		4 8.4	
2 18 54.3		16 19 12.6	
20 34 13. 13.99		20 34 13.94	
5 44 40.3		19 44 58.60	
0 56.5		3 13.92	
43.8		44.18	
60		60	
16.20		15.82	+.70
15.50		15.50	-.50
mean 3grs. +.70		+.32	+.20 by Board
B-H = 1.0		mean 6grs.	+.52
		1 forum	+.26 mean
			-.18 mean weights.
			+.08 Signal No. Error.

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1878phae.proj.1806w

Jan 30.

	3451 + 1/3	3451	1327 -1/3
2	20 59.5	16 29 19	16 33 31
	4 08.21	4 9.03	5 20.4
2	16 51.29	16 25 9.97	16 28 10.6
20	38 10.55	20 38 10.55	20 38 10.55
5	38 40.74	19 46 59.42	19 50 00.05
	0 55.54	3 14.46	3 14.90
	45.20	44.96	45.05
	60	60.0 0	60
	14.80	15.04	14.95
	15.50	15.50	15.5
			-.55
add 2 gr.	-.70	-.46	+.54
at $10^h 30^m$		add 25 gr. ~~-.50 for 2 h~~	-.50
			+.54
Jan 31.	B-H: .5 at 11^h		+.04 Signal No Er.

	3451 -1/4 min.	3451	1327
6	17 35	16 34 16.5 +1/2	16 36 28 +1/2
	4 10.20	4 10.92	5 21.80
6	13 24.80	16 30 05.58	16 31 6.20
20	42 7.11	20 42 7.11	20 42 7.11
9	31 17.69	19 47 58.47	19 48 59.09
	1 33.54	3 14.67	3 14.85
	44.15	43.80	44.24
	60	rejected 60	60
	15.85	16.20	15.76
	15.50	15.50	15.50
	+.35	+.70	+.26 Run sig. for 2h
B-H: 1.5			+.27
			-.01 Signal No Error

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1878phae.proj.180GW

Feb. 1

3451

4 11 12

4 11.32

4 7 00.68

20 46 03.67

7 20 57.01

~~5 06.66~~

1 12.25

44.76

60

15.24

15.50

-.26 B-H=1.6

added 1 gr ark 24h

Feb. 2.5d

1327	3451 -1/2	1327 -1/3
6 34 43	7 20 40.5	16 45 23
5 22.70	4 13.07	5 23.75
6 29 20.30	7 16 27.43	16 39 59.25
-20 50 00.23	20 50 00.23	20 50 00.23
9 39 20.07	10 26 27.20	19 49 59.02
1 34.90	1 42.55	3 14.74
45.17	44.65	44.28
60	60	60
14.83	15.35	15.72
15.50	15.50	15.50
-.67	-.15	+.22 Time to gra for 40m
		-.18
		+.04 Sig. No. Error

add 1 gra

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1878phae.proj.1806w

Feb. 3.

3451 −1/4			1327 −1/4	
2	53 54		16 47 20	
	4 14.33		5 23.80	
2	49 39.67		16 43 56.20	
20	53 56.79		20 53 56.79	
5	55 42.88		19 49 59.41	
	0 58.24		3 14.90	
	44.64		44.51	
	60		60	Added to H 10 grammes at
	15.36		15.49	$20^h 30^m$
	15.50		15.50	
	−.14		−.01	Sigrist No Error.

B − H = 1.8

Feb. 4.

3451 −1/3		3451		1327 −1/4			
2	39 49.5	6	24 26.5	16 52 17		16 57 11 + 1/3	
	4 15.85		4 16.05	5 23.90		4 16.73	
2	35 33.65	6	20 10.45	16 45 53.10		16 52 54.27	
20	57 53.35	20	57 53.35	20 57 53.35		20 57 53.35	
5	37 40.30	9	22 17.10	19 47 59.75		19 55 00.92	
	0 55.32		1 32.12	3 14.60		3 [illegible].84	
	44.98		44.98	45.15		45.04	
	60		60	60		60	
	15.02		15.02	14.75		14.96	
	15.50		15.50	15.50		15.50	
	−.48		−.48	−.75	−.65	−.54	
			added 1 gr.	added 20 grammes.		−.65	
			H − B. 6	for Halfam Hour.		3.50	acc. to 191
						−.57	
						+.37	20 grains
				added 10 grs. for th		−.50	
						+.27	
				rr = 10 grs.		−.03	
						Sigrist No Error.	

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1878phae.proj.1800W

Feb. 5.

1327	3451 + ¼	1327 + ¼	3451
2 17 49	2 18 43	17 6 15	17 3 9.5
5 24	4 17.30	5 24.20	4 18.20
2 12 25	2 14 25.70	17 0 50.80	16 58 50.80
21 1 49.91	21 1 49.91	21 1 49.91	21 1 49.916
5 16 35.09	5 12 35.79	19 59 00.88	19 57 01.39
0 50.85	0 51.20	3 16.45	3 16.10
44.24	44.59	44.43	45.29
60	60	60	60
15.76	15.41	15.57	14.71
15.50	15.50	15.50	15.50
+.26	−.09	+.07	−.69

Rem 1 gramme. n = 9 gr.

added 1 gr n = 10 gr.

Noticed

Signal No Error.

Feb. 6.

1327	3451
5 13 14 −1½	16 2 8 2
5 24.35	4 21.42
5 7 49.65	16 2 3 40.58
21 5 46.47	21 5 46.47
8 2 03.18	19 17 54.11
2 18.90	3 9.71
44.28	44.40
60	60
15.72	15.60
15.50	15.50
+.22	+.10

Rem 1 gramme,

1 gr for 2 Sets, B−H = .2

−.06

+.04 Signal No Error

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1878phae.proj.1806w

Feb. 7 1327.

Febru 1327

6	23	22	17	9	8
	5	24.8		5	24.95
6	17	57.2	17	3	43.05
21	9	42.99	21	9	42.99
9	8	14 21	19	54	00.06
	1	29.80		3	15.60
		44.41			44.46
		60			60
		15.69			15.56
		15.50			15.50
		.09			.06
		+.15			

-.38 by Howard 19'

mean, -.12 added 2 grs for 2h

+.12 Signal w Error.
.00

Feb. 8. 1327.

5	21	8
	5	24.6
5	15	43.4
21	13	39.55
8	02	03.85
	1	18.96
		44.89
		60
		15.11
		15.50
		-.39

at 24h added 2 grs.

H-B=.H

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1870phae.proj.1000W

Feb. 9.

	1327. + 1/3		1327. + 1/3
6	17 13	17 11	0
	5 24.6		5 24.6
6	11 48.4	17 5	35.4
21	17 36.11	21 17	36.11
8	54 12.29	19 47	59.29
	1 27.55		3 14.70
	44.74		44.59
	60		60
	15.26		15.41
	15.50		15.50
	−.24		−.09 added 1 gr. for 2h
	run 1 gr.		+.06
	W=10 gr.		−.03 Signal No Error.

Feb. 10

	3451 +1/2	1327	3451
	5 41 55.5	17 15 56	
	4.26.76	5 24.9	17 25 1.5
	5 36 38.74		
21	21 32.67	17 10 31.1	427.7
8	15 06.07	21 21 32.67	17 20 33.8
	1 21.20	19 48 58.43	21 21 32.7
	44.87	3 14.74	19 59 1.1
	60	43.69	3 16.48
	15.13	60	44.7
	15.50	16.31	60
	−.37	15.50	15.3
	added 1 gr.	Reduced. +.81	15.5 −.2
	B−H=1 gr.		B−H=1. −.2 +.2 +.0 Signal No Error.
			Add 1 gr. for 2h.

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1878phae.proj.1806W

Feb. 11.

3451 +½	3451.	1327 / 3451 -½.
4 23 50	17 19 58.5	17 35 55
4 28.50	4 29.5	5 23.20
4 19 21.50	17 15 29.5	17 32 31.80
21 25 29.23	21 25 29.23	21 25 29.23
6 53 52.27	19 50 00.27	20 7 2.57
1 7.85	3 14.98	3 17.65
44.42	45.29	44.92
60	60	60
15.57	44.71	15.08
15.50	15.50	15.50
+.07	-.79	-.42
run 1 gr.		+.00 by 394.
		+.10 by Hoover.
		3 | -.32
		-.10 added 2 grafor 2 h.
		+.10
		.00 Signal to Error.

Feb. 12.

3451 +½.	3451 -½	1327. -¼	
5 41 1.0	17 25 57.5	17 37 52	17 37 52
4 30.65	4 31.60	5 23.7	5 23.6
5 36 30.35	17 21 25.90	17 32 28.3	17 32 28.4
21 29 25.78	21 29 25.78	21 29 25.8	21 29 25.8
8 7 4.57	19 52 00.12	20 3 2.5	20 03 2.6
1 19.85	3 15.20	3 17.0	
44.92	44 92	45.5	
60	60		
15.28	15.08		
15.50	15.50	-.42	
-.22	-.42	-.22 by 394	
B-A = 1.0	added 10 grs. for 1 hr 1 gr 5	64	
		-.32 by mean.	
		+.32/00 Signal to Error.	

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1870phae.proj.1000W

Feb. 13.

