

KG
11366
v. 598

N.
36

Some Observations & Reductions
C. 36.
From Oct 29, 1876 Jan. 14, 1877.
J. W. Sever, University Bookstore, Cambridge.

636	^h 22	^m 18	^s 31	50	Oct-29
0	21	36	52		Dec-5
0	22	24	52		" "
1	50	17	54		" 6

Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ'
d											
$((\delta) - D) \frac{d'}{100}$											
δ_1											
d											
$((\delta) - D) \frac{d'}{100}$											
δ_2											
d											
$((\delta) - D) \frac{d'}{100}$											
δ_1											
d											
$((\delta) - D) \frac{d'}{100}$											
δ_2											
<p><i>Adopted values of i for 1877.</i></p> <p><i>1877</i></p> <p><i>Jan 13 - Mar 1</i> $+5^\circ 41' 14''$ <i>Tang. i</i></p> <p><i>Mar 2 - May 2¹⁴</i> $+5 \quad 1 \quad 41$</p> <p><i>May ¹⁵ - July 4</i> $+4 \quad 59 \quad 45$</p> <p><i>July 5 - Dec 31</i> $+5 \quad 3 \quad 9$</p>						<i>For Circle</i>	<i>For</i>				
						<i>Readings</i>	<i>Declinations</i>				
						<i>15 tang. i</i>	<i>15 tang. i</i>				
						<i>0.122416</i>	<i>0.122416 w</i>				
						<i>0.12048</i>	<i>0.12048 w</i>				
δ_1						<i>0.11768</i>	<i>0.11768 w</i>				
$((\delta) - D) \frac{d'}{100}$						<i>0.12260</i>	<i>0.12260 w</i>				
d											
$((\delta) - D) \frac{d'}{100}$											
δ_2											
d											
$((\delta) - D) \frac{d'}{100}$											
δ_1											
d											
$((\delta) - D) \frac{d'}{100}$											
δ_2											
d											
$((\delta) - D) \frac{d'}{100}$											
δ_1											
d											
$((\delta) - D) \frac{d'}{100}$											
δ_2											

Date₁ = 1876 Oct. 29
u = -0.70Observer
RecorderDate₂ = Oct. 30

u = -0.79

c = $\frac{+1.0}{T_g} + 11.50$ Observer
Recorder

2

Star.	α	δ	Mag.	T_a	T_m	T_s	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
33	15	50° 55'	8.5	21	32	58.5	33	110	142	175	206	240	33
32	40.7	51.0	8.1			23							33
$(\delta) - D$	$\frac{\kappa'}{100}$					42							33
a_1						187							33
κ													33
$(\delta) - D$	$\frac{\kappa'}{100}$					32.10							33
a_2													33
36	Y	53 27	8.6		35	322	36	1.0	44	8.0	114	130	36
35	32.0	22.4	8.9			35.2							36
$(\delta) - D$	$\frac{\kappa'}{100}$					38.8							36
a_1						3540							36
κ													36
$(\delta) - D$	$\frac{\kappa'}{100}$												36
a_2													36
38	31	53 11	8.0		35	320	35	58.0	1.6	5.0	8.5	120	38
37	56.7	64	7.6			35.0							38
$(\delta) - D$	$\frac{\kappa'}{100}$					37.4							38
a_1						34.80							38
κ													38
$(\delta) - D$	$\frac{\kappa'}{100}$												38
a_2													38
40	36	52 38	9.3		40	319	40	532	564	594	33	63	40
40	21.9	33.8	9.4			34.5							40
$(\delta) - D$	$\frac{\kappa'}{100}$					87.2							40
a_1						34.53							40
κ													40
$(\delta) - D$	$\frac{\kappa'}{100}$												40
a_2													40
42	48	54 27	8.7		40	193	40	502	535	568	0.3	3.9	42
42	14.5	22.9	8.9			22.2							42
$(\delta) - D$	$\frac{\kappa'}{100}$					25.5							42
a_1						22.33							42
κ													42
$(\delta) - D$	$\frac{\kappa'}{100}$												42
a_2													42
42	48	54 27	8.7		42	592	42	278	312	349	387	42.0	42
42	14.5	22.9	8.9			3.2							42
$(\delta) - D$	$\frac{\kappa'}{100}$					6.3							42
a_1						290							42
κ													42
$(\delta) - D$	$\frac{\kappa'}{100}$					26.0							42
a_2						30.0							42
41	59.0	54 22.9	9.1		43	26.0	42	434	474	509	541	57.7	42
41	14.5					33.4							42
$(\delta) - D$	$\frac{\kappa'}{100}$					29.50							42
a_1													42
κ													42
$(\delta) - D$	$\frac{\kappa'}{100}$												42
a_2													42
41	59.0		8.8		42	128	42	25.0	28.4	323	356	380	42
41	14.5					14.6							42
$(\delta) - D$	$\frac{\kappa'}{100}$					17.0							42
a_1						14.80							42
κ													42
$(\delta) - D$	$\frac{\kappa'}{100}$												42
a_2													42

Dec 29 +3 53.24 - " 23 + 3 35
30 +3 54.56 - 24 + 3.42 + 3.35

Runs

	T _m - T	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	+ 3.42	z	8'
d	+15.79 1.19838 9.89020 1.210942	4' 39.1 *9.79934 1.12008m	45.1	842	29' 4" 42.0	58 58 50 56	625 58.87 -16.26	59.49 -13.19	25	50 56 42.61 46.30 -7 + 8.44 -108 + 894 + 35 -27.40 56 30.39 45.27		11.49
((8) - D) $\frac{d'}{100}$	-2.09 -16.09	33 21.86	56 14.3		30							
δ_1												
d	-14.20 1.23553w 9.89020 1.24809	0 9.1 9.79934 1.15723	14.9	24.0	0 1200	50 52 56	36.35 30.91 +17.79 +14.36		30	50 56 48.64 45.27 -8 -5 + 893 + 35 -27.50 56 30.39		+9.15 12.54
((8) - D) $\frac{d'}{100}$	-2.09 -16.09	33 22.00	56 14.2		58							
δ_2												
d	+32.56 1.51268 9.90509 1.540132	2 58.9 9.77456 1.40960m	3.0	12.19	3 0.95	53 24 28	47.40 40.02 -34.68 -25.68	40.64 -25.68	55	53 28 53.4 14.96 -27 +11.14 -69 +10.65 +11.45 -27.90 28 0.55		+11.14 14.49
((8) - D) $\frac{d'}{100}$	-2.01 -16.23	36 12.43	27 45.3		58							
δ_1												
d	+30.20 1.48001 9.90509 1.507462	3 0.8 9.77456 1.37693m	5.5	6.3	3 3.15	53 24 28	45.20 39.76 -32.14 -23.82		55	53 28 7.59 15.94 -24 -74 +11.63 + 45 -28.00 28 2.40		+11.10 14.52
((8) - D) $\frac{d'}{100}$	-2.01 -16.23	36 12.32	27 46.2		13							
δ_2												
d	+47.63 1.67970 9.90358 1.705642	3 44.7 9.77728 1.57934m	48.8	13.5	3 46.75	53 9 12	1.60 54.22 -50.77 -37.96	54.84 -37.96	10	53 12 3.45 16.88 -59 -87 +13.036 + 40 -28.00 12 2.44		+9.38 +10.30 13.65
((8) - D) $\frac{d'}{100}$	-2.04 -16.36	38 37.68	11 46.2		134							
δ_1												
d	+26.18 1.41797 9.90368 1.444401	3 35 9.77728 1.31744m	7.2	10.7	3 535	53 9 13	43.00 37.56 -27.50 -20.77		10	53 18 4.76 16.79 -18 -74 +11.36 + 40 -28.10 13 2.95		+10.84 +10.84 14.26
((8) - D) $\frac{d'}{100}$	-2.04 -16.36	38 37.73	11 46.6		46							
δ_2												
d	+25.82 1.40123 9.90043 1.424022	1 31.8 9.78280 1.30639m	35.9	7.7	1 33.85	52 36 40	14.50 7.12 -16.55	7.74 -20.25	45	52 39 40.57 47.49 -17 -36 +10.77 + 40 -28.10 39 33.38		+10.64 13.99
((8) - D) $\frac{d'}{100}$	-2.07 -16.48	41 4.07	39 16.9		46							
δ_1												
d	+34.61 1.53920 9.90043 1.561992	1 24.4 9.78280 1.44436m	29.9	14.3	1 27.15	52 36 40	21.20 15.76 -36.77 -27.82		45	52 39 39.29 47.94 -31 -34 +10.77 + 40 -28.20 39 33.68		+10.52 13.94
((8) - D) $\frac{d'}{100}$	-2.07 -16.48	41 4.08	39 17.2		58							
δ_2												
d	-27.98 1.44685w 9.91060 1.47981	3 0.9 9.76413 1.33334	5.5	6.4	3 320	54 24 28	45.15 37.77 +30.19 +21.54	38.36 +21.54	55	54 28 7.46 16.85 59.93 -20 +12.79 + 50 -28.40 28 28.30 28 47.34		+10.52 13.94
((8) - D) $\frac{d'}{100}$	-2.02 -16.57	39.10	42 39.31		58							
δ_1												
d	+17.26 1.23704 9.91078 1.270182	2 26.2 9.76378 1.23782m	31.3	57.5	28.75	54 24 29	19.60 14.16 -18.63 -13.28		55	54 30 55.53 24 -7 +12.77 + 50 -28.40 28 48.98		+13.08 16.50
((8) - D) $\frac{d'}{100}$	-2.02 -16.57	42 39.35	31 0.58 +13.08									
δ_2			28 32.41									

Date₁ = 1876 Oct. 29Observer
RecorderDate₂ = Oct. 30Observer
Recorder

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Star.	α	δ	Mag.	T_s	T_m	T_e	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
57	1	52° 52'	9.1	21 50	446	50 57.9	15	5.0	8.2	117	57	4.88	
50	23.8	47.7	9.4		490					+2.15		+9.08	
					534						57	13.01	
					4900							-1.86	
(8) - D	$\frac{\kappa'}{100}$											11.15	
a_1													
58		9.2		51 12.0	50 55.3	58.7	2.0	5.4	9.0	51	2.08		
					145					+10.94		+9.50	
					17.8							-1.05	
(8) - D	$\frac{\kappa'}{100}$				1477						51	+2.4914	
a_2												13.02	
												-1.83	
												11.19	
52	10	50 43	9.0	52 39.4	53 9.7	13.0	16.3	19.5	23.0	53	16.30		
52	33.6	38.3	8.7		41.7					+8.23		+9.08	
					45.0						53	-8.5	
(8) - D	$\frac{\kappa'}{100}$				42.03							24.53	
a_1												-1.97	
												22.56	
		9.0		52 44.8	53 7.0	10.3	13.5	16.8	20.0	53	13.52		
					47.8					+10.91		+9.50	
					50.0							-9.6	
(8) - D	$\frac{\kappa'}{100}$				47.53						53	+2.3714	
a_2												24.43	
												-1.94	
												22.49	
53	3	54 12	8.9	54 48.7	54 58.3	1.5	5.1	8.7	12.0	55	5.12		
54	27.7	7.4	9.0		53.6					+8.11		+9.08	
					56.0						55	-9.7	
(8) - D	$\frac{\kappa'}{100}$				52.90							13.23	
a_1												-1.86	
												11.37	
53	45.3	54 7.5	8.9	53 86.0	54 13.6	17.0	20.5	24.1	27.6	54	20.56		
					88.3					+10.96		+9.50	
					40.6						54	-1.07	
(8) - D	$\frac{\kappa'}{100}$				38.30							+2.5517	
a_2			8.6	54 34.9	54 55.3	58.8	2.3	5.8	9.3			32.52	-18.4
					37.9					+10.96		2.30	29.68
					41.0						55	+9.50	
					37.93							-1.09	
												+2.5317	13.26
53	48	54 58	8.8	53 88.3	53 93.0	46.7	50.2	53.8	57.4	55	50.22		-18.3
55	12.9	53.3	9.1		86.3					+8.08		+9.08	
					39.9							-1.00	
(8) - D	$\frac{\kappa'}{100}$				36.50							58.30	
a_1												-1.84	
												56.46	
55	8.2	54 55.8	9.2	55 54.2	55 38.5	39.0	42.6	46.0	49.7	55	42.56		
					87.4					+10.98		+9.50	
					40.6							-1.13	
(8) - D	$\frac{\kappa'}{100}$				37.40							+2.6117	
a_2												58.54	
												-1.81	
												57.73	
56	43	54 45	8.8	56 25.5	56 38.6	42.0	45.7	49.3	52.8	56	45.68		
56	7.0	41.0	9.0		29.5					+8.09		+9.08	
					32.0							-9.9	
(8) - D	$\frac{\kappa'}{100}$				29.00							53.77	
a_1												-1.86	
												51.91	
		8.5		56 28.5	56 35.5	39.3	42.9	46.2	50.0	56	42.78		
					31.6					+10.99		+9.50	
					34.0							-1.11	
(8) - D	$\frac{\kappa'}{100}$				31.37							+2.6017	
a_2												53.73	
												-1.05	
												51.74	

Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	$+3.35$ z	δ'
d	+15.86 1.20030 9.90178 1.22444	2 38.7 9.75047 1.10313	43.0	81.7	32.1 4083	50 52	7.50 0.74 -16.77	0.74 -12.68	30	52 53 43.35 48.06 - 7 + 62 + 11.02 + 40 - 28.60 53 33.54 24.44 53 48.00 - 5 - .50 + 1.03 + 40 - 28.70 54 33.60	✓ +10.73 +10.73 14.08
(8) - D ₁₀₀	-2.13 -16.96	51 9.02	53 16.6	32 33							
d	-12.69 1.10346 9.90187 1.12769	2 3.2 9.75030 1.00612	6.9	10.1	2. 505	52 50 52 52	13.30 37.86 + 13.42 + 10.14		30	52 54 24.44 53 48.00 - 5 - .50 + 1.03 + 40 - 28.70 54 33.60	✓ +10.68 +10.68 14.30
(8) - D ₁₀₀	-2.13 -16.96	51 9.06	54 16.6	53							
d	+34.27 1.53491 9.88906 1.54633	0 46.5 9.80105 1.45832	53.6	100.1	0 5005	50 41 50 45	58.30 50.92 - 35.18 - 28.73	51.54 - 28.73	40	50 45 15.74 22.81 - 32 - 18 + 8.75 + 35 - 28.50 45 62.6	+6.60 11.95
(8) - D ₁₀₀	-2.21 -17.07	53 20.35	44 49.2	40							
d	+25.99 1.41481 9.88906 1.42623	0 54.5 9.80105 1.33822	1.4	115.9	0 5795	50 41 50 45	50.40 44.96 - 26.68 - 21.79		40	50 45 18.28 23.14 - 18 - 22 + 8.74 + 35 - 28.60 45 66.8	+6.64 12.11
(8) - D ₁₀₀	-2.21 -17.07	53 20.28	44 49.6	12							
d	+12.22 1.08707 9.90924 1.11867	2 45.1 9.76677 1.09762	49.4	145	2 4725	54 10 54 13	1.10 54.34 - 12.14 - 9.47		10	54 13 40.58 44.87 - 4 - 64 + 12.47 + 50 - 29.00 13 31.57	+12.29 15.64
(8) - D ₁₀₀	-2.11 -17.15	55 9.16	13 14.4	12							
d	+42.26 1.62593 9.90924 1.65237	2 25.5 9.76677 1.45106	31.2	54.7	2 2835	54 10 54 14	20.00 14.56 - 45.45 - 32.74	13 45.52 74.94 15.33	10	54 13 29.11 41.82 - 47 - 60 + 12.48 + 50 - 29.10 13 32.01	38.25 13 45.58 - 15 - 62 + 12.48 + 50 - 29.20 13 32.01
(8) - D ₁₀₀	-2.11 -17.15	53 36.4	40.5	76.9	2 38.45	54 10 54 14	0.90 4.46 - 26.21 - 18.88	45.55 + 12.21 15.63	10	54 13 29.11 41.82 - 47 - 60 + 12.48 + 50 - 29.10 13 32.01	
d	+13.72 1.13735 9.91336 1.17307	1 56.7 9.75859 1.01830	41.5	118.2	1 5910	54 55 54 59	49.25 41.84 - 44.90 - 10.43	42.49 - 10.43	25	54 59 26.97 32.06 - 5 - 46 + 13.31 + 50 - 29.40 59 39.41	✓ +13.30 16.65
(8) - D ₁₀₀	-2.09 -17.19	55 54.37	59 2.4	24							
d	+5.16 0.71265 9.91354 0.74855	4 55.0 9.75823 1.05932	0.8	115.8	4 57.90	54 57 54 59	50.45 45.01 - 45.05 - 5.60 - 22.20 - 3.92		20	54 59 14.45 44.45 - 41.84 - 41.84 - 41.84 - 41.84 - 41.84 - 41.84	1 41.09 - 1 - 119 + 13.33 + 50 - 29.20 1 27.94
(8) - D ₁₀₀	-2.09 -17.19	55 49.64	110.8	7							
d	+16.68 1.22220 9.91221 1.25677	4 22.8 9.46093 1.10549	26.8	9.6	4 2480	54 43 54 47	23.55 16.14 - 18.06 - 12.75	16.79 - 12.75	35	54 47 58.11 4.04 - 7 - 101 + 13.08 + 50 - 29.10 46 50.79	+12.50 15.85
(8) - D ₁₀₀	-2.10 -17.23	56 49.81	46 33.6	39							
d	+11.41 1.05729 9.91221 1.09186	4 27.4 9.76093 1.04058	32.2	59.6	4 2880	54 43 54 47	18.55 13.11 - 12.36 - 8.72		35	54 47 0.75 4.39 - 3 - 108 + 13.08 + 50 - 29.20 46 51.08	+13.47 15.89
(8) - D ₁₀₀	-2.10 -17.23	56 49.84	46 33.8								

Date₁ = 1876 Oct. 29Observer
RecorderDate₂ = Oct. 30Observer
Recorder

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Star.	α	δ	Mag.	T_s	T_m	T_o	T_f	T_e	T_h	Sum	Mean	Red. to T_m	T
58	52	52	8.8	21	58	35.9	58	57.2	54.5	57.8	13	45	
58	146	226	9.1			35.8						58	57.8
						415							+ 9.08
						38.73						59	6.03
													- 1.97
(8) - D													406
a_1													
			9.0	58	210	58	48.5	51.7	55.0	58.4	1.9	58	55.10
						25.3							+ 9.50
						27.5							- 1.03
(8) - D						2460							+ 2.4614
a_2												59	6.03
													- 1.94
													409
22	0	48	9.0	22	0	20.8	0	44.3	47.6	51.0	54.2	57.7	0
0	105	301	9.3			23.9							50.96
						26.8							+ 9.08
(8) - D						2383							- 9.1
a_1												0	59.13
													- 2.00
													57.13
			8.9	0	6.9	0	41.3	44.8	48.0	51.6	54.9	0	48.12
						9.9							+ 9.50
						12.9							- 1.03
(8) - D						990							+ 2.4614
a_2												0	59.05
													- 1.97
													57.08
2	42	52	5.0	2	163	2	37.4	40.7	44.2	47.5	51.0	2	44.16
2	4.1	385	6.2			18.6							+ 9.08
						22.7							- 9.1
(8) - D						1953						2	52.33
a_1													- 2.02
													50.31
			5.8	2	15.0	2	34.5	37.9	41.4	44.7	48.0	2	41.30
						17.5							+ 9.50
						20.3							- 1.03
(8) - D						1760							+ 2.4614
a_2												2	52.25
													- 1.99
													50.26
3	38	54	9.4	3	22.2	3	32.7	36.2	40.0	43.6	47.2	3	38.94
3	0.8	488	9.5			25.2							+ 9.08
						29.7							- 9.9
(8) - D						2570						3	48.03
a_1													- 1.95
													46.08
			9.4	3	18.2	3	29.8	33.5	37.2	40.7	44.1	3	37.06
						20.8							+ 9.50
						24.7							- 1.12
(8) - D						2123							+ 2.4614
a_2												3	48.04
													- 1.92
													46.13
8	0	53	8.9	7	41.8	7	56.9	0.6	38	74	10.9	8	39.2
7	22.9	225	9.0			44.5							+ 9.08
						47.4							- 9.5
(8) - D						4457						8	120.5
a_1													- 2.06
													9.99
			9.0	8	70	7	54.2	57.7	1.0	48	8.1	8	1.16
						105							+ 9.50
						133							- 1.07
(8) - D						1027							+ 2.5214
a_2												8	12.11
													- 2.03
													10.08

Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ'
	+19.13 1.28 171 9.89 27 1.30 334	3 11.2 9.78 478 1.88 852	15.9	71 58	13.53	24 28	34.80 27.42 -20.11	28.04 -15.45	55	52 28 13.31 12.59 -10 -74 +10.58 +40 -29.00 27 57.08	+3.35 +3.42 +10.14 13.49
d											
$(\delta) - D$	$\frac{d'}{100}$										
-2.20 δ_1		59 1.86		27 39.8	58						
-17.32											
	+30.50 1.48 430 9.89 337 1.50 603	3 2.3 9.78 461 1.39 127	6.9	9.2 3	4.60	24 28	43.75 38.31 -32.06 -24.62		55	52 28 6.25 13.69 -25 -74 +10.57 +40 -29.10 27 57.99	+9.98 13.40
d											
$(\delta) - D$	$\frac{d'}{100}$										
-2.20 δ_2		59 1.89		27 40.7	49						
-17.32											
	+24.83 1.43 345 9.90 014 1.45 595	4 53.1 9.78 329 1.33 910	57.8	109 4	55.45	32 36	52.90 45.52 -26.67 -21.83	46.14 -21.83	45	52 36 16.95 24.31 -19 -113 +10.72 +40 -29.10 36 8.36	+9.80 13.15
d											
$(\delta) - D$	$\frac{d'}{100}$										
-2.20 δ_1		0 54.93		35 51.0	49						
-17.41											
	+38.22 1.58 229 9.90 014 1.60 479	4 44.9 9.78 329 1.48 794	50.1	95.0 4	47.50	33 36	0.85 55.41 -40.25 -30.76		45	52 36 15.16 24.65 -38 -115 +10.72 +40 -29.20 36 8.46	+9.59 13.01
d											
$(\delta) - D$	$\frac{d'}{100}$										
-2.20 δ_2		0 54.88		35 51.0	43						
-17.41											
	+24.63 1.39 146 9.90 072 1.41 454	3 57.5 9.78 230 1.29 612	1.5	119.0 3	59.50	38 42	48.85 41.47 -25.47 -19.75	42.06 -19.75	40	52 42 15.54 22.31 -16 -92 +10.82 +40 -29.20 42 6.60	+10.14 13.49
d											
$(\delta) - D$	$\frac{d'}{100}$										
-2.21 δ_1		2 48.10		41 49.1	44						
-17.49											
	+23.70 1.37 475 9.90 072 1.39 783	3 58.1 9.78 230 1.27 941	3.4	121.5 4	0.75	38 42	47.60 42.16 -24.99 -19.03		40	52 42 17.17 23.13 -15 -96 +10.82 +40 -29.30 42 7.36	+10.11 13.53
d											
$(\delta) - D$	$\frac{d'}{100}$										
-2.21 δ_2		2 48.05		41 49.9	30						
-17.49											
	+14.24 1.15 351 9.91 301 1.18 888	0 21.5 9.75 931 1.03 518	26.2	7.7 0	23.85	52 56	24.50 17.12 -15.45 -10.54	17.74 -10.54	30	54 56 1.67 6.90 -5 -9 +13.25 +50 -29.50 55 54.36	+13.61 16.96
d											
$(\delta) - D$	$\frac{d'}{100}$										
-2.15 δ_1		3 43.93		55 36.8	30						
-17.53											
	+15.83 1.19 948 9.91 301 1.23 485	0 19.3 9.75 931 1.07 115	25.9	45.2 0	22.60	52 56	25.75 20.31 -14.14 -11.78		30	54 56 3.44 8.53 -7 -10 +13.24 +50 -29.60 55 55.92	+13.57 16.99
d											
$(\delta) - D$	$\frac{d'}{100}$										
-2.15 δ_2		3 43.98		55 38.4	57						
-17.53											
	+19.35 1.28 668 9.90 509 1.31 413	2 14.0 9.77 456 1.18 360	18.2	12.2 2	16.10	25 29	32.25 24.87 -20.61 -15.26	25.49 -15.26	55	53 29 4.26 10.23 -9 -53 +10.68 +45 -29.60 28 59.49	+10.57 13.56
d											
$(\delta) - D$	$\frac{d'}{100}$										
-2.23 δ_1		8 7.76		28 36.8	57						
-17.71											
	-9.1 0.95 904 9.90 509 9.77 456	2 37.2 9.77 456 1.18 360	40.7	77.9 2	38.95	25 29	9.40 3.96 +7.18		55	29 11.14 -3 -60 +11.67 +45 -29.70 28 56.85	+11.47 14.91
d											
$(\delta) - D$	$\frac{d'}{100}$										
-2.23 δ_2		8 7.85		28 38.6							
-17.71											

