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Reduction E.
of
Zone Observations
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Solution of Equations for Zones 2 & 3.

t # m	C	W	q	m_2	n_2	m_3	n_3	$W C$	$q C$
10..17	0.28	2	0.6	+ 0.32	+ 3.2	+ 0.35	+ 6.3	0.56	0.17
10..15	0.25	2	0.5	+ 0.22	+ 4.0	+ 0.22	+ 3.0	0.50	0.12
10..23	0.38	3	1.1	- 0.07	- 1.0	- 0.11	+ 0.2	1.14	0.42
10..56	0.93	2	2.0	- 0.15	- 3.3	- 0.20	+ 0.7	1.86	1.86
11..29	1.48	1	1.5	- 0.23	+ 0.3	- 0.28	+ 0.8	1.48	2.22
11..29	1.48	4	6.0	- 0.34	- 1.1	- 0.49	+ 0.9	5.92	8.88
11..33	1.55	1	1.5	- 0.64	- 2.7	- 0.74	- 3.2	1.55	2.32
11..53	1.88	1	2.0	- 0.47	- 3.6	- 0.57	- 3.5	1.88	3.76
11..54	1.90	2	4.0	- 0.42	- 2.5	- 0.57	- 1.3	3.80	7.60
		18	19.2					18.69	27.35

Zone 2

Period

$$-2.97 = 18.0x_2 + 18.69x_2'$$

$$-6.07 = 19.2x_2 + 27.35x_2'$$

$$-10.6 = 18.0y_2 + 18.69y_2'$$

$$-31.2 = 19.2y_2 + 27.35y_2'$$

$$1.07 \quad -3.18 \quad 19.2 \quad + 20.00$$

$$1.07 \quad -11.3 \quad 19.2 \quad + 20.00$$

$$x = +0.24 \pm \frac{\epsilon}{\sqrt{7.0}} = +0.24 \pm \frac{\epsilon}{\sqrt{2.6}}$$

$$x' = -0.38 \pm \frac{\epsilon}{\sqrt{7.8}} = -0.38 \pm \frac{\epsilon}{2.8}$$

$$\epsilon = \pm 0.12$$

$$\begin{array}{r} 26 \overline{) 12.04} \quad (0.46 \\ 104 \\ \hline 160 \\ 28 \overline{) 12.04} \\ 112 \\ \hline 8 \end{array}$$

By Least Squares

$$x = +0.24 \pm 0.046$$

$$x' = -0.38 \pm 0.043$$

W_{m2}	W_{n2}	W_{m3}	W_{n3}	g_{m2}	g_{n2}	g_{m3}	g_{n3}
+ 0.64	+ 6.4	+ 0.70	+ 12.6	+ 0.18	+ 1.9	+ 0.21	+ 3.8
+ 0.44	+ 8.0	+ 0.44	+ 6.0	+ 0.11	+ 2.0	+ 0.11	+ 1.5
- 0.21	- 3.0	- 0.33	+ 0.6	- 0.08	- 1.1	- 0.12	+ 0.3
- 0.30	- 6.6	- 0.40	+ 1.4	- 0.30	- 6.6	- 0.40	+ 1.4
- 0.23	+ 0.3	- 0.28	+ 0.8	- 0.34	+ 0.4	- 0.42	+ 1.2
- 1.36	- 4.4	- 1.96	+ 3.6	- 2.04	- 6.6	- 2.94	+ 5.4
- 0.64	- 2.7	- 0.74	- 3.2	- 0.96	- 4.0	- 1.11	- 4.8
- 0.47	- 3.6	- 0.57	- 3.5	- 0.94	- 7.2	- 1.14	- 7.0
- 0.84	- 5.0	- 1.00	- 2.6	- 1.68	- 10.0	- 2.00	- 5.2
+ 1.08	+ 14.7	+ 1.14	+ 25.0	+ 0.29	+ 4.3	+ 0.32	+ 13.6
- 4.05	- 25.3	- 5.28	- 9.3	- 6.36	- 35.5	- 8.13	- 17.0
- 2.97	- 10.6	- 4.14	+ 15.7	- 6.07	- 31.2	- 7.81	- 3.4

Zone 3

Tested

$$-4.14 = 18.00x_3 + 18.69x'_3$$

$$-7.81 = 19.20x_3 + 27.35x'_3$$

$$+15.7 = 18.00y_3 + 18.69y'_3$$

$$-3.4 = 19.20y_3 + 27.35y'_3$$

$$1.07 \quad -4.43 \quad 19.2 \quad + 20.00$$

$$1.07 \quad +16.80 \quad 19.2 \quad + 20.00$$

Solution of Equations for Zones 4 & 5.

$t = \frac{h}{m}$	τ	W	g	m_4	n_4	m_5	n_5	$W \tau$	$g \tau$
10.19	0.15	2	0.3	+0.73	0.0	+0.41	-1.8	0.30	0.04
10.39	0.48	1	0.5	+0.39	-1.2	-0.06	-3.2	0.48	0.24
11.14	1.07	1	1.1	+0.16	-4.1	-0.24	-7.1	1.07	1.17
11.22	6.20	2	2.4	+0.12	-4.5	-0.22	-6.3	2.40	2.48
11.47	1.62	1	1.6	-0.16	-7.1			1.62	2.59
12.00	~~1.83~~ 1.75	3	~~5.9~~ 2.8	-0.05	-4.9			~~5.83~~ 5.83	~~10.86~~ 10.86
Zone 4		10	11.7					11.70	~~14.88~~ 16.58
		- 4	- 7.4					- 7.45	- 12.90
Zone 5		6.	4.3					4.25	3.93

Zone 4.

Tested

$$+1.94 = 10.0x_4 + 11.72x'_4$$

$$+0.33 = 11.7x_4 + 16.58x'_4$$

$$-36.1 = 10.0y_4 + 11.72y'_4$$

$$-54.2 = 11.7y_4 + 16.58y'_4$$

.58
12.65

$W m_4$	$W m_4$	$W m_5$	$W m_5$	$g m_4$	$g m_4$	$g m_5$	$g m_5$
+ 1.46	0.0	+ 0.82	- 3.6	+ 0.22	0.0	+ 0.12	- 0.5
+ 0.39	- 1.2	- 0.06	- 3.2	+ 0.20	- 0.6	- 0.03	- 1.6
+ 0.16	- 4.1	- 0.24	- 7.1	+ 0.18	- 4.5	- 0.26	- 7.8
+ 0.24	- 9.0	- 0.44	- 12.6	+ 0.29	- 10.8	- 0.53	- 15.1
- 0.16	- 7.1			- 0.26	- 11.4		
- 0.15	- 14.7			- 0.30	- 26.9		
+ 2.25	- 0.0	+ 0.82	+ 0.0	+ 0.89	+ 6.0	+ 0.12	+ 0.0
- .31	- 36.1	- 0.74	- 26.5	- 0.56	- 52.2	- 0.82	- 25.0
+ 1.94	- 36.1	+ 0.08	- 26.5	+ 0.33	- 55.7	- 0.70	- 25.0

Lone 5.