	3451 −1/4	3451 −1/3	1327 +1/2	1327.
				19 9 3
8	4 22.5	17 25 54.5	17 39 48	5 24.8
	4 32.78	4 33.55	5 24.75	19 3 38.2
7	59 49.72	17 21 20.95	17 34 23.25	21 33 22.34
21	33 22.34	21 33 22.34	21 33 22.34	21 30 15.86
10	26 27.38	19 47 58.61	20 01 00.91	3 31.40
	1 42.58	3 14.55	3 16.81	44.46
	44.80	44.06	44.10	60
	60	60	60	15.54
	15.20	15.94	15.90	15.58
	15.50	15.50	15.50	+.04
	−.30	+.44	+.40	+.42 Signal
	added 1 gr.	rem. 1 gr. rem 10 gr. for 1½ h		−.41 No Error
			B-H-1.7 ~~Signal No Error~~	+01

3451 +1/3

added 10 gr. to H. at 20h 30m. rem. at 11h
added 8 shot to pendulum.

Feb. 14.

3	49 38	3451 −1/2	1327 +1/2	
	4 34.6	17 29 53	17 45 45	
3	45 03.4	4 35.8	5 24.93	
21	37 18.99	17 25 17.2	17 40 20.07	
6	07 44.50	21 37 18.90	21 37 18.90	
	1 0.29	19 47 58.30	20 03 01.17	
	44.21	3 14.40	3 17.15	
	60	43.90	44.02	
	15.79	60	60	
	15.50	16.10	15.98	
	+.29	15.50	15.50	
	rem. 1 gr.	+.60	+.48	
	H-B = .5	+.54	rem 10 gr. for 2h	
		−.54	Signal No Error	rem 1 gr.
		+.00		

1327 Set back 5 minutes.

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1878phae.proj.1806W

Feb. 15

1327
3451

18	17	48	18	31	1.5		18	17	48		
	5	25.25		4	38.05				25.03		
18	12	22.70	18	26	23.45		18	17	22.97		
21	41	15.45	21	41	15.45		21	41	15.45		
20	31	7.25	20	45	08.00		20	36	7.52		
	3	21.75		3	23.94			3	22.53		
		45.50			44.06	4.06			44.99		
		60			60				60		
		14.50			14.06				15.01		
		15.50			added 1 gr.				15.50		
		-1.00							-.49		

Timed star 1327 then 3451 then 1327 again

not used.

1327 -1/3

Feb. 16.

6	5	44	17	42	38						
		25.07			25.46						
6	5	18.93	17	42	12.54						
21	45	12.00	21	45	12.00						
8	20	6.93	19	57	00.54						
	1	21.98		3	16.03						
		44.95			44.51						
		60			60						
		15.05			15.49						
		15.50			15.50						
		-.45			-.01						

Signal No Error

added 1 gr.

w = 11 gr.

H-B = 1.1

run 1 gr.

H-B = .6

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1870phae.proj.1006W

Feb. 17.

1327		1327.	
5 17	22	17 38	34
	25.80		26.16
5 17	6.20	17 38	7.84
21 49	08.56	21 49	08.56
7 27	57.64	19 48	59.28
1	13.36	3	14.83
	44.28		44.45
	60		60
	15.72		15.55
	15.50		15.50
	+.22		+.05

rem 1 gr. Signal No Error. added 1gr. at 22h.

Feb. 18.

1327		3451		1327	
			+1/4		
6 44	43	6 51	58.5	17 35	30
	26.50	4	42.2		26.87
6 44	16.50	6 47	16.3	17 35	3.13
21 53	05.12	21 53	05.12	21 53	05.12
8 51	11.38	8 54	11.18	19 41	58.01
1	29.03	1	27.55	3	13.64
	44.35		43.63		44.37
	60		60		60
	15.65		16.37		15.63
	15.50		15.50		15.50
	+.15		+.87		+.13 rem. 2 gr. for 2h
					-.12
					+.01 Signal No Error

+.15
+.00
+.15
+.87
4|11.7

average +.30 Rem. 1gr.

H - B = .5

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1878phae.proj.1806w

Feb. 19.

1324. + 1/3			1327.		
3	1	3	17	48	29
		27.16			27.6
3	0	25.84	17	48	1.4
21	57	1.65	21	57	1.65
5	3	24.19	19	50	59.75
	0	49.75		3	15.12
		44.44			44.63
		60			60
		15.56			15.36
		15.50			15.50
		+.06			-.14

$\frac{-.14}{+.07}$ $\frac{}{-.07}$ Sig. no Error.

added sign for 40 m

∴ 1 H-B = .75

Feb 20.

1327				
17	52	27		
		28.3		
17	51	58.7		
22	00	58.20		
19	51	00.5		
	3	15.15		
∴		44.35	45.35	
		60	Less 14.65	
		15.65	15.50	
		15.50	-.85	
		+.15		
		-.14		
		+.01		

Feb 20. afterwards found that I had made a mistake in subtraction.

∴ Sigma sent 1st out.

F.W.

Sig. no Error.

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1870phae.proj.1006W

Feb. 21

1327	$-\frac{1}{4}$		1327	$+\frac{1}{3}$		1327	$-\frac{1}{3}$	
7	50	45	8	21	50	18	5	25
~~22~~	~~4~~	~~54.76~~			28.82			29.12
		28.82	8	21	21.18	18	4	55.88
7	50	16.18	22	4	54.76	22	4	54.76
22	4	54.76	10	16	26.42	20	0	01.12
9	45	21.42		1	41.02		3	16.55
	1	35.93			45.40			44.57
		5.49			60			60
					14.60			15.43
					15.50			15.50
					-.90			-.07

H - B = +.6 added 4 pre. added 4 pre. Signal too soon.

Feb. 22.

1327 $-\frac{1}{2}$

5 9 14

29.45

5 8 44.55

22 8 51.32

6 59 53.23

1 11.55

44.68

60

15.32

15.50

-.18

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1878phae.proj.1806W

Feb 23.

1327 ~~+1/4~~			1327			1327 + 1/3		
2	27	44	2	27	44	18	21	21
		30.05			30.30			31.30
2	27	13.95	2	27	13.70	18	20	49.70
22	12	47.87	22	12	47.87	22	12	47.87
4	14	26.08	4	14	25.83	20	8	1.83
		41.68			41.68	3		17.90
		44.40			44.15			43.93
		60			60			60
		15.60			15.85			16.07
		15.50			15.50			15.50
		+.10			+.35			+.57
					Run 1gr.			-.50
								+.07

W = 9 gr.
Run 10gr for $1^h 50^m$
Liq. No Error

B = H = +1.3 at $9^h 30^m$ W.T

Feb. 24

1327 + 1/4			1327 - 1/3		
7	17	29	18	1	15
		31.76			32.20
7	16	57.24	18	0	42.80
22	16	44.43	22	16	44.43
9	00	12.81	19	43	58.37
		128.52	3		13.92
		44.27			44.45
		60			60
		15.73			15.55
		15.50			15.50
		+.23			+.05
B - H = 1.0			B - H = .9		
B H = -.8			H = .7		

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1878phae.proj.1906W

Feb. 25.

1327		3451 -1/2		1327	
8 23 37		8 44 1		18 12 14	
	33.40		4 53.9		33.7
8 23 03.60		8 39 07.1		18 11 40.3	
22 20 40.98		22 20 40.98		22 20 40.98	
10 2 22.62		10 18 26.12		19 50 59.32	
1 38.62		1 41.24		3 15.11	
4400		44.88		44.21	
60		60		60	
16.00		15.12		15.79	
15.50		15.50		15.50	
+.50		-.38		+.29	Rem. 10 gra for 1 h
				-.27	
		B-H=1		B-H=1. +.02	Sig. no Error.

Feb. 26.

1327		1327 (191).		1327 -1/3		3451	
7 13 23		6 21 15		18 21 1		18 31 36.5	
	33.5		33.46		33.88		4 57.12
7 12 49.5		6 21 41.54		18 20 38.12		18 26 39.38	
22 24 37.54		22 24 37.54		22 24 37.54		22 24 37.54	
8 48 11.96		7 57 04.00		19 56 00.58		24 02 01.84	
1 26.53		1 18.14		3 15.88		31.94	
45.43		45.86		44.70		44.90	
60		60		60		60	
14.57		14.14		15.30		15.10	
15.50		15.50		15.50		15.50	
-.93		(-1.36)(191)		+.20		-.40	

B-H=.4 added 4 gra to B. 394.

W= 13 gra

-.20
-.00
+.40
3|80
-.27
+.22
-.05

Rem 3 gra + added 4 gra for 2 h.
~~Rem 3 gra~~
~~Rem 10~~
W=10 gra
Sig. no Error.

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1878phae.proj.1806w

Feb. 27.

1327		1327 1/2		1327. (191)
10	8 47	18	74 9	13 32 23
	34.50		34.82	
10	8 12.50	18	23 34.18	
22	28 34.09	22	28 34.09	
11	39 38.41	19	55 00.09	
	1 54.56		3 15.84	
	13.95		44.25	
	60		60	
	16.05		15.75	
	15.50		15.50	
	+.55		+.25	
	Sum 3 qrs.		-.27	Sum 2 qrs. mean for 2h
	W=7 qrs.		-.02	Sign no Error.