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Star.	α	δ	Mag.	T_s	T_m	T_e	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
498 2 9 8 κ (8) - D) κ'_{100} a_1	24 49.7	53 54 49.5	8.8 9.2	22 8 58.7 3.0 5.6 24.3	9 22.7	26.3	29.8	33.3	36.7 +8.11	9 29.76 + 9.08 - 9.7 9 37.89 - 2.06 35.81			
κ (8) - D) κ'_{100} a_2			8.9	9 13.5 16.5 20.5 16.83	9 20.1	23.2	26.9	30.4	34.0 +10.94	9 28.92 + 9.50 - 1.11 +2.59 9 37.86 - 2.03 35.83			
10 14 9 κ (8) - D) κ'_{100} a_1	36.3	53 52 47.6	9.1 9.2	9 54.4 58.0 1.1 57.83	10 9.0	12.8	16.0	19.8	23.3 +8.11	10 16.20 + 9.08 - 9.7 10 24.31 - 2.08 22.23			
κ (8) - D) κ'_{100} a_2			9.1	10 15.3 18.0 22.0 18.43	10 6.4	9.9	13.4	16.8	20.6 +10.94	10 13.42 + 9.50 - 1.11 +2.55 10 24.36 - 2.05 22.31			
11 6 10 κ (8) - D) κ'_{100} a_1	27.1	54 2 53 56.9	7.0 7.8	10 44.5 48.6 57.2 48.10	11 0.7	4.1	7.6	11.1	14.5 +8.11	11 7.60 + 9.08 - 9.7 11 15.71 - 2.08 13.63			
κ (8) - D) κ'_{100} a_2			8.0	11 8.3 16.0 12.6 10.30	10 57.6	13	4.8	-8.3	12.0 +10.94	11 4.80 + 9.50 - 1.11 +2.55 11 15.74 - 2.06 13.68			
13 3 12 κ (8) - D) κ'_{100} a_1	24.5	51 26 22.3	9.0 8.9	12 33.6 36.5 40.0 36.70	13 0.8	4.1	7.6	10.8	14.1 +8.20	13 7.48 + 9.08 - 8.8 13 15.68 - 2.19 13.49			
κ (8) - D) κ'_{100} a_2			9.0	12 24.2 26.8 29.2 26.73	12 38.0	1.4	4.7	8.0	11.1 +10.90	13 -4.64 + 9.50 - 1.11 +2.40 13 15.54 - 2.16 13.38			
14 8 13 κ (8) - D) κ'_{100} a_1	29.4	51 29 28.7	8.4 8.5	13 44.3 48.0 57.6 47.97	14 5.8	9.0	12.3	15.7	19.3 +8.20	14 12.42 + 9.08 - 8.8 14 20.62 - 2.20 18.42			
κ (8) - D) κ'_{100} a_2			8.8	13 47.2 50.4 52.7 50.10	14 3.1	6.4	9.7	12.8	16.4 +10.90	14 9.68 + 9.50 - 1.11 +2.40 14 20.58 - 2.18 18.40			

Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ'
	+27.33	0' 11.3	13.8	71	30' 13.55	52	34.80		30	53' 58" 58.74	
d	1.43664					53	56	27.72	28.01	56' 6.74	
(8) - D	9.90759	9.76991						-29.28	-21.33	-19	+442
δ_1	1.46659	1.32891								-5	14.77
	-2.22									+1116	
	-17.77									+50	
		9 33.59		55	34.1					-29.60	
										55' 51.88	
	+10.09	0 25.2	31.0	56.2	0 28.10	53	56	20.25		30	53' 56' 44.2
d	1.00889										6.94
(8) - D	9.90759	9.76991						14.81		-3	+12.50
δ_2	1.63384	1.089616						-10.81		-12	15.92
	-2.22							-7.87		+12.15	
	-17.77									+50	
		9 33.61		55	35.4					-29.70	
										55' 53.16	
	+18.37	2 39.6	43.5	83.1	2 41.53	50	6.80			30	53' 53' 39.75
d	1.26411					53	53	59.72	54.0.04		45.69
(8) - D	9.90741	9.77026						-17.67	-14.35	-8	+10.92
δ_1	1.29388	1.15673								-62	14.27
	-2.23									+1112	
	-17.80									+50	
		10 20.00		53	12.5					-29.70	
										53' 30.26	
	-5.01	2 59.1	3.1	112.2	3 56.10	53	49	47.25		30	53' 53' 47.18
d	0.69984							41.81			45.72
(8) - D	9.90741	9.77026						+5.37		-1	+11.88
δ_2	0.72966	0.59246						+3.91		-72	15.30
	-2.23									+1211	
	-17.80									+50	
		10 20.08		53	13.4					-29.50	
										53' 31.22	
	+19.50	2 59.0	3.1	122.1	3 1.05	59	47.30			20	54' 3' 18.99
d	1.29003					54	3	39.92	40.51		25.37
(8) - D	9.90832	9.76852						-20.93	-15.17	-7	+12.01
δ_1	1.32071	1.18091								-69	15.36
	-2.23									+1229	
	-17.84									+50	
		11 11.40		2	53.2					-29.70	
										3' 11.03	
	+30.78	3 19.4	23.4	428	3 21.40	59	26.95			20	54' 56' 54.44
d	9.90823	9.76840				54	3	21.57		3	25.79
(8) - D	0.74036	0.59292						+4.28		-1	+11.98
δ_2	0.76870									-79	15.40
	-2.23									+1228	
	-17.84									+50	
		11 11.45		2	53.4					-29.90	
										3' 11.29	
	+30.78	2 24.6	30.9	55.5	2 27.75	25	20.60			55	51' 28' 41.30
d	1.48827					51	29	13.22	13.81		48.43
(8) - D	9.89344	9.79431						-31.92	-25.41	-25	+9.06
δ_1	1.50407	1.40494								-57	12.41
	-2.32									+9.53	
	-17.91									+35	
		13 11.17		28	13.3					-29.60	
										28' 31.24	
	+34.91	2 18.6	25.0	43.6	2 21.80	25	26.35			55	51' 28' 41.84
d	1.57875					51	29	21.11			49.82
(8) - D	9.89344	9.79431						-30.31		-38	+8.93
δ_2	1.59455	1.49542						-31.29		-56	12.35
	-2.32									+9.52	
	-17.91									+35	
		13 11.06		28	14.6					-29.70	
										28' 32.47	
	+28.45	1 6.1	11.4	17.5	1 8.75	26	39.60			55	51' 30' 6.85
d	1.38828					51	30	32.22	32.81		12.67
(8) - D	9.89364	9.79399						-25.37	-20.17	-16	+9.49
δ_1	1.40428	1.30463								-25	12.84
	-2.32									+9.55	
	-17.96									+35	
		14 16.10		29	38.0					-29.60	
										29' 55.91	
	+19.58	1 10.6	16.1	6.7	1 13.35	26	35.00			55	51' 30' 9.25
d	1.29181					51	30	29.56			13.40
(8) - D	9.89352	9.79415						-20.31		-11	+9.49
δ_2	1.30771	1.20832						-16.16		-27	12.91
	-2.32									+9.54	
	-17.96									+35	
		14 16.08		29	38.6					-29.80	
										29' 56.51	

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Star.	α	δ	Mag.	T_e	T_m	T_s	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
16 33													
κ													
(8) - D													
α_1													
κ													
(8) - D													
α_2													
17 36	51 13	9.1	22 17	12.0	17 35.3	38.8	42.1	45.3	48.5	17	43.0		
κ	58.7	7.9	9.4	15.8							+ 9.08		
(8) - D				18.4							- 87		
α_1				15.90							50.21		
κ											- 2.25		
(8) - D											47.96		
α_2													
18 31	50 43	9.4	18 14.2	18 35.1	38.1	41.4	45.0	48.2	18	41.256			
κ	58.5		17.8								+ 9.08		
(8) - D			20.4								- 85		
α_1			17.47								49.85		
κ											- 2.28		
(8) - D											47.57		
α_2													
18 32	51 26	8.8	18 10.8	19 31.6	38.9	38.2	41.5	44.8	19	38.20			
κ	54.1	20.8	8.9	13.9							+ 9.08		
(8) - D			17.3								- 88		
α_1			14.00								46.40		
κ											- 2.27		
(8) - D											44.13		
α_2													
20 0	50 11	8.9	20 39.3	21 0.9	4.1	7.2	10.7	14.0	21	7.38			
κ	21.4	6.0	43.4								+ 9.09		
(8) - D			45.8								- 83		
α_1			42.83								15.64		
κ											- 2.33		
(8) - D											13.31		
α_2													
21 0	50 11	8.9	20 38.2	20 58.0	1.4	4.5	7.8	10.9	21	4.52			
κ			42.0								+ 9.50		
(8) - D			45.2								- 95		
α_1			41.80								23.54		
κ											- 2.30		
(8) - D											13.12		
α_2													

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Star.	α	δ	Mag.	T_s	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
22 25 21 47.2 K	51 19 12.9	7.8 8.0	22 22	52 22	23.9	27.3	30.6	33.8	37.2 +8.22	22	30.56 +9.09 -8.7 38.78 -2.31 36.47		
(8) - D) κ'_{100}										22			
a_1													
K		8.2	21 58.6	22 21.0	24.3	27.8	31.0	34.5 +10.91	22	27.72 +9.50 -9.9 +2.40			
(8) - D) κ'_{100}									22	38.63 -2.29 36.34			
a_2													
23 46 23 7.5 K	51 26 21.0	9.5 9.2	23 29.7	23 45.7	49.1	52.3	55.7	58.9 +8.21	23	52.34 +9.09 -8.8 0.55 -2.32 58.23			
(8) - D) κ'_{100}									24				
a_1													
K		9.5	24 6.9	23 43.2	46.6	50.2 50.9	53.2	56.7 +10.90	23	49.94 +9.50 -1.00 +2.40			
(8) - D) κ'_{100}									24	0.84 -2.30 49.54	58.54		
a_2													
23 14 24 34.1 K	53 45 39.7	8.3 8.8	25 0.7	25 10.4	13.9	17.3	20.8	24.4 +8.14	25	17.34 +9.09 -9.5 25.50 -2.28 23.22			
(8) - D) κ'_{100}									25				
a_1													
K		9.0	25 17.6	25 7.4	10.9	14.5	18.2	21.9 +10.97	25	14.58 +9.50 -1.07 +2.54			
(8) - D) κ'_{100}									25	25.55 -2.25 23.30			
a_2													
26 9 25 30.8 K	50 28 22.7	8.2 8.2	25 45.3	26 9.9	13.0	16.3	19.5	22.8 +8.24	26	16.30 +9.09 -8.5 24.54 -2.38 22.16			
(8) - D) κ'_{100}									26				
a_1													
K		8.6	25 53.4	26 7.0	10.1	13.6	17.0	20.1 +10.90	26	13.56 +9.50 -9.6 +2.36			
(8) - D) κ'_{100}									26	24.46 -2.36 22.10			
a_2													
27 14 26 34.3 K	53 22 16.8	6.8 6.5	26 48.0	27 10.9	14.6	18.0	21.5	24.9 +8.14	27	17.98 +9.09 -9.5 26.12 -2.31 23.81			
(8) - D) κ'_{100}									27				
a_1													
K		6.6	26 49.4	27 8.6	11.8	15.2	18.7	22.0 +10.95	27	15.26 +9.50 -1.07 +2.52			
(8) - D) κ'_{100}									27	26.21 -2.28 23.93			
a_2													

Runs

+ 3.35

13

+ 3.42

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	8'
d	+22.29 1.34811 9.89264 1.36311	0 22.5 9.79558 1.26605	28.2	10.7	5	17	23.00		5	51° 20' 52.55"	
(δ) - D	$\frac{d'}{100}$					51	21	15.62 -23.07	16.24 -16.45		
δ_1	-2.38 -18.27	22 34.09	20 23.5							51° 20' 52.55" + 9.52 12.84	
d	+25.99 1.41481 9.89264 1.42981	0 19.8 9.79558 1.33275	27.3	47.1	5	17	24.80		5	51° 20' 52.46"	
(δ) - D	$\frac{d'}{100}$					51	21	19.36 -26.90 -21.52			
δ_2	-2.38 -18.27	22 33.96	20 22.4							51° 20' 52.46" + 9.44 12.89	
d	+19.44 1.28870 9.89334 1.30440	3 41.1 9.79447 1.18553	45.7	6.8	58	24	4.95		55	51° 27' 37.41"	
(δ) - D	$\frac{d'}{100}$					51	27	57.57 -20.16	58.19 -15.33		
δ_1	-2.39 -18.32	23 55.85	27 6.7							51° 27' 37.41" + 8.950 12.25	
d	+13.53 1.13130 9.90676 1.16042	4 13.9 9.79463 1.19480 1.22715	19.5	13.4	59	23	31.65		55	51° 26' 44.71"	
(δ) - D	$\frac{d'}{100}$					51	27	26.21 -4.50 +16.57			
δ_2	-2.39 -18.32	23 56.15	27 6.7							51° 26' 44.71" + 6.73 12.15	
d	+13.53 1.13130 9.90676 1.16042	0 4.1 9.79447 1.02513	8.8	12.9	40	42	41.90		40	53° 46' 20.25"	
(δ) - D	$\frac{d'}{100}$					53	46	34.52 -14.47	35.14 -10.60		
δ_1	-2.34 -18.37	25 20.88	45 50.5							53° 46' 20.25" + 4.36 14.71	
d	-6.09 0.78462 9.90676 0.81365	0 20.1 9.79463 0.67862	25.9	46.0	40	42	25.35		40	53° 46' 26.42"	
(δ) - D	$\frac{d'}{100}$					53	46	19.91 + 6.51 + 4.77			
δ_2	-2.34 -18.37	25 20.96	45 51.5							53° 46' 26.42" + 12.34 15.76	
d	+27.93 1.441607 9.88741 1.45584	1 42.8 9.80351 1.37142	48.1	10.9	56	26	2.90		55	50° 29' 26.95"	
(δ) - D	$\frac{d'}{100}$					50	29	55.82 -28.57	56.14 -23.55		
δ_1	-2.43 -18.40	26 19.73	28 55.7							50° 29' 26.95" + 6.17 11.52	
d	+17.26 1.23704 9.88741 1.24681	1 52.7 9.80351 1.16291	59.1	11.8	56	25	52.45		55	50° 29' 29.36"	
(δ) - D	$\frac{d'}{100}$					50	29	47.01 -17.65 -14.55			
δ_2	-2.43 -18.40	26 19.67	28 55.6							50° 29' 29.36" + 8.26 11.68	
d	+26.21 1.41847 9.90471 1.44554	2 8.8 9.77524 1.31604	11.9	20.7	56	20	38.00		0	53° 24' 2.92"	
(δ) - D	$\frac{d'}{100}$					53	24	30.62 -27.90	31.24 -20.71		
δ_1	-2.37 -18.44	27 21.44	23 35.5							53° 24' 2.92" + 10.35 13.70	
d	+22.46 1.35717 9.90462 1.38415	2 10.6 9.77541 1.25494	15.5	6.1	2	20	35.30		0	53° 24' 5.67"	
(δ) - D	$\frac{d'}{100}$					53	24	29.86 -24.22 -17.99			
δ_2	-2.37 -18.44	27 21.56	23 37.7							53° 24' 5.67" + 11.39 14.81	

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Star.	α	δ	Mag.	T_a	T_m	T_s	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
28 14 27 34.1 κ	52 36 50.7	9.1 9.3	22 27	54.0 57.3 6.2 57.17	28 12.9	16.3	19.7	23.1	26.5 +8.18	28 19.70 +9.09 -9.1 27.88 -2.38 25.50			
(S) - D) κ'_{100}													
a_1													
κ		9.3		28 9.2 12.0 14.2 11.80	28 10.1	13.5	16.9	20.3	23.6 +10.93	28 16.88 +9.50 -1.03 +24.66 27.81 -2.36 25.45			
(S) - D) κ'_{100}													
a_2													
30 07 29 27.4 κ	53 0 52 55.3	- 9.0	29 40.4	30 5.4 4.0 4.4 43.93	8.9	12.4	15.8	19.2	+8.16	30 12.34 +9.09 -9.3 20.50 -2.37 18.13			
(S) - D) κ'_{100}													
a_1													
κ		8.9		29 29.7 31.8 34.9 32.3	30 2.8	6.2	9.7	13.0	16.6 +10.94	30 9.66 +9.50 -1.05 +24.97 20.60 -2.34 18.26			
(S) - D) κ'_{100}													
a_2													
Single Observations													
Oct. 29 21 41 42 41 8.0 κ	54 56 57.8	9.6 9.4	21 41	33.2 33.20	41 36.9	39.9	44.2	47.6	51.0 +8.08	41 43.92 +9.08 -1.00 -1.7 52.00 -1.65 50.35			
(S) - D) κ'_{100}													
a_1													
Oct. 29 21 50 3 49 27.6 κ	52 54 49.6	7.7 8.3	21 49	47.8 50.3 53.5 50.53	49 58.9	23	5.8	9.2	12.4 +8.15	50 5.72 +9.08 -9.3 13.87 -1.85 12.02			
(S) - D) κ'_{100}													
a_2													
Oct. 29 22 24 20 23 47.0 κ	51 50 48.2	7.4 8.0	22 24	18.2 21.8 23.9 21.30	24 23.6	26.8	30.3	33.5	37.0 +8.20	24 30.24 +9.09 -8.9 38.44 -2.31 36.13			
(S) - D) κ'_{100}													
a_1													
κ													
(S) - D) κ'_{100}													
a_2													
κ													
(S) - D) κ'_{100}													
a_1													
κ													
(S) - D) κ'_{100}													
a_2													

Runs

+ 3.35

15

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ'
d	+22.58 1.35276 9.90024 1.37536	3 57.7	1.9	119.6	48 59.80	33 48.55	37 41.17	41.79	45	52 37 17.44	
$(\delta) - D$	$\frac{d'}{100}$										
δ_1	-2.39 -18.47	28 23.11		36 48.4						13.46	
d	+5.08 0.70586 9.90014 0.72836	4 12.8	17.9	10.7	4 15.35	33 33.00	37 27.06		45	52 37 32.91	
$(\delta) - D$	$\frac{d'}{100}$										
δ_2	-2.39 -18.47	28 23.06		36 48.2						13.56	
d	+28.41 1.45347 9.90254 1.47837	4 29.2	33.2	62.4	4 31.20	58 17.15	2 9.77	10.39	20	53 1 39.68	
$(\delta) - D$	$\frac{d'}{100}$										
δ_1	-2.40 -18.54	30 15.73		1 12.5						13.71	
d	+34.53 1.54438 9.90254 1.59928	4 23.5	28.7	12.2	4 26.10	58 22.25	2 16.81		20	53 1 37.07	
$(\delta) - D$	$\frac{d'}{100}$										
δ_2	-2.40 -18.54	30 15.86		1 11.4						13.58	
d	+10.72 1.03019 9.91319 1.06574	3 42.9	45.9	8.8	3 44.40	54 3.95	57 56.57	57.19	25	54 57 44.44	
$(\delta) - D$	$\frac{d'}{100}$										
δ_1	-1.99 -16.52	41 48.36		57 20.4						16.22	
d	+15.19 1.18156 9.90206 1.20598	0 2.8	7.9	10.7	0 53.5	52 43.00	56 35.62	36.24	30	52 56 14.55	
$(\delta) - D$	$\frac{d'}{100}$										
δ_2	-2.12 -16.92	50 9.90		55 13.3						14.74	
d	+8.94 0.95134 9.89574 0.96944	4 49.6	56.9	106.5	4 53.25	47 55.10	51 47.72	48.34	30	51 57 38.40	
$(\delta) - D$	$\frac{d'}{100}$										
δ_1	-2.38 -18.34	24 33.75		51 5.1						12.55	
d											
$(\delta) - D$	$\frac{d'}{100}$										
δ_2											
d											
$(\delta) - D$	$\frac{d'}{100}$										
δ_1											
d											
$(\delta) - D$	$\frac{d'}{100}$										
δ_2											

570

501

16

Date₁ = 1876 Nov. 4
 $n = -.81$
 $C = -.10$

Observer
 Recorder

Date₂ = Nov. 5
 $n = -.83$
 $C = -.10$

Observer
 Recorder

Run

Star.	α	δ	Mag.	T_s	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
1876phae. 2	16 16	54 4	8.8	22	15	35.6	16	75	108	144	180	216	
κ	15 368	53 52.3	8.8			38.0							
						40.7							
						38.70							
$((\delta) - D) \frac{\kappa'}{100}$													
a_1													
κ			9.1	15	52.1	16	70	10.7	14.0	17.6	21.0		
$((\delta) - D) \frac{\kappa'}{100}$						53.1							
a_2						58.4							
						55.20							
κ	18 28	53 11	8.6	18	12.6	18	33.9	37.5	40.9	44.4	47.8		
κ	18 0.4	53 5.6	8.7			16.2							
						18.8							
						15.87							
$((\delta) - D) \frac{\kappa'}{100}$													
a_1													
κ			8.8	18	6.7	18	33.5	36.8	40.4	44.0	47.3		
$((\delta) - D) \frac{\kappa'}{100}$						10.3							
a_2						12.7							
						9.90							
κ	19 33	54 4	8.7	19	13.2	19	37.4	40.9	44.2	47.8	51.5		
κ	19 4.8	53 58.3	8.9			16.0							
						19.7							
						16.30							
$((\delta) - D) \frac{\kappa'}{100}$													
a_1													
κ			9.0	19	20.2	19	37.1	40.3	43.9	47.4	51.1		
$((\delta) - D) \frac{\kappa'}{100}$						24.3							
a_2						27.0							
						23.83							
κ	20 40	53 26	8.4	20	10.7	20	40.0	43.6	47.0	50.4	53.9		
κ	20 7.2	20.8	9.0			13.9							
						17.3							
						13.97							
$((\delta) - D) \frac{\kappa'}{100}$													
a_1													
κ			8.9	20	32.7	20	39.8	43.0	46.5	50.1	53.6		
$((\delta) - D) \frac{\kappa'}{100}$						36.1							
a_2						40.6							
						36.47							
κ	21 33	53 59	8.7	21	13.7	21	28.1	31.4	35.3	38.6	42.4		
κ	20 55.9	54.0	8.9			17.4							
						20.8							
						17.30							
$((\delta) - D) \frac{\kappa'}{100}$													
a_1													
κ			8.9	21	33.5	21	27.4	30.8	34.7	37.9	41.5		
$((\delta) - D) \frac{\kappa'}{100}$						36.5							
a_2						39.3							
						36.43							