Tested

$$+ 0.08 = 6.0x_5 + 4.25x'_5$$

$$- 0.70 = 4.3x_5 + 3.93x'_5$$

$$- 26.5 = 6.0x_5 + 4.25x'_5$$

$$- 25.0 = 4.3x_5 + 3.93x'_5$$

Solution of Equations for Zones 6 & 7.

t	τ	W	q	m_6	n_6	m_7	n_7	W'	q'
11.14	0.07	2	0.1	- 0.21	- 6.6	+ 0.09	- 5.8	0.14	0.01
11.14	0.07	1	0.0	- 0.19	- 7.1	+ 0.21	- 6.1	0.07	0.05
11.47	0.62	1	0.6	- 0.46	- 10.1	- 0.16	- 9.1	0.62	0.37
12.00	0.83	3	2.5	- 0.50	- 7.9	- 0.15	- 6.9	2.49	2.07
12.11	1.02	1	1.1	- 0.38	- 7.4	- 0.13	- 6.4	1.02	1.12
12.32	1.37	1	1.4	- 0.74	- 10.5	- 0.34	- 10.5	1.37	1.92
12.34	1.40	1	1.4	- 0.66	- 7.0	- 0.36	- 4.0	1.40	1.94
13.02	1.87	2	3.7	- 0.30	- 12.6		- 12.6	3.74	6.92
		12	10.8					10.85	14.35
		- 2	- 3.7					- 3.74	- 6.92
Zone m_7		10	7.1					7.11	7.43

Zone 6.

$$\begin{aligned} \text{Total } \downarrow & - 4.95 = 12.0x_6 + 10.85x'_6 \\ & - 5.03 = 10.8x_6 + 14.35x'_6 \end{aligned}$$

$$\begin{aligned} \text{Total } \downarrow & - 104.2 = 12.0x_6 + 10.85y'_6 \\ & - 105.7 = 10.8x_6 + 14.35y'_6 \end{aligned}$$

W_{m6}	W_{m6}	W_{m7}	W_{m7}	g_{m6}	g_{m6}	g_{m7}	g_{m7}
- 0.42	- 13.2	+ 0.18	- 11.6	- 0.02	- 0.7	+ 0.01	- 0.6
- 0.19	- 7.1	+ 0.21	- 6.1	+ 0.00	0.0	+ 0.00	- 0.0
- 0.46	- 10.1	- 0.16	- 9.1	- 0.28	- 6.1	- 0.10	- 5.5
- 1.50	- 23.7	- 0.45	- 20.7	- 1.25	- 19.7	- 0.37	- 17.2
- 0.38	- 7.4	- 0.13	- 6.4	- 0.42	- 8.1	- 0.14	- 7.0
- 0.74	- 10.5	- 0.34	- 10.5	- 1.03	- 14.7	- 0.48	- 14.7
- 0.66	- 7.0	- 0.36	- 4.0	- 0.92	- 9.8	- 0.50	- 5.6
- 0.60	- 25.2		- 25.2	- 1.11	- 46.6		- 46.6
- 4.95	- 104.2	- 1.44	- 93.6	- 5.03	- 105.7	- 1.49	- 97.2
		+ 0.39				+ 0.01	
- 4.95	- 104.2	- 1.05	- 93.6	- 5.03	- 105.7	- 1.48	- 97.2

Lone y.

Merid

$$-1.05 = 10.0x_7 + 7.11x_7$$

$$-1.48 = 7.1x_7 + 7.43x_7$$

$$-93.6 = 10.0x_7 + 7.11x_7 = 12.0x_7 + 10.85x_7$$

$$-97.2 = 7.1x_7 + 7.43x_7 = 10.8x_7 + 14.35x_7$$

Solution of Equations for Lones 10811.

t	τ	w	g	m_{10}	n_{10}	m_{11}	n_{11}	$w\tau$	$g\tau$
18.06	0.10	2	0.6	+ 0.12	- 1.1	+ 0.73	+ 2.2	0.10	0.01
..08	0.13	2	0.3	+ 0.00	+ 0.2	+ 0.77	+ 1.2	0.26	0.04
..08	0.13	1	0.1	+ 0.25	- 0.7	+ 0.60	+ 2.3	0.13	0.01
..16	0.27	1	0.3	+ 0.09	- 3.3	+ 0.71	- 3.5	0.27	0.08
22	0.37	3	1.0	+ 0.30	- 3.2	+ 0.80	- 1.3	1.11	0.37
22	0.37	2	0.7	+ 0.21	- 3.7	+ 0.41	- 1.7	0.74	0.26
23	0.38	3	1.1	+ 0.06	- 3.1	+ 0.79	- 4.3	1.14	0.42
23	0.38	2	0.8	+ 0.15	- 4.9	+ 0.90	- 5.1	0.76	0.30
55	0.92	1	0.9	+ 0.38	- 9.0	+ 1.03	- 6.1	0.92	0.83
55	0.92	1	0.9	+ 0.33	- 7.1	+ 1.08	- 7.3	0.92	0.83
19.05	1.10	1	1.1	+ 0.54	- 4.3	+ 1.44	- 3.4	1.10	1.21
10	1.17	2	2.3	+ 0.01	- 6.1	+ 0.74	- 4.2	2.34	2.69
11	1.18	2	2.4	+ 0.01	- 7.6	+ 0.74	- 5.6	2.36	2.83
14	1.23	1	1.2	+ 0.14	- 7.0	+ 0.56	- 4.0	1.23	1.48
31	1.52	2	3.0	+ 0.11	- 5.6	+ 0.79	- 4.7	3.14	4.56
19.41	1.68	2	3.4	+ 0.20	- 6.0	+ 0.67	- 5.2	3.36	5.71
		27	19.6					19.88	21.63

Zone 10.