Feb. 28

1327 -1/4		1327.	
8	12 25	18	23 5
	34.75		34.95
8	11 50.25	18	22 30.05
22	32 30.65	22	32 30.65
9	39 19.60	19	49 59.40
	1 34.85		3 14.97
	44.75		44.43
	60		60
	15.25		15.57
	15.50		15.50
	-.25		+.07
	added 1 qr.		Sum 1 qr.
	B-H= 1.85 (7)		B-H: 2.4

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1878phae.proj.1800W

March 1

1327. +½

6 21 3

35.20

6 20 27.80

22 36 27.20

7 44 00.60

1 16.10

44.50

Leo

15.58

N.58

.00

March 2d5

1327			1327 -½			1327 -½		
8	30	21 .18	30	59	18	30	59	
		35.7		35.9			35.7	
8	29	45.3 18	30	23.1	18	30	23.3	
22	40	23.76 22	40	23.76	22	40	23.76	
9	49	21.54 19	49	59.34	19	49	59.54	
	1	36.54	3	14.86		3	14.86	
		45.00		44.48			44.68	
		Leo		Leo			Leo	
		15.00		15.52			15.32	
		15.50		15.50			15.50	4th 1gr.
		-.50		+.02			-.18	added 20gr for 20m.
							+.18	
							.00	Sig. no Syrr.

added 2 gr. ames

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1878phae.proj.1806M

March 3d

1327	-1/3		1327			
7	4	2		18	38	56
		35.70				35.70
7	3	26.30		18	38	20.30
22	44	20.31		22	44	20.31
8	19	05.99		19	53	59.99
	1	21.70			3	15.57
		44.29				44.42
		60				60
		15.71				15.58
		15.50				15.50
		+.21				+.08 Rem 1 gr for 2h
Rem 1 gr.						-.06
						-.02 Sig. No. Error.

March 4.

1327			1327.			
8	33	13		18	43	53
		35.70				35.93
8	32	37.30		18	43	17.07
22	48	16.87		22	48	16.87
9	44	20.43		19	55	00.20
	1	35.73			3	15.75
		44.70				44.45
		60				60
		15.30				15.55
		15.50				15.50
		-.30				+.05 Sig. No Error.
adds 1 gr.						

added second shot to the pendulum of Howard

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1878phae.proj.1800W

March 5

1327.			1327.		
6	18	47	18	26	46
					36.1
			18	26	9.9
			22	52	13.41
			19	33	56.49
				3	12.24
					44.25
					60
					15.75
					15.50
					+.25 rate 10 gr per 40m.
					−.24 also rate 150. fem. + 10 gr for 2h.
					+.01 Sig No Error.

March 6th

1327			1327		
8	57	9	18	47	46
		36.00			36.00
8	56	33.00	18	47	10.00
22	56	9.97	22	56	9.97
10	00	23.03	19	51	0.03
	1	38.35		3	15.20
		44.68			44.83
		60			60
		15.32			15.17
		15.50			15.50
		−.18			−.33 added 20 gr for 30m
					+.27
					−.06 add

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1878phae.proj.1806W

March 7.

			1327 + ½			1327 + ½
8	14	58		18	50	42
			36.2			36.25
8	14	21.8		18	50	05.75
23	0	6.52		23	0	6.52
9	14	15.28		19	49	59.23
	1	30.87			3	15.00
		44,41				44,23
		60				60
		15.59				15.77
		15.50				15.50
		+.09				+.27 rem 10gr for 40m
						−.18
						+.09 rem 2gr for 1h
						−.06
						+.03 Sig. No Error

March 9.

			1327			1327.			1327			1327 (191)
0	12	31		18	58	36	18	58	36	5	57	32.0
			36.35			36.55			36.15			36.16
0	11	54.65		18	57	59.45	18	57	59.84	5	56	55.84
23	7	59.62		23	49	59.62	23	7	59.62	23	7	59.62
1	3	55.03		19	49	59.83	19	50	00.22	6	48	56.22
		10.48			3	15.00		3	15.00		1	7.00
		44.55				44.83			45.22			49.22
		60				60			60			60
		15.45				15.17			14.78			10.78
		15.50				15.50			15.50			15.50
		−.05				−.33 add'd 2ogr.			−.72			(−4.72 191)
						for 40m			+.36			
									−.36			
						add 18r for 1h 1/3			+.36			
									00			

Sig No Error

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1878phae.proj.1800w

March 10.

1327 -1/3	1327 (+44). (191)	1327 -1/3
8 20 47	7 12 00 = 20 S	19 1 32
36.14	36.16	36.15
8 20 10.86	7 11 23.84	19 0 55.85
23 11 56.18	23 11 56.18	23 11 56.18
9 8 14.68	7 59 27.66	19 48 59.67
1 29.75	1 18.55	3 14.74
44.83	09.11	44.93
60	20 00	60
15.17	10.89	15.07
15.50	15.50	15.50 (B+H) (4.4)
-.33	-4.61 (191)	-.43 -.43
added 1 gr.		(344) +.00 added 20 grammes for 20

Mean -.22
+.18
-.04

March 11

1327 -1/2	(1327 191)	1327	(1327 191)
9 18 52	6 46 48 = 16S	19 28 32	17 44 36 = 16S
36.4	36.35	36.85	36.8
9 18 15.6	6 46 11.65	19 27 55.15	17 43 59.2
23 15 52.73	23 15 52.73	23 15 52.73	23 15 52.73
10 02 22.87	7 30 18.92	20 12 2.42	18 28 6.47
1 38.60	1 13.77	3 18.56	3 1.53
44.27	5.15	43.86	4.84
60	16.00	60	16.00
15.73	10.85	16.14	11.16
15.50	15.50		15.50
+.23	-4.65 (191)		(-4.36 191)
Mean 1 gr.			

Sign Error.

(191)

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1878phae.proj.1806w

F. W.

March 11. 8 1327.

19 28 32
36.45
9 27 55.55
23 15 52.73
20 12 2.82
1 18.55
48.27
60
15.73
15.50
+.23
−.24
−.01 Sig. No Error.
rem 9 gr for 1h

March 12

1327 − 1/2			1327 (191)			1327 − 1/2		
8	34	41	6	21 = 00	5	19	31	29
		37.13		37.1				37.35
8	34	03.87	6	1	43.9	19	30	51.65
23	19	49.29	23	19	49.29	23	19	49.29
9	14	14.58	6	41	55.10 .61	20	11	2.36
	1	30.72		1	5.74 .74		3	18.28
		43.86			9.26,9.87			44.08
		60			15.50			60
		16.14			−6.14 (191)			15.92
		15.50	6	41	54.61			15.50
		+.64		1	5.74			+.42
		rem 2 gr.			48.87			rem 9 gr.
					44.50			
					(−4.37 191)			

+.42
−.41 = 10 gr for 1/2 h
+.01
Sig res Error.

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1878phae.proj.180cm

March 12

1327 (191)

18 26 23

37.33

18 25 45.67

23 19 49.29

19 05 56.38

3 9.73

48.65

60

11.35

15.50

−4.15 (191)

March 13.

1327	1327 (191)	1327 +⅓	1327 (191)
9 49 50	6 32 22=00	19 35 26	12 7 35=18
37.2	37.2	37.6	37.56
9 49 12.8	6 31 44.8	19 34 48.4	12 6 57.44
23 23 45.84	23 23 45.84	23 23 45.84	23 23 45.84
10 25 26.96	7 7 58.96	20 11 2.56	12 48 11.60
1 42.47	1 10.11	3 18.43	2 5.02 ~~26.93~~
44.39	48.85	43.13	~~44.87~~
60	60	60	6.58
15.61	11.15	15.87	18.00
15.50	15.50	15.50	11.42
+.11	−4.35	Fund. +.37	15.50
W=9 gre.		Band +.11	4.08
		48	
		mean +24	
		−24	Sum 6 gr. for ½ h.
		.00	Sig. No. Error.

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1878phae.proj.1806w

March, 14.

	1327 + 1/3		1327 − 1/2		
8	35	34	19	16	19
		37.6			37.8
8	34	56.4	19	15	41.2
23	27	42.40	23	27	42.40
9	7	14.00	19	47	58.8
	1	29.70		3	14.54
		44.30			44.26
		60			60
		15.70			15.72
		15.50			15.50
		+ .20			+ .22
					− .18
					.04

Sigma Error

Tem 10 gr per 40 m

				(1327 − 191)		1327 + 1/4		
Mar. 16.	1327		1327 + 1/4	7	10	47.30	19	35 15
23	51	00	10	28	45	38.3		38.5
		38.10			38.4	7 10 08.7	19	34 36.5
23	50	21.90	10	28	06.6	23 35 35.5	23	35 35.51
23	35	35.51	23	35	35.51	7 34 33.2	19	59 00.99
	14	46.39	10	52	31.09	1 14.46		8 16.46
	0	2.40		1	46.93	18.74		44.53
		43.99			44.16	30		60
		60			60	11.26		15.47
		16.01			15.84	15.50		15.50
		15.50			15.50	− 4.34		−.03
		+ .51			+ .34	(191)		add 1 gr.
		Tem 2 gr.						M = 8 gr.

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1878phae.proj.180cm

Mar. 17.

1327 + 1/3	1327 + 1/3	1327 (191)	1327 (191)
7 10 9	19 35 11	18 6 0.6	18 50 48 = 40
38.45	39.0	38.9	
7 9 30.55	19 34 32.0	18 5 21.7	
23 39 32.07	23 39 32.07	23 39 32.07	
7 29 58.48	19 54 59.93	18 25 49.63	
1 13.76	3 15.81	3 1.16	
44.72	44.12	48.47	
60	60	60.00	
15.28	15.88	11.53	
added 1 gr. at 5h. 15.00	15.50	15.50	
−.22	+.38 Rem 9 gr. for 35m	−3.97	
added 1 gr B−H = 4.3	−.13	B−H = 4.5	
Rem 9 gr.	+.25 Rem 6 gr. for 1½h		
	−.24		
	+.01 Signal mo Error.		