Runs

Run "1"
 1004 +3 56.03
 5 +3 55.25 56.30

"25" +3.41
 -2.5 +3.62

+3.41

17

+3.62

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	8'
d	+36.36 1.56062 9.90860 1.59158	0 3.0 9.76800 1.45098	8.2	11.2	20' 5.60	54 6	42.75 38.78 -34.05 -28.25		20	54 6	59.73 10.53 -3.5 -3 +12.20 +12.20 +5.70 -30.70 5 55.56
(8) - D											15.73
δ_1	-2.27 -18.04	16 21.98		5 37.5							
d	+18.86 1.27534 9.90851 1.30641	0 18.4 9.76817 1.16607	24.2	42.6	20 21.30	54 6	27.05 22.30 -22.25	23.35 -14.66	20	54 6	2.05 8.69 -9 -7 +12.44 +5.70 -30.80 5 54.29
(8) - D											16.40
δ_2	-2.27 -18.04	16 22.04		5 36.2							
d	+25.03 1.39846 9.90358 1.42440	3 55.4 9.77728 1.29810	0.9	116.3	13 58.15	53 12	50.20 46.23 -26.64 -19.16		10	53 12	19.66 26.37 -16 -100 +11.24 +40 -30.80 12 9.46
(8) - D											13.89
δ_1	-2.31 -18.13	18 46.36		11 51.3							
d	+30.52 1.48458 9.90358 1.51052	3 51.6 9.77728 1.38422	56.5	8.1	13 54.05	53 12	51.30 49.55 -32.40	50.60 -24.22	10	53 12	17.15 26.38 -25 -98 +11.47 +40 -30.90 12 9.74
(8) - D											14.26
δ_2	-2.31 -18.13	18 48.35		11 54.6							
d	+28.06 1.44809 9.90842 1.47887	1 26.8 9.76835 1.33880	31.9	58.7	21 29.35	54 5	19.00 15.03 -26.72 -21.82		20	54 4	44.91 53.21 -20 -38 +12.18 +50 -30.90 4 37.82
(8) - D											15.51
δ_1	-2.29 -18.17	19 51.81		4 19.6							
d	+20.13 1.30384 9.90842 1.33462	1 34.1 9.76835 1.19455	38.6	12.7	21 36.35	54 5	12.00 7.25 -21.61	8.30 -15.65	20	54 4	45.64 52.65 -10 -40 +12.42 +50 -31.00 4 37.69
(8) - D											16.04
δ_2	-2.29 -18.17	19 51.87		4 19.5							
d	+33.01 1.51865 9.90499 1.54600	3 45.0 9.77473 1.41574	50.9	95.9	58 47.95	53 27	0.40 56.43 -35.16 -26.05		55	53 27	21.27 30.38 -28 -95 +11.51 +45 -30.90 27 13.62
(8) - D											14.14
δ_1	-2.32 -18.21	20 54.39		26 55.4							
d	+10.13 1.00561 9.90499 1.63296	4 49 9.77473 0.90270	9.9	14.8	59 7.40	53 27	40.95 46.20 -10.79	37.25 -4.99	55	53 27	25.44 29.26 -3 -102 +11.74 +45 -31.00 27 13.02
(8) - D											14.76
δ_2	-2.32 -18.21	20 54.47		26 54.8							
d	+17.86 1.25188 9.90805 1.28229	0 30.4 9.76904 1.14328	46.3	76.7	25 38.35	54 1	10.00 6.03 -14.16 -13.91		25	54 0	46.84 52.12 -8 -15 +12.07 +50 -31.00 0 36.89
(8) - D											15.77
δ_1	-2.31 -18.24	21 42.56		0 18.6							
d	-1.94 0.29447 9.90805 1.32488	0 52.4 9.76904 0.18587	56.9	8.3	25 57.15	54 0	54.20 49.45 +2.11	50.50 +1.53	25	54 0	51.56 52.03 -0 -23 +12.03 +50 -31.10 0 37.15
(8) - D											16.22
δ_2	-2.31 -18.24	21 42.32		0 18.9							

Date₁ = 1876 Nov. 4Observer
RecorderDate₂ = Nov. 5Observer
Recorder

18

Run

Star.	α	δ	Mag.	T_s	T_m	T_o	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
22	16	54 1	9.5	22 22	60 22 9.3	12.5	16.2	20.1	23.6	166	22	16.3 412	
	21	36.9	8.3		8.4 16.3		16.7	16.6	+1178			+13.07	
	κ				13.7							-1.12	
	(8) - D	κ'			9.37						22	-1.17	
	a_1											-2.08	
												26.04 12	
	κ		9.6	22 18.3	22 8.8	12.0	15.9	19.6	22.8	158	22	15.82 90	
				18.30	15.8		15.9	16.1	+13.21			+13.53 2	
	(8) - D	κ'										-1.15	
	a_2										22	-1.17	
												28.05 11	
												-2.05	
												25.97 26.06	
24	26	53 27	8.5	23 46.6	24 19.7	23.2	26.6	30.0	33.7		24	26.64	
	23	46.7	8.7		49.4				+118.0			+13.06	
	κ				37.6							-1.09	
	(8) - D	κ'			49.20						24	-1.17	
	a_1											38.44	
												-2.13	
												36.31	
	κ		8.8	23 48.3	24 19.2	22.5	26.2	29.6	33.2		24	26.14	
				57.7					+12.24			+13.53 2	
	(8) - D	κ'			53.2							-1.12	
	a_2				57.73						24	-1.17	
												38.38	
												-2.10	
												36.27 8	
25	41	54 14	8.3	25 5.2	25 34.8	38.4	41.8	45.3	48.9		25	41.8 88	
	25	1.7	8.8		9.3				+1177			+13.06	
	κ				12.4							-1.12	
	(8) - D	κ'			8.97							-1.17	
	a_1										25	53.65	
												-2.12	
												37.53	
	κ		8.7	25 8.0	25 34.1	37.8	41.3	45.0	48.4		25	41.34	
				11.5					+12.21			+13.53 2	
	(8) - D	κ'			14.2							-1.15	
	a_2				11.23						25	-1.17	
												53.57	
												-2.09	
												37.45 6	
26	56	54 47	8.8	26 14.8	26 47.4	51.1	54.4	58.2	1.7		26	54.53	
	26	16.1	9.0		17.7				+117.6			+13.06	
	κ				21.1							-1.13	
	(8) - D	κ'			17.87							-1.17	
	a_1										27	6.32	
												-2.12	
												4.20	
	κ		8.9	26 29.0	26 46.9	50.6	54.0	57.6	1.4		26	54.10	
				32.1					+12.20			+13.53 2	
	(8) - D	κ'			34.7							-1.16	
	a_2				31.93						27	-1.17	
												6.32	
												-2.09	
												4.20	
28	5	54 26	8.5	27 28.1	27 57.3	0.6	4.0	2.8	11.4		28	4.22	
	27	25.1	8.4		80.9				+117.6			+13.06	
	κ				84.4							-1.13	
	(8) - D	κ'			31.13							-1.17	
	a_1										28	15.98	
												-2.14	
												13.84	
	κ		8.6	27 47.7	27 56.4	0.1	3.8	2.2	10.7		28	3.68	
				31.6					+12.20			+13.53 2	
	(8) - D	κ'			34.4							-1.16	
	a_2				51.17						28	-1.17	
												15.90	
												-2.12	
												13.75 6	

Runs

+3.41

19

+3.62

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	8'
+7.05		3' 49.1	54.1	103.2	23 51.60	58	56.75		20	54 2' 45.30	
d		0.84323819				54 2	52.78			41.38	
(8) - D	$\frac{d'}{100}$	0.5738240.73429m					-5.48			-1	+4.65
δ_1		22 23.81		2 13.1			-5.426			+97	15.06
-2.31										+1213	
-18.26										+50	
-240		3 57.6	2.0	119.6	23 59.80	58	48.55		20	54 8' 10.41	
d		0.39445m				54 2	43.80			2 46.78	
(8) - D	$\frac{d'}{100}$	0.42504 0.28551					+26.61			-0	+4.87
δ_2		22 23.75		2 12.9			+19.3			-100	15.49
-2.31							1.87			+12.37	
-18.26										+50	
										-31.70	
										2 31.4238	
										2 31.17	
d		3 0.6	6.1	6.7	3 335	24	45.00		55	53 28' 1.15	
(8) - D	$\frac{d'}{100}$	1.573341				53 28	41.03			11.50	
δ_1		24 33.97		27 36.4			-39.88			-37	+10.64
-2.34							-29.53			-77	14.25
-18.34										+1153	
										+45	
										-31.00	
										27 54.75	
d		3 4.9	8.6	13.5	3 6.75	24	41.60		55	53 28' 0.20	
(8) - D	$\frac{d'}{100}$	1.53668				53 28	36.85			10.76	
δ_2		24 33.94		27 36.1			-36.65			-31	+11.13
-2.34							-24.14			-77	14.75
-18.34										+1176	
										+45	
										-31.10	
										27 54.41	
d		0 17.9	24.0	41.9	0 20.95	12	27.40		10	54 15' 48.02	
(8) - D	$\frac{d'}{100}$	1.57733				54 16	23.43			57.96	
δ_1		25 49.20		15 24.4			-35.41			-28	+12.53
-2.33							-25.47			-7	15.94
-18.38										+12.38	
										+50	
										-31.10	
										15 42.80	
										15 42.80	
d		0 21.1	26.2	7.3	0 23.65	12	24.70		10	54 15' 47.55	
(8) - D	$\frac{d'}{100}$	1.47871				54 16	19.95			37.69	
δ_2		25 49.13		15 24.4			-32.40			-23	+12.79
-2.33							-23.31			-10	16.41
-18.38										+12.62	
										+50	
										-31.30	
										15 42.80	
										15 42.80	
d		2 7.6	12.7	20.3	2 10.15	45	38.20		35	54 48' 54.48	
(8) - D	$\frac{d'}{100}$	1.56455				54 49	34.23			623	
δ_1		27 1.88		48 32.6			-39.75			-34	+12.56
-2.32							-28.03			-53	15.97
-18.43										+12.95	
										+50	
										-31.20	
										48 51.00	
										48 51.00	
d		2 20.0	24.8	4.8	2 22.40	45	25.95		35	54 48' 57.18	
(8) - D	$\frac{d'}{100}$	1.34577				54 49	21.20			49 5.32	
δ_2		27 1.89		48 32.1			-24.02			-13	+13.00
-2.32							-16.93			-60	16.62
-18.43										+1323	
										+50	
										-31.40	
										48 50.54	
										48 50.54	
d		3 24.9	30.5	55.4	3 27.70	24	20.65		55	54 27' 40.99	
(8) - D	$\frac{d'}{100}$	1.51940				54 28	16.68			5.19	
δ_1		28 11.50		27 16.8			-25.69			-28	+11.94
-2.34							-25.49			-87	15.35
-18.47										+1259	
										+50	
										-31.30	
										27 85.24	
										27 85.24	
d		3 42.4	46.8	9.2	3 44.60	24	3.75		55	54 27' 45.57	
(8) - D	$\frac{d'}{100}$	1.09726				54 29	54.00			50.41	
δ_2		28 11.42		27 16.5			-13.49			-5	+12.36
-2.34							-9.64			-93	15.68
-18.47										+1284	
										+50	
										-31.40	
										27 34.92	

Date₁ = 1876 Nov. 4Observer
RecorderDate₂ = Nov. 5Observer
Recorder

20

Ru

Star.	α	δ	Mag.	T_s	T_m	T_a	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
29 ^m 28 ^s κ	4 24.2	53 25 19.9	7.5 7.3	22 28 30.9 35.3 37.8 34.67	28 57.4	0.8	4.2	7.9	11.3 +11.80	29 ^m 29 ^s	432 +13.06 -1.09 -1.17 16.12 -2.20 13.92		
(8) - D	κ'_{100}												
α_1													
κ		8.3		28 40.4 43.8 47.0 43.73	28 56.9	0.2	3.8	7.0	10.7 +12.24	29 ^m 29 ^s	382 +13.532 -1.12 -1.17 15.98 -2.17 13.78 ⁹		
(8) - D	κ'_{100}												
α_2													
31 ^m 30 ^s κ	8 24.2	54 27 21.3 19.2	9.0 8.9	30 27.6 32.1 34.7 31.47	30 56.0	59.4	2.9	6.6	10.2 +11.76	31 ^m 31 ^s	302 +13.06 -1.13 -1.17 14.78 -2.19 12.59		
(8) - D	κ'_{100}												
α_1													
κ		9.1		30 31.5 33.7 37.4 34.20	30 55.3	59.0	2.4	6.1	9.5 +12.20	31 ^m 31 ^s	246 +13.532 -1.16 -1.17 14.67 -2.17 12.48 ⁹		
(8) - D	κ'_{100}												
α_2													
32 ^m 31 ^s κ	16 26.8	54 28 22.8	8.9 9.1	31 46.0 48.3 53.6 49.63	32 8.9	12.3	15.9	19.5	22.9 +11.76	32 ^m 32 ^s	1690 +13.06 -1.13 -1.17 27.64 -2.21 25.45		
(8) - D	κ'_{100}												
α_1													
κ		9.0		31 43.4 46.8 49.9 46.70	32 8.4	11.9	15.4	18.8	22.3 +12.20	32 ^m 32 ^s	1536 +13.532 -1.16 -1.17 27.57 -2.18 25.39 ⁸		
(8) - D	κ'_{100}												
α_2													
34 ^m 33 ^s κ	34 52.9	54 19 13.6	8.9 9.1	34 23 6.9 11.1 6.77	34 26.3	29.8	33.4	36.9	40.5 +11.77	34 ^m 34 ^s	3838 +13.06 -1.12 -1.17 45.15 -2.24 42.91		
(8) - D	κ'_{100}												
α_1													
κ		9.0		34 17 5.1 7.7 4.83	34 25.9	29.3	32.8	36.4	39.9 +12.21	34 ^m 34 ^s	3284 +13.532 -1.15 -1.17 45.08 -2.22 ⁵ 42.86 ⁵		
(8) - D	κ'_{100}												
α_2													
35 ^m 34 ^s κ	38 57.9	54 21 15.3	8.9 8.7	35 9.9 13.1 16.2 13.07	35 31.2	34.7	38.0	41.8	45.4 +11.76	35 ^m 35 ^s	3822 +13.06 -1.13 -1.17 49.98 -2.26 47.72		
(8) - D	κ'_{100}												
α_1													
κ		8.8		34 58.3 1.9 5.1 1.77	35 30.6	34.1	37.5	41.2	44.6 +12.20	35 ^m 35 ^s	3760 +13.532 -1.16 -1.17 49.81 -2.23 47.58 ⁷		
(8) - D	κ'_{100}												
α_2													

Runs

21

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	8'
d	+29.65 1.447202 9.90490 1.49928	4' 18.5	22.9	41.4	59 4' 28.70	53 23	27.65 23.68 -21.57 -23.40		55	53 26' 52.11 27 00.28 -23 +16.64 -107 1405 +1149 +45 -31.20 26 43.13	
(8) - D) $\frac{d'}{100}$	-2.38 -18.50	29 11.54		26 24.6							
δ_1											
d	+19.99 1.30081 9.90490 1.32807	4 26.0	31.5	57.5	59 4 28.75	53 23	19.60 14.85 -21.28 -15.78	15.90	55	53 26 53.54 27 0.12 -10 +10.96 -113 14.58 +1174 +45 -31.30 26 43.40	
(8) - D) $\frac{d'}{100}$	-2.38 -18.50	29 11.41		26 24.9							
δ_2											
d	+31.55 1.49900 9.91042 1.53178	4 56.4	2.8	119.2	59 4 59.60	54 26	48.75 46.78 -34.42 -24.31		55	54 26 10.76 20.47 -26 +11.54 -125 14.95 +12.55 +50 -31.40 26 40.2	
(8) - D) $\frac{d'}{100}$	-2.36 -18.57	31 10.23		25 45.4							
δ_1											
d	+28.26 1.45114 9.91042 1.48395	4 58.5	5.1	124.6	59 4 23.0	54 26	46.05 41.80 -30.48 -21.78	42.35	55	54 26 10.82 20.97 -21 +11.55 -125 15.47 +12.81 +50 -31.50 26 4.54	
(8) - D) $\frac{d'}{100}$	-2.36 -18.57	31 10.13		25 46.0							
δ_2											
d	+26.24 1.41946 9.91060 1.45242	2 12.2	17.2	9.4	57 2 14.70	54 29	33.65 29.68 -28.34 -20.23		55	54 29 1.34 9.45 -18 +12.38 -55 15.79 +12.61 +50 -31.50 28 53.74	
(8) - D) $\frac{d'}{100}$	-2.37 -18.61	32 23.08		28 35.1							
δ_1											
d	+28.66 1.45728 9.91060 1.49024	2 12.1	16.1	8.2	57 2 14.10	54 29	34.25 24.52 -30.92 -22.06	30.58	55	54 28 58.58 29 8.49 -21 +12.60 -55 16.22 +12.86 +50 -31.60 28 53.11	
(8) - D) $\frac{d'}{100}$	-2.37 -18.61	32 23.01		28 34.5							
δ_2											
d	+26.61 1.42504 9.90984 1.45724	0 58.1	43.1	81.2	5 40.60	54 21	7.75 3.48 -28.66 -20.56		5	54 20 35.12 43.22 -19 +12.56 -17 16.00 +12.45 +50 -31.50 20 27.72	
(8) - D) $\frac{d'}{100}$	-2.40 -18.68	34 40.51		20 9.0							
δ_1											
d	+28.83 1.44762 9.90984 1.47985	0 57.7	41.9	79.6	5 39.80	54 21	8.55 3.80 -30.19 -21.65	4.85	5	54 20 33.61 43.20 -20 +12.55 -17 16.47 +12.72 +50 -31.70 20 27.97	
(8) - D) $\frac{d'}{100}$	-2.40 -18.68	34 40.45		20 9.3							
δ_2											
d	+25.15 1.40054 9.91005 1.43295	3 49.8	55.1	104.9	3 52.45	54 22	55.90 51.93 -27.14 -19.41		0	54 22 24.83 32.82 -16 +11.87 -77 15.28 +12.80 +50 -31.60 22 16.20	
(8) - D) $\frac{d'}{100}$	-2.40 -18.71	35 45.32		21 57.5							
δ_1											
d	+35.83 1.55425 9.91005 1.58666	3 40.9	45.4	6.3	3 43.15	54 23	5.20 0.45 -38.64 -27.66	1.50	0	54 22 21.54 33.84 -33 +12.00 -92 15.62 +12.75 +50 -31.70 22 17.76	
(8) - D) $\frac{d'}{100}$	-2.40 -18.71	35 45.17		21 59.0							
δ_2											

Date₁ = 1876 Nov. 4Observer
RecorderDate₂ = Nov. 5Observer
Recorder

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Star.	α	δ	Mag.	T_s	T_m	T_a	T_e	T_g	T_h	Sum	Mean	Red. to T_m	T
37	53 14	53 14	6.0	22 36 30.3	37 0.4	4.0	7.2	10.7	14.0	37	9.26		
κ			6.0	33.3							+13.06		
				35.7							-1.08		
				33.10							-1.7		
(S) - D											19.07		
a_1											-2.31		
											16.76		
κ		55		36 21.2	37 0.0	3.1	6.7	10.0	13.6	37	6.68		
				24.8							+13.592		
				27.9							-1.10		
				24.77							-1.7		
(S) - D											18.95		
a_2											-3.28		
											16.68		
38	54 55	54 55	8.7	38 21.3	38 49.9	53.4	57.0	0.7	44	38	57.08		
κ			8.5	24.0							+13.06		
				27.0							-1.16		
				24.10							-1.7		
(S) - D											8.81		
a_1											-2.29		
											6.52		
κ		8.9		38 24.1	38 49.4	53.1	56.8	0.6	4.1	38	57.50		
				27.2							+13.592		
				30.5							-1.19		
				27.27							-1.7		
(S) - D											8.98		
a_2											-2.26		
											6.78		
40	54 16	54 16	8.5	39 41.6	40 6.1	9.5	13.0	16.4	20.2	40	13.04		
κ			8.9	45.3							+13.05		
				47.7							-1.12		
				44.87							-1.7		
(S) - D											24.80		
a_1											-2.33		
											22.47		
κ		8.8		39 32.5	40 5.3	9.0	12.6	16.0	19.6	40	12.50		
				85.3							+13.592		
				88.0							-1.15		
				35.27							-1.7		
(S) - D											24.72		
a_2											-2.30		
											22.40		
41	54 12	54 12	6.6	40 49.8	41 7.9	11.3	14.8	18.3	21.8	41	14.82		
κ			7.1	52.0							+13.05		
				54.2							-1.12		
				52.00							-1.7		
(S) - D											26.58		
a_1											-2.34		
											24.24		
κ		6.7		40 40.5	41 7.2	10.8	14.4	17.7	21.5	41	14.82		
				43.2							+13.592		
				46.8							-1.15		
				43.50							-1.7		
(S) - D											26.54		
a_2											-2.32		
											24.20		
42	53 21	53 21	9.1	42 14.6	42 57.2	54.6	58.1	1.4	4.8	42	57.02		
κ			9.0	17.8							+13.05		
				20.4							-1.09		
				17.60							-1.7		
(S) - D											9.81		
a_1											-2.39		
											7.42		
κ		8.9		42 24.3	42 50.6	54.0	57.6	0.9	4.3	42	57.48		
				27.2							+13.592		
				29.4							-1.12		
				26.97							-1.7		
(S) - D											9.72		
a_2											-2.37		
											7.34		

Runs

+3.41

23

	T _m - T	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	8'
d	+34.16 1.53352 9.90386 1.55974	0' 20.3 9.77677 1.43265	26.8	71	10' 23.5	12	24.80 20.83 -36.29 -27.08	10	53	15' 44.54 53.75 -31 -10 +11.82 +45 -31.50 1.5 37.02	+4.36 14.77
((8) - D) $\frac{d'}{100}$	-2.44 -18.76	37 14.32	15 18.3								
d	+41.71 1.62024 9.90386 1.64646	0 15.5 9.77677 1.51937	20.9	36.4	10' 18.20	12	30.15 25.40 -44.31 -33.07	10	53	15' 44.09 53.38 -45 -7 +11.54 +45 -31.70 1.5 36.77	+11.47 15.09
((8) - D) $\frac{d'}{100}$	-2.44 -18.76	37 14.22	15 18.0								
d	+32.98 1.51825 9.91310 1.55371	4 42.0 9.75913 1.43997	45.2	72	29 4 43.60	53	4.75 0.78 -25.79 -25.10	25	54	56' 24.99 35.68 -28 -18 +13.11 +50 -31.80 3.6 19.44	+12.15 15.56
((8) - D) $\frac{d'}{100}$	-2.41 -18.82	39 4.11	56 0.6								
d	+29.53 1.47026 9.91310 1.50572	4 45.4 9.75913 1.35175	50.1	95.5	29 4 47.75	53	0.60 55.85 -32.04 -22.48	25	54	56' 23.81 34.42 -23 -120 +13.38 +50 -31.90 5.6 18.59	+12.45 16.07
((8) - D) $\frac{d'}{100}$	-2.41 -18.82	39 4.30	55 59.8								
d	+28.17 1.44099 9.90960 1.48175	3 15.5 9.76607 1.33822	20.7	36.2	8 3 18.10	14	30.25 26.28 -34.32 -21.79	5	54	18' 55.96 44.49 -21 -82 +12.40 +50 -31.70 1.7 48.07	+11.87 15.28
((8) - D) $\frac{d'}{100}$	-2.44 -18.85	40 20.03	17 29.2								
d	+37.23 1.57089 9.90960 1.60294	3 9.9 9.76590 1.45915	12.8	23.7	8 3 11.35	14	37.00 32.75 -42.08 -28.78	5	54	18' 52.17 4.52 -37 -80 +12.68 +50 -31.90 1.7 48.25	+12.01 15.63
((8) - D) $\frac{d'}{100}$	-2.44 -18.85	40 19.97	17 29.4								
d	+22.82 1.35832 9.90924 1.38992	2 58.2 9.76677 1.24745	3.0	121.2	13 3 0.60	9	47.75 43.78 -24.54 -17.68	10	54	13' 19.24 26.10 -14 -75 +12.82 +50 -31.80 1.3 9.64	+11.93 15.34
((8) - D) $\frac{d'}{100}$	-2.45 -18.88	41 5.36	12 50.8								
d	+30.82 1.48883 9.90924 1.52043	2 52.7 9.76677 1.37796	57.9	10.6	12 2 55.30	9	53.05 48.30 -33.15 -23.88	10	54	13' 15.15 25.47 -25 -72 +12.57 +50 -31.90 1.3 9.31	+12.12 15.74
((8) - D) $\frac{d'}{100}$	-2.45 -18.88	41 21.76	12 50.4								
d	+40.42 1.60660 9.90462 1.63358	2 56.4 9.77541 1.50437	1.2	117.6	12 2 58.80	19	49.55 46.58 -43.04 -31.94	0	53	23' 2.57 13.64 -43 -75 +11.44 +45 -31.70 2.2 56.06	+10.71 14.12
((8) - D) $\frac{d'}{100}$	-2.48 -18.93	43 4.94	22 37.1								
d	+30.51 1.48824 9.90462 1.51142	3 6.2 9.77541 1.38221	10.2	16.4	13 8.20	19	50.15 45.40 -32.14 -24.11	0	53	23' 2.93 12.34 -24 -76 +11.69 +45 -31.90 2.2 55.18	+11.12 14.74
((8) - D) $\frac{d'}{100}$	-2.48 -18.93	43 4.87	22 36.2								

Date₁ = 1876 Nov. 4Observer
RecorderDate₂ = Nov. 5Observer
Recorder

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1876phae.