$-0.57 = 27.0x_{10} + 19.88x'_{10}$
 $+0.79 = 19.6x_{10} + 21.63x'_{10}$

$-118.8 = 27.0y_{10} + 19.88y'_{10}$
 $-110.7 = 19.6y_{10} + 21.63y'_{10}$

Solution by Normals

$$x = -0.08$$

$$x' = +0.06$$

Wm_{10}	Wm_{10}	Wm_{11}	Wm_{11}	gm_{10}	gm_{10}	gm_{11}	gm_{11}
+ 0.12	- 1.1	+ 0.73	+ 2.2	+ 0.01	- 0.1	+ 0.07	+ 0.2
0.00	+ 0.4	+ 1.54	+ 2.4	0.00	+ 0.6	+ 0.23	+ 0.4
- 0.25	- 0.7	+ 0.60	+ 2.3	- 0.02	- 0.1	+ 0.06	+ 0.2
- 0.09	- 3.3	+ 0.71	- 3.5	- 0.03	- 1.0	+ 0.21	- 1.0
- 0.90	- 9.6	+ 2.40	- 3.9	- 0.30	- 3.2	+ 0.80	- 1.3
- 0.82	- 7.4	+ 0.82	- 3.4	- 0.29	- 2.6	+ 0.29	- 1.2
- 0.18	- 9.3	+ 2.37	- 12.9	- 0.07	- 3.4	+ 0.87	- 4.3
+ 0.30	- 9.8	+ 1.80	- 10.2	+ 0.12	- 3.9	+ 0.72	- 4.1
+ 0.38	- 9.0	+ 1.03	- 6.1	+ 0.34	- 8.1	+ 0.93	- 5.5
+ 0.33	- 7.1	+ 1.08	- 7.3	+ 0.30	- 6.4	+ 0.98	- 6.6
+ 0.54	- 4.3	+ 1.44	- 3.4	+ 0.59	- 4.7	+ 1.58	- 3.7
- 0.02	- 12.2	+ 1.48	- 8.4	- 0.02	- 14.0	+ 1.70	- 9.7
- 0.02	- 15.2	+ 1.48	- 11.2	- 0.02	- 18.2	+ 1.78	- 13.4
- 0.14	- 7.0	+ 0.56	- 4.0	- 0.17	- 8.4	+ 0.67	- 4.8
- 0.22	- 11.2	+ 1.58	- 9.4	- 0.33	- 16.8	+ 2.37	- 14.1
+ 0.40	- 12.0	+ 1.34	- 10.4	+ 0.68	- 20.4	+ 2.28	- 17.7
+ 1.55	+ 0.4	+ 20.96	+ 6.9	+ 2.03	+ 0.6	+ 15.54	+ 0.8
- 3.16	- 119.2	- 0.00	- 94.1	- 1.37	- 111.3	0.00	- 87.4
- 1.61	- 118.8	+ 20.96	- 87.2	+ 0.66	- 110.7	- 15.54	- 86.6
1.04				0.79			
- 0.97							

Zone 11.

Tertul

$$+20.96 = 27.0x_{11} + 19.88x'_{11}$$

$$-15.44 = 19.6x_{11} + 21.63x'_{11}$$

Tertul

$$-87.2 = 27.0y_{11} + 19.88y'_{11}$$

$$-86.6 = 19.6y_{11} + 21.63y'_{11}$$

Solution of Equations for Lones 13 & 14.

$L = \frac{h}{m} \frac{m}{h}$	τ	W	g	m_{13}	n_{13}	m_{14}	n_{14}	$W \tau$	$g \tau$
19.49	0.15	2	0.3	- 0.47	- 5.8	+ 0.05	- 10.6	0.30	0.04
49	0.15	2	0.3	- 0.43	- 7.9	+ 0.02	- 10.5	0.30	0.04
50	0.17	2	0.3	- 0.57	- 4.1	- 0.01	- 11.7	0.34	0.05
57	0.18	2	0.4	- 0.29	- 5.2	+ 0.01	- 9.7	0.36	0.07
58	0.30	2	0.6	- 0.30	- 5.5	+ 0.20	- 10.4	0.60	0.18
20.09	0.48	1	0.5	- 0.53	- 1.8	- 0.23	- 4.7	0.48	0.24
11	0.52	2	1.0	- 0.69	- 6.3	- 0.14	- 9.8	1.04	0.52
16	0.60	1	0.6	- 0.10	- 3.8	+ 0.20	- 9.7	0.60	0.36
58	1.30	2	2.6	+ 0.01	- 5.8	+ 0.26	- 10.3	2.60	3.38
58	1.30	2	2.6	- 0.23	- 0.3	+ 0.12	- 4.1	2.60	3.38
21.04	1.40	1	1.4	- 0.74	- 2.2	- 0.15	- 7.9	1.40	1.96
13	1.55	3	4.6	- 0.35	- 4.3	- 0.20	- 10.2	4.65	7.13
16	1.60	1	1.6	+ 0.05	- 3.5	- 0.05	- 8.5	1.60	2.56
35	1.92	2	3.8	- 0.71	- 5.9	- 0.57	- 12.7	3.84	7.36
39	1.98	3	5.9			- 0.37	- 12.3	5.94	11.68
Lone 14		28	26.5					26.65	38.95
		- 3	- 5.9					- 5.94	- 11.68
Lone 13		25	20.6					20.71	27.27

Lone 13.

$$-9.61 = 25.0x_{13} + 20.71x'_{13}$$

$$-7.53 = 20.6x_{13} + 27.27x'_{13}$$

$$-118.7 = 25.0y_{13} + 20.71y'_{13}$$

$$-87.0 = 20.6y_{13} + 27.27y'_{13}$$

W_{m13}	W_{n13}	W_{m14}	W_{n14}	g_{m13}	g_{n13}	g_{m14}	g_{n14}
- 0.94	- 11.6	+ 0.10	- 21.2	- 0.14	- 1.7	+ 0.01	- 3.2
- 0.86	- 15.8	+ 0.04	- 21.0	- 0.12	- 2.4	+ 0.01	- 3.2
- 1.02	- 9.2	- 0.02	- 23.4	- 0.15	- 1.2	- 0.00	- 3.5
- 0.58	- 10.4	+ 0.02	- 19.4	- 0.12	- 2.1	+ 0.00	- 3.9
- 0.60	- 11.0	+ 0.40	- 20.8	- 0.18	- 3.3	+ 0.12	- 6.2
- 0.53	- 1.8	- 0.23	- 4.7	- 0.25	- 0.9	- 0.11	- 2.3
- 1.38	- 12.6	- 0.28	- 19.6	- 0.69	- 6.3	- 0.14	- 9.8
- 0.10	- 3.8	+ 0.20	- 8.7	- 0.06	- 2.3	+ 0.12	- 5.2
+ 0.02	- 11.6	+ 0.52	- 20.6	+ 0.03	- 15.1	+ 0.68	- 26.8
- 0.46	- 0.6	+ 0.24	- 8.2	- 0.60	- 0.8	+ 0.31	- 10.7
- 0.74	- 2.2	- 0.15	- 7.9	- 1.04	- 3.1	- 0.21	- 11.1
- 1.05	- 12.9	- 0.60	- 30.6	- 1.61	- 19.8	- 0.92	- 46.9
+ 0.05	- 3.5	- 0.05	- 8.5	+ 0.10	- 5.6	- 0.07	- 13.6
- 1.42	- 11.8	- 1.14	- 25.4	- 2.70	- 22.4	- 2.17	- 48.3
		- 1.11	- 36.9			- 2.18	- 72.6
+ 0.07	+ 0.0	+ 1.52	+ 0.0	+ 0.13	+ 0.0	+ 1.25	+ 0.0
- 9.68	- 118.7	- 3.58	- 276.9	- 7.66	- 87.0	- 5.80	- 267.3
- 9.61	- 118.7	- 2.06	- 276.9	- 7.53	- 87.0	- 4.55	- 267.3