Mar. 18.

1327	1327 (191).	1327 − 1/3	1327 + 1/3
10 21 36	7 51 16 = 00	19 43 8	20 7 12
38.84	38.86	39.02	38.98
10 20 57.16	7 50 37.14	19 42 28.98	20 6 33.02
23 43 28.61	23 43 28.61	23 43 28.61	23 43 28.61
10 37 28.55	8 7 8.53	19 59 00.37	20 23 04.41
1 44.42	1 19.81	3 16.38	3 20.38
44.13	48.72	44.9	44.03
60	60	60	60
15.87	11.28	16.00	15.97
15.50	15.50	15.50	15.50
+.37	−4.22	+.50	+.47
Rem 1 gramme.			Rem 9 gr. for 1h 40m
			W = 8 gr.
			+.47
			−.40
			+.07 Sig. Mo Error.

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1878phae.proj.1806W

March 19

	1327 + 1/3	1327 (191)	1327 + 1/4
	10 42 36	6 29 21 = 2 1/2	19 38 4
	39.2	39.1	39.24
	10 41 56.8	6 28 41.9	19 37 24.76
	23 47 25.16	23 47 25.16	23 47 25.16
	10 54 31.64	6 41 16.74	19 49 59.60
	1 47.27	1 5.74	3 14.96
	44.37	11.00	44.64
	60	23.00	60
	15.63	12.00	15.36.
	15.50	15.50	15.50
	+.13	-3.50	-.14 added 10 grs for 15m
	Was 8 grs.		+.07
			-.07 Sig. No Error.

March 20.

	1327	(1327 191)	1327 + 1/4
	10 26 30	4 23 35 = 00	19 43 1
	39.2	39.2	39.2
	10 25 50.8	4 22 55.8	19 42 21.8
	23 51 21.72	23 51 21.72	23 51 21.72
	10 34 29.08	3 31 34.08	19 51 00.08
	1 43.95	0 44.48	3 15.15
	45.103	49.60	44.93
	60	60	60
added 1 gr at 4h.	14.97	10.40	15.07
	15.50	15.50	15.12 (B-H=5-5).
	-.53	-5.10	-.14 ~~added 2 grs.~~
	added 2 grs		+.00 (by 394)
			mean. -.27 added 2 grs for 1/2h.
			+.27
			.00 Signal No Error.

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1878phae.proj.18000

March 20 1327 (191)

0 +3 -5

0 13 54

39.2

0 13 14.8

23 51 21.72

0 21 53.08

3.60

49.48

60

10.52

15.50

-5.00

(191).

March 21. 1327 -1/2 1327 (191) 1327 +1/4

11 10 39.3 8 12 37 = 28 19 53 59

39.68 39.6 39.8

11 9 53.32 8 11 57.4 19 53 19.2

23 55 18.26 23 55 18.26 23 55 18.26

11 14 35.06 8 16 39.14 19 58 00.94

1 50.41 1 21.37 3 16.31

44.65 17.77 44.63

60 28.00 60

15.35 10.23 15.37

15.50 15.50 15.50

-.15 -5.27 -.13 added 10 gr for 25 min.

+10

-.03

Signal no Error.

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1878phae.proj.1806W

March 22. 1327.

6 52 47
40.0

6 52 07 0
23 59 14.82
6 52 52.18
1 7.66
44.52
60
15.48
15.58
-.02

	1327 −1/3	1327 +1/2	1327 +1/4	1327 (191)
March 23d	0 25 40	9 15 7	19 42 50	12 42 00 :4
	40.2	40.4	40.52	40.72
	0 24 59.8	9 14 26.6	19 42 09.48	12 41 19.28
	0 3 11.37	0 3 11.37	0 3 11.37	0 3 11.37
	21 48.43	9 11 15.23	19 38 58.11	12 38 07.91
	3.54	1 30.39	3 13.29	2 4.20
	44.89	44.84	44.91	35 03.71
	60	60	60	14
	15.11	15.16	15.09	10.29
	15.50	15.50	15.50	15.50
	-.39	-.34	-.41	-5.21
				-.41
	added 1gr.	added 1gr. W=11 grs.	added 2 gr. +.41 for 45 m. .00 Sig. Log Sines.	

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1878phae.proj.18069

March 24

1327 − ¼	1327 · (191)	1327 − ½
9 56 9	8 6 33 = 36	19 56 48
41.16	41.14	41.3
9 55 27.84	8 5 51.86	19 56 06.7
7 7.93	7 7.93	~~3 15.85~~
9 48 19.91	7 58 43.93	~~0.85~~
1 36.35	18.43	7 7.93
43.56	25.50	19 48 58.77
60	36.00	3 14.60
16.44	10.50	44.17
15.50	15.50	60
+.94	− 5.00	15.83
rem 3 grs.		15.50
		added 2 grs. +.33
		+.30 by 71.191
		rem 5 grs for 2h +.31 mean.
		−.26
		+.05 Sig. No. Error.

March 25.

1327 + ½	1327 (191)	1327 − ¼
10 43 14	4 26 17	20 7 46
41.08	41.02	41.2
10 42 32.92	4 25 35.98	20 7 4.8
11 4.48	11 4.48	11 4.48
10 31 28.44	4 14 31.50	19 56 0.32
1 43.54	0 41.60	3 15.88
44.90	49.90	44.44
60	60.00	60
15.10	10.10	15.56
15.50	15.50	15.50
−.40	− 5.40 (191).	+.06 Sig. No. Error.
added ½ grain.		rem 2 grs.

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1878phae.proj.1806w

Mar. 26. 1327. +1/8 1327 (191) 1327 ft +1/3 D.W.

7	48	41		6	53	37.5	20	6	42
		41.1				41.1			41.2
7	47	59.9		6	52	56.4	20	6	0.8
	15	01.04			15	01.04		15	01.04
7	32	58.86		6	37	55.36	19	50	59.76
	+	14.24			1	5.19		3	15.16
		44.62				50.17			44.60
		60				60			60
		15.38				9.83			15.40
		15.50				15.50			15.50
		-.12				-5.67 (191)			-.10 added 10 gr. for 20 m.
									a +.09
									-.01 Sig. No. Error.

Mar. 27. 1327

20	16	40	
		41.35	
20	15	58.65	
	18	57.58	
19	57	01.07	
	3	16.12	
	53	44.95	
		60	
		15.05	
		15.50	
		-.45	B-H = 5.50 / 5.05
Bond		-.20	
Howard		-.40	
		10 5	
Mean		-.35	
added 20 gr for 1/2 h		+.27	
		-.08	
added 2 gr for 1 1/2		+.09	
		+.01	Sig. No. Error.

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1878phae.proj.18060

F.W.

Mar. 28.

	1327.			1327. +1/3		
7	54	34	20	13	35	
		41.4			41.5	
7	53	52.6	20	12	53.5	
	22	54.14		22	54.14	
7	30	58.46	19	49	59.36	
	1	13.86		3	14.98	
		44.60			44.58	
		60			60	
		15.140			15.142	
		15.50			15.50	B-H-6.1
		-.10	~~B-H=5.8~~		-.08	
		added 1 gr.			.00	394
					.00	191
					Mean -.03	Sig. No. Error
					n=10 grs.	

Mar. 30

Run 2 gr. ab	1327.		1327 + 1/3		1327 (191) -1/3	
1h m.f.	8 59	37	19 38	22	12 47	20
		41.8		41.35		41.25
	8 58	55.2	19 37	40.65	12 46	38.75
	30	47.25	30	47.25	30	47.25
	8 28	07.95	19 6	53.40	12 15	51.50
	1	23.25	3	7.93	2	00.50
		44.70		45.47		09.00
		60		60		15.50
		15.30		14.53		-6.50 (191)
		15.50		15.50		
		-.20		-.97	added 20 grs. at 19h 5m for 1 1/2h and 20 more at 20h 5m for 25 m.	
		added 1 gr.		+.81		
				+.28		
				+.07	The clock was +.07 at 5.10 Am. F.W.	
					~~Sig. too small.~~	

No Signal sent today by a mistake of mine. F.W.

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1878phae.proj.1806W

March 31.

1327. $-\frac{1}{3}$.

7 56 22

41.28

7 55 40.72

34 43.81

7 20 56.91

1 12.18

44.73

60

15.27

15.50

−.23

1327 $-\frac{1}{2}$.

19 39 17

41.3

19 38 35.7

34 43.81

19 3 51.89

3 7.30

44.59

60

15.41

15.50 B-H = 6.5.

1327 −.09

191 −.20

394 .00

29

mean −.10 added 10gr for ½h.

+.13

+.03

April 1.

1327

9 44 35

41.14

9 43 53.86

38 40.36

9 5 13.50

1 29.31

44.19

60

15.81

15.50

+.31

Thu. 2 grammes.

1327 (191)

7 8 1

41.12

7 7 34.88

38 40.36

6 28 54.52

1 3.70

50.82

~~15.50~~

~~−4.68~~

60.00

9.18

15.50

−6.42 (191).

1327 (191)

11 55 3

41.00

11 54 22.00

38 40.36

11 15 41.64

1 50.70

50.94

60

9.06

15.50

−6.44 (191).