Star.	α	δ	Mag.	T_s	T_m	T_o	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
22 44 24 43 42.4 κ	53 59 54.4	8.6 8.4	22 43 57.2 53.4 57.5 54.70	44 18.8	22.4	25.8	29.3	32.8 +11.76	44 25.82 +13.05 -1.12 -1.7 37.58 -2.39 35.2719				
(8) - D) $\frac{\kappa'}{100}$													
a_1													
		8.6	43 48.5 52.0 54.8 51.9877	44 18.4	22.0	25.3	29.2	32.6 +12.21	44 25.50 +13.532 -1.15 -1.7 37.71 -2.37 35.384				
κ													
(8) - D) $\frac{\kappa'}{100}$													
a_2													
45 49 45 6.2 κ	53 14 8.8	8.2 8.6	45 8.8 11.5 14.4 11.87	45 41.8	45.2	48.2	52.1	55.7 +11.79	45 48.74 +13.05 -1.09 -1.7 0.53 -2.43 45 58.10				
(8) - D) $\frac{\kappa'}{100}$													
a_1													
		8.4	45 11.2 15.2 18.8 15.07	45 41.4	44.9	48.2	51.6	55.2 +12.24	45 48.38 +13.532 -1.12 -1.7 0.50 -2.419 45 58.89				
κ													
(8) - D) $\frac{\kappa'}{100}$													
a_2													
46 52 45 59.4 κ	53 45 40.1	9.0 8.7	46 14.7 15.0 21.2 17.63	46 36.7	40.0	43.6	47.1	50.7 +11.79	46 43.62 +13.05 -1.09 -1.7 53.41 -2.43 52.98				
(8) - D) $\frac{\kappa'}{100}$													
a_1													
		9.0	46 17.1 20.0 23.0 20.03	46 36.3	39.7	43.1	46.4	49.9 +12.24	46 43.08 +13.532 -1.12 -1.7 55.32 -2.411 52.91				
κ													
(8) - D) $\frac{\kappa'}{100}$													
a_2													
48 3 47 19.8 κ	53 19 14.0	9.5 9.5	47 29.0 32.3 35.2 32.7	47 56.8	0.1	3.6	7.0	10.4 +11.79	48 3.58 +13.05 -1.09 -1.7 15.37 -2.46 12.91				
(8) - D) $\frac{\kappa'}{100}$													
a_1													
		9.5	47 36.6 39.3 42.3 39.40	47 56.2	59.6	3.0	6.2	10.0 +12.24	48 3.00 +13.532 -1.12 -1.7 15.24 -2.44 12.9980				
κ													
(8) - D) $\frac{\kappa'}{100}$													
a_2													
48 53 48 12.1 κ	54 44 37.7	8.2 8.5	48 32.3 35.3 38.6 35.40	48 49.5	53.2	56.7	0.3	3.8 +11.75	48 36.70 +13.05 -1.13 -1.7 54.5 -2.44 6.01				
(8) - D) $\frac{\kappa'}{100}$													
a_1													
		8.3	48 37.2 41.3 45.0 41.17	48 49.3	52.7	56.1	59.7	3.4 +12.20	48 56.24 +13.532 -1.16 -1.7 54.4 -2.413 6.02				
κ													
(8) - D) $\frac{\kappa'}{100}$													
a_2													

Runs

+ 3.41

25

+ 3.62

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ'
d	+31.12 1.49304 9.90814 1.52354	4 39.6 9.76887 2.08427	43.6	82.2	24 4	58 54 2	58.75 27.8 25.75		20	54 1 29.40 38.55 -25 -118 +1213 +50 -31.80 1 21.36	+11.20 1461
$((\delta) - D) \frac{d'}{100}$	-2.48 -18.98	44 32.71		1 2.4							
d	+33.73 1.52802 9.90814 1.55852	4 38.9 9.76887 2.41925	42.7	81.6	24 4	58 54 2	58.55 28.0 26.18	3.85 -26.26	20	54 1 26.62 37.59 -29 -117 +1237 +50 -32.00 1 20.64	+11.43 150.5
$((\delta) - D) \frac{d'}{100}$	-2.48 -18.98	44 32.86		1 1.7							
d	+34.17 1.54019 9.90396 1.59651	0 10.2 9.77660 2.14691	15.4	5.6	10 0	12 53 16	35.55 31.58 29.49 29.45		10	53 15 52.09 2.13 -37 -5 +1182 +45 -31.80 15 45.09	+11.35 1476
$((\delta) - D) \frac{d'}{100}$	-2.50 -19.02	45 55.60		15 26.1							
d	+33.19 1.52101 9.90386 1.54723	0 13.8 9.77677 2.14201	18.6	12.4	10 0	12 53 16	32.15 27.40 25.26	28.45 -26.31	10	53 15 52.14 2.14 -29 -7 +1156 +45 -31.90 15 45.51	+11.65 1527
$((\delta) - D) \frac{d'}{100}$	-2.50 -19.02	45 55.59		15 26.5							
d	+25.99 1.41481 9.90665 1.44402	3 52.6 9.77130 2.13084	55.1	57.3	38 3	43 53 47	53.50 51.53 27.80 20.35		35	53 47 23.78 3.18 -18 -97 +1187 +45 -31.90 47 13.88	+11.19 1460
$((\delta) - D) \frac{d'}{100}$	-2.50 -19.04	46 50.48		46 54.8							
d	+23.05 1.36267 9.90685 1.39188	3 52.8 9.77130 2.25633	57.9	127.3	38 3	43 53 47	53.00 48.25 24.65	49.30 -18.04	35	53 47 23.60 3.126 -14 -98 +1212 +45 -3200 47 14.33	+11.45 1507
$((\delta) - D) \frac{d'}{100}$	-2.50 -19.04	46 50.41		46 55.3							
d	+31.41 1.49707 9.90434 1.52377	0 28.0 9.77592 2.13953	34.6	62.6	5 0	17 53 21	17.05 13.08 33.40 24.85		5	53 20 39.68 48.23 -26 -12 +1142 +45 -31.90 20 31.23	+11.53 1494
$((\delta) - D) \frac{d'}{100}$	-2.52 -19.08	48 10.39		20 12.2							
d	+23.60 1.37291 9.90434 1.39961	0 37.7 9.77592 2.12719	42.1	79.8	5 0	17 53 21	8.45 3.70 25.10	4.75 -18.67	5	53 21 38.68 20 46.08 -15 -15 +1165 +45 -3200 20 29.50	+11.60 1542
$((\delta) - D) \frac{d'}{100}$	-2.52 -19.08	48 10.28		20 10.4							
d	+21.30 1.32838 9.91203 1.36277	1 16.4 9.76129 2.12120	22.8	39.2	41 1	41 54 45	28.75 24.78 23.06 16.29		40	54 45 1.72 8.49 -12 -33 +1292 +50 -3200 44 52.87	+12.97 16.38
$((\delta) - D) \frac{d'}{100}$	-2.50 -19.10	49 3.51		44 33.8							
d	+16.07 1.17811 9.91203 1.21250	1 23.1 9.76129 2.10617	27.9	11.0	41 1	41 54 45	22.85 18.70 16.31	19.15 -14.53	40	54 45 1.77 7.62 -6 -35 +1318 +50 -3220 44 52.31	+13.27 16.89
$((\delta) - D) \frac{d'}{100}$	-2.50 -19.10	49 3.53		44 33.2							

Date₁ = 1876 Nov. 4Observer
RecorderDate₂ = Nov. 5Observer
Recorder

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Star.	α	δ	Mag.	T_s	T_m	T_a	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
50 59 K	29 45.8	53 34 28.7	8.3 8.0	22 49 59.0 5.7 1.3 3.33	50 21.8	25.3	28.9	32.4	35.7 +11.79	50 50	28.82 +13.05 -1.09 -1.17 40.61 -2.49 38.12		
(8) - D	κ'_{100}												
a_1													
K		8.1		49 56.0 59.2 1.8 59.00	50 21.4	24.9	28.4	31.8	35.3 +12.24	50	28.36 +13.52 -1.12 -1.17 40.60 -2.47 38.12 ³		
(8) - D	κ'_{100}												
a_2													
52 51 K	0 16.6	53 22 17.1	8.4 8.5	51 33.0 37.9 40.4 37.10	51 53.9	57.4	0.8	4.4	7.9 +11.79	52 52	0.90 +13.05 -1.09 -1.17 12.69 -2.52 10.17		
(8) - D	κ'_{100}												
a_1													
K		9.0		51 26.5 30.7 34.2 30.47	51 53.5	56.9	0.5	2.8	7.3 +12.24	52	0.40 +13.52 -1.12 -1.17 12.64 -2.50 10.18 ⁴		
(8) - D	κ'_{100}												
a_2													
53 53 K	50 7.2	52 21 13.6	8.8 9.2	53 16.1 19.7 22.6 19.27	53 45.8	49.2	52.0	55.9	59.4 +11.84	53 54	52.46 +13.05 -1.05 -1.16 4.30 -2.57 1.73		
(8) - D	κ'_{100}												
a_1													
K		8.8		53 12.4 15.3 18.4 15.37	53 45.2	48.8	52.0	55.4	59.0 +12.29	53 54	52.08 +13.52 -1.08 -1.16 4.37 -2.54 1.82 ³		
(8) - D	κ'_{100}												
a_2													
53 54 K	19 38.7	53 18 13.4	9.1 9.0	54 43.9 47.4 50.1 47.13	55 13.3	16.8	20.4	23.7	27.2 +11.79	53 55	20.28 +13.05 -1.09 -1.17 32.07 -2.57 29.50		
(8) - D	κ'_{100}												
a_1													
K		9.3		54 45.3 48.0 50.6 47.97	55 12.7	16.3	19.9	23.2	26.7 +12.24	55 55	19.76 +13.52 -1.12 -1.17 32.60 -2.52 29.45 ⁶		
(8) - D	κ'_{100}												
a_2													
56 55 K	13 30.9	54 04 53 58.7	9.0 9.0	55 51.7 56.1 58.1 54.97	56 10.6	14.0	17.5	21.1	24.8 +11.75	56 56	17.60 +13.05 -1.13 -1.17 29.35 -2.56 26.79		
(8) - D	κ'_{100}												
a_1													
K		9.1		55 47.7 50.9 54.4 50.00	56 10.2	13.5	17.0	20.3	24.0 +12.20	56 56	17.00 +13.52 -1.16 -1.17 29.20 -2.54 26.68 ⁶		
(8) - D	κ'_{100}												
a_2													

Runs

+3.41

27

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	+ 3.62 z	8'
d	+25.49 1.40634 9.90574 1.43447	0' 37.4	42.2	79.6	50' 39.8	32	8.55 4.58 -27.19 -20.05	53	50	53 35' 37.39 44.53 -17 -15 +1169 +45 -3200 35 24.76	+17.82 15.23 27.76
(8) - D) $\frac{d'}{100}$											
δ_1	-2.53 -19.14	50 35.59	35 8.6								
d	+29.36 1.46776 9.90574 1.49586	0 35.4	40.2	75.6	50 37.8	32	10.55 5.80 -31.22 -23.09	53	50	53 35 34.48 43.76 -23 -15 +1192 +45 -3220 35 27.17	+11.99 15.61
(8) - D) $\frac{d'}{100}$											
δ_2	-2.53 -19.14	50 35.60	35 8.0								
d	+23.80 1.37658 9.90471 1.40365	2 19.1	24.1	43.2	2 21.6	20	16.75 22.76 -25.53 -18.80	53	0	53 24 57.45 3.98 -15 -59 +1148 +45 -3220 35 27.17	+11.19 14.60
(8) - D) $\frac{d'}{100}$											
δ_1	-2.53 -19.18	52 7.62	23 27.4								
d	+29.93 1.47611 9.90462 1.50309	2 14.2	18.1	12.3	2 16.5	20	32.20 27.45 -31.85 -23.65	53	0	53 23 55.60 4.85 -23 -57 +1161 +45 -3220 23 46.58	+11.26 14.88
(8) - D) $\frac{d'}{100}$											
δ_2	-2.55 -19.18	52 7.59	23 28.4								
d	+33.19 1.52161 9.89908 1.54245	0 37.2	42.1	79.3	0 39.6	22	8.70 4.73 -34.64 -26.82	52	0	52 25 29.86 37.91 -29 -15 +1043 +40 -3200 25 19.71	+10.39 13.50
(8) - D) $\frac{d'}{100}$											
δ_1	-2.58 -19.23	53 59.15	25 0.5								
d	+36.71 1.56478 9.89908 1.58622	3 36.0	40.0	76.0	0 38.0	22	10.35 5.60 -36.57 -29.66	52	0	52 25 24.03 36.99 -35 -15 +1065 +40 -3210 25 19.06	+10.55 14.17
(8) - D) $\frac{d'}{100}$											
δ_2	-2.58 -19.23	53 59.25	24 59.8								
d	+33.15 1.52048 9.90434 1.54718	0 27.5	33.1	60.6	0 30.3	14	18.05 14.08 -35.25 -26.23	53	5	53 20 38.83 47.85 -29 -13 +1143 +45 -3210 20 30.62	+11.46 14.87
(8) - D) $\frac{d'}{100}$											
δ_1	-2.57 -19.26	55 26.93	20 11.4								
d	+31.79 1.50229 9.90434 1.52899	0 29.4	34.5	63.9	0 31.9	17	16.210 11.65 -33.81 -25.15	53	5	53 20 37.84 47.55 -26 -13 +1165 +45 -3230 20 30.58	+11.71 15.33
(8) - D) $\frac{d'}{100}$											
δ_2	-2.57 -19.26	55 26.89	20 11.3								
d	+22.63 1.35468 9.90851 1.38555	0 35.9	41.9	77.8	0 38.9	2	9.45 5.18 -24.30 -17.59	54	20	54 5 41.18 47.89 -14 -15 +1222 +50 -3220 5 31.53	+12.43 15.84
(8) - D) $\frac{d'}{100}$											
δ_1	-2.57 -19.29	56 24.22	5 12.2								
d	+26.00 1.41497 9.90851 1.44584	0 35.1	40.5	75.8	0 37.8	2	14.45.55 5.70 -27.92 -20.21	54	20	54 5 37.78 46.54 -18 -15 +1246 +50 -3240 5 30.39	+12.63 16.25
(8) - D) $\frac{d'}{100}$											
δ_2	-2.57 -19.29	56 24.09	5 11.1								

Date₁ = 1876 Nov. 4Observer
RecorderDate₂ =Observer
Recorder

28

Rt

Star.	α	δ	Mag.	T_{δ}	T_m	T_a	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
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 κ
 $(\delta) - D) \frac{\kappa'}{100}$

Single Observations

Nov. 4
 22 33 70 54 20 22 32 40 33 21 6.8 10.3 18.8 17.4
 32 22.5 14.4 9.4 47.8 50.8 47.53 +1175

33 10.28
 + 13.05
 - 113
 - 17
 33 22.03
 - 2.23
 19.80

 κ
 $(\delta) - D) \frac{\kappa'}{100}$
 α_2
 κ
 $(\delta) - D) \frac{\kappa'}{100}$
 α_1
 κ
 $(\delta) - D) \frac{\kappa'}{100}$
 α_2
 κ
 $(\delta) - D) \frac{\kappa'}{100}$
 α_1
 κ
 $(\delta) - D) \frac{\kappa'}{100}$
 α_2
 κ
 $(\delta) - D) \frac{\kappa'}{100}$
 α_1
 κ
 $(\delta) - D) \frac{\kappa'}{100}$
 α_2
 κ
 $(\delta) - D) \frac{\kappa'}{100}$
 α_1
 κ
 $(\delta) - D) \frac{\kappa'}{100}$
 α_2

Runs

+ 3.41

29

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ'
d											
$((\delta) - D) \frac{d'}{100}$											
δ_1											
	+22.75	0 17.2	23.4	40.30	20.15	17	28.20		5	54° 20' 59.73"	
d	1.35698					54	21	24.23		21	6.66
$((\delta) - D) \frac{d'}{100}$	4.90984	9.76552						-24.50			-13
δ_2	1.38921	1.24488						-17.57			-8
	-2.38										+12.78
	-18.63	33 17.42	20 32.7								16.19
											+1249
											+50
											-51.50
											19 51.35
											60
d											
$((\delta) - D) \frac{d'}{100}$											
δ_1											
d											
$((\delta) - D) \frac{d'}{100}$											
δ_2											
d											
$((\delta) - D) \frac{d'}{100}$											
δ_1											
d											
$((\delta) - D) \frac{d'}{100}$											
δ_2											
d											
$((\delta) - D) \frac{d'}{100}$											
δ_1											
d											
$((\delta) - D) \frac{d'}{100}$											
δ_2											

Date₁ = 1876 Nov. 12
u = -.72

Observer
Recorder

573

Date₂ = Nov. 13
n = 69

Observer
Recorder

30

1876phase.p

Star.	α	δ	Mag	T_s	T_m	T_a	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
22	27 17	54 32	8.8	22	26	53.7	27.48	8.4	11.7	15.4	19.0	27	11.86
	26	37.0	8.2			56.8				+16.18		+17.19	
	κ					56.7						-1.01	
(δ) - D)	κ'_{100}											27	28.04
a_1												-1.91	
												26.13	
κ		8.7		26	35.8	27.40	7.7	11.4	15.0	18.5	27	11.32	
						40.3				+16.74		+17.71	
						42.7						-9.7	
(δ) - D)	κ'_{100}					39.60						27	25.06
a_2												-1.88	
												26.18	
28	12	54.6	8.9	27	47.0	28.08	4.3	7.7	11.4	14.8	28	7.50	
	27	32.4	8.8			50.9				+16.20		+17.19	
	κ					53.9						-9.9	
(δ) - D)	κ'_{100}					50.60						28	24.00
a_1												-1.95	
												22.05	
κ		9.0		27	38.4	28.02	3.6	7.3	10.8	14.3	28	7.24	
						42.0				+16.76		+17.71	
						45.7						-9.5	
(δ) - D)	κ'_{100}					41.83						28	24.00
a_2												-1.92	
												22.08	
30	12	53.45	8.8	29	54.2	30.01	3.6	6.9	10.4	13.9	30	6.98	
	29	32.1	8.9			57.3				+16.23		+17.20	
	κ					0.5						-9.7	
(δ) - D)	κ'_{100}					57.33						30	23.21
a_1												-1.99	
												21.22	
κ		8.0		29	43.3	29.58.6	3.0	6.2	9.9	13.3	30	6.40	
						48.2				+16.78		+17.71	
						51.0						-9.3	
(δ) - D)	κ'_{100}					48.17						30	23.18
a_2												-1.96	
												21.22	
31	5	54.25	8.9	30	38.8	30.47.5	57.0	54.6	58.3	1.9	30	6	
	30	34.2	9.2			41.9				+16.19		+17.20	
	κ	19.5	17.8			44.9						-1.01	
(δ) - D)	κ'_{100}					41.87						31	10.55
a_1												-1.98	
												8.97	
κ		8.7		30	38.1	30.47.1	50.6	54.2	57.6	1.3	30	54.16	
						40.9				+16.74		+17.71	
						43.8						-9.7	
(δ) - D)	κ'_{100}					40.93						31	10.80
a_2												-1.95	
												8.95	
32	0	54.35	9.3	31	54.0	31.56.5	59.9	33	6.7	10.4	32	3.06	
	31	35.0	9.4			57.0				+16.19		+17.20	
	κ					0.5						-1.01	
(δ) - D)	κ'_{100}					57.17						32	19.55
a_1												-1.99	
												17.56	
κ		9.5		31	45.0	31.55.7	59.4	2.9	6.0	10.0	32	2.80	
						49.3				+16.74		+17.71	
						52.7						-9.7	
(δ) - D)	κ'_{100}					49.00						32	19.54
a_2												-1.96	
												17.58	

Nov 12 +3' 56.60 56.60 -1.28 +3.23
 13 +3' 56.48 -1.28 +3.33

Runs

31

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	$+3.33$ z	δ'
	+15.19	2' 33.8	36.9	107	52.1	30	13.00		50	54 33' 53.16	
d	1.18156					54 34	9.56	9.69		58.02	
(8) - D	9.91105	9.76324					-16.40	-11.67		-6	+12.36
δ_1	1.21497	1.06716								-73	15.59
	-2.33									+12.65	
	-18.44									+50	
		27 23.80	33 23.1							-3210	
										33 41.51	
d	+31.72	2 19.0	24.4	434	2 2170	30	26.65		50	54 33' 48.84	
(8) - D	1.50133					54 34	23.13	25		58.76	
δ_1	9.91105	9.76324					-24.26			-26	+12.23
	1.53474	1.38643					-24.37			-65	15.56
	-2.33									+12.64	
	-18.44									+50	
		27 23.85	33 23.7							-3220	
										33 42.12	
d	+17.20	3 87.9	40.6	785	3 3928	41	9.10		15	54 7' 47.19	
(8) - D	1.28553					54 8	5.66	5.70		52.34	
δ_1	9.90869	9.76782					-18.47	-13.36		-7	+4.60
	1.26658	1.12571								-101	14.83
	-2.35									+12.18	
	-18.47									+50	
		28 19.70	7 16.7							-3200	
										7 35.17	
d	+25.41	3 30.2	34.9	51	3 3255	41	15.80		15	54 7' 44.44	
(8) - D	1.40500					54 8	12.28			52.55	
δ_1	9.90869	9.76782					-27.29			-17	+11.51
	1.24360	1.29518					-19.73			-99	14.84
	-2.35									+12.17	
	-18.47									+50	
		28 19.73	7 16.8							-3210	
										7 35.29	
d	+9.65	4 09	4.8	57	4 285	38	45.50		40	53 42' 31.75	
(8) - D	0.98453					53 42	42.06	42.10		34.53	
δ_1	9.90639	9.77216					-10.31	-7.57		-3	+11.02
	1.01328	0.87905								-114	14.02
	-2.38									+1174	14.25
	-18.54									+45	
		30 18.84	41 58.0							-3220	
										42 16.58	
d	+18.23	4 53.6	58.5	121	4 5605	37	52.30		40	53 47' 29.31	
(8) - D	1.26079					53 41	48.78			34.48	
δ_1	9.90639	9.77233					-14.47			-8	+10.71
	1.28945	1.15548					-14.30			-137	+14.14
	-2.38									+1171	
	-18.54									+45	
		30 18.84	41 57.7							-3230	
										41 16.22	
d	+12.79	1 52.3	57.0	93	1 5465	20	53.70		0	54 24' 36.47	
(8) - D	1.10684					54 24	50.26	50.30		40.44	
δ_1	9.91023	9.76484					-13.74	-9.86		-5	+12.41
	1.13946	0.99407								-53	15.64
	-2.36									+1249	
	-18.57									+50	
		31 6.51	24 5.2							-3230	
										24 23.78	
d	+13.23	1 52.2	57.1	93	1 5465	20	53.70		0	54 24' 35.92	
(8) - D	1.12156					54 24	50.18			39.98	
δ_1	9.91023	9.76484					-14.26			-5	+12.39
	1.15415	1.00876					-10.20			-53	15.72
	-2.36									+1247	
	-18.57									+50	
		31 6.59	24 4.7							-3240	
										24 23.30	
d	+6.19	3 44.2	48.1	123	3 4615	29	2.20		50	54 32' 52.08	
(8) - D	0.79169					54 32	58.76	58.80		54.04	
δ_1	9.91023	9.76342					-6.68	-4.76		-1	+12.06
	0.82501	0.67747								-106	15.29
	-2.37									+1263	
	-18.60									+50	
		32 15.19	32 18.3							-3240	
										32 36.93	
d	+13.80	3 39.3	42.0	813	3 4065	29	7.70		50	54 32' 49.28	
(8) - D	1.13988					54 33	4.18			33.57	
δ_1	9.91023	9.76342					-14.90			-5	+12.01
	1.17320	1.02566					-10.61			-106	15.34
	-2.37									+1262	
	-18.60									+50	
		32 15.21	32 17.8							-3250	
										32 36.41	