Zone 14.

$$- 2.06 = 28.0x_{14} + 26.65x'_{14}$$

$$- 4.55 = 26.5x_{14} + 38.95x'_{14}$$

$$- 276.9 = 28.0y_{14} + 26.65y'_{14}$$

$$- 267.3 = 26.5y_{14} + 38.95y'_{14}$$

1852. April 16th Lone 2. Solution of Equations

$$\begin{aligned}\text{Lone 2} \quad & +0.12 = x_2 + 0.31x'_2 \\ & -0.18 = x_2 + 1.11x'_2 \\ & -0.41 = x_2 + 1.64x'_2\end{aligned}$$

$$\begin{aligned}& +1.6 = y_2 + 0.31y'_2 \\ & -2.1 = y_2 + 1.11y'_2 \\ & -2.0 = y_2 + 1.64y'_2\end{aligned}$$

April 17th Lone 3.

$$\begin{aligned}\text{Lone 3} \quad & +0.12 = x_3 + 0.31x'_3 \\ & -0.23 = x_3 + 1.11x'_3 \\ & -0.53 = x_3 + 1.64x'_3\end{aligned}$$

$$\begin{aligned}& +2.7 = y_3 + 0.31y'_3 \\ & +0.7 = y_3 + 1.11y'_3 \\ & -0.7 = y_3 + 1.64y'_3\end{aligned}$$

1852. April 27. Zone 4.

$$\begin{aligned} \text{Zone 4} + 0.62 &= x_4 + 0.43x'_4 \\ + 0.13 &= x_4 + 1.32x'_4 \\ - 0.08 &= x_4 + 1.94x'_4 \end{aligned}$$

$$\begin{aligned} - 0.4 &= y_4 + 0.43y'_4 \\ - 4.4 &= y_4 + 1.32y'_4 \\ - 5.4 &= y_4 + 1.94y'_4 \end{aligned}$$

April 28. Zone 5.

$$\begin{aligned} \text{Zone 5} + 0.41 &= x_5 + 0.32 \\ - 0.15 &= x_5 + 0.94 \\ - 0.22 &= x_5 + 1.37 \end{aligned}$$

$$\begin{aligned} - 1.8 &= y_5 + 0.32y'_5 \\ - 5.1 &= y_5 + 0.94y'_5 \\ - 6.3 &= y_5 + 1.37y'_5 \end{aligned}$$

1852 April 29 - Lone 6.

$$\begin{aligned} \text{Lone 6} + 0.30 &= x_6 + 0.07x'_6 \\ -0.47 &= x_6 + 0.82x'_6 \\ -0.75 &= x_6 + 1.62x'_6 \end{aligned}$$

$$\begin{aligned} -6.8 &= y_6 + 0.07y'_6 \\ -8.2 &= y_6 + 0.82y'_6 \\ -10.7 &= y_6 + 1.62y'_6 \end{aligned}$$

May 4th Lone 7.

$$\begin{aligned} \text{Lone 7} + 0.13 &= x_7 + 0.07x'_7 \\ -0.15 &= x_7 + 0.82x'_7 \\ -0.43 - 0.15 &= x_7 + 1.61x'_7 \end{aligned}$$

$$\begin{aligned} -5.9 &= y_7 + 0.07y'_7 \\ -7.2 &= y_7 + 0.82y'_7 \\ -9.9 &= y_7 + 1.62y'_7 \end{aligned}$$

1852 Augth 9 Lone 8th

$$\begin{aligned}
 \text{Lone 8} - +0.24 &= x_8 + 0.21x'_8 \\
 +0.20 &= x_8 + 0.74x'_8 \\
 -0.08 &= x_8 + 1.34x'_8
 \end{aligned}$$

$$\begin{aligned}
 +0.7 &= y_8 + 0.21y'_8 \\
 -2.1 &= y_8 + 0.74y'_8 \\
 -2.6 &= y_8 + 1.34y'_8
 \end{aligned}$$

Augth 11. Lone 9th

$$\begin{aligned}
 \text{Lone 9} -0.22 &= x_9 + 0.22x'_9 \\
 -0.26 &= x_9 + 0.78x'_9 \\
 -0.41 &= x_9 + 1.57x'_9
 \end{aligned}$$

$$\begin{aligned}
 -3.1 &= y_9 + 0.22y'_9 \\
 -3.6 &= y_9 + 0.78y'_9 \\
 -5.6 &= y_9 + 1.57y'_9
 \end{aligned}$$

1852 Aug 12th

$$\begin{aligned} \text{Lone } 10^{\text{th}} - 0.14 &= x_{10} + 0.23x'_{10} \\ + 0.05 &= x_{10} + 0.55x'_{10} \\ 0.00 &= x_{10} + 1.37x'_{10} \end{aligned}$$

$$\begin{aligned} -1.9 &= y_{10} + 0.23y'_{10} \\ -4.7 &= y_{10} + 0.55y'_{10} \\ -6.4 &= y_{10} + 1.37y'_{10} \end{aligned}$$

Aug - 11th

$$\begin{aligned} \text{Lone } 11^{\text{th}} + 0.74 &= x_{11} + 0.23x'_{11} \\ + 0.85 &= x_{11} + 0.56x'_{11} \\ + 0.72 &= x_{11} + 1.37x'_{11} \end{aligned}$$

$$\begin{aligned} -0.1 &= y_{11} + 0.23y'_{11} \\ -4.3 &= y_{11} + 0.56y'_{11} \\ -4.8 &= y_{11} + 1.37y'_{11} \end{aligned}$$