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1878phae.proj.18069

April 1 1327

19 54 15
40.85
19 53 34.15
38 40.36
19 14 53.79
3 19.18
44.61
60
15.39
15.50
−.11 Sig. h. Error.
+.09
−.02
added 10 gr. for 20mm.

April 2nd. 1327. 1327 (191) 1327 − ¼ 1327 (191)

8	56	23	7	52	53 = 34^s	21	23	25	19	36	14
		40.40			40.4			40.48			40.5
8	55	42.60	7	52	12.6	21	22	44.52	19	35	33.5
	42	36.90		42	36.90		42	36.90		42	36.9
8	13	05.70	7	09	35.70	20	40	07.62	18	52	56.6
	1	20.78		1	10.31		3	23.12		3	5.6
		44.92			25.34			44.50			51.0
		60			34.00			60			60
		15.08			8.66			15.50			9.00
		15.50			15.50			15.50			15.50
		−.42			−6.84 (191)			.00			−6.50 (191)
		added 1 gramme.			24			Sig. h. Error.			
					6.60 (191)						

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1878phae.proj.1806w

April 3. 6h

	1327		1327. -⅓		
7	54	8	20	38	13
		40.24			40.1
7	53	27.76	20	37	32.9
	46	33.46		46	33.46
7	6	54.30	19	50	59.44
	1	9.95		3	15.06
		44.35			44.38
		60			60
		15.65			15.62
		15.50			15.50
		+.16			+.12
		rem. 1 gramme.			+.00 by 394.
					+.06 Sig. No. Error.

April 4.

	1327.		1327. +½		
9	52	23	19	56	2
		39.90			39.7
9	51	43.10	19	55	22.3
	50	30.01		50	30.01
9	1	13.09	19	04	52.3
	1	28.67		3	7.68
		44.42			44.65
		60			60
		15.58			15.35
		15.50			15.50
		+.08			−.15 B−H = 6.50
					−.20 by 191
					−.18 mean.
					+.18 added 10 gr for Ag.

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1878phae.proj.18003

April 6th.

1327 − ¼.		1327 191		1327 − ½	
11	0 25	7	46 36 = 36	21	9 3
	37.55		37.67		37.5
10	59 47.45	7	45 58.33	21	8 25.5
	58 23.12		58 23.12		58 23.12
10	0 1 24.33	6	47 35.21	20	10 02.38
	1 38.48		1 6.75		3 18.12
	45.85		28.46		44.26
	60		36.00		60
	14.15		7.54		15.74
	15.50		15.50		15.50
	−1.35		−7.96 (191)		+.24 Rem. 4 gr. Rem. 10 from ½.
					−.27 Signal No Error.
					−.03

added ± grammes.

April 7.

1327 + ¼.		1327	
9	43 6	21	11 58
	36.5		36.23
9	42 29.5	21	11 21.77
1	2 19.68	1	2 19.68
8	40 09.82	20	9 2.09
	1 25.26		3 18.04
	44.56		44.05
	60		60
	15.44		15.95
	15.50		15.50
	−.06		+.45 Rem 10 grs for 1¼½.
			−.41
			+.04

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1878phae.proj.1806w

April 8.

1327 (191)

4	48	10
		35.6
9	47	34.4
1	6	16.22
8	41	18.18
	1	25.37
		52.41
		60
		7.59
		15.50
		−7.91 (191)

1327

11	17	16
		35.6
11	16	40.4
1	6	16.22
10	10	24.18
1		40.00
		44.18
		60
		15.82
		15.50
		+.32

Item 19.

1327

20	35	47
		35.25
20	35	11.75
1	6	16.22
19	28	55.53
	3	11.50
		44.03
		60
		15.97
		15.50
		+.47

+47 Sig. Ns
−.46
−.01 Error

Item 9 goes for 2h

No. Sig. Sent. Forgotten.

1327. (191)

20	36	10 = 14
		35.25
20	35	34.75
1	6	16.22
19	29	18.93
	3	11.58
		7.35
		15.50
		−7.15

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1870phae.proj.18003

April 9.

1327 + ½			1327 (191)			21	3	47
12	23	22	9	33	3			34.25
		34.5			34.5	21	3	12.75
12	22	47.5	9	32	28.5	1	10	12.78
1	10	12.78	1	10	12.78	19	52	59.97
11	12	34.72	8	22	15.72		3	15.47
	1	50.25		1	22.28			44.50
		44.47			53.44			60
		60			60			15.50
		15.53			6.56			15.50
		15.50			6.50			.00
		+.03			−8.94			

Sig. No. Error.

April 10

1327			1327 + ⅓		
9	26	48	20	51	40
		38.56			33.25
9	26	14.44	20	51	06.75
1	14	9.33	1	14	9.33
8	12	5.11	19	36	57.42
	1	20.63		3	12.86
		44.48			44.56
		60			60
		15.52			15.44
		15.50			15.50
		+.02			−.06

Sig. No. Error.

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1878phae.proj.1806w

April 11.

1327	1327 (191)	1327 +½
13 11 20	1 40 37=00	20 21 30
32.5	33.95	32.25
13 10 47.5	1 40 03.05	20 20 57.75
1 18 5.89	1 18 5.89	1 18 5.89
11 52 41.6	0 21 57.16	19 2 51.86
1 56.75	3.6	3 7.30
44 85	54.56	44.56
60	60	60
15.15	5.64	15.44.
15.50	15.50	15.50
−.35	−10.06	−.06 left on two qr
added 2 qre.		+.12 for 2h
		+.06

By 236 compared with 1327 Bonds Mean +1.2 out, and 394 was set ~~also~~ back 2 wholeseconds.

Bonds. 236.

21	27	39.5
		31.53
21	27	7.97
1	18	5.89
20	9	2.08
	3	18.06
		44.02
		60
		15.98
		15.50
		+.48 run 96 qre for 2h
		−.48
		no Sig. No. Error.

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1870phae.proj.180cm

April 13.

1327			1327			1327 (191		
2	6	23	20	57	28	12	18	13 = 00
		32.8			32.30			32.55
2	5	50.85	20	56	55.70	12	17	40.45
1	25	58.97	1	25	58.97	1	25	58.97
0	39	51.23	19	30	56.73	10	51	41.48
		6.55		3	11.84		1	46.77
		44.68			44.89			54.71
		60			60			60
		15.32			15.11			15.29
		15.50			15.50			15.58
		.18			.39			-9.21
					+.27			
					-.12			
					+.06			

Fig. No. Error.

added 10 sec for 1h
" 2 " " 1h

1327 = (191)

April 12

21	13	45 = 00
		33.00
21	13	12
1	22	2.41
19	51	09.59
	3	15.13
		54.46
		60
		15.54
		15.50
		9.96

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1878phae.proj.1806M

April 14.

1327			1324 - ¼			1327 (191)		
11	58	55	21	53	32	21	19	37.25
		31.75			31.7			31.7
11	58	23.25	21	53	00.3	21	19	05.55
1	29	55.53	1	29	55.53	1	29	55.53
10	28	27.72	20	23	04.77	19	49	10.02
	1	42.96		3	20.39		3	14.83
		44.76			44.38			55.19
		60			60			60
		15.24			15.62			04.81
		15.10			15.12			15.50
		-.26			+.12			-10.69
		added 1 gr.			-.09			run 1 gr.
					+.03			run 2 gr. for 1½ h

Sig Mal No Error

April 15.

1327			1327		
11	7	42	21	31	24
		31.6			
+	33	52.11			31.45
11	7	10.4 #89	21	30	42.55
1	33	52.11	1	33	52.11
9	33	18.29	19	56	50.44
	1	33.91		3	16.06
		44.38			44.38
		60			60
		15.62			15.62
		15.50			15.50
		+.12			+.12 run 2 gr for 3/4 h
					-.09
					+.03 Sig. No. Error.

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1878phae.proj.1900w

April 16.

1327 - 1/2

12 17 49
31.45
12 17 17.58
1 37 48.67
10 39 28.88
1 44.68
44.20
60
15.80
15.50
+.30
wtm. 1 gr.

1327 - 1/4

21 56 24
31.3
21 55 52.7
1 37 48.67
20 18 04.03
3 19.50
44.53
60
15.47
15.50
-.03
added 1 gr. Sig. No Error.

April 17.

1327 - 1/2.

8 38 9
31.2
8 37 37.8
1 41 45.22
6 55 52.58
1 8.02
44.56
60
15.40
15.50
+.06

1327

21 15 13
31.1
21 14 41.9
1 41 45.22
19 32 56.68
3 12.12
44.56
60
15.44
15.50
-.06

Signal No Error.

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1878phae.proj.1806W

April 18.

1327 - 1/2

21 27 11.

30.9

21 26 40.1

1 45 41.77

19 40 58.33

3 13.39

48.94

60

14.06

15.50

1327 : −.44

394 : .00

Mean − .22 . added 10 gr for 45m

+.21

−.01 Sig. No. Error.

April 19.