Date₁ = 1876 Nov. 12Observer
RecorderDate₂ = Nov. 13Observer
Recorder

32

Star.	α	δ	Mag.	T_s	T_m	T_e	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
33	8	54 54	8.8	22 22	430	32 56.3	59.8	2.4	7.0	10.7	33	3.44	
32	27.9	49.0	9.0		463					+16.18	33	+17.20	
					494						33	-1.02	
					4623						33	19.62	
(δ) - D)	$\frac{\kappa'}{100}$											-1.99	
												17.63	
a_1													
		9.6		33 100	33 7.2		+0.8	13.0	182	21.9	33	14.62	
					1000					+16.73	33	+17.71	
κ											33	-9.8	
(δ) - D)	$\frac{\kappa'}{100}$										33	31.35	
												-1.96	
a_2												29.39	
34	47	53 44	7.4	33 57.9	34 25.5	29.0	32.6	36.0	396	34	33.57		
33	35.6	43.6	9.0		552				+16.23		34	+17.20	
					584						34	-97	
κ					5517						34	48.77	
(δ) - D)	$\frac{\kappa'}{100}$											-2.05	
												46.72	
a_1													
		9.4		34 4.0	34 24.9	28.5	31.9	35.4	380	34	31.94		
					7.8				+16.78		34	+17.71	
κ					109						34	-93	
(δ) - D)	$\frac{\kappa'}{100}$				7.57						34	48.72	
												-2.02	
a_2												46.70	
36	11	53 24	8.7	35 29.2	35 39.4	2.9	6.3	9.8	18.4	36	6.38		
35	29.8	19.5	8.8		32.7				+16.23		36	+17.20	
					35.6						36	-97	
κ					32.50						36	22.59	
(δ) - D)	$\frac{\kappa'}{100}$											-2.09	
												20.50	
a_1													
		8.8		35 52.0	2.5	5.9	9.3	12.7	36	5.88			
								+16.78		36	+17.71		
κ										36	-93		
(δ) - D)	$\frac{\kappa'}{100}$										36	22.66	
												-2.06	
a_2												20.60	
37	11	53 34	7.5	36 31.0	36 59.6	3.0	6.6	10.2	13.7	37	6.62		
36	29.4	29.4	7.3		33.6				+16.33		37	+17.20	
					37.0						37	-97	
κ					33.87						37	22.85	
(δ) - D)	$\frac{\kappa'}{100}$											-2.10	
												20.75	
a_1													
		7.3		36 35.5	36 59.3	2.6	6.0	9.6	13.0	37	6.10		
					39.6				+16.78		37	+17.71	
κ					42.3					37	-93		
(δ) - D)	$\frac{\kappa'}{100}$				39.13						37	22.88	
												-2.07	
a_2												20.81	
39	20	53 35	9.0	38 46.3	39 8.2	11.7	15.1	18.6	22.0	39	15.12		
38	37.9	30.3	9.0		49.6				+16.23		39	+17.20	
					52.0						39	-97	
κ					49.00						39	31.35	
(δ) - D)	$\frac{\kappa'}{100}$											-2.13	
												29.22	
a_1													
		8.9		38 56.7	39 7.5	11.0	14.6	18.0	22.3	39	14.48		
					0.1				+16.78		39	+17.71	
κ					56.40					39	-93		
(δ) - D)	$\frac{\kappa'}{100}$										39	31.46	
												-2.10	
a_2												29.16	

Runs

+ 3.23

33

+ 3.33

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ'
d	+14.21 123578 9.91301 1.27115	0 58.7 9.75931 1.11745	2.9	121.6	31' 0"	51 54 55	47.55 44.11 -16.67	44.15 -13.11	30	54 55' 25.44 31.04 -7 -28 +1304 +50 -3250 55 14.96	19 +13.29 16.42
(δ) - D) $\frac{d'}{100}$	-2.37 -18.63	33 15.26		54 56.3	30				30		
δ_1											
d	+4.6 0.66276 9.91301 9.75931 0.54443	0 41.4 9.75931 1.11745	45.9	7.3	0 43.6	54 56	4.70 1.18 3.50		30	55 57.68 1 -19 +1303 +50 -3260 55 47.84	+13.33 16.66
(δ) - D) $\frac{d'}{100}$											
δ_2											
d	+37.37 157252 9.90713 1.60201	0 51.4 9.77078 1.46566	54.1	53 0	52.75	46 53	55.60 52.16 -40.00 -29.22	52.20 -29.22	35	53 50 12.16 22.98 -37 -28 +1186 +50 -3240 50 55.55	+11.74 14.94
(δ) - D) $\frac{d'}{100}$	-2.41 -18.68	34 44.31		49 46.9	36				35		
δ_1											
d	+24.37 1.38686 9.90713 1.41635	1 0.9 9.77078 1.28000	5.3	6.2	1 31.0	46 53	45.25 41.73 -26.08 -19.05		35	53 50 15.65 22.68 -15 -28 +1185 +50 -3250 50 54.3	+11.92 15.25
(δ) - D) $\frac{d'}{100}$	-2.41 -18.68	34 44.29		49 46.8							
δ_2											
d	+33.86 1.52969 9.90490 1.55695	0 7.7 9.77490 1.42695	11.4	19.1	0 9.5	22 53	38.80 35.36 -36.05 -26.73	35.40 -26.73	0	53 28 55.31 8.67 -30 -3 +1144 +45 -3250 25 50.96	+11.56 14.79
(δ) - D) $\frac{d'}{100}$	-2.43 -18.73	36 18.07		25 32.2							
δ_1											
d	+39.86 1.52969 9.90490 1.55695	0 7.7 9.77490 1.42695	11.4	19.1	0 9.5	22 53	38.80 35.36 -36.05 -26.73	35.40 -26.73	0	53 28 55.31 8.67 -30 -3 +1144 +45 -3250 25 50.96	+11.56 14.79
(δ) - D) $\frac{d'}{100}$	-2.43 -18.73	36 18.17		25 32.2							
δ_2											
d	+32.75 1.51521 9.90583 1.54340	0 0.9 9.77319 1.41076	4.9	5.8	0 29.0	32 53	45.45 42.41 -34.95 -25.75	42.05 -25.75	50	53 36 7.06 16.30 -28 -0 +1161 +45 -3250 35 58.81	+11.78 15.01
(δ) - D) $\frac{d'}{100}$	-2.43 -18.76	37 18.32		35 40.0							
δ_1											
d	+26.94 1.42088 9.90583 1.44907	0 4.9 9.77319 1.31643	9.4	14.3	0 71.5	32 53	41.20 37.68 -26.19 -20.72		50	53 36 17.44 16.96 -19 -3 +1161 +45 -3260 35 54.53	+11.84 15.17
(δ) - D) $\frac{d'}{100}$	-2.43 -18.76	37 18.38		35 40.8							
δ_2											
d	+25.82 1.41196 9.90583 1.44024	4 8.6 9.77302 1.30734	14.4	20.0	4 10.0	33 53	38.35 34.91 -27.56 -20.29	34.95 -20.29	45	53 37 7.35 14.66 -17 -118 +1163 +45 -3250 36 56.12	+10.73 13.96
(δ) - D) $\frac{d'}{100}$	-2.45 -18.83	39 26.77		36 37.3							
δ_1											
d	+16.08 1.21165 9.90583 1.42408	4 14.6 1.21165 9.77319 1.10722	18.1	12.7	4 16.35	33 53	32.00 28.48 -17.38 -12.00 24		45	37 11.10 15.04 -1 -120 +1159 +45 -3260 36 52.67	+10.77 14.10
(δ) - D) $\frac{d'}{100}$	-2.45 -18.83	39 26.71		36 38.5							
δ_2											

Date₁ = 1876 Nov. 12Observer
RecorderDate₂ = Nov. 13Observer
Recorder

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Star.	α	δ	Mag.	T_e	T_m	T_e	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
42	40 44	54 11	8.8	22 40	40 028	364	399	434	470	40	399.0	+22	
	40 28	60	9.0		135				+16.21		+17.20		
	K				17.1					40	-99		
	(δ - D) $\frac{\kappa'}{100}$				1390						56.11		
	α_1										-2.13		
											53.98		
			9.0	40 41.8	40 323	358	395	429	46.4	40	39.38		
	K			44.3					+16.76		+17.71		
	(δ - D) $\frac{\kappa'}{100}$			46.7						40	-95		
	α_2			44.27							56.14		
											-2.10		
											54.04		
43	29	53 44	6.0	42 50.0	43 181	216	250	286	320	43	2506		
42	47.4	39.2	6.0	52.5					+16.23		+17.20		
	K			53.2							-97		
	(δ - D) $\frac{\kappa'}{100}$			52.57						43	41.29		
	α_1										-2.18		
											39.11		
			6.4	43 17.5	210	246	279	314	43	2448			
	K							+16.78		+17.71			
	(δ - D) $\frac{\kappa'}{100}$								43	-93			
	α_2									41.26			
										-2.16			
										39.10			
44	29	53 22	8.0	44 1.7	44 17.6	210	244	280	313	44	2450		
43	468	164	8.1	5.7					+16.23		+17.20		
	K			8.5							-97		
	(δ - D) $\frac{\kappa'}{100}$			5.30						44	40.73		
	α_1										-2.21		
											38.52		
			8.0	43 53.7	44 17.0	206	240	275	309	44	2400		
	K			58.6					+16.79		+17.72		
	(δ - D) $\frac{\kappa'}{100}$			1.9						44	-93		
	α_2			58.77							40.69		
											-2.19		
											38.60		
52	28	53 57	8.5	52 39	52 15.9	184	228	263	300	52	2288		
57	44.1	52.1	8.3	74					+16.22		+17.20		
	K			10.4							-98		
	(δ - D) $\frac{\kappa'}{100}$			7.23						52	39.10		
	α_1										-2.32		
											36.78		
			8.5	51 49.5	52 15.7	188	22.2	258	294	52	2232		
	K			52.3					+16.78		+17.72		
	(δ - D) $\frac{\kappa'}{100}$			53.8						52	-94		
	α_2			52.58							39.10		
											-2.29		
											36.81		
54	27	54 48	8.9	53 59.2	54 25.8	29.7	33.1	36.7	40.3	54	33.14		
53	53.5	42.1	8.9	2.1					+16.19		+17.20		
	K			5.3							-101		
	(δ - D) $\frac{\kappa'}{100}$			2.20						54	49.33		
	α_1										-2.32		
											47.01		
			9.0	54 17.0	54 25.4	29.0	32.5	36.0	398	54	32.54		
	K			19.9					+16.75		+17.72		
	(δ - D) $\frac{\kappa'}{100}$			23.0						54	-97		
	α_2			19.97							49.29		
											-2.30		
											46.99		

Runs

+ 3.23

35

+ 3.33

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ'
	+26.00	3 22.3	26.1	8.4	13 24.20	9	24.15	10	54 12 45.51		
d	1.41497					54 13	24.77	20.75	13	0.60	
(8) - D	9.90915	9.76695	1.30428w				-35.20	-20.15		-18	+11.64
δ_1	1.54648w									-95	14.87
	-2.44									+12.27	
	-18.87									+50	
		40 51.54		12 23.8						-32.80	
					13					12 42.67	
d	-4.9	3 45.3	49.7	15.0	3 47.50	9	0.85	10	53 56 3.52		
(8) - D	9.90915	9.76695	0.67020w			54 12	57.33	+3.80	13	1.13	+11.68
δ_2	0.57451									-1	15.01
	-2.44									-106	
	-18.87									+12.25	
		40 51.60		12 24.5						+50	
					40					-32.80	
										12 43.34	
d	+32.49	0 24.0	28.3	12.3	0 26.15	42	22.20	40	53 45 41.02		
(8) - D	1.51175					53 46	18.76	18.80	45	53.35	
δ_1	9.90664	9.77164	1.54078w				-34.74	-25.45		-27	+11.86
	1.54078w	1.40575w								-11	15.09
	-2.48									+11.77	
	-18.95									+45	
		43 36.63		45 16.7						-32.80	
					40					45 35.64	
d	0 23.1	27.9		11.0	0 25.30	42	22.85	40			
(8) - D	9.90664	9.77164				53 46	19.33			-	
δ_2										-11	
	-2.48									+11.79	
	-18.95									+45	
		43 36.62								-32.90	
d	+19.20	3 8.9	12.2	21.3	10.80	19	37.80	0	53 23 13.63		
(8) - D	1.28330					53 23	34.56	34.40		19.23	
δ_1	9.90462	9.77541	1.31028w				-20.43	-16.17		-7	+10.74
	1.31028w	1.18107w								-50	14.08
	-2.49									+11.37	
	-18.98									+45	
		44 36.03		22 41.5						-32.80	
										23 0.51	
d	+25.23	3 3.0	7.2	10.2	3 5.70	19	43.25	0	53 23 12.88		
(8) - D	1.40192					53 23	39.73			19.79	
δ_2	9.90462	9.77541	1.42890w				-16.85			-17	+10.80
	1.42890w	1.29969w					-19.94			-87	14.13
	-2.49									+11.39	
	-18.98									+45	
		44 36.11		22 42.0						-32.90	
					26					23 1.02	
d	+15.65	1 53.5	57.9	11.4	1 55.70	55	52.65	25	53 59 32.43		
(8) - D	1.19451					53 59	49.21	49.25		37.06	
δ_1	9.90796	9.76922	1.22483w				-16.78	-12.19		-7	+11.94
	1.22483w	1.08609w								-53	15.17
	-2.54									+12.04	
	-19.19									+50	
		52 34.24		58 59.8						-33.20	
					26					59 19.03	
d	+29.49	1 43.3	47.5	10.8	1 45.40	56	2.95	25	53 59 27.49		
(8) - D	1.47407					53 59	59.43			36.22	
δ_2	9.90796	9.76922	1.50439w				-34.94			-23	+11.83
	1.50439w	1.36565w					-23.21			-48	15.16
	-2.54									+12.04	
	-19.19									+50	
		52 34.27		58 58.8						-33.30	
					36					59 18.08	
d	+30.94	1 16.1	20.4	36.5	1 18.25	46	30.10	35	54 40 53.14		
(8) - D	1.49052					54 40	26.64	26.70		3.08	
δ_1	9.91248	9.76039	1.52536w				-33.52	-23.62		-25	+12.83
	1.52536w	1.37827w								-35	16.06
	-2.54									+12.73	
	-19.25									+50	
		54 44.47		49 26.5						-33.40	
					36					49 45.74	
d	+12.57	1 31.7	35.9	7.6	1 33.80	46	14.56	35	54 50 57.11		
(8) - D	1.09934					54 50	11.03			1.43	
δ_2	9.91248	9.76039	1.13418w				-13.62			-5	+12.96
	1.13418w	0.98209w					-9.60			-43	16.29
	-2.54									+12.74	
	-19.25									+50	
		54 44.45		49 25.0						-49 33.50	
										49 44.22	

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Date₁ = 1876 Nov. 12

Observer
RecorderDate₂ = Nov. 13Observer
Recorder

Ru

[illegible]

Runs

+ 3.23

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	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	$+ 3.33$ z	δ'
d	+9.50 0.97742 9.90611 1.00619	2 4.9 9.77268 9.77268 9.77268	8.6 8.6 8.6 8.6	135 135 135 135	4.7 4.7 4.7 4.7	35 35 35 35	41.60 38.16 -10.44 -7.46	38.20 38.20 38.20 38.20	45	53 39 28.42 30.74 -3 +59 +11.69 +45 -33.30 39 12.19	+11.52 1475
$(\delta) - D$	$\frac{d'}{100}$										
δ_1	-2.57 -19.26	55 27.99	38 52.9								
d	+11.30 1.05308 9.90611 1.08155	2 3.3 9.77268 9.77268 9.77268	6.6 6.6 6.6 6.6	9.92 9.92 9.92 9.92	4.95 4.95 4.95 4.95	35 35 35 35	43.10 39.88 -12.04 -8.87	43.10 39.88 -12.04 -8.87	45	53 39 27.81 31.01 -3 +59 +11.68 +45 -33.40 39 12.45	+11.51 1484
$(\delta) - D$	$\frac{d'}{100}$										
δ_2	-2.57 -19.26	55 27.98	38 53.2								
d	+28.24 1.45086 9.90759 1.48081	0 18.4 9.76891 9.76891 9.76891	22.1 22.1 22.1 22.1	40.5 40.5 40.5 40.5	20.25 20.25 20.25 20.25	52 52 52 52	28.10 24.66 -30.26 -22.04	24.70 24.70 -22.04 -22.04	30	53 56 54.40 2.66 -21 -8 +11.97 +50 -33.60 58 44.47	+12.18 1541
$(\delta) - D$	$\frac{d'}{100}$										
δ_1	-2.63 -19.46	3 57.13	55 25.0								
d	+18.93 1.27415 9.90759 1.30710	0 25.0 9.76891 9.76891 9.76891	29.9 29.9 29.9 29.9	14.9 14.9 14.9 14.9	2.745 2.745 2.745 2.745	52 52 52 52	20.90 17.38 -20.28 -14.77	20.90 17.38 -20.28 -14.77	30	53 56 57.10 2.61 -9 -13 +11.97 +50 -33.70 58 44.47	+12.25 1558
$(\delta) - D$	$\frac{d'}{100}$										
δ_2	-2.63 -19.46	3 57.23	55 25.0								
d	+24.31 1.38578 9.89888 1.40702	2 56.0 9.78543 9.78543 9.78543	0.0 0.0 0.0 0.0	116.0 116.0 116.0 116.0	2 58.00 2 58.00 2 58.00 2 58.00	19 19 19 19	50.35 46.91 -25.53 -19.70	50.35 46.91 -25.53 -19.70	0	52 23 21.38 2.25 -16 -84 +10.33 +40 -33.40 23 6.81	+12.73 1296
$(\delta) - D$	$\frac{d'}{100}$										
δ_1	-2.66 -19.49	5 31.85	22 47.3								
d	+38.66 1.58726 9.89888 1.60850	2 43.8 9.78543 9.78543 9.78543	48.1 48.1 48.1 48.1	11.92 11.92 11.92 11.92	45.95 45.95 45.95 45.95	20 20 20 20	2.10 58.88 -10.60 -31.26	2.10 58.88 -10.60 -31.26	0	52 23 18.28 2.62 -39 -72 +10.35 +40 -33.50 23 7.04	+12.92
$(\delta) - D$	$\frac{d'}{100}$										
δ_2	-2.66 -19.49	5 31.99	22 47.6								
d	+4.13 0.61595 9.90722 0.64553	4 14.9 9.77061 9.77061 9.77061	17.7 17.7 17.7 17.7	12.6 12.6 12.6 12.6	4 16.30 4 16.30 4 16.30 4 16.30	48 48 48 48	32.05 28.61 -14.22 -3.23	32.05 28.61 -14.22 -3.23	30	53 52 44.40 2.42 -1 -120 +11.90 +50 -33.60 52 6.24	+11.19 1442
$(\delta) - D$	$\frac{d'}{100}$										
δ_1	-2.65 -19.51	6 38.54	51 46.7								
d	+20.09 1.30298 9.90731 1.33265	4 0.9 9.77061 9.77061 9.77061	4.7 4.7 4.7 4.7	5.6 5.6 5.6 5.6	4 28.0 4 28.0 4 28.0 4 28.0	48 48 48 48	45.55 42.03 -24.57 -15.70	45.55 42.03 -24.57 -15.70	30	53 52 20.52 26.33 -10 -145 +11.91 +50 -33.80 52 7.05	+11.19 1452
$(\delta) - D$	$\frac{d'}{100}$										
δ_2	-2.65 -19.51	6 38.44	51 47.5								
d	+34.59 1.53895 9.90878 1.57019	2 45.7 9.76765 9.76765 9.76765	49.4 49.4 49.4 49.4	15.1 15.1 15.1 15.1	4 25.5 4 25.5 4 25.5 4 25.5	5 5 5 5	0.80 54.36 -37.17 -26.85	0.80 54.36 -37.17 -26.85	15	54 8 20.19 30.55 -31 -78 +12.19 +50 -33.90 8 11.48	+11.67 1483
$(\delta) - D$	$\frac{d'}{100}$										
δ_1	-2.72 -19.68	15 58.25	7 51.8								
d	+7.75 0.88930 9.90878 0.92044	2 8.1 9.76765 9.76765 9.76765	10.4 10.4 10.4 10.4	18.5 18.5 18.5 18.5	4 25.5 4 25.5 4 25.5 4 25.5	54 54 54 54	39.10 35.58 -8.33 -6.02	39.10 35.58 -8.33 -6.02	15	54 8 27.25 29.56 -2 -59 +12.19 +50 -34.10 8 10.87	+12.08 1541
$(\delta) - D$	$\frac{d'}{100}$										
δ_2	-2.72 -19.68	15 58.33	7 51.2								

Date₁ = 1876 Nov. 12Observer
RecorderDate₂ = Nov. 13Observer
Recorder

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Ru

Star.	α	δ	Mag.	T_s	T_m	T_e	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
16 49 16 34 κ	53 32 26.0	7.9	23	16 21.0 28.6 26.8 2380	16 40.0	43.4	47.0	50.5	53.9 +16.24	16 46.96 +17.21 - 9.7 17 3.20 - 2.40 0.50			
(8) - D) κ'_{100}													
α_1													
κ		8.0		16 14.6 14.6 18.0 1673	16 38.4	42.8	46.2	49.8	53.2 +16.40	16 46.28 +17.73 - 9.3 17 3.08 - 2.68 0.40			
(8) - D) κ'_{100}													
α_2													
17 47 17 25 κ	54 55 49.8	8.8 8.7	17	17 27.5 31.2 35.7 3147	17 39.4	42.9	46.2	49.9	53.5 +16.18	17 46.88 +17.21 - 1.03 18 25.6 - 2.68 17 59.88			
(8) - D) κ'_{100}													
α_1													
κ		8.9		17 24.5 27.0 31.0 2750	17 38.6	42.1	45.7	49.3	52.8 +16.74	17 45.70 +17.73 - 9.9 18 24.4 - 2.66 17 59.78			
(8) - D) κ'_{100}													
α_2													
18 3 18 17.6 κ	54 23 17.9	8.2 7.5	18	18 38.8 36.6 39.3 3657	18 53.0	56.5	0.1	3.5	6.9 +16.20	19 00.0 +17.21 - 1.01 19 16.20 - 2.72 13.48			
(8) - D) κ'_{100}													
α_1													
κ		7.7		18 16.0 19.0 22.2 1907	18 52.3	53.8	58.6	2.9	6.4 +16.77	18 59.40 +17.74 - 9.7 19 16.07 - 2.69 13.48			
(8) - D) κ'_{100}													
α_2													
21 12 20 26.4 κ	54 6 0.8	8.2 9.0	20	20 37.7 40.8 44.0 40.83	21 2.1	6.5	10.2	13.8	17.4 +16.22	21 10.20 +17.21 - 9.9 21 26.42 - 2.76 23.66			
(8) - D) κ'_{100}													
α_1													
κ		8.9		20 30.1 33.5 36.5 3337	21 2.8	6.2	9.7	13.3	16.7 +16.79	21 9.74 +17.74 - 9.5 21 26.53 - 2.74 23.79			
(8) - D) κ'_{100}													
α_2													
22 22 21 26.7 κ	54 39 82.3	9.0 9.1	21	21 56.3 58.9 32 5980	22 12.1	15.5	19.3	22.8	26.3 +16.20	22 19.20 +17.21 - 1.01 22 35.40 - 2.76 32.64			
(8) - D) κ'_{100}													
α_1													
κ		9.1		21 50.2 54.4 57.1 5390	22 11.5	15.0	18.6	22.1	25.7 +16.77	22 18.58 +17.74 - 9.7 22 35.35 - 2.74 32.61			
(8) - D) κ'_{100}													
α_2													