4 Errors, thus far

1852 Nov-3^d

$$\begin{aligned} \text{Lone } 13^{\text{th}} - & -0.43 = x_{13} + 0.16x'_{13} \\ & -0.30 = x_{13} + 0.79x'_{13} \\ & -0.47 = x_{13} + 1.75x'_{13} \end{aligned}$$

$$\begin{aligned} -5.7 &= y_{13} + 0.16y'_{13} \\ -4.1 &= y_{13} + 0.79y'_{13} \\ -5.0 &= y_{13} + 1.75y'_{13} \end{aligned}$$

$$\begin{aligned} \text{Nov. } 4^{\text{th}} \text{ Lone } 14^{\text{th}} - & +0.02 = x_{14} + 0.16x'_{14} \\ & +0.09 = x_{14} + 0.79x'_{14} \\ & -0.30 = x_{14} + 1.64x'_{14} \end{aligned}$$

$$\begin{aligned} -10.6 &= y_{14} + 0.16y'_{14} \\ -8.3 &= y_{14} + 0.79y'_{14} \\ -11.0 &= y_{14} + 1.64y'_{14} \end{aligned}$$

1852. Nov-4⁺

$$\begin{aligned} \text{Zone } 14^+ + 0.02 &= x_{14} + 0.16x'_{14} \\ + 0.04 + 0.08 &= x_{14} + 0.79x'_{14} \\ - 0.35 &= x_{14} + 1.74x'_{14} \end{aligned}$$

$$\begin{aligned} -10.6 &= y_{14} + 0.16y'_{14} \\ -8.2 &= y_{14} + 0.79y'_{14} \\ -11.0 &= y_{14} + 1.74y'_{14} \end{aligned}$$

Nov-24⁺

$$\begin{aligned} \text{Zone } 16^+ - 0.50 &= x_{16} + 36x'_{16} \\ -0.35 &= x_{16} + 1.20x'_{16} \\ -0.67 &= x_{16} + 1.78x'_{16} \end{aligned}$$

$$\begin{aligned} -1.3 &= y_{16} + 0.26y'_{16} \\ +2.1 &= y_{16} + 1.20y'_{16} \\ -2.1 &= y_{16} + 1.78y'_{16} \end{aligned}$$

8 Surveys

1852 Nov 11th

5.08

$$\text{Zone } 15^{\text{th}} - 0.07 = x_{15} + 0.06x'_{15}$$

$$- 0.61 = x_{15} + 0.44x'_{15}$$

$$- 0.66 = x_{15} + 1.21x'_{15}$$

$$- 5.9 = y_{15} + 0.06y'_{15}$$

$$- 6.8 = y_{15} + 0.44y'_{15}$$

$$- 6.7 = y_{15} + 1.21y'_{15}$$

Nov 30th

$$\text{Zone } 17^{\text{th}} + 5.41 = x_{17} + 0.06x'_{17}$$

$$- 0.09 = x_{17} + 0.40x'_{17}$$

$$- 0.07 = x_{17} + 1.21x'_{17}$$

$$- 6.6 = y_{17} + 0.06y'_{17}$$

$$- 6.1 = y_{17} + 0.40y'_{17}$$

$$- 7.1 = y_{17} + 1.21y'_{17}$$

1852. Dec^r 6th

$$\begin{aligned} \text{Zone } 18 & - 0.15 = x_{18} + 0.17x'_{18} \\ & - 0.36 = x_{18} + 0.77x'_{18} \\ & - 0.39 = x_{18} + 1.57x'_{18} \end{aligned}$$

$$\begin{aligned} & - 5.4 = y_{18} + 0.16y'_{18} \\ & - 7.1 = y_{18} + 0.77y'_{18} \\ & - 8.4 = y_{18} + 1.57y'_{18} \end{aligned}$$

Dec^r 14

$$\begin{aligned} \text{Zone } 19 & - 0.40 = x_{19} + 0.16x'_{19} \\ & - 0.68 = x_{19} + 0.77x'_{19} \\ & - 0.62 = x_{19} + 1.57x'_{19} \end{aligned}$$

$$\begin{aligned} & - 3.8 = y_{19} + 0.16y'_{19} \\ & - 5.8 = y_{19} + 0.77y'_{19} \\ & - 5.8 = y_{19} + 1.57y'_{19} \end{aligned}$$

1852. Dec^r 22^o -

Zone 20 sec below!

$$\text{Zone 21} + 0.07 = x_{21} + 0.08x'_{21}$$

$$-0.31 = x_{21} + 0.86x'_{21}$$

$$-0.42 = x_{21} + 1.54x'_{21}$$

$$-6.8 = y_{21} + 0.08y'_{21}$$

$$-9.2 = y_{21} + 0.86y'_{21}$$

$$-8.9 = y_{21} + 1.54y'_{21}$$

Dec^r 15^h

$$\text{Zone 20} - 0.43 = x_{20} + 0.08x'_{20}$$

$$-0.86 = x_{20} + 0.86x'_{20}$$

$$-0.91 = x_{20} + 1.54x'_{20}$$

$$-5.8 = y_{20} + 0.08y'_{20}$$

$$-9.7 = y_{20} + 0.86y'_{20}$$

$$-9.2 = y_{20} + 1.54y'_{20}$$

1852

(Dec. 29th)

Lone 22

$$-0.04 = x_{22} + 0.07x'_{22}$$

$$-0.44 = x_{22} + 0.45x'_{22}$$

$$-0.80 = x_{22} + 1.00x'_{22}$$

$$-3.3 = y_{22} + 0.07y'_{22}$$

$$-4.6 = y_{22} + 0.45y'_{22}$$

$$-2.2 = y_{22} + 1.00y'_{22}$$

1853. Jan. 5th

Lone 23

$$-0.37 = x_{23} + 0.07x'_{23}$$

$$-1.12 = x_{23} + 0.71x'_{23}$$

$$-1.62 = x_{23} + 1.54x'_{23}$$

$$-3.3 = y_{23} + 0.07y'_{23}$$

$$-3.6 = y_{23} + 0.71y'_{23}$$

$$-3.3 = y_{23} + 1.54y'_{23}$$

Thus far

Examined by duplicate computations of Henry Safford

1853. Jan. 6th

Ex. a

$$\text{Zone 24} - 0.65 = x_{24} + 0.28x'_{24}$$

$$-0.81 = x_{24} + 0.82x'_{24}$$

$$-1.20 = x_{24} + 1.50x'_{24}$$

$$-8.1 = y_{24} + 0.28y'_{24}$$

$$-8.1 = y_{24} + 0.82y'_{24}$$

$$-4.5 = y_{24} + 1.50y'_{24}$$

Jan. 7th

$$\text{Zone 25} - 0.45 = x_{25} + 0.28x'_{25}$$

$$-0.59 = x_{25} + 0.81x'_{25}$$

$$-1.08 = x_{25} + 1.50x'_{25}$$

$$-9.1 = y_{25} + 0.28y'_{25}$$

$$-8.0 = y_{25} + 0.81y'_{25}$$

$$-5.1 = y_{25} + 1.50y'_{25}$$

1853. Jan. 8th

$$\begin{aligned} \text{Zone 26} \quad -0.44 &= x_{26} + 0.26x'_{26} \\ -0.49 &= x_{26} + 0.90x'_{26} \\ -0.79 &= x_{26} + 1.58x'_{26} \end{aligned}$$