1327	1227 + 1/3
8 33 00	22 17 15
30.8	31.6
8 32 29.2	22 16 43.4
1 49 38.33	1 49 38.33
6 42 50.87	20 29 05.07
1 6.02	3 21.06
44.85	44.01
60	60
15.15	15.99
15.50	15.53
−.35	+.49
−.00	Mean .42
−.17	

~~added 1 gr.~~

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1978phae.proj.10060

April 20

1327 − 1/3			1327 (191)			1327			1327 (191)		
11	40	27	9	31	17	21	9	0	19	23	31.35
		31.4			31.45			31.35			
11	39	55.6	9	30	45.55	21	8	28.65	19	23	22.65
1	53	34.87	1	53	34.87	1	53	34.87	1	53	34.87
9	46	20.73	7	37	10.68	19	14	53.78	17	29	47.78
	1	36.00		1	14.88		3	9.18		2	51.96
		44.73			55.80			44.60			55.82
		60			60			60			60
		15.27			4.20			15.40			4.18
		15.50			15.50			15.50			15.50
		−.23			−11.30 (191)			−.10			−11.32
								+.06			
		added 2 grammes.						added 2 gr. for 2h.			
								left in 1 gr.			

1327 + 1/3.			1327 (191)			1327			1327		
April 21 2h.	9	36	2	7	48	24 = 8	21	52	2	22	17	6
		31.02			31.06			31.08			31.08
	9	35	30.98	7	47	52.94	21	51	30.92	22	16	34.92
	1	57	31.43	1	57	31.43	1	57	31.43	1	57	31.43
	7	37	59.55	5	50	21.51	19	53	59.49	20	19	03.49
		1	15.08		0	57.38		3	15.60		3	19.70
			44.47			24.13			43.89			43.79
			60			28			60			60
			15.53			3.87			16.03			16.21
			15.50			15.50			15.50			15.50
			+.03			−11.63 (191)			+.53			+.71
							run 1 gr. for 1h 3/4		−.47			
									+.06			

Sig. Un. Error.

Sig. Un. Error.

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1878phae.proj.1806w

April 22

(1327 191)	1327. -½	1327 -¼
7 50 52	11 40 18	21 55 59
30.72	30.6	30.45
7 50 21.28	11 39 47.4	21 55 28.55
2 1 27.98	2 1 27.98	2 1 27.98
5 48 53.30	9 38 19.42	19 54 00.57
0 57.15	1 34.67	3 15.57
56.15	37 44.75	45.00
60	60	60
3.85	15.25	15.00
15.50	15.50	15.50
11.65 (191)	-.25	+.50 / 4.5 / -.05 Sig. Zs - Error.
added 1 graduation	added 20 gr. for ¾ h and 1 gr for ½ h	

April 23.

1327 - ¼	1327 (191)	1327 - ¼	1327
11 25 11	9 30 4	21 23 49	19 35 43.4
30.41	30.43	30.34	30.34
11 24 40.59	9 29 33.57	21 23 18.66	19 35 13.06
2 5 24.54	2 5 24.54	2 5 24.54	2 5 24.54
9 19 16.05	7 24 09.03	19 17 54.12	17 29 48.52
1 31.57	1 12.76	3 9.64	2 51.98
44.48	23 56.27	44.48	56.54
60	60	60	60
15.52	3.73	15.52	3.46
15.50	15.50	15.50	15.50
+.02	-11.77 (191)	+.02 Sig. No. Error.	-12.04

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1878phae_proj_1805N

April 24.

1327 − 1/4.			1327 (191)			1327 + 1/3		
11	33	8	9	47	3	22	1	51
		30.35			30.35			30.35
11	32	37.65	9	46	32.65	22	1	20.65
2	9	21.09.	2	9	21.09	2	9	21.09
9	23	16.56	7	37	11.56	19	59	59.56
	1	32.23		1	14.90		3	15.33
		4433			56.66			44.23
		60			60			60
		15.67			3.34			1577
		15.50			15.50			15.50
		+.17			−12.16 (191).			+.27 .00 Sig. M. Error.

27 1327
00 394
27
−14
.00

Mean 10gs for 3/2h

April 25

1327			1327 − 1/4		
11	16	1	21	14	39
		30.35			30.35
11	15	30.65	21	14	08.65
2	13	27.65	2	13	27.65
9	2	03.00	19	00	41.00
	1	28.79		3	6.84
		44.21			44.16
		60			60
		15.79			15.84
		15.50			15.50
		+.29			+.34 1327
		.00 394			+.00 394
		+.15 mean.	Mean.		+.17 Mean 5gs for 1 1/2h
					−.20
					−.03 Sig. M. Error

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1878phae.proj.1806M

April 27. 1327

2 46 28

29.9

2 45 58.10

2 21 10.76

0 24 47.34

3.98

43.36

60

16 64

15.50

+1.14

1327

12 36 V

29.7

12 35 35.3

2 21 10.76

10 14 24.54

1 40.65

43.89

60

16.11

15.50

+.61

1327 (191)

2 40 41

1327 (191)

12 13 15

(191).

9 53 52

29.75

9 53 22.25

2 21 10.76

7 32 11.49

1 14.07

~~2.58~~

57.42

60

2.58

15.50

(191) (+ 12.98)

rem 3 gr.

1327 + ¼

2 2 . 12 40

29.6

22 12 10.4

2 21 10.76

19 50 59.64

3 15.14

44.50

60

15.50

15.50

Sig. to. Error.

added 2 grs.

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1878phae.proj.1806M

April 28

1327 + 1/2.

9	48	34
		29.40
9	48	04.60
2	25	7.31
7	22	57.29
	7	12.63
		44.66
		60
		15.34
		15.50
		-.16

1327 + 1/4.

22	24	58
		29.3
22	24	28.7
2	25	7.31
19	59	21.39
	3	16.50
		44.89
		60
		15.11
		15.50
		-.39

-.39 -.26
.00 +.14
.78 +.11
-.26 -.01

added 10gr for 30m
add, 2gr .. 2h

(1327) (191)

9	47	47.00
		29.4
9	47	17.6
2	25	7.31
7	22	10.29
	1	12.43
		57.86
		60
		2.14
		15.50
		-13.36

April 29.

1327 - 1/3

11	21	45
		29.3
11	21	15.7
2	29	3.87
8	52	11.83
	1	27.13
		44.70
		60
		15.30
		15.50

1327 -.20
394 .00
-.10

1327

22	21	33
		29.3
22	21	3.7
2	29	3.87
19	51	59.83
	3	15.28
		44.55
		60
		15.45
		15.50
		-.05

Sig. No. Error.

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1878phae.proj.1806M

G.W.

	1327		1327 (91)	
April 30.	9	57 27	9	49 39
		29.41		29.4
	9	56 57.59	9	49 09.6
	2	33 00.42	2	33 00.42
	7	23 57.17	7	16 09.18
		1 12.74		1 11.44
		44.43		57.74
		60		60
		15.57		2.26
		15.50		15.50
		+.07		−13.24

1327

22	29	30
		29.3
22	29	0.7
2	33	00.42
19	56	00.28
	3	15.92
		44.36
		60.00
		15.64
		15.50
		±.14 range for ½
		−.10
		+.04 Original Mer Error.

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1878phae.proj.180C

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1878phae.proj.1806W

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1878phae.proj.18009

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1878phae.proj.1806w

422 1879.

Errors of Bond 394.

January

1.31	−.10	
1.83	−.35	+10 gr. for 1.1 h
2.31	−.23	+1 gr. " 12 h
2.82	+.16	−10 gr. " ½ h.
3.44	+1.42	−5 gr. " 14 h
3.83	−0.06	
4.31	−.11	∓1 gr.
5.40	+.26	
5.83	−.06	+1 gr.
6.38	+.34	−1 gr.
6.83	+.12	−5 gr. for ½ h.
7.47	−.22	
7.82	−.17	+10 gr. for ½ h
8.38	+.04	
8.83	−.02	
9.40	−.07	
9.83	+.40	−10 gr. for 1½ h.
10.25	+.75	−2 gr. for 15 h.
10.84	+.31	−8 gr. " 1 h.
12.40	+.10	
12.83	+.13	−10 gr. " ½ h.
13.22	+.15	
13.37	+.63	−2 gr. " 11 h
13.83	+.20	−10 gr. for ½ h
14.42	+.68	−2 gr. for 10 h.
14.82	+.27	−5 gr. " 2 h.
15.41	+.70	−3 gr. " 10 h
15.82	+.10	−3 gr. " ¾ h.
16.38	+.37	−1 gr.
16.83	−.02	
17.44	−.05	+1 gr.
17.82	+.06	
18.25	+.20	
19.41	−.28	
19.82	−.20	+10 gr. for ⅔ h.
20.41	−.20	
20.82	−.32	+10 gr. for 30 m +4 gr. " 1½ h
21.39	+.19	−1 gr. " 10 h.
21.82	+.07	−1 gr. " 1 h
22.29	+.44	−2 gr. " 13 h.
22.83	−.77	+30 gr. " ⅔ h. +5 gr. " 1½ h.
23.46	−.37	
23.83	−.24	+10 gr. " ⅔ h.
24.45	−.16	
24.82	+.25	−10 gr. " 1 h.
25.39	+.85	−2 gr. " 15 h +2 gr. " 8 h
26.32	+.65	−2 gr. " 12 h
26.34	+.70	
26.82	+.25	−10 gr. " ⅔ h
27.48	+.05	
27.81	−.12	+2 gr. " 2 h.
28.45	+.15	
28.83	±.05	
29.24	+.70	−3 gr. " 14 h
29.82	+.26	−6 " " ⅔ h.
30.23	−.70	+2 gr. " 14 h
30.82	−.50	+20 gr. " 2 h
31.40	+.35	
31.82	+.76	−5 gr. " 2 h.

February.