Runs

+ 3.23

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	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	$+3.33$ z	δ'
d	+23.16 1.36474 9.90546 1.39256w	3 31.1	34.9	6.0	53 31 3300 29	53 33	15.35 11.71 -24.69	11.95 -16.24	50	53 32 47.22 53.71 -14 -99 +11.57 +45 -33.80 32 34.03	+12.89 14.12
$(\delta) - D) \frac{d'}{100}$	-2.73 -19.70	16 57.77	32 14.3	53							
δ_1											
d	+29.55 1.44056 9.90546 1.49838w	3 25.6	29.3	14.9	3 27.45 29	53 33	20.90 17.38 -21.50 -23.27	57	50	53 32 45.88 54.11 -23 -98 +11.57 +45 -34.00 32 34.25	+12.81 14.14
$(\delta) - D) \frac{d'}{100}$	-2.73 -19.70	16 57.67	32 14.6	29							
δ_2											
d	+14.91 1.17348 9.91310 1.20894w	4 35.2	38.4	13.6	4 36.80 53	54 57	11.55 8.44 -16.18 -11.35	8.15	25	54 56 51.95 56.80 -6 -129 +13.07 +50 -34.00 56 38.25	+12.22 15.45
$(\delta) - D) \frac{d'}{100}$	-2.72 -19.72	17 57.16	56 18.5	29							
δ_1											
d	+18.20 1.26007 9.91310 1.29553w	4 32.1	36.0	8.1	4 34.05 53	54 57	14.30 10.75 -19.75 -13.85		25	54 56 57.03 56.93 -9 -129 +13.07 +50 -34.20 56 38.25	+12.19 15.52
$(\delta) - D) \frac{d'}{100}$	-2.72 -19.72	17 57.06	56 18.5	29							
δ_2											
d	+23.43 1.36977 9.91023 1.40236w	1 49.2	52.5	10.17	1 50.80 20	54 24	57.50 54.06 -25.26 -16.07	54.10	0	54 24 25.80 36.03 -14 -53 +12.50 +50 -34.00 24 17.59	+12.33 15.56
$(\delta) - D) \frac{d'}{100}$	-2.74 -19.74	19 10.74	23 57.8	20							
δ_1											
d	+40.33 1.60563 9.91023 1.63822w	1 35.6	39.9	15.5	1 37.75 21	54 25	10.60 7.08 -13.17 -31.16		0	54 24 23.61 35.98 -42 -45 +12.49 +50 -34.20 24 17.23	+12.67 15.45
$(\delta) - D) \frac{d'}{100}$	-2.74 -19.74	19 10.74	23 57.5	21							
δ_2											
d	+29.37 1.46790 9.90569 1.49895w	3 51.6	54.9	6.5	3 53.25 3	54 7	55.10 51.66 -31.55 -22.81	51.70	15	54 7 20.11 28.89 -22 -109 +12.18 +50 -34.00 4 8.49 9.49	+11.37 14.60
$(\delta) - D) \frac{d'}{100}$	-2.76 -19.77	21 20.90	6 49.7	18							
δ_1											
d	+36.34 1.56074 9.90869 1.59179w	3 45.3	48.9	14.2	3 47.10 4	54 7	1.25 57.73 -37.04 -25.24		15	54 7 18.60 29.49 -35 -106 +12.17 +50 -34.20 7 9.90	+12.25 14.61
$(\delta) - D) \frac{d'}{100}$	-2.76 -19.77	21 21.03	6 50.1	46							
δ_2											
d	+49.40 1.28780 9.91158 1.32174w	1 39.1	42.3	8.14	1 40.70 36	54 40	7.65 4.24 -20.98 -14.87	4.25	45	54 39 43.23 49.38 -9 -48 +12.76 +50 -34.10 39 31.20	+12.69 15.92
$(\delta) - D) \frac{d'}{100}$	-2.76 -19.79	22 29.88	39 11.4	46							
δ_1											
d	+24.68 1.39235 9.91158 1.42629w	1 34.9	38.2	13.1	1 36.55 36	54 40	11.80 8.28 -26.69 -15.92		45	54 39 41.59 49.36 -16 -45 +12.77 +50 -34.20 39 31.15	+12.66 15.99
$(\delta) - D) \frac{d'}{100}$	-2.76 -19.79	22 29.85	39 11.4	46							
δ_2											

Date₁ = 1876 Nov. 12Observer
RecorderDate₂ = Nov. 13Observer
Recorder

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Run

Star.	α	δ	Mag.	T_s	T_m	T_a	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
23 16 22 29.3 K	54 27 21.4	7.2 7.8	23 22 48.9 46.6 50.5 47.00	23 50	8.7	12.1	13.8	19.2	23	12.16 +17.21 -1.01 28.36 -2.78 25.58			
(8) - D $\frac{\kappa'}{100}$													
a_1													
K		7.7	22 45.0 48.3 51.5 48.27	23 4.6	8.2	11.6	15.4	18.9	23	11.74 +17.74 -9.7 28.57 -2.76 25.75			
(8) - D $\frac{\kappa'}{100}$													
a_2													
24 28 23 40.8 K	54 43 87.5	9.5 9.4	23 58.7 2.6 6.0 2.23	24 9.1	12.3	16.1	19.7	22.1	24	16.10 +17.21 -9.7 32.34 -2.81 29.53			
(8) - D $\frac{\kappa'}{100}$													
a_1													
K		9.1	23 49.8 52.7 53.5 52.67	24 7.5	10.9	14.3	17.6	21.3	24	14.32 +17.74 -9.3 31.13 -2.78 28.35			
(8) - D $\frac{\kappa'}{100}$													
a_2													
26 39 25 57.5 K	55 48 54 58.3	8.0 8.5	25 57.1 59.8 3.0 59.97	26 27.7	31.2	34.9	38.4	42.1	26	34.88 +17.21 -1.03 51.04 -2.83 48.21			
(8) - D $\frac{\kappa'}{100}$													
a_1													
K		7.9	26 0.8 3.8 6.7 3.77	26 27.2	30.7	34.2	38.0	41.5	26	34.32 +17.74 -9.9 50.97 -2.81 48.26			
(8) - D $\frac{\kappa'}{100}$													
a_2													
27 37 26 52.0 K	53 49 42.7	8.2 8.0	27 0.3 2.9 5.6 2.93	27 29.1	32.4	36.2	39.7	43.0	27	36.12 +17.21 -9.7 52.36 -2.86 49.50			
(8) - D $\frac{\kappa'}{100}$													
a_1													
K		8.2	27 8.6 11.8 14.8 11.73	27 28.7	32.3	35.7	39.3	42.7	27	35.74 +17.74 -9.3 52.55 -2.84 49.71			
(8) - D $\frac{\kappa'}{100}$													
a_2													
29 33 28 46.4 K	53 32 26.0	8.7 8.8	29 5.0 8.5 11.0 8.17	29 27.3	30.6	33.9	37.5	41.2	29	34.10 +17.21 -9.7 50.34 -2.89 47.45			
(8) - D $\frac{\kappa'}{100}$													
a_1													
K		9.0	29 13.5 15.7 19.7 16.30	29 26.7	30.2	33.7	37.2	40.7	29	33.70 +17.74 -9.3 50.57 -2.87 47.64			
(8) - D $\frac{\kappa'}{100}$													
a_2													

Runs

+ 3.23

41

+ 3.33

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	8'
d	+25.16 1.40071 9.91251 1.43358w	3 52.8	56.6	9.4 3 54.70	58	23	53.65 52.21 -27.14	50.25 -19.38	55	54 27 23.07 30.87 -117 -109 +12.55 +50 -34.10 27 11.79	+11.79 +12.79 15.02
(8) - D $\frac{d'}{100}$											
δ_1	-2.77 -19.80	23 22.81	26 52.0								
d	+23.47 1.37051 9.91051 1.40338w	3 54.5	58.2	12.7 3 56.35	58	23	52.00 48.48 -25.32 -18.08		55	54 27 23.16 30.40 -14 -109 +12.56 +50 -34.20 27 11.36	+11.85 +12.82 15.16
(8) - D $\frac{d'}{100}$											
δ_2	-2.77 -19.80	23 22.98	26 57.6								
d	+13.87 1.14208 9.90654 1.17161w	2 50.	7.5	12.5 2 62.5	42	40	42.10 38.66 -12.83 -10.87	38.70 -10.87	40	53 44 23.53 27.83 -5 -59 +1177 +45 -34.20 47 11.36	+11.58 +11.58 14.81
(8) - D $\frac{d'}{100}$											
δ_1											
d	+21.65 1.33546 9.77216 1.22998w	3 54.9	58.2	13.1 3 56.55	43	38	51.60 48.28 -21.65 -16.78		40	42 31.30 -12 -109 +1177 +45 -34.20 42 11.94	+11.01 +11.01 14.34
(8) - D $\frac{d'}{100}$											
δ_2											
d	+34.89 1.54270 9.91359 1.57895w	0 53.9	57.5	11.4 0 55.70	40	1	52.65 49.21 -37.93 -26.46	49.25 -26.46	20	55 5 11.28 22.79 -31 -25 +13.21 +50 -34.20 5 4.97	+12.15 16.38
(8) - D $\frac{d'}{100}$											
δ_1	-2.80 -19.84	26 45.41	4 45.1								
d	+30.55 1.48501 9.91389 1.52126w	0 57.4	19	11.9 0 59.65	20	1	48.70 45.18 -33.21 -23.17		20	55 5 11.97 22.01 -24 -28 +12.17 +50 -34.20 5 3.09	+12.15 15.48
(8) - D $\frac{d'}{100}$											
δ_2	-2.80 -19.84	26 45.46	41 43.2								
d	+33.19 1.52101 9.90704 1.55041w	1 23.5	26.9	10.4 1 25.20	36	46	23.15 19.71 -35.52 -25.96	19.75 -25.96	35	53 49 11.19 53.79 -29 -39 +11.87 +45 -34.10 49 34.56	+11.65 14.87
(8) - D $\frac{d'}{100}$											
δ_1	-2.82 -19.86	27 46.68	49 14.6								
d	+24.01 1.38039 9.90704 1.40979w	1 30.4	34.1	4.5 1 32.25	36	46	16.10 12.58 -25.69 -18.76		35	53 49 46.89 53.80 -15 -43 +11.89 +45 -34.30 49 34.59	+11.76 15.09
(8) - D $\frac{d'}{100}$											
δ_2	-2.82 -19.86	27 46.89	49 14.7								
d	+25.93 1.41980 9.90546 1.44162w	3 13.9	17.5	11.4 3 15.70	53	29	32.65 29.21 -27.64 -20.42	29.25 -20.42	50	53 33 4.57 8.83 -18 -70 +11.57 +45 -34.10 32 48.90	+11.79 14.17
(8) - D $\frac{d'}{100}$											
δ_1	-2.83 -19.88	29 44.62	32 29.0								
d	+17.40 1.24055 9.90546 1.26837w	3 22.0	26.1	8.1 3 24.05	53	29	24.30 20.78 -18.55 -13.70		50	53 33 2.23 7.08 -95 +11.59 +45 -34.30 32 47.72	+11.81 14.34
(8) - D $\frac{d'}{100}$											
δ_2	-2.83 -19.88	29 44.81	32 27.2								

Date₁ = 1876 Nov. 12Observer
RecorderDate₂ = Nov. 13Observer
Recorder

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Run

1876phae.p

Star.	α	δ	Mag.	T_s	T_m	T_a	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
29	30 10 29 22.0 κ	53° 46' 40.0	8.4 8.4	23 29 56.5 58.3 18 59.20	30 2.5	5.9	9.4	12.8	16.1 +16.24	30 30	9.84 9.84 +17.21 -9.7 25.58 -2.90 22.68		
	$(\delta) - D$												
	a_1												
		8.3		30 29.9 34.0 86.2 33.37	30 1.9	5.3	9.0	12.5	16.0 +16.81	30 30	8.94 8.94 +17.74 -9.3 25.75 -2.88 22.87		
	κ												
	$(\delta) - D$												
	a_2												
31	27 30 39.5 κ	54 14 8.9	8.9 8.9	31 3.5 5.50	31 19.0	22.6	26.2	29.6	33.1 +16.20	31 31	26.10 26.10 +17.21 -1.01 42.30 -2.91 39.39		
	$(\delta) - D$												
	a_1												
		9.2		30 58.9 15 4.7 1.70	31 18.5	22.2	26.7	29.1	32.7 +16.74	31 31	25.64 25.64 +17.74 -9.7 42.41 -2.89 39.52		
	κ												
	$(\delta) - D$												
	a_2												
32	24 31 38.7 κ	54 6 0.6	8.3 8.5	32 4.0 6.8 10.1 6.97	32 14.9	18.3	22.0	25.4	29.0 +16.21	32 32	21.83 21.83 +17.21 -1.00 38.13 -2.93 35.20		
	$(\delta) - D$												
	a_1												
		8.6		31 58.4 1.8 4.6 1.60	32 14.4	18.0	21.4	25.0	28.4 +16.78	32 32	21.44 21.44 +17.74 -9.6 38.22 -2.91 35.31		
	κ												
	$(\delta) - D$												
	a_2												
34	33 33 44.9 κ	54 26 20.4	7.2 7.9	34 6.0 9.0 7.50	34 24.5	28.1	31.9	35.4	38.9 +16.20	34 34	31.76 31.76 +17.21 -1.01 47.96 -2.96 45.00		
	$(\delta) - D$												
	a_1												
		8.1		34 13.1 16.0 18.8 15.97	34 24.2	27.7	31.3	34.7	38.2 +16.77	34 34	31.22 31.22 +17.74 -9.7 47.89 -2.94 45.05		
	κ												
	$(\delta) - D$												
	a_2												
36	15 35 26.3 κ	53 54 48.0	8.7 8.5	35 35.2 38.3 41.4 38.30	36 6.7	10.0	13.6	17.0	20.6 +16.23	36 36	13.58 13.58 +17.22 -9.9 29.81 -2.99 26.82		
	$(\delta) - D$												
	a_1												
		8.5		35 42.6 45.8 48.0 45.47	36 6.0	9.8	13.3	16.6	19.9 +16.79	36 36	13.12 13.12 +17.74 -9.5 29.91 -2.97 26.94		
	κ												
	$(\delta) - D$												
	a_2												

Runs

+ 3.23

43

+ 3.33

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ'
d	+10.14 1.00604 9.90676 1.03516	4 14.4	17.8	12.2	39.1 16.10	43 53	32.25 28.85		35	53 47 14.97	
(δ) - D	$\frac{d'}{100}$						-10.84 -7.94			10.91 -120 +1182 +45 -34.20	+11.04 14.27
-2.84 δ_1 -19.89		30 19.84	46 41.1								
d	-24.93 1.38792 9.90676 1.41704	4 41.2	44.2	5.4	39 4	43 53	5.65 2.13		35	53 47 36.01	
(δ) - D	$\frac{d'}{100}$						+26.19 +19.13			47 21.26 -15 -132 +1184 +45 -34.50 47 1.11	+10.82 14.15
-2.84 δ_2 -19.89		30 21.03	46 41.2								
d	+20.60 1.31387 9.90942 1.34565	0 15.9	20.4	36.3	10 0	12 54	30.20 26.44		10	54 16 46.0	
(δ) - D	$\frac{d'}{100}$						-22.46 -15.95			10.85 -11 +8 +12.34 +50 -34.20 15 52.53	+12.65 15.88
-2.84 δ_1 -19.90		31 36.55	15 32.6								
d	+23.94 1.37912 9.90942 1.41090	0 15.1	18.7	12.8	10 0	12 54	31.45 27.93		10	54 16 2.77	
(δ) - D	$\frac{d'}{100}$						-25.76 -18.53			9.40 -15 -8 +12.37 +50 -34.40 15 50.97	+12.64 15.97
-2.84 δ_2 -19.90		31 36.68	15 31.1								
d	+14.95 1.17464 9.90869 1.20569	3 53.9	57.4	11.3	18 3	3 54	52.70 49.24		15	54 7 33.20	
(δ) - D	$\frac{d'}{100}$						-16.06 -11.61			119.30 -6 -109 +12.19 +50 -34.20 15 50.97	+11.54 14.77
-2.85 δ_1 -19.91		32 32.35	16 58.4								
d	+19.84 1.29754 9.90869 1.32859	3 50.4	54.4	4.8	18 3	3 54	55.95 52.43		15	54 7 31.72	
(δ) - D	$\frac{d'}{100}$						-27.31 -15.41			37.02 -10 -109 +12.23 +50 -34.40 15 50.97	+11.54 14.87
-2.85 δ_2 -19.91		32 32.46	6 57.6								
d	+24.26 1.38489 9.91057 1.41776	3 20.2	24.9	5.1	58 3	24 54	25.83 22.41		55	54 28 56.24	
(δ) - D	$\frac{d'}{100}$						-26.17 -18.69			22.45 -15 -95 +12.53 +50 -34.40 15 50.97	+11.95 15.18
-2.87 δ_1 -19.93		34 42.13	27 24.6								
d	+15.25 1.18324 9.91057 1.21614	3 29.9	33.9	6.8	58 3	24 54	16.45 12.93		55	54 28 56.48	
(δ) - D	$\frac{d'}{100}$						-16.45 -11.55			1.08 -6 -98 +12.59 +50 -34.50 27 44.54	+12.05 15.38
-2.87 δ_2 -19.93		34 42.18	27 22.0								
d	+35.28 1.54753 9.90759 1.57748	1 9.6	11.9	21.5	31 1	51 53	37.60 34.16		30	53 58 56.36	
(δ) - D	$\frac{d'}{100}$						-37.80 -27.53			6.67 -33 -34 +11.96 +50 -34.50 27 41.96	+11.79 15.02
-2.88 δ_1 -19.95		36 23.94	54 27.4								
d	+27.65 1.44140 9.90750 1.47156	1 14.9	18.3	13.2	31 1	51 53	31.75 28.23		30	53 58 58.61	
(δ) - D	$\frac{d'}{100}$						-29.62 -21.58			6.65 -20 -36 +11.79 +50 -34.40 54 47.51	+11.93 15.26
-2.88 δ_2 -19.95		36 24.06	54 27.6								

Aug. 502

Date₁ = 1876 Dec. 12Observer
Recorder

Date, = Dec. 13

Observer _____
Recorder _____

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But

Star.	α	δ	Mag.	T_s	T_m	T_e	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
1876 phase.	38 16	54 47	7.8	23 37 35.8	38 7.0	107	141	175	214	38	14.14		
	37 27.9	40.6	7.7	39.2					+16.21		+17.22		
				42.6							-1.01		
				39.20							30.35		
(8) - D											-3.01		
											27.34		
a_1													
		7.8		38 18.7	38 6.5	10.1	13.7	17.4	208	38	13.70		
				21.5					+16.77		+17.74		
κ				24.4							-9.7		
(8) - D				21.53							30.37		
											-2.99		
											27.48		
a_2													
Nov. 12				Single Observations									
22 45 56	53 37	9.0	22 45 26.7	45 4.8	48.4	57.8	55.3	58.7	45	57.80			
40 13.3	22.5	9.0	24.7					+16.23		+17.20			
κ			33.4							-9.7			
(8) - D			27.78							46	8.03		
										-2.22			
											5.81		
a_1													
Nov. 12													
22 47 6	55 0	8.7	22 46 24.1	46 52.7	56.2	6.0	85	7.0	476	57.88			
46 23.0	54 57.7	8.4	27.3					+16.17		+17.20			
κ			30.5							-1.03			
(8) - D			27.30							487	16.05		
										-2.22			
											13.83		
a_2													
Nov. 12													
23 25 40	54 53	9.3	23 25 7.0	25 11.8	15.3	15.7	22.2	25.8	23	18.76			
24 52.7	47.1	9.0	10.0					+16.23		+17.21			
κ			13.3							-1.00			
(8) - D			10.10							25	34.99		
										-2.82			
											32.17		
a_1													
Nov. 13													
23 9 0	53 14	9.0	23 8 18.0	8 50.5	53.9	57.2	0.8	4.1	8	57.80			
8 15.3	8.7	8.5	20.3					+16.51		+17.73			
κ			23.2							-9.2			
(8) - D			20.50							9	14.11		
										-2.56			
											11.55		
a_2													
Nov. 13													
23 10 58	53 44	9.0	23 9 46.9	10 16.6	20.3	23.8	27.2	30.6	10	33.90			
10 12.0	32.0	9.0	49.9					+16.80		+17.73			
κ			53.0							-9.3			
(8) - D			49.93							10	40.50		
										-2.58			
											37.92		
a_1													
Nov. 13													
23 12 3	53 43	9.1	23 11 19.7	11 43.0	46.4	50.0	53.3	57.0	11	49.94			
11 4.2	35.1	8.5	22.0					+16.80		+17.73			
κ			25.6							-9.3			
(8) - D			22.43							12	6.74		
										-2.60			
											4.14		
a_2													
Nov. 13													
23 12 45	53 42	9.3	23 12 28.5	12 37.0	40.4	43.9	47.3	51.0	12	43.90			
12 0.4	36.5	8.8	31.8					+16.80		+17.73			
κ			34.6							-9.3			
(8) - D			31.63							13	0.72		
										-2.61			
											58.11		
a_1													
Nov. 13													
23 14 7	55 0	9.5	23 13 40.9	13 56.2	59.8	8.4	7.0	105	14	3.38			
1 13 22.0	54 54.3	9.3	44.7					+16.77		+17.73			
κ			47.5							-9.9			
(8) - D			44.37							14	20.12		
			27.7							-2.60			
			30.73								17.52		
Nov. 13													
23 15 11	54 58	9.3	23 14 30.5	15 2.8	6.4	10.0	13.6	17.1	10	8.98			
14 26.8	52.5	8.4	34.0					+16.74		+17.73			
a_2			30.73							-9.9			
Nov. 13													
23 39 47	54 37	8.9	23 39 6.0	39 37.1	40.7	44.2	47.9	51.5	15	26.43			
38 58.9	30.8	9.0	9.4					+16.77		+17.74			
			12.4							-2.60			
			30.73								1.05		
			30.73								37.5803		