$$\begin{aligned} +16.2 &= y_{26} + 0.26y'_{26} \\ +14.6 &= y_{26} + 0.90y'_{26} \\ +13.4 &= y_{26} + 1.58y'_{26} \end{aligned}$$

Jan. 11th

$$\begin{aligned} \text{Zone 27} \quad -0.69 &= x_{27} + 0.26x'_{27} \\ -0.76 &= x_{27} + 1.04x'_{27} \\ -1.29 &= x_{27} + 1.58x'_{27} \end{aligned}$$

$$\begin{aligned} +15.6 &= y_{27} + 0.26y'_{27} \\ +18.8 &= y_{27} + 0.90y'_{27} \\ +13.7 &= y_{27} + 1.58y'_{27} \end{aligned}$$

1853, Jan. 21

$$\text{Zone } 28 - 0.25 = x_{28} + 0.13x'_{28}$$

$$-0.64 = x_{28} + 0.75x'_{28}$$

$$-1.40 = x_{28} + 1.73x'_{28}$$

$$-4.1 = y_{28} + 0.13y'_{28}$$

$$-4.2 = y_{28} + 0.75y'_{28}$$

$$-11.4 = y_{28} + 1.73y'_{28}$$

Jan. 29

$$\text{Zone } 29^+ - 0.25 = x_{29} + 0.13x'_{29}$$

$$-0.64 = x_{29} + 0.87x'_{29}$$

$$-1.57 = x_{29} + 1.73x'_{29}$$

$$-3.1 = y_{29} + 0.13y'_{29}$$

$$-4.5 = y_{29} + 0.87y'_{29}$$

$$-12.1 = y_{29} + 1.73y'_{29}$$

1853. Feb. 1

$$\text{Lone } 30 \quad +0.61 = x_{30} + 0.03x'_{30}$$

$$\times \quad +0.46 = x_{30} + 1.09x'_{30}$$

$$\quad +0.14 = x_{30} + 1.61x'_{30}$$

$$-0.5 = y_{30} + 0.03y'_{30}$$

$$-3.8 = y_{30} + 1.09y'_{30}$$

$$-3.9 = y_{30} + 1.61y'_{30}$$

Feb. 8th

$$\text{Lone } 32. \quad +0.18 = x_{32} + 0.03x'_{32}$$

$$-0.92 = x_{32} + 1.09x'_{32}$$

$$-1.06 = x_{32} + 1.45x'_{32}$$

$$-0.2 = y_{32} + 0.03y'_{32}$$

$$-3.7 = y_{32} + 1.09y'_{32}$$

$$-2.6 = y_{32} + 1.45y'_{32}$$

1853. Feb. 1.st

$$\begin{aligned} \text{Zone 31} \quad & +0.25 = x_{31} + 0.29x'_{31} \\ & +0.07 = x_{31} + 1.10x'_{31} \\ & -0.45 = x_{31} + 1.98x'_{31} \end{aligned}$$

$$\begin{aligned} & -0.0 = y_{31} + 0.29y'_{31} \\ & -3.6 = y_{31} + 1.10y'_{31} \times \\ & -4.6 = y_{31} + 1.98y'_{31} \end{aligned}$$

Feb. 11

$$\begin{aligned} \text{Zone 33.} \quad & -0.04 = x_{32} + 0.29x'_{32} \\ & -0.18 = x_{32} + 1.01x'_{32} \\ & -0.60 = x_{32} + 1.96x'_{32} \end{aligned}$$

$$\begin{aligned} & -3.4 = y_{32} + 0.29y'_{32} \\ & -3.2 = y_{32} + 1.01y'_{32} \\ & -4.2 = y_{32} + 1.96y'_{32} \end{aligned}$$

185.3 Feb. 12[#]

$$\text{Zone 34} - 0.17 = x_{34} + 0.12x'_{34}$$

$$-0.55 = x_{34} + 0.88x'_{34}$$

$$-0.72 = x_{34} + 1.94x'_{34}$$

$$-11.0 = y_{34} + 0.12y'_{34}$$

$$-10.7 = y_{34} + 0.76y'_{34}$$

$$-13.0 = y_{34} + 1.94y'_{34}$$

Feb. 14

$$\text{Zone 35} - 0.11 = x_{35} + 0.12x'_{35}$$

$$-0.45 = x_{35} + 0.65x'_{35}$$

$$-0.62 = x_{35} + 1.87x'_{35}$$

$$-10.6 = y_{35} + 0.12y'_{35}$$

$$-8.7 = y_{35} + 0.65y'_{35}$$

$$-11.8 = y_{35} + 1.89y'_{35}$$

1853. Feb. 17th

$$\text{Zone } 36 - 0.05 = x_{36} + 0.07x'_{36}$$

$$-0.24 = x_{36} + 0.66x'_{36}$$

$$-1.04 = x_{36} + 1.61x'_{36}$$

$$+3.6 = y_{36} + 0.08y'_{36}$$

$$+5.3 = y_{36} + 0.66y'_{36}$$

$$+3.2 = y_{36} + 1.61y'_{36}$$

Feb. 21st

$$\text{Zone } 37 + 0.49 = x_{37} + 0.07x'_{37}$$

$$+0.56 = x_{37} + 0.49x'_{37}$$

$$-0.67 = x_{37} + 1.48x'_{37}$$

$$+3.2 = y_{37} + 0.07y'_{37}$$

$$+5.7 = y_{37} + 0.49y'_{37}$$

$$+3.0 = y_{37} + 1.48y'_{37}$$

1853. Feb. 26th

$$\begin{aligned} \text{Zone } 38 + 0.09 &= x_{38} + 0.36x'_{38} \\ -0.02 &= x_{38} + 1.21x'_{38} \\ -0.21 &= x_{38} + 1.68x'_{38} \end{aligned}$$

$$\begin{aligned} -63.3 &= y_{38} + 0.41y'_{38} \\ -66.9 &= y_{38} + 1.21y'_{38} \\ -67.6 &= y_{38} + 1.68y'_{38} \end{aligned}$$

Compared thus far with H.S.