1.3	−.26	+1 gr. at 24 h
2.4	−.36	
2.8	+.22	−8 gr for ⅔ h
3.3	−.14	
3.8	−.01	
4.3	−.48	
4.4	−.48	+1 gr for 10 h
4.8	−.65	+20 gr for ½ h +10 " " 1 h
5.2	+.26	−1 gr for 15 h
5.8	+.07	+1 gr. perm.
6.3	+.22	−1 gr. for 11 h
6.8	+.10	−1 gr for 2 h
7.4	+.09	
7.8	−.12	+2 gr for 2 h
8.3	−.39	+2 gr. at 24 h
9.4	−.24	−1 gr.
9.8	−.09	+1 gr. for 2 h
10.3	−.37	
10.8	−.2	+4 gr for 2 h
11.3	+.07	−1 gr " 13 h
11.8	−.10	+2 gr " 2 h
12.3	−.22	
12.8	−.32	+10 gr for 1⅔ h
13.4	−.30	+1 gr for 9 h
13.8	+.42	−1 gr. perm. −10 gr for 1½ h
13.9	+.04	
14.3	+.29	−1 gr for 14 h
14.8	+.54	−10 gr " 2 h
15.8	−.49	
16.3	−.45	+1 gr for 11 h
16.8	−.01	
17.3	+.22	−1 gr " 12 h
17.8	+.05	
18.4	+.30	−1 gr for 11 h
18.8	+.13	−2 gr " 2 h
19.2	+.06	
19.8	−.14	+5 gr for ⅔ h
20.8	+.15	2 gr. each 15 m −10 gr " ½ h
21.4	−.90	+4 gr " 10 h
21.8	−.07	
22.3	−.18	
23.2	+.85	−1 gr for 16 h
23.8	+.57	−10 gr " 1 h 50 m −1 gr. perm.
24.3	+.23	
24.8	+.06	
25.4	+.06	
25.8	+.29	−10 gr. for 1 h
26.3	−.93	−4 gr " 11 h
26.8	−.27	+4 gr. for 2 h
27.5	+.55	−3 gr. " 8 h
27.8	+.25	−8 gr for 2 h
28.4	−.25	+1 gr. for 10 h
28.8	+.07	

+555
−979
52 | 1534

March.

1.3	+.00	
2.4	−.50	+2 gr. for 10 h
2.8	−.18	+1 gr. perm. +20 gr. for 20 min
3.3	+.21	−1 gr. for 11 h.
3.8	+.08	−1 gr " 2 h
4.4	−.30	+1 gr. for 10
4.8	+.05	
	+	
5.8	+.25	−10 gr. for 40 m. −2 gr. perm. +1 gr for 2 h
6.4	−.18	
6.8	−.33	+20 gr. for 30 m.
7.4	+.09	
7.8	+.27	−10 gr. for ⅔ h −2 gr. for 1 h
9.0	−.05	
9.8	−.72	+20 gr for ⅔ h. +10 gr " 1⅓ h.
10.4	−.33	+1 gr.
10.8	−.22	+20 gr. for ⅓ h.
11.4	+.23	−1 gr. for 10 h.
12.4	+.64	−2 gr. " 11 h
12.8	+.42	−10 gr. " 1½ h.
13.4	+.11	
13.8	+.24	−6 gr " 1½ h
14.4	+.20	
14.8	+.22	−10 gr for ⅔ h
16.0	+.51	−2 gr " " h
16.4	+.34	
16.8	−.03	+1 gr
17.3	−.22	+1 gr.
17.8	+.38	−9 gr for ½ h −6 " " 1½ h
18.4	+.37	−1 gr.
18.8	+.48	−1 gr. for 1⅔ h.
19.4	+.13	
19.8	−.14	+10 gr for ⅔ h. +1 gr. for 16 h
20.4	−.53	+2 gr " 9 h
20.8	−.27	+20 gr for ⅔ h
21.5	−.15	
21.8	−.13	+10 gr. for 25 m.
22.3	−.02	
23.0	−.39	+1 gr.
23.4	−.34	+1 gr.
23.8	−.41	+20 gr. for 45 m.
24.4	+.94	−3 gr for 12 h.
24.8	+.31	−5 gr for 2 h.
25.4	−.40	+2 gr. for 10 h
25.8	+.06	
26.3	−.12	
26.8	−.10	
27.8	−.35	
28.3	−.10	
28.8	−.03	
30.4	−.20	
30.8	−.97	
31.3	−.23	
31.8	−.10	

+657
−804
52 | 1461 | 28
104
421
416

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1878phae.proj.180W

April.

1.4	+.31	−2 gr. for 12 h.
1.8	−.11	+10 gr. " 1/3 h.
2.3	−.42	+1 gr.
2.8	.00	
3.3	+.16	−1 gr. for 13 h.
3.8	+.06	
4.4	+.08	
4.8	−.18	+10 gr for 2/3 h.
6.4	−1.35	+4 gr. " 10 h
6.8	+.24	−10 " " 1 h
7.3	−.06	
7.8	+.45	−10 gr. for 1 1/2 h.
8.4	+.32	−1 gr.
8.8	+.47	−9 gr. for 2 h
9.5	+.03	
9.8	+.00	
10.3	+.02	
10.8	−.06	
11.5	−.35	+2 gr for 7 h.
11.8	(−.06)	+" " " 2 h.
11.8	+1.20	Path back 23 and brought up
13.0	−.18	
13.8	−.39	+12 gr for 1 h.
14.4	−.26	+1 gr. for 10 h.
14.8	+.12	−2 gr. for 1 1/2 h.
15.4	+.12	
15.8	+.12	−2 gr. for 3/4 h.
16.4	+.30	−1 gr. for 9 h.
16.8	−.03	
17.3	−.06	
17.8	−.06	
18.8	−.22	+10 gr. for 45 m
19.3	−.17	
19.8	+.49	−2 g for 14 h
20.4	−.23	
20.8	−.10	+1 gr. for 2 h.
21.3	+.03	
21.8	+.53	−10 gr. for 1 3/4 h
22.4	−.25	+1 gr
22.8	−.50	+.20 g for 3/4 h and 1 gr for 1 1/2 h.
23.4	+.02	
23.8	+.02	
24.4	+.17	
24.8	+.14	−10 g for 1/2 h.
25.8	+.15	
25.8	+.17	−5 gr. for 1 1/2 h.
27.0	+1.14	−3 gr for 2 h
27.8	.00	
28.3	−.16	
28.8	−.26	+10 gr. 1/2 h. +2 gr. for 2 h
29.3	−.10	
29.8	−.05	
30.3	+.07	
30.8	+.14	−9 gr for 1/2 h
	+707	
	−555	
54	1262	.23
	108	
	182	
	162	

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1878phae.proj.1806w

block comparisons to determine error Will.
and rate of Bond 312, between Apr. 27 and May 6, 1878.
Compared by Chron 236

	312	326	326	1327	312 reduced	1327 − 312
Apr. 27.1	4 49 10.1	4 48 16.0	4 45 30.4	4 45 23.0	4 46 24.5	$-1^m\ 1.^s5$
28.9	23 40 0.0	39 4.3	36 0.5	35 54.6	36 56.2	−1 1.6
29.9	23 32 30.0	31 31.3	29 4.4	29 0.0	30 3.1	−1 3.1
	312 stopped and pendulum lowered about $\frac{1}{3}$ revolution					
30.2	5 40 10.0	40 40.3	38 34.1	38 30.0	38 3.8	+26.2
30.9	23 35 45.0	36 14.4	34 11.8	34 10.0	33 42.4	+27.6
May 4.2	~~6 21 46.9~~			22 25.0	21 46.9	+38.1
6.0	Mean of 8 comparisons given in R11 p162					+39.19
6.2		8				+39.31

2	36.2 = 39.31		
2	34.2 = 38.1	1.2	0.6 rate.
4	30.2 = 26.2	11.9	3.0 rate.

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1878phae.proj.180

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1878phae.proj.1806w

Bond 312. Errs & Rates. 1877.

		Error		
Dec	8d.2	0s.0		
	10.9	+1m 28.0	> +31.s	Lowered Pend. 2 rev.
	10.9	+1m 36.5		
Mar.	1.9	+3 12.0	76 days.	rate +1.s26
	5.4	+4 7.3(?)	2 comp.	

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1878phae.proj.18060W

Absolute weight to be left permanently in the Pendulum bob of Bond 394.