Runs

+3.23

45

+3.33

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ'
d	+34.94 1.54332 9.91239 1.57807	2' 46.9 9.76057 4.42625w	49.6	16.5	37 4825	45 54 48	0.10 56.66 -37.85	56.70 -26.68	35	54 48' 18.4 30.02 -32 -78 +12.93 +50 -34.00 48 14.18 16.85	+12.33 15.56
((S) - D) $\frac{d'}{100}$	-2.89 -19.97	38 24.45	47 51.2	38	4.0 3	32.00	44 26.35 54 48 22.83 -5.48 +5.98	35	54 48 14.35 16.85	48 28.81 -2 -95 +12.95 +50 -34.60 48 10.02	+12.48 15.81
d	-7.83 0.89376w 9.91230 0.92842	3 20.0 9.76075 0.77687	24.0	4.0	3	32.00	44 26.35 54 48 22.83 -5.48 +5.98	35	54 48 14.35 16.85	48 28.81 -2 -95 +12.95 +50 -34.60 48 10.02	+12.48 15.81
((S) - D) $\frac{d'}{100}$	-2.89 -19.97	38 24.59	47 50.1	46	12.0 1	56.00	35 52.35 53 39 48.95 -23.35 -17.17	45	53 39 25.56 31.78 -13 -53 +11.69 +45 -32.90 39 13.59	+11.48 14.71	
d	+21.87 1.33985 9.90611 1.36832	1 54.2 9.77268 1.23489w	57.8	12.0	1	56.00	35 52.35 53 39 48.95 -23.35 -17.17	45	53 39 25.56 31.78 -13 -53 +11.69 +45 -32.90 39 13.59	+11.48 14.71	
((S) - D) $\frac{d'}{100}$	-2.50 -19.02	46 3.31	38 54.6	24	14.6 4	58.00	58 11.05 55 2 7.41 -35.39 7.65 -24.75	20	55 1 32.22 32.90 -27 -129 +1209 +50 -33.10 1 14.06	+11.03 14.26	
d	+32.58 1.51295 9.91354 1.54885	4 36.1 9.75823 1.39354w	38.5	14.6	4	58.00	58 11.05 55 2 7.41 -35.39 7.65 -24.75	20	55 1 32.22 32.90 -27 -129 +1209 +50 -33.10 1 14.06	+11.03 14.26	
((S) - D) $\frac{d'}{100}$	-2.48 -19.05	47 13.35	1 5.0	33	58.0 3	27.00	49 19.35 53 53 15.91 -9.27 15.95 -6.77	30	53 53 6.64 8.18 -2 -98 +1193 +50 -39.10 52 48.84	+11.43 14.66	
d	+8.66 0.93752 9.90731 0.96719	3 27.1 9.77043 0.83031w	30.9	58.0	3	27.00	49 19.35 53 53 15.91 -9.27 15.95 -6.77	30	53 53 6.64 8.18 -2 -98 +1193 +50 -39.10 52 48.84	+11.43 14.66	
((S) - D) $\frac{d'}{100}$	-2.68 -19.56	9 8.87	15 8.3	10	57.2 0	28.60	53 12 19.75 16 16.23 -39.09 -29.14	10	53 15 37.17 47.06 -35 -14 +1128 +45 -33.50 15 27.83	+11.24 14.57	
d	+33.77 1.52853 9.90648 1.55737	2 14.9 9.77199 1.42288w	17.9	12.8	2	16.40	40 31.95 53 44 28.43 -36.05 -26.48	40	53 44 52.34 1.95 -29 -64 +1178 +45 -33.90 43 42.68	+11.35 14.63	
((S) - D) $\frac{d'}{100}$	-2.68 -19.60	10 37.24	413 23.1	44	12.8 4	56.40	53 37 57.95 41 48.43 -29.39 -21.59	40	53 41 49.04 26.84 -20 -137 +1172 +45 -33.90 41 6.87	+10.60 13.93	
d	+27.51 1.48949 9.90630 1.46815	4 54.9 9.77233 1.33418w	57.9	12.8	4	56.40	53 37 57.95 41 48.43 -29.39 -21.59	40	53 41 49.04 26.84 -20 -137 +1172 +45 -33.90 41 6.87	+10.60 13.93	
((S) - D) $\frac{d'}{100}$	-2.69 -19.62	12 1.45	40 47.2	42	12.5 2	56.25	53 39 52.10 43 48.68 -13.13 -9.64	40	53 43 35.45 38.94 -4 -81 +1176 +45 -33.90 43 19.73	+11.36 14.69	
d	+12.29 1.08955 9.90648 1.11839	2 54.1 9.774199 0.98390w	38.4	12.5	2	56.25	53 39 52.10 43 48.68 -13.13 -9.64	40	53 43 35.45 38.94 -4 -81 +1176 +45 -33.90 43 19.73	+11.36 14.69	
((S) - D) $\frac{d'}{100}$	-2.70 -19.63	12 55.41	43 0.1	42	13.6 0	68.0	53 37 41.55 1 38.03 -14.43 +13.51 16.84	25	55 1 23.60 36.45 -40 -45 +13.13 +50 -34.20 1 6.24	29.75 -31 -106 +12.75 +50 -34.20 37 10.06	
d	+19.0 1.27875 9.91354 1.15934	0 4.4 58 36.45 +12.76 16.09	9.2	13.6	0	68.0	53 37 41.55 1 38.03 -14.43 +13.51 16.84	25	55 1 23.60 36.45 -40 -45 +13.13 +50 -34.20 1 6.24	29.75 -31 -106 +12.75 +50 -34.20 37 10.06	
((S) - D) $\frac{d'}{100}$	-2.69 -19.65	14 14.83	0 46.6	256	37 29.15 15.21	27.00	53 37 41.55 1 38.03 -14.43 +13.51 16.84	25	55 1 23.60 36.45 -40 -45 +13.13 +50 -34.20 1 6.24	29.75 -31 -106 +12.75 +50 -34.20 37 10.06	
d	+39.25 1.59384 9.91279 1.62416	1 35.3 9.76922 1.38472w	403	75.6	1	37.80	54 59 10.55 59 4.03 -42.09 -52.24	25	54 59 10.55 59 4.03 -42.09 -52.24	25	54 59 10.55 59 4.03 -42.09 -52.24
((S) - D) $\frac{d'}{100}$	-2.70 -19.67	12 55.41	43 0.1	42	13.6 0	68.0	53 37 41.55 1 38.03 -14.43 +13.51 16.84	25	55 1 23.60 36.45 -40 -45 +13.13 +50 -34.20 1 6.24	29.75 -31 -106 +12.75 +50 -34.20 37 10.06	

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586

46

Date₁ = 1876 Dec. 5
u = -.57

Observer
Recorder

Date₂ = Dec. 18
n = .41

Observer
Recorder[illegible]

Dec 5 + 3' 56.61 - .30 + 3.37
 19 + 3 56.72 - .34 + 3.81

Runs

+ 3.37

47

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	$+ 3.81$ z	δ'
$+17.36$ 1.23955 9.77813 1.14128 (8) - D) $\frac{d'}{100}$ -3.16 -2003 δ_1	$+16.39$ 1.26458 9.90254 1.28948 11 6.61	4 48.1	48.9	17.0	4 48.50	57 1	57.85 56.46 -19.47 -44.66	53	20	53 1' 36.99 44.66 - 8 - 144 + 1133 + 40 - 37.30 1 47.98	12.62 +10.11 13.48 18.80
d (8) - D) $\frac{d'}{100}$ -3.16 -2003 δ_2	$+33.41$ 1.52388 9.90254 1.54878 11 6.75	4 32.5	32.9	5.4	4 32.70	58 2	58.65 12.37 -35.38 -26.63	53	20	53 1 36.99 45.74 - 29 - 154 + 1171 + 40 - 38.00 1 21.73	+10.18 13.99
d (8) - D) $\frac{d'}{100}$ -3.17 -2003 δ_1	$+25.16$ 1.40071 9.90014 1.42321 12 23.78	4 24.8	26.9	11.7	4 25.85	33 37	22.50 19.11 -26.50 -20.25	52	45	52 36 52.61 58.86 - 17 - 132 + 1088 + 40 - 37.20 36 34.72	+9.69 13.06
d (8) - D) $\frac{d'}{100}$ -3.17 -2003 δ_2	$+27.87$ 1.445114 9.90014 1.46764 12 23.69	4 22.1	23.1	5.2	4 22.60	33 37	25.75 22.47 -24.35 -22.43	52	45	52 36 53.12 0.04 - 21 - 149 + 1124 + 40 - 37.90 36 35.79	+9.84 13.65
d (8) - D) $\frac{d'}{100}$ -3.18 -2001 δ_1	$+28.85$ 1.46015 9.89918 1.48169 14 40.85	0 2.0	4.1	6.1	0 3.05	22 26	45.30 41.91 -30.32 -23.30	52	0	52 26 11.57 18.61 - 22 - 2 + 1068 + 30 - 37.20 25 55.52	14.11
d (8) - D) $\frac{d'}{100}$ -3.18 -2001 δ_2	$+21.63$ 1.33506 9.89918 1.35660 14 2.82	4 58.7	58.9	17.6	4 58.80	22 26	49.55 46.27 -22.73 -17.47	52	55	52 26 23.54 28.80 - 13 - 170 + 1103 + 30 - 37.90 26 42.1	+9.60 13.31
d (8) - D) $\frac{d'}{100}$ -3.19 -2001 δ_1	$+25.64$ 1.40943 9.89898 1.43077 15 52.68	2 5.6	7.9	13.5	2 6.75	20 24	41.60 38.21 -26.46 -20.75	52	0	52 24 11.25 17.46 - 18 - 63 + 1064 + 30 - 37.20 23 53.76	+10.13 13.50
d (8) - D) $\frac{d'}{100}$ -3.19 -2001 δ_2	$+23.35$ 1.36829 9.89898 1.38963 15 52.64	2 7.9	6.9	14.8	2 7.40	20 24	40.95 37.67 -24.53 -15.88	52	0	52 24 13.14 18.79 - 14 - 71 + 1100 + 30 - 38.00 23 55.05	+10.65 14.26
d (8) - D) $\frac{d'}{100}$ -3.19 -2000 δ_1	$+25.95$ 1.41414 9.88563 1.42213 17 24.18	3 34.8	35.9	10.7	3 35.85	9 13	13.00 9.61 -26.43 -22.01	50	10	50 12 43.18 47.60 - 18 - 108 + 829 + 25 - 36.80 12 21.45	+7.28 10.65
d (8) - D) $\frac{d'}{100}$ -3.19 -2000 δ_2	$+27.28$ 1.43584 9.88563 1.44388 17 24.19	3 32.1	32.5	4.6	3 32.30	9 13	16.05 12.77 -27.79 -23.14	50	10	50 12 44.98 49.63 - 20 - 119 + 857 + 20 - 37.50 12 23.32	+7.38 11.19

Date₁ = 1876 Dec. 5Observer
RecorderDate₂ = Dec. 19Observer
Recorder

Star.	α	δ	Mag.	T_0	T_m	T_a	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
18 8	50 1	7.8	0 17 273	17 432	468	49.9	53.1	56.3	17	49.86			
17 K	17.4	49 53.5	8.4	80.8				+37.76		+38.44			
(8) - D	κ'_{100}			83.7					18	27.62			
a_1				30.60						-3.23			
										24.39			
19 32	53 48	8.7	18 42.1	19 6.2	8.8	13.5	16.9	20.3	19	13.34			
18 K	42.4	9.0	44.3					+37.68		+38.45			
(8) - D	κ'_{100}		47.1						19	57.02			
a_1			44.50							-3.23			
										47.79			
18 28.6	18 46.9	50.1	53.5	57.1	0.6	18	53.58			+57.71			
K			26.2					+57.16		-5.5			
(8) - D	κ'_{100}		28.1						19	50.74			
a_2			25.97							-2.94			
										47.84			
20 29	53 22	8.7	19 38.8	20 2.0	3.7	9.1	12.7	15.9	20	9.08			
19 K	15.9	9.0	41.0					+37.68		+38.45			
(8) - D	κ'_{100}		44.0						20	46.76			
a_1			41.27							-3.25			
										43.57			
19 20.0	19 42.3	45.8	49.3	52.7	56.0	19	49.22			+57.71			
K			23.0					+57.16		-5.5			
(8) - D	κ'_{100}		25.8						20	46.38			
a_2			32.93							-2.93			
										43.45			
21 36	52 20	8.7	21 17.4	21 8.5	11.8	15.3	18.5	22.0	21	15.22			
20 K	41.7	8.7	20.7					+37.72		+38.45			
(8) - D	κ'_{100}		25.5						21	52.94			
a_1			21.20							-3.27			
										49.67			
20 34.2	20 48.4	52.0	53.4	58.8	2.3	20	55.38			+57.71			
K			87.3					+57.19		-5.2			
(8) - D	κ'_{100}		46.3						21	52.57			
a_2			37.27							-2.97			
										49.60			
22 27	52 37	8.7	21 17.4	21 59.5	3.1	6.7	9.9	13.2	22	6.48			
21 K	33.3	8.7	58.4					+37.71		+38.45			
(8) - D	κ'_{100}		0.9						22	44.14			
a_1			58.33							-3.28			
			59.65							40.91			
21 42.0	21 40.0	43.3	46.7	50.0	53.5	21	46.70			+57.71			
K			45.0					+57.18		-5.3			
(8) - D	κ'_{100}		48.1						22	43.88			
a_2			45.03							-2.98			
										40.90			

Runs

+337

49

+3.81

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	8'
d	+19.26 1.284166 9.88457 1.29159	3' 33.7 9.80762 1.21464	36.5	10.2	23' 35.10	59 13	13.25 9.86 -14.54 -16.39		20	50° 2' 50.29 53.47 -10 -108 +811 +25 -36.80 2 27.22	+7.18 10.55
$(\delta) - D) \frac{d'}{100}$											
δ_1	-3.20 -19.99	18 21.19		2 7.2	23						
d	+25.81 1.411179 9.88457 1.41872	3 27.9 9.80762 1.34177	29.8	17.1	3 28.85	59 3	19.50 16.22 -26.23 -21.97		20	50 2. 49.99 54.25 -18 -119 +838 +20 -37.50 2 27.77	+7.21 11.02
$(\delta) - D) \frac{d'}{100}$											
δ_2	-3.20 -19.99	18 21.26		2 7.8	36						
d	+25.84 1.446000 9.90704 1.48940	1 24.9 9.77095 1.35331	25.9	10.8	1 25.40	46 50	22.95 19.56 -30.86 -22.56		35	53 49 48.70 57.00 -22 -42 +12.21 +33 -37.50 49 34.79	+11.92 15.29
$(\delta) - D) \frac{d'}{100}$											
δ_1	-3.23 -19.98	19 44.56		49 14.8	36						
d	+27.61 1.444107 9.90704 1.47047	1 24.1 9.77095 1.33438	24.4	.5	1 24.25	46 50	24.10 20.82 -24.57 -21.60		35	53 49 57.28 57.22 -20 -48 +12.62 +35 -38.30 49 37.02	+12.29 16.10
$(\delta) - D) \frac{d'}{100}$											
δ_2	-3.23 -19.98	19 44.61		49 17.0	36						
d	+27.81 1.444420 9.90462 1.47118	2 58.9 9.77541 1.34197	59.3	18.2	2 59.10	19 53	49.25 45.86 -24.59 -21.98		0	53 23 16.27 23.88 -20 -70 +11.72 +35 -37.40 23 08.2	+10.97 14.34
$(\delta) - D) \frac{d'}{100}$											
δ_1	-3.23 -19.97	20 40.34		22 40.8	5						
d	+26.29 1.41979 9.90462 1.44677	3 58.5 9.77541 1.31756	58.9	1.4	2 58.70	19 53	49.69 46.42 -27.98 -20.78		0	53 23 18.43 25.63 -18 -102 +12.11 +35 -38.20 23 25.46	+11.26 15.07
$(\delta) - D) \frac{d'}{100}$											
δ_2	-3.23 -19.97	20 40.22		22 42.5	5						
d	-5.98 0.74670 9.89859 0.79765	0 24.8 9.78592 0.68498	27.1	11.9	0 28.98	14 52	22.40 19.01 -6.28 +4.54		5	52 21 12.73 14.17 23.85 -1 -13 +10.59 +36 21 37.30 23 25.46	+10.75 14.12
$(\delta) - D) \frac{d'}{100}$											
δ_1	-3.24 -19.97	21 46.43		20 40.7	5						
d	+18.11 1.25492 9.89869 1.27897	0 4.2 9.78576 1.16604	4.1	.3	0 4.15	17 52	44.20 40.92 -19.01 -14.66		5	52 21 27.91 26.26 -9 -3 +10.94 +30 -38.10 21 30.9	+11.12 14.93
$(\delta) - D) \frac{d'}{100}$											
δ_2	-3.24 -19.97	21 46.36		20 43.1	44						
d	+6.83 0.83442 9.78246 0.73948	+8.15 0.91116 9.90063 0.93475	4 16.9 16.8	1.7	4 16.85	38 52	31.50 28.11 -8.59 -6.59 -5.49		40	52 42 19.52 21.56 -2 -128 +10.87 +30 -37.30 41 37.50	22.62 +9.87 13.24 58.56
$(\delta) - D) \frac{d'}{100}$											
δ_1	-3.24 -19.96	22 37.67		41 38.6	44						
d	+1.64 0.22272 9.90063 0.24571	4 18.6 9.78246 0.12754	17.6	16.2	4 18.10	38 52	30.25 26.97 -4.76 -1.34		40	52 42 25.27 25.63 0 -146 +11.33 +30 -38.10 42 1.51	+10.17 13.98
$(\delta) - D) \frac{d'}{100}$											
δ_2	-3.24 -19.96	22 37.66		41 41.6	44						

Date₁ = 1876 Dec. 5Observer
RecorderDate₂ = Dec. 19Observer
Recorder

50

Run

Star.	α	δ	Mag.	T_0	T_m	T_e	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
24 81 23 63 κ	52 35 29.6	9.4 9.4	0	23 12.5 14.8 17.4 16.10	23 34.6	38.0	41.5	44.5	47.8 +37.71	23 41.30 +38.45 -7.4 24 19.01 -3.31 15.70			
(δ) - D) κ'_{100}													
a_1													
κ		9.3		22 47.2 50.6 53.5 50.43	23 14.8	18.0	21.6	24.8	28.4 +57.19	23 21.52 +57.72 -5.3 24 15.71 -3.01 15.70			
(δ) - D) κ'_{100}													
a_2													
25 20 24 28.4 κ	53 15 8.8	8.5 8.5		24 35.7 42.0 44.3 41.67	24 53.0	36.5	0.0	8.4	6.8 +37.69	24 58.96 +38.45 -7.6 25 37.65 -3.33 34.32			
(δ) - D) κ'_{100}													
a_1													
κ		8.8		24 4.6 7.5 11.1 7.73	24 33.3	36.8	40.4	43.7	47.2 +57.17	24 40.28 +57.72 -5.3 25 37.45 -3.02 34.43			
(δ) - D) κ'_{100}													
a_2													
26 11 25 16.8 κ	53 16 9.9	8.7 9.0		25 26.8 30.1 32.5 29.80	25 43.5	42.0	50.4	54.0	57.4 +37.69	25 50.48 +38.45 -7.6 26 28.15 -3.35 24.80			
(δ) - D) κ'_{100}													
a_1													
κ		8.5		25 6.6 9.8 12.2 9.53	25 23.4	27.0	30.8	34.0	37.6 +57.17	25 30.58 +57.72 -5.3 26 27.73 -3.04 24.69			
(δ) - D) κ'_{100}													
a_2													
27 8 26 13.0 κ	53 22 15.9	7.0 7.3		26 32.1 35.0 38.3 35.13	26 40.3	43.7	47.2	50.7	54.0 +37.68	26 47.18 +38.45 -7.7 27 24.56 -3.36 21.50			
(δ) - D) κ'_{100}													
a_1													
κ		6.8		26 9.4 12.0 15.8 12.40	26 20.4	23.9	27.4	30.8	34.2 +57.17	26 29.34 +57.72 -5.3 27 24.51 -3.05 21.46			
(δ) - D) κ'_{100}													
a_2													
28 22 27 27.2 κ	53 30 24.4	6.8 7.1		27 37.9 41.0 43.4 40.77	27 54.5	57.9	1.6	4.9	8.4 +37.68	28 1.46 +38.45 -7.7 28 39.14 -3.38 35.76			
(δ) - D) κ'_{100}													
a_1													
κ		7.0		26 56.7 57.1 7.5 59.10	27 34.6	38.0	41.5	45.1	48.5 +57.17	27 41.54 +57.72 -5.3 28 38.71 -3.07 35.64			
(δ) - D) κ'_{100}													
a_2													

Runs

+ 3.37

57

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	+ 3.81 z	8'
+ 25.20 1.40140 9.78329 1.30729 (8) - D) $\frac{d'}{100}$	+26.70 1.42160 9.90014 1.44410	4 29.4	31.0	60.4	49 30.20	33 18.15	14.76		45	52 36' 46.96	54.97
-3.27 δ_1 -19.94		24 12.43		36 10.2	49	52 37	-24.80 -21.21 20.29			52 36' 18.18 -135 +1088 +30 -37.30 36.44	+9.65 13.02 3.017
d (8) - D) $\frac{d'}{100}$	+31.09 1.49262 9.90014 1.51512	4 22.3	22.3		4 22.30	33 26.05	22.77		45	52 36' 50.03	
-3.27 δ_2 -19.94		24 12.43		36 12.2	10	53 16	-32.74 -26.02			57.75 -25 -150 +1124 +30 -38.20 36.32	+9.79 13.60
d (8) - D) $\frac{d'}{100}$	+18.29 1.26221 9.90386 1.28843	0 33.5	35.1	8.6	10 34.30	12 14.05	10.66		10	53 15' 57.23	
-3.27 δ_1 -19.93		25 31.05		15 13.9	10	53 16	-14.43 -14.50			56.16 -8 -17 +1159 +35 -37.40 15 33.82	+11.69 15.66
d (8) - D) $\frac{d'}{100}$	+32.55 1.51255 9.90386 1.53877	0 22.1	21.9	4.0	0 22.00	12 26.35	23.07		10	53 15' 44.49	
-3.27 δ_2 -19.93		25 31.16		15 14.8	8	53 17	-34.58 -25.80			57.24 -28 -14 +11.98 +35 -38.30 15 34.69	+11.91 15.72
d (8) - D) $\frac{d'}{100}$	+20.66 1.31513 9.90405 1.34154	3 48.2	48.4	6 3	8 48.30	11 0.05	56.66		5	53 17' 40.57	
-3.28 δ_1 -19.92		26 21.52		16 57.1	8	53 17	-16.09 -16.34			40.26 -11 -114 +1163 +35 -37.40 17 16.49	+10.73 14.10
d (8) - D) $\frac{d'}{100}$	+21.03 1.32284 9.90405 1.34925	3 47.9	45.2	13.1	3 46.55	14 1.80	58.52		5	53 17' 36.17	
-3.28 δ_2 -19.92		26 21.41		16 58.4	5	53 23	-22.35 -16.66			41.86 -12 -129 +12.02 +35 -38.30 17 18.33	+10.96 14.77
d (8) - D) $\frac{d'}{100}$	+12.02 1.08099 9.90462 1.10797	3 14.2	14.2	3	3 14.20	19 34.15	30.76		0	53 23' 17.92	
-3.29 δ_1 -19.91		27 18.21		22 36.3	54	53 23	-12.52 -9.52			21.24 -4 -97 +1172 +35 -37.50 22 58.17	+11.06 14.43
d (8) - D) $\frac{d'}{100}$	+14.94 1.17435 9.90462 1.20133	3 13.0	10.9	3.9	3 11.95	19 36.40	33.12		0	53 23' 17.22	
-3.29 δ_2 -19.91		27 18.17		22 38.1	54	53 31	-15.40 -11.81			21.31 -6 -109 +12.11 +35 -38.40 22 58.03	+11.31 15.12
d (8) - D) $\frac{d'}{100}$	+28.69 1.31546 9.90537 1.34349	4 38.1	55.5	6 4	54 35.30	24 53.05	49.66		50	53 31' 27.61	
-3.30 δ_1 -19.90		28 32.46		30 50.0	54	53 32	-22.05 -16.30			33.36 -11 -148 +1188 +35 -37.50 53 31' 9.87	+10.64 14.01
d (8) - D) $\frac{d'}{100}$	+42.44 1.62778 9.90537 1.65551	4 36.5	36.0	5 4	54 36.25	28 12.10	8.82		50	52 31' 23.58	
-3.30 δ_2 -19.90		28 32.34		30 50.3	54	53 32	-45.24 -33.43			35.39 -48 -156 +1116 +35 -38.50 31 12.16	+9.46 13.27