B 4 Errors

H 4 —

March 15th

$$\begin{aligned} \text{Zone } 39 - 0.03 &= x_{39} + 0.41x'_{39} \\ -0.30 &= x_{39} + 1.20x'_{39} \\ -0.55 &= x_{39} + 1.70x'_{39} \end{aligned}$$

$$\begin{aligned} -61.2 &= y_{39} + 0.41y'_{39} \\ -64.2 &= y_{39} + 1.20y'_{39} \\ -64.1 &= y_{39} + 1.70y'_{39} \end{aligned}$$

Entered

1853 March 16th

$$\begin{aligned} \text{Zone 40} \quad -0.13 &= x_{40} + 0.50x'_{40} \\ -0.19 &= x_{40} + 0.93x'_{40} \\ -0.44 &= x_{40} + 1.64x'_{40} \end{aligned}$$

$$\begin{aligned} -0.9 &= y_{40} + 0.50y'_{40} \\ -2.8 &= y_{40} + 0.93y'_{40} \\ -4.4 &= y_{40} + 1.64y'_{40} \end{aligned}$$

March 16th

$$\begin{aligned} \text{Zone 41} \quad -0.27 &= x_{41} + 0.53x'_{41} \\ -0.34 &= x_{41} + 0.93x'_{41} \\ -0.75 &= x_{41} + 1.65x'_{41} \end{aligned}$$

$$\begin{aligned} -0.8 &= y_{41} + 0.53y'_{41} \\ -2.8 &= y_{41} + 0.93y'_{41} \\ -4.5 &= y_{41} + 1.65y'_{41} \end{aligned}$$

1853 March 29[#]

Cone 42 $-1.07 = x_{42} + 0.13x'_{42}$
 $-1.30 = x_{42} + 0.40x'_{42}$

$-66.4 = y_{42} + 0.13y'_{42}$
 $-67.8 = y_{42} + 0.40y'_{42}$

March 29^L See note in Book B.

Cone 43 $-1.16 = x_{43} + 0.13x'_{43}$
 $-1.65 = x_{43} + 0.40x'_{43}$

$-63.4 = y_{43} + 0.13y'_{43}$
 $-64.3 = y_{43} + 0.40y'_{43}$

1883 March 30[#]

$$\begin{aligned} \text{Line 44} + 0.27 &= x_{44} + 0.28x'_{44} \\ + 0.23 &= x_{44} + 0.73x'_{44} \\ - 0.30 &= x_{44} + 1.57x'_{44} \end{aligned}$$

$$\begin{aligned} - 0.6 &= y_{44} + 0.28y'_{44} \\ - 1.3 &= y_{44} + 0.73y'_{44} \\ + 1.2 &= y_{44} + 1.57y'_{44} \end{aligned}$$

April 1st

$$\begin{aligned} \text{Line 45} + 0.04 &= x_{45} + 0.28x'_{45} \\ - 0.04 &= x_{45} + 0.73x'_{45} \\ - 0.55 &= x_{45} + 1.57x'_{45} \end{aligned}$$

$$\begin{aligned} + 0.3 &= y_{45} + 0.28y'_{45} \\ - 0.6 &= y_{45} + 0.73y'_{45} \\ + 1.6 &= y_{45} + 1.57y'_{45} \end{aligned}$$

1853. April 8th

$$\begin{aligned} \text{Zone } 46 & + 0.58 = x_{46} + 0.26x'_{46} \\ & + 0.30 = x_{46} + 0.64x'_{46} \\ & - 0.03 = x_{46} + 1.14x'_{46} \end{aligned}$$

$$\begin{aligned} & + 3.2 = y_{46} + 0.26y'_{46} \\ & + 4.7 = y_{46} + 0.64y'_{46} \\ & + 4.5 = y_{46} + 1.14y'_{46} \end{aligned}$$

April 9th

$$\begin{aligned} \text{Zone } 47 & + 0.18 = x_{47} + 0.46x'_{47} \\ & - 0.50 = x_{47} + 1.38x'_{47} \\ & - 0.96 = x_{47} + 2.12x'_{47} \end{aligned}$$

$$\begin{aligned} & + 5.9 = y_{47} + 0.46y'_{47} \\ & + 7.2 = y_{47} + 1.38y'_{47} \\ & + 7.1 = y_{47} + 2.12y'_{47} \end{aligned}$$

1853. Feb. 26th

$$\text{Lone } 38 + 0.09 = x_{38} + 0.36x'_{38}$$

$$-0.02 = x_{38} + 1.21x'_{38}$$

$$-0.21 = x_{38} + 1.68x'_{38}$$

$$-63.3 = y_{38} + 0.41y'_{38}$$

$$-66.9 = y_{38} + 1.21y'_{38}$$

$$-67.6 = y_{38} + 1.68y'_{38}$$

38 & 39 are here centered by mistake

March 15th

$$\text{Lone } 39 - 0.03 = x_{39} + 0.41x'_{39}$$

$$-0.30 = x_{39} + 1.20x'_{39}$$

$$-0.55 = x_{39} + 1.62x'_{39}$$

$$-61.2 = y_{39} + 0.38y'_{39}$$

$$-64.2 = y_{39} + 1.20y'_{39}$$

$$-64.1 = y_{39} + 1.62y'_{39}$$

1853. April 9th

$$\begin{aligned} \text{Zone } 47 + 0.17 &= x_{47} + 0.38x'_{47} \\ -0.49 &= x_{47} + 1.38x'_{47} \\ -0.92 &= x_{47} + 2.09x'_{47} \end{aligned}$$

$$\begin{aligned} +6.3 &= y_{47} + 0.38y'_{47} \\ +7.2 &= y_{47} + 1.38y'_{47} \\ +6.9 &= y_{47} + 2.09y'_{47} \end{aligned}$$

April 15

$$\begin{aligned} \text{Zone } 48 + 0.04 &= x_{48} + 0.50x'_{48} \\ -0.29 &= x_{48} + 1.31x'_{48} \\ -0.67 &= x_{48} + 2.08x'_{48} \end{aligned}$$

$$\begin{aligned} +5.7 &= y_{48} + 0.50y'_{48} \\ +6.2 &= y_{48} + 1.31y'_{48} \\ +6.3 &= y_{48} + 2.08y'_{48} \end{aligned}$$