1878 March 1d.9 = 7.75 grammes.
3.8 = 10.00 "

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1878phae.proj.1806w

1878. May

1	2h 37m	54.s05		
2	2 41	50. 61	6.56	
3	2 45	47. 17	6.56	
4	2 49	43. 72	6.55	
5	2 53	40. 28	6.56	
6	2 57	36. 83	6.55	
7	3 1	33. 39		
8	3 5	29. 94	6.56	
9	3 9	26. 50		
10	3 13	23. 06	6.56	
11	3 17	19. 62		
12	3 21	16. 17	6.55	
13	3 25	12. 73		
14	3 29	9. 28	6.55	
15	3 33	5. 84	6.56	
16	3 37	2. 40	6.56	
17	3 40	58. 96	6.56	
18	3 44	55. 51	6.56	
19	3 48	52. 07	6.55	
20	3 52	48. 62	6.55	
21	3 56	45. 18		
22	4 0	41. 74	6.56	
23	4 4	38. 30	6.56	
24	4 8	34. 85	6.55	
25	4 12	31. 41	6.56	
26	4 16	27. 97		
27	4 20	24. 53		
28	4 24	21. 09	6.56	
29	4 28	17. 65	6.56	
30	4 32	14. 20		
31	4 36	10. 76	6.56	

June

1	4 40	7. 32	6.56	
2	4 44	3. 88	6.55	
3	4 48	0. 43	6.55	
4	4 52	56. 99	6.56	
5	4 55	53. 55	6.56	
6	4 59	50. 11	6.56	
7	5 3	46. 67		
8	5 7	43. 23		
9	5 11	39. 78		
10	5 15	36. 34		
11	5 19	32. 90		
12	5 23	29. 46	6.56	
13	5 27	26. 02	6.56	
14	5 31	22. 58		
15	5 35	19. 14		
16	5 39	15. 70	6.56	
17	5 43	12. 25	6.55	
18	5 47	8. 81	6.56	
19	5 51	5. 37	6.56	
20	5 55	1. 93	6.56	
21	5 58	58. 49	6.56	
22	6 2	55. 05		
23	6 6	51. 60	6.55	
24	6 10	48. 16	6.56	
25	6 14	44. 72	6.56	
26	6 18	41. 28	6.56	
27	6 22	37. 84	6.56	
28	6 26	34. 40	6.56	
29	6 30	30. 96		
30	6 34	27. 52		
31				

July 1878.

6	38	24. 07		
6	42	20. 62	6.55	
6	46	17. 19	6.57	
6	50	13. 75	6.56	
6	54	10. 31	6.56	
6	58	6. 87	6.56	
7	2	3. 42	6.55	
7	5	59. 98	6.56	
7	9	56. 54	6.56	
7	13	53. 10	6.56	
7	17	49. 66	6.56	
7	21	46. 22	6.56	
7	25	42. 78	6.56	
7	29	39. 34	6.56	
7	33	35. 89	6.55	
7	37	32. 45	6.56	
7	41	29. 00	6.55	
7	45	25. 56	6.56	
7	49	22. 12	6.56	
7	53	18. 68	6.56	
7	57	15. 23		
8	1	11. 79		
8	5	8. 45		
8	9	4. 91		
8	13	1. 46		
8	16	58. 02		
8	20	54. 58		
8	24	51. 14		
8	28	47. 69		
8	32	44. 25		
8	36	40. 80		

August.

8	40	37. 36		
8	44	33. 92		
8	48	30. 48		
8	52	27. 03		
8	56	23. 59		
9	0	20. 14		
9	4	16. 70		
9	8	13. 26		
9	12	9. 82		
9	16	6. 37		
9	20	2. 93		
9	23	59. 48		
9	27	56. 04		
9	31	52. 59		
9	35	49. 15		
9	39	45. 70		
9	43	42. 26		
9	47	38. 81		
9	51	35. 37		
9	55	31. 92		
9	59	28. 48		
10	3	25. 03		
10	7	21. 59		
10	11	18. 14		
10	15	14. 70		
10	19	11. 25		
10	23	7. 81		
10	27	4. 36		
10	31	0. 92		
10	34	57. 47		
10	38	54. 02		

September 1878.

1				
2				
3	10	50	43. 68	
4	10	54	40. 24	
5	10	58	36. 79	
6	11	2	33. 35	
7	11	6	29. 90	
8	11	10	26. 46	
9	11	14	23. 01	
10	11	18	19. 57	
11	11	22	16. 11	
12	11	26	12. 67	
13	11	30	9. 22	
14	11	34	5. 78	
15	11	38	2. 33	
16	11	41	58. 88	
17	11	45	55. 43	
18	11	49	51. 99	
19	11	53	48. 54	
20	11	57	45. 09	
21	12	1	41. 64	
22	12	5	38. 20	
23	12	9	34. 75	
24	12	13	31. 31	
25	12	17	27. 86	
26	12	21	24. 42	
27	12	25	20. 97	
28	12	29	17. 52	
29	12	33	14. 07	
30	12	37	10. 63	

Oct. 1878.

1	12	41	7. 198
2	12	45	3. 74
3	12	49	0. 29
4	12	52	56. 84
5	12	56	53. 39
6	13	0	49. 95
7	13	4	46. 50
8	13	8	43. 06
9			
10			
11	13	20	32. 72
12	13	24	29. 27
13	13	28	25. 82
14	13	32	22. 38
15	13	36	18. 93
16	13	40	15. 49
17	13	44	12. 04
18	13	48	8. 60
19	13	52	5. 15
20	13	56	1. 71
21	13	59	58. 26
22	14	3	54. 82
23	14	7	51. 37
24	14	11	47. 93
25	14	15	44. 48
26	14	19	41. 04
27	14	23	37. 60
28	14	27	34. 16
29	14	31	30. 72
30	14	35	27. 28
31	14	39	23. 84

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November 1877.

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14				
15				
16				
17				
18	15	51	18.85	
19	15	55	15.41	6.56
20	15	59	11.97	6.56
21	16	3	8.53	6.56
22	16	7	5.08	6.55
23	16	11	1.64	6.56
24	16	14	58.20	
25	16	18	54.76	6.56
26	16	22	51.31	6.55
27	16	26	47.87	
28	16	30	44.43	
29	16	34	40.99	
30	16	38	37.54	
31				

January 1878

19	43	55.79	16	
19	47	52.35	17	
	51	48.91	18	
	55	45.47	19	
	59	42.03	20	
20	3	38.59	21	
	7	35.14	22	
	11	31.70	23	
	15	28.26	24	
	19	24.82	25	
	23	21.37	6.56	
	27	17.93	6.55	
	31	14.48	6.56	
	35	11.04		
	39	7.60		
	43	4.16		

March 1878

22	37	24.26	6.56	1
22	41	20.82	6.55	2
22	45	17.37	6.55	3
22	49	13.92	6.55	4
22	53	10.47	6.56	5
22	57	7.03	6.56	6
23	1	3.58	6.55	7
23	5	0.13	6.55	8
23	8	56.68	6.55	9
23	12	53.24	6.56	10
23	16	49.79	6.55	11
23	20	46.35	6.56	12
23	24	42.90	6.55	13
23	28	39.45	6.55	14
23	32	36.00		15
23	36	32.56		16
23	40	29.11		17
23	44	25.67		18
23	48	22.22		19
23	52	18.77	6.55	20
23	56	15.32		21
0	0	11.88	6.55	22
0	4	8.43	6.56	23
0	8	4.99	6.56	24
0	12	1.54	6.55	25
0	15	58.10	6.56	26
0	19	54.65	6.55	27
0	23	51.20	6.55	28
0	27	47.75	6.56	29
0	31	44.31	6.56	30
0	35	40.86		31

December 1877

1	16	42	34.40	
2	16	46	30.96	6.56
3	16	50	27.52	
4	16	54	24.08	6.56
5	16	58	20.64	
6	17	2	16.89	6.55
7	17	6	13.45	6.56
8	17	10	10.01	
9	17	14	6.57	6.56
10	17	18	3.13	6.56
11	17	21	59.69	56.56
12	17	25	56.24	56.55
13	17	29	52.80	
14	17	33	49.36	56.56
15	17	37	45.92	
16	17	41	42.48	
17	17	45	39.04	
18	17	49	35.59	
19	17	53	32.15	
20	18	57	28.71	
21	18	1	25.27	
22	18	5	21.83	
23	18	9	18.39	
24	18	13	14.95	
25	18	17	11.51	
26	18	21	8.07	
27	18	25	4.63	
28	18	29	1.19	
29	18	32	57.75	
30	18	36	54.30	
31	18	40	50.86	

February 1878

20	47	0.71	6.55	
20	50	57.27	6.56	
20	54	53.82	6.56	
20	58	50.38		
21	2	46.94		
21	6	43.50		
21	10	40.05	6.56	
21	14	36.61		
21	18	33.16	6.56	
21	22	29.72		
21	26	26.27	6.55	
21	30	22.83		
21	34	19.38	6.55	
21	38	15.94		
21	42	12.49	6.55	
21	46	9.05		
21	50	5.60	6.55	
21	54	2.16	6.56	
21	57	58.71	6.55	
22	1	55.28	6.57	
22	5	51.83	6.55	
22	9	48.39	6.56	
22	13	44.94	6.55	
22	17	41.49	6.55	
22	21	38.04	6.55	
22	25	34.60	6.56	
22	29	31.15		
22	33	27.71	6.56	

April 1878

				1
0	43	33.97	6.56	2
0	47	30.53	6.55	3
0	51	27.08	6.55	4
0	55	23.63	6.55	5
0	59	20.18	6.55	6
1	3	16.74	6.56	7
1	7	13.29	6.56	8
1	11	9.85	6.55	9
1	15	6.40	6.55	10
1	19	2.96	6.56	11
1	23	59.51	6.55	12
1	26	56.07	6.56	13
1	30	52.62	6.55	14
1	34	49.18	6.56	15
1	38	45.73		16
1	42	42.28	6.55	17
1	46	38.83	6.55	18
1	50	35.39	6.56	19
1	54	31.94	6.55	20
1	58	28.50	6.56	21
2	2	25.05	6.55	22
2	6	21.61	6.56	23
2	10	18.16	6.55	24
2	14	14.72	6.55	25
2	18	11.27		26
2	22	7.83		27
2	26	4.38		28
2	30	0.94	6.56	29
2	33	57.49	6.55	30

Griffin

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