1853. April 27.

$$\text{Zone } 49 + 0.34 = x_{49} + 0.26x'_{49}$$

$$+ 0.23 = x_{49} + 1.00x'_{49}$$

$$+ 0.05 = x_{49} + 1.58x'_{49}$$

$$+ 3.4 = y_{49} + 0.26y'_{49}$$

$$+ 2.6 = y_{49} + 1.00y'_{49}$$

$$+ 2.0 = y_{49} + 1.58y'_{49}$$

April 28

$$\text{Zone } 50 + 0.62 = x_{50} + 0.26x'_{50}$$

$$+ 0.65 = x_{50} + 1.00x'_{50}$$

$$+ 0.56 = x_{50} + 1.58x'_{50}$$

$$+ 4.7 = y_{50} + 0.26y'_{50}$$

$$+ 5.5 = y_{50} + 1.00y'_{50}$$

$$+ 4.5 = y_{50} + 1.58y'_{50}$$

1853. May 2^d

$$\text{Zone } 51 + 0.27 = x_{51} + 0.24x'_{51}$$

$$+ 0.23 = x_{51} + 0.53x'_{51}$$

$$- 0.17 = x_{51} + 1.83x'_{51}$$

$$+ 0.3 = y_{51} + 0.24y'_{51}$$

$$- 1.8 = y_{51} + 0.53y'_{51}$$

$$- 0.1 = y_{51} + 1.83y'_{51}$$

May 4th

$$\text{Zone } 52 - 0.39 = x_{52} + 0.24x'_{52}$$

$$- 0.36 = x_{52} + 0.62x'_{52}$$

$$- 0.70 = x_{52} + 1.91x'_{52}$$

$$+ 1.6 = y_{52} + 0.24y'_{52}$$

$$+ 0.3 = y_{52} + 0.62y'_{52}$$

$$+ 1.8 = y_{52} + 1.91y'_{52}$$

1853. May 9

$$\text{Lone } 53 - 0.27 = x_{53} + 0.33x'_{53}$$

$$-0.30 = x_{53} + 1.08x'_{53}$$

$$-0.60 = x_{53} + 1.96x'_{53}$$

$$-2.5 = y_{53} + 0.33y'_{53}$$

$$-0.6 = y_{53} + 1.08y'_{53}$$

$$-3.0 = y_{53} + 1.96y'_{53}$$

May 11th

$$\text{Lone } 54 - 0.18 = x_{54} + 0.33x'_{54}$$

$$-0.36 = x_{54} + 1.08x'_{54}$$

$$-0.61 = x_{54} + 1.96x'_{54}$$

$$-2.2 = y_{54} + 0.33y'_{54}$$

$$+0.7 = y_{54} + 1.08y'_{54}$$

$$-2.9 = y_{54} + 1.96y'_{54}$$

1853. May 31

$$\text{Lone } 55 - + 0.30 = x_{55} + 0.44x'_{55}$$

$$- 0.07 = x_{55} + 1.18x'_{55}$$

$$- 0.13 = x_{55} + 1.71x'_{55}$$

$$- 3.9 = y_{55} + 0.44y'_{55}$$

$$- 3.4 = y_{55} + 1.18y'_{55}$$

$$- 2.3 = y_{55} + 1.72y'_{55}$$

June 1st

$$\text{Lone } 56 - + 0.17 = x_{56} + 0.44x'_{56}$$

$$- 0.07 = x_{56} + 1.18x'_{56}$$

$$- 0.14 = x_{56} + 1.72x'_{56}$$

$$- 3.7 = y_{56} + 0.44y'_{56}$$

$$- 2.8 = y_{56} + 1.18y'_{56}$$

$$- 0.4 = y_{56} + 1.72y'_{56}$$

June 6th

$$\begin{aligned} \text{Zone } 57 - 0.39 &= x_{57} + 0.34x'_{57} \\ -0.61 &= x_{57} + 1.28x'_{57} \\ -0.65 &= x_{57} + 1.54x'_{57} \end{aligned}$$

$$\begin{aligned} +8.3 &= y_{57} + 0.34y'_{57} \\ +5.8 &= y_{57} + 1.28y'_{57} \\ +3.7 &= y_{57} + 1.54y'_{57} \end{aligned}$$

June 8th

$$\begin{aligned} \text{Zone } 58 +0.34 &= x_{58} + 0.36x'_{58} \\ +0.07 &= x_{58} + 1.14x'_{58} \\ +0.07 &= x_{58} + 1.41x'_{58} \end{aligned}$$

$$\begin{aligned} -8.2 &= y_{58} + 0.36y'_{58} \\ -11.8 &= y_{58} + 1.14y'_{58} \\ -11.8 &= y_{58} + 1.41y'_{58} \end{aligned}$$

1853 July 1st

$$\begin{aligned}
 \text{zone } 59 - 0.22 &= x_{59} + 0.53x'_{59} \\
 - 0.19 &= x_{59} + 1.78x'_{59} \\
 + 0.09 &= x_{59} + 2.28x'_{59}
 \end{aligned}$$

$$\begin{aligned}
 + 1.6 &= y_{59} + 0.53y'_{59} \\
 - 2.3 &= y_{59} + 1.78y'_{59} \\
 - 1.7 &= y_{59} + 2.28y'_{59}
 \end{aligned}$$

July 2^d

$$\begin{aligned}
 \text{Zone } 60 - 0.40 &= x_{60} + 0.53x'_{60} \\
 - 0.41 &= x_{60} + 1.74x'_{60} \\
 - 0.24 &= x_{60} + 2.24x'_{60}
 \end{aligned}$$

$$\begin{aligned}
 \pm 0.0 &= y_{60} + 0.53y'_{60} \\
 - 4.8 &= y_{60} + 1.74y'_{60} \\
 - 4.7 &= y_{60} + 2.24y'_{60}
 \end{aligned}$$

1853 Sept 8th

Zone 61

$$+0.20 = x_{61} + 0.10 x'_{61}$$

$$-0.14 = x_{61} + 0.38 x'_{61}$$

$$-0.2 = y_{61} + 0.10 y'_{61}$$

$$+0.8 = y_{61} + 0.38 y'_{61}$$

Sept 8th

Zone 62

$$+0.05 = x_{62} + 0.10 x'_{62}$$

$$-0.30 = x_{62} + 0.38 x'_{62}$$

$$-2.2 = y_{62} + 0.10 y'_{62}$$

$$-3.9 = y_{62} + 0.38 y'_{62}$$