Date₁ = 1876 Dec. 5Observer
RecorderDate₂ = Dec. 19Observer
Recorder

52

Star.	α	δ	Mag.	T_a	T_m	T_e	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
29	33	53 58	9.4	0	28 465	29 9.3	127	164	19.8	232	29	1628	
		52.4	9.4							+37.67		+38.46	
												-79	
(δ) - D	κ'										29	53.95	
a_1												-3.41	
												50.54	
			9.5		28 383	28 494	52.9	564	59.9	36	28	56.52	
					86.1					+57.15		+57.72	
					89.2							-57	
(δ) - D	κ'				86.20						29	53.67	
a_2												-3.10	
												50.57	
31	33	53 51	9.0		30 484	31 8.1	11.7	15.2	18.7	22.1	31	15.16	
		43.2	9.0		52.0					+37.67		+38.486	
					54.5							-79	
(δ) - D	κ'				52.18						31	52.83	
a_1												-3.44	
												49.39	
			9.1		30 209	30 484	51.9	53.3	58.8	23	30	55.34	
					24.0					+57.16		+57.73	
					28.1							-57	
(δ) - D	κ'				24.33						31	52.50	
a_2												-3.13	
												49.37	
33	48	52 6	9.1		32 505	33 202	23.7	27.2	30.2	34.0	33	27.06	
		09	9.2		33.0					+37.73		+38.46	
					33.6							-73	
(δ) - D	κ'				33.99						34	4.79	
a_1					55.60							-3.48	
												1.31	
			8.9		32 330	33 05	4.0	7.3	10.6	14.1	33	7.30	
					37.7					+57.21		+57.73	
					41.0							-52	
(δ) - D	κ'				37.90						34	4.51	
a_2												-3.19	
												1.32	
45	43	52 11	9.0		44 53.1	45 164	19.7	23.1	26.7	30.0	45	23.18	
		5.5	8.7		58.5					+37.74		+38.467	
					2.3							-73	
(δ) - D	κ'				58.63						46	0.92	
a_1												-3.68	
												57.24	
			8.5		44 284	44 565	59.9	83	65	100	45	3.24	
					31.7					+57.23		+57.75	
					24.6							-52	
(δ) - D	κ'				31.57						46	0.47	
a_2												-3.40	
												57.07	
46	40	52 24	9.1		46 05	46 146	17.7	21.0	24.5	28.0	46	21.16	
		19.0	9.0		30					+37.73		+38.467	
					6.0							-74	
(δ) - D	κ'				3.17						46	58.89	
a_1												-3.70	
												55.19	
			9.0		45 44.7	45 54.6	58.0	1.4	4.8	8.1	46	1.38	
					46.8					+57.22		+57.75	
					49.5							-53	
(δ) - D	κ'				47.00						46	58.60	
a_2												-3.42	
												55.18	

Runs

53

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	$+3.37$ z	8'
d.	+29.8	1 34.9 1.47422	35.8	107	26 3 33.5	56 54 0	13.00 9.61		25	53 59 46.89 -24 -48 +12.37 +40 -37.60 59 24.23	+12.07 15.44
(8) - D) $\frac{d'}{100}$		9.76922 1.36580					23.22				
δ_1	-3.31 -19.88	29 47.23		59 4.4	26						
d.	+20.32	1 42.8 1.30792	41.4	421	4210	56 521 0	6.25 2.97		25	59 41.18 47.14 -10 -58 +12.81 +40 -38.50 59 24.93	+12.53 16.34
(8) - D) $\frac{d'}{100}$		9.76922 1.33824					-21.49 -15.63				
δ_2	-3.31 -19.88	29 47.26		59 5.1	33						
d.	+23.03	3 46.3 1.36229	46.2	5	3 46.25	29 53 52	2.10 58.71		30	53 52 34.05 40.72 -14 -113 +12.26 +40 -37.50 52 17.98	+11.39 14.76
(8) - D) $\frac{d'}{100}$		9.77043 1.39196					-24.66 -17.99				
δ_1	-3.32 -19.86	31 46.07		51 58.1	33						
d.	+31.01	3 39.8 1.49150	37.9	177	3 38.85	49 53 53	9.50 6.22		30	53 52 33.02 41.49 -25 -122 +12.68 +40 -38.50 52 18.91	+11.61 15.42
(8) - D) $\frac{d'}{100}$		9.77043 1.52117					-33.20 -24.23				
δ_2	-3.32 -19.86	31 46.05		51 59.0	18						
d.	+31.46	3 14.4 1.49776	15.9	103	3 15.75	4 52 8	33.20 26.51		15	52 58 51.14 59.07 -31 -98 +10.35 +30 -37.40 7 34.49	19.0 12.73
(8) - D) $\frac{d'}{100}$		9.78805 1.40841					-35.67 -27.74				
δ_1	-3.33 -19.83	33 57.98		7 19.8	18						
d.	+29.40	3 17.0 1.46835	16.1	131	3 16.55	4 52 8	31.50 28.52		15	52 57.76 4.60 -23 -112 +10.71 +30 -38.20 7 39.87	+9.66 13.47
(8) - D) $\frac{d'}{100}$		9.78805 1.48803					-30.76 -23.92				
δ_2	-3.33 -19.83	33 57.99		7 20.0	13						
d.	+24.55	3 54.2 1.39005	56.9	111	3 55.5	8 52 12	52.80 49.41		10	52 12 23.69 29.47 -16 -118 +10.44 +30 -37.20 12 50.4	+9.40 12.77
(8) - D) $\frac{d'}{100}$		9.78723 1.41022					-25.72 -19.94				
δ_1	-3.41 -19.65	45 53.83		11 45.4	13						
d.	+31.67	3 47.4 1.50065	46.5	139	3 46.95	9 52 12	1.40 58.12		10	52 12 24.94 32.40 -26 -129 +10.80 +30 -38.30 12 7.46	+9.55 13.36
(8) - D) $\frac{d'}{100}$		9.78423 1.52082					-33.18 -25.72				
δ_2	-3.41 -19.65	45 53.66		11 47.8	13						
d.	+17.99	0 11.5 1.25503	12.9	4.4	0 12.20	22 52 26	36.15 32.76		0	52 26 13.86 18.23 -9 -6 +10.69 +30 -37.20 25 55.23	+10.84 14.21
(8) - D) $\frac{d'}{100}$		9.78494 1.27657					-18.90 -14.53				
δ_1	-3.42 -19.64	46 51.77		25 35.6	6						
d.	+14.38	0 14.5 1.15776	14.1	6	0 14.30	22 52 26	34.05 30.77		0	52 26 15.66 16.45 -5 -37 +11.04 +30 -38.30 25 55.69	14.96 15.03
(8) - D) $\frac{d'}{100}$		9.78494 1.17930					-15.11 -11.62				
δ_2	-3.42 -19.64	46 51.76		25 36.0	6						

Date₁ = 1876 Dec. 5Observer
RecorderDate₂ = Dec. 19Observer
Recorder

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Star.	α	δ	Mag.	T_s	T_m	T_o	T_e	T_g	T_h	Sum	Mean	Red. to T_m	T
48 27 47 28.9 K	53° 59' 53.0	9.0	0	47 28.5 81.3 35.0 31.60	48 0.8	4.0	7.5	11.0	14.7 +57.68	48 76.0 +38.47 -7.9 48 45.28 -3.74 41.54			
(8) - D) κ'_{100}													
a_1													
K		8.9		47 17.6 20.8 24.5 20.77	47 40.6	44.2	47.8	57.3	54.9 +57.18	47 47.76 +57.75 -5.7 48 44.94 -3.44 41.50			
(8) - D) κ'_{100}													
a_2													
49 17 48 19.7 K	52 39 33.9	9.0 8.9		48 34.8 38.4 41.0 38.07	48 57.1	54.7	58.0	1.5	4.9 +37.73	48 58.04 +38.47 -7.4 49 35.77 -3.74 32.03			
(8) - D) κ'_{100}													
a_1													
K		9.0		48 13.7 16.5 20.0 16.73	48 31.5	34.9	38.3	41.7	44.9 +57.19	48 38.26 +57.78 -5.7 49 35.45 -3.46 31.99			
(8) - D) κ'_{100}													
a_2													
50 18 49 19.0 K	52 52 47.7	8.0 8.2		49 31.0 34.0 36.5 33.83	49 50.2	53.5	57.0	0.7	4.0 +57.72	49 57.08 +38.48 -7.6 50 34.80 -3.76 31.04			
(8) - D) κ'_{100}													
a_1													
K		8.0		49 8.5 11.0 14.0 11.17	49 30.4	33.8	37.1	40.8	44.0 +57.21	49 37.22 +57.76 -5.5 50 34.43 -3.48 30.95			
(8) - D) κ'_{100}													
a_2													
51 33 50 33.8 K	53 56 51.4	8.8 8.9		50 32.1 35.4 39.1 35.53	51 5.1	8.6	11.9	15.3	18.8 +37.69	51 11.98 +38.48 -7.9 51 49.67 -3.80 45.87			
(8) - D) κ'_{100}													
a_1													
K		9.0		50 20.7 24.3 27.7 24.23	50 45.3	48.8	52.1	53.6	58.2 +57.19	50 52.20 +57.76 -5.7 51 49.39 -3.51 45.88			
(8) - D) κ'_{100}													
a_2													
52 30 51 41.4 K	53 29 23.7	9.0 8.8		51 46.7 49.6 53.9 52.07	52 13.8	17.3	20.7	24.4	27.6 +37.71	52 20.76 +38.48 -7.7 52 58.47 -3.81 54.66			
(8) - D) κ'_{100}													
a_1													
K		9.0		51 24.9 28.2 31.6 28.28	51 54.0	57.3	0.9	4.4	7.8 +57.21	52 0.92 +57.76 -5.5 52 58.13 -3.53 54.60			
(8) - D) κ'_{100}													
a_2													

Runs

+ 3.37

55

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	$+ 3.81$ z	δ'
d	+36.00 1.55630 9.90505 1.58671w	0 44.9 9.76904 1.44770w	45.6	10.5	25 0 45.25	57 0	3.10 59.71 -35.61 -28.04	25	54 0 21.10 31.64 -34 -23 +12.41 +40 -37.40 0 9.88	+12.24 156.1	
$(\delta) - D$	$\frac{d'}{100}$										
δ_1	-3.46 -19.61	48 38.08		59 50.3	25						
d	+26.79 1.42799 9.90505 1.45838w	0 50.6 9.76904 1.31937w	49.4	100.0	0 50.00	56 0	58.35 55.07 -26.73 -20.86	25	54 0 26.54 34.21 -18 -27 +12.82 +40 -38.60 0 12.19	+12.75 16.58	
$(\delta) - D$	$\frac{d'}{100}$										
δ_2	-3.46 -19.61	48 38.04		59 52.6	45						
d	+19.97 1.30038 9.90505 1.32327w	0 22.1 9.78263 1.20537w	23.7	5.8	0 22.90	37 41	25.45 22.06 -21.05 -16.05	45	52 41 7.01 6.01 -11 -11 +1096 +30 -37.20 40 43.22	+11.04 14.41	
$(\delta) - D$	$\frac{d'}{100}$										
δ_1	-3.45 -19.59	49 28.58		40 23.6	45						
d	+21.63 1.33304 9.90505 1.35593w	0 20.5 9.78263 1.23803w	20.3	8.0	0 20.40	37 41	27.95 24.67 -22.70 -17.30	45	52 41 7.97 7.37 -12 -10 +1133 +30 -38.40 40 44.19	+11.41 15.22	
$(\delta) - D$	$\frac{d'}{100}$										
δ_2	-3.45 -19.59	49 28.54		40 24.6	31						
d	+23.25 1.36642 9.90187 1.39065w	1 35.3 9.78030 1.26908w	36.9	12.2	1 36.10	51 55	12.25 8.86 -24.58 -18.58	30	52 54 44.28 50.28 -14 -48 +1121 +30 -37.20 54 27.34	+11.89 14.26	
$(\delta) - D$	$\frac{d'}{100}$										
δ_1	-3.46 -19.57	50 27.58		54 7.8	31						
d	+26.05 1.41581 9.90187 1.44004w	1 31.9 9.78030 1.31847w	32.1	4.0	1 22.00	51 65	16.35 13.07 -27.54 -20.82	30	52 54 45.53 52.25 -18 -51 +1159 +30 -38.40 54 28.56	+11.20 15.01	
$(\delta) - D$	$\frac{d'}{100}$										
δ_2	-3.46 -19.57	50 27.49		54 7.3	27						
d	+36.45 1.56170 9.90787 1.59193w	2 38.2 9.76939 1.45345w	39.0	17.2	2 38.60	55 59	9.75 6.36 -30.08 -26.41	25	53 58 27.24 34.95 -35 -79 +1238 +40 -37.40 58 15.36	+11.64 15.01	
$(\delta) - D$	$\frac{d'}{100}$										
δ_1	-3.48 -19.55	51 42.39		57 56.0	27						
d	+27.94 1.44669 9.90787 1.47692w	2 43.5 9.76939 1.33844w	41.1	4.6	2 42.30	55 59	6.05 2.77 -22.99 -21.50	25	53 58 32.78 40.97 -20 -92 +12.79 +40 -38.60 58 27.78	+12.07 15.88	
$(\delta) - D$	$\frac{d'}{100}$										
δ_2	-3.48 -19.55	51 42.40		57 58.7	55						
d	+30.69 1.48400 9.90537 1.51473w	0 8.0 9.77405 1.38341w	9.9	17.9	0 8.95	27 31	39.40 36.01 -32.71 -24.18	55	53 31 3.50 11.83 -25 -4 +11.88 +35 -37.30 20 44.84	+11.94 15.31	
$(\delta) - D$	$\frac{d'}{100}$										
δ_1	-3.48 -19.52	52 51.18		30 30.3	55						
d	+32.69 1.51441 9.90537 1.54214w	0 5.5 9.77405 1.41082w	5.1	6.0	0 5.80	27 31	43.05 39.77 -32.54 -25.75	55	53 50 54.93 31 14.02 -28 -3 +12.27 +35 -38.50 30 57.64	+12.31 16.12	
$(\delta) - D$	$\frac{d'}{100}$										
δ_2	-3.48 -19.52	52 51.12		30 32.1							

504
Date₁ = 1876 Dec. 5

Observer
Recorder

506
Date₂ = Dec. 19

Observer
Recorder

56

Rur

Star.	α	δ	Mag.	T_s	T_m	T_o	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
54	1	53 1	8.7	0 53	56 53 34.8	38.0	41.4	45.0	48.5	53	41.54		
53	2.0	2.4	8.9		2.5				+37.72	54	+38.48		
κ					12.9						-7.6		
(8) - D	$\frac{\kappa'}{100}$				9.33						19.26		
a_1											-3.83		
											15.43		
54	56	53 33	8.8	54 14.6	54 30.4	33.9	37.3	40.7	44.1	54	37.28		
53	87.4	28.5	8.5	17.8					+37.71	55	+38.48		
κ				2.03							-7.7		
(8) - D	$\frac{\kappa'}{100}$			17.57							14.99		
a_1											-3.85		
											11.14		
54	56	53 33	8.8	53 49.4	54 10.3	13.9	17.4	20.9	24.2	54	17.54		
κ				51.9					+57.21	55	+57.76		
(8) - D	$\frac{\kappa'}{100}$			54.2							-5.5		
a_2				51.83							14.76		
											-3.57		
											11.18		
56	29	52 10	8.8	53 31.0	56 2.0	5.6	9.2	12.3	15.6	56	8.94		
53	29.8	5.3	8.6	84.6					+37.75	57	+38.48		
κ				87.6							-7.3		
(8) - D	$\frac{\kappa'}{100}$			34.40							46.69		
a_1				53 48.0	56 15.0	18.3	21.8	25.0	28.4	56	-3.86	42.83	
				51.5					+37.75	57	+38.48		
				54.2							-7.3		
				51.23							59.46	-3.86	
											49.02	55.59	
κ				17.3					+57.25	58	+57.77		
(8) - D	$\frac{\kappa'}{100}$			20.6							-8.2		
a_2				17.30							46.27		
				33.5							-3.59		
				36.7					+57.25	56	+57.77		
				33.33							-5.2		
				33.13							59.46	-3.60	
57	31	52 45	8.7	56 54.2	57 4.7	8.4	11.5	14.9	18.4	57	17.58		
56	31.8	39.5	8.8	56.8					+57.74	58	+38.48		
κ				57.7							-7.4		
(8) - D	$\frac{\kappa'}{100}$			56.90							49.52		
a_1				9							-3.88		
											45.44		
56	30.4	56 45.1	8.6	56 88.9	56 45.1	48.4	37.8	33.4	38.8	56	51.90		
κ				86.7					+57.24	57	+57.77		
(8) - D	$\frac{\kappa'}{100}$			33.67							-5.3		
a_2											49.14		
											-3.61		
											45.53		
58	83	54 5	8.9	57 48.4	58 6.5	10.1	13.4	17.0	20.4	58	13.48		
57	33.0	52 59.7	2.0	57.3					+37.69	59	+38.48		
κ				53.2							-7.9		
(8) - D	$\frac{\kappa'}{100}$			52.97							51.17		
a_1											-3.92		
											47.25		
57	83.9	57 47.8	8.7	57 86.5	57 47.8	50.2	33.9	37.4	0.9	57	53.65		
κ				89.6					+57.20	58	+57.77		
(8) - D	$\frac{\kappa'}{100}$			36.67							-5.7		
a_2											51.05		
											-3.64		
											47.44		
											36		

Runs

57

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	8'
	+32.21 1.50799 9.90330 1.53365w	1' 40.6 42.1		2.7	16' 1' 41.35	6' 1' 7.00			15	53 9' 29.44	
d						53 10 3.61				38.02	
(8) - D						-34.17				-27	+11.1
δ_1	-3.49 -19.50	54 11.94	8 55.8			-25.59				-41	1448
										+11.47	
										+30	
										-37.20	
										9 15.30	
d	+31.54 1.49886 9.90330 1.52452w	1 39.7 39.1		8	16 1 39.40	6 8.95			15	53 9 32.21	
(8) - D						53 10 5.67				40.61	
δ_2	-3.49 -19.50	54 11.91	8 59.8			-33.46				-26	+11.36
						-25.06				-55	15.17
										+11.87	
										+30	
										-38.50	
										9 17.28	
d	+19.71 1.29469 9.90571 1.32279w	0 57.9 58.8		16.7	50 0 58.35	31 52.00			50	53 35 25.58	
(8) - D						53 35 16.61				31.11	
δ_1	-3.50 -19.48	55 7.64	34 49.7			-21.03				-9	+11.98
						-15.50				-29	15.30
										+11.76	
										+35	
										-37.20	
										35 9.21	
d	+25.71 1.41010 9.90571 1.43820w	0 53.0 51.9		4.9	50 0 52.45	31 55.90			50	53 35 25.19	
(8) - D						53 35 52.62				32.40	
δ_2	-3.50 -19.48	55 7.68	34 50.5			-27.43				-17	+12.23
						-20.22				-31	16.04
										+12.36	
										+35	
										-38.50	
										35 9.94	
d	+34.54 1.53832 9.89781 1.55849w	3 52.1 54.0		6.1	13 3 53.05	8 55.30	12 23.66	10	52 12 15.73	12 27.17	
(8) - D						52 12 51.91	+9.25			23.86	-25
δ_1	-3.49 -19.44	56 39.34	11 40.0			-36.78	12.62			-32	-187
						-25.05				-117	+1044
										+1044	+30
										-37.00	-37.00
										11 59.48	12 2.86
d	+31.72 1.50133 9.89781 1.52150w	3 53.0 52.3		5.3	13 3 52.65	8 55.70	12 26.66	10	52 12 14.19	22.45	12 29.19
(8) - D						52 12 52.42	+9.49			26.66	-22
δ_2	-3.49 -19.44	56 39.19	11 42.3			-33.23	13.30			-26	-133
						-25.76				-133	+1078
										+1078	+30
										+30	-38.20
										12 1.76	12 4.33
d	+14.68 1.16673 9.90111 1.19020w	4 52.4 51.0		1.4	4 50.70	42 57.65		35	52 46 38.76		
(8) - D						52 46 54.26				42.33	
δ_1	-3.51 -19.42	57 41.93	45 59.1			-15.50				-6	+9.86
						-11.93				-145	13.23
										+1107	
										+30	
										-37.00	
										46 18.56	
d	+18.23 1.26079 9.90111 1.28426w	4 46.2 45.4		11.6	4 45.80	43 2.65		35	52 46 40.03		
(8) - D						52 46 59.27				44.66	
δ_2	-3.51 -19.42	57 42.02	46 0.7			-49.24				-9	+10.05
						-14.61				-160	13.86
										+1144	
										+30	
										-38.40	
										46 20.12	
d	+22.51 1.35238 9.90860 1.38334w	4 31.1 31.1		19	4 31.10	3 17.25		15	54 6 49.69		
(8) - D						54 7 13.86				56.37	
δ_1	-3.54 -19.40	58 43.71	6 14.6			-24.17				-13	+11.46
						-17.14				-138	14.83
										+12.54	
										+40	
										-37.20	
										6 34.00	
d	+17.24 1.2354876 9.90860 1.26674w	4 33.4 33.1		5.4	4 33.25	3 15.10		15	54 6 53.34		
(8) - D						54 7 11.82				58.44	
δ_2	-3.54 -19.40	58 43.52	6 16.0			-18.48				-156	+11.71
						-13.34				-152	15.52
										+12.94	
										+40	
										-38.60	
										6 35.43	

58

Date₁ = 1876 Dec. 5

Observer
Recorder

Date, = Dec. 19

Observer
Recorder

Run

[illegible]

Runs

+3.37

59

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	$+3.81$ z	δ'
d	+36.73 1.56502 9.90565 1.59303w	1' 46.3	47.4	13.7	51' 46.85	53 31 1.50	53 34 58.11		50	53 34 18.93	+4.50
(δ) - D $\frac{d'}{100}$	9.90565 1.59303w	9.77353	1.46091w			-59.18	-28.90			29.21 -36 -54.42 +119.5 +33	+10.51 14.87
-3.55 δ_1 -19.35		0 54.72		33 47.6						-37.10 34 5.77	698
d	+32.69 1.571441 9.90565 1.54242w	1 49.3	47.9	17.2	51 48.60	53 34 59.75	53 34 56.47		50	53 34 21.60	+11.50
(δ) - D $\frac{d'}{100}$	9.90565 1.54242w	9.77353	1.41030w			-59.18	-25.72			30.75 -28 -61 +12.34 +33	+12.05 15.61
-3.55 δ_2 -19.35		0 54.61		33 48.5						-37.10 34 7.86	
d	+29.11 1.46404 9.90787 1.49427w	2 59.9	60.1	120.0	3 00.0	53 54 48.35	53 58 44.96		25	53 58 13.75	+11.66
(δ) - D $\frac{d'}{100}$	9.90787 1.49427w	9.76939	1.35549w			-59.18	-22.69			22.27 -22 -90 +12.38 +40	150.3
-3.56 δ_1 -19.32		2 14.84		57 40.9						-37.10 58 0.20	
d	+28.83 1.45984 9.90787 1.49007w	2 58.1	57.0	15.1	57.53	53 54 50.80	53 58 47.52		25	53 58 16.61	+11.95
(δ) - D $\frac{d'}{100}$	9.90787 1.49007w	9.76939	1.35159w			-59.18	-22.47			25.05 -22 -97 +12.76 +40	15.76
-3.56 δ_2 -19.32		2 14.89		57 42.9						-37.10 58 2.21	
d	+22.93 1.360110 9.90611 1.38887w	2 56	6.1	11.7	58.5	53 35 42.50	53 39 39.11		45	53 39 14.63	+11.62
(δ) - D $\frac{d'}{100}$	9.90611 1.38887w	9.77268	1.25544w			-59.18	-18.01			21.10 -14 -63 +12.04 +35	14.99
-3.57 δ_1 -19.30		3 10.46		38 39.8						-37.10 38 5.09	
d	+23.15 1.36455 9.90611 1.39302w	2 48	3.3	8.1	4.95	53 35 44.30	53 39 41.02		45	53 39 16.30	+11.92
(δ) - D $\frac{d'}{100}$	9.90611 1.39302w	9.77268	1.25959w			-59.18	-18.18			22.84 -14 -71 +12.42 +35	15.73
-3.57 δ_2 -19.30		3 10.42		38 41.8						-37.10 39 0.07	
d	+18.92 1.24692 9.89693 1.29621w	2 59.2	0.4	119.6	2 59.80	52 3 48.55	52 3 45.16		20	52 3 25.38	+9.59
(δ) - D $\frac{d'}{100}$	9.89693 1.29621w	9.78869	1.18797w			-59.18	-15.42			29.74 -10 -90 +10.29 +30	12.96
-3.55 δ_1 -19.27		4 7.65		2 46.6						-36.50 3 6.20	5.90
d	+14.59 1.16406 9.89693 1.18335w	3 15	0.3	1.8	3 0.90	52 3 47.45	52 3 44.17		20	52 3 28.98	+9.84
(δ) - D $\frac{d'}{100}$	9.89693 1.18335w	9.78869	1.07511w			-59.18	-11.89			32.28 -6 -102 +10.62 +30	13.65
-3.55 δ_2 -19.27		4 7.64		2 48.5						-36.50 3 6.20	
d	+24.20 1.43454 9.89693 1.45326w	4 35.9	36.9	12.8	36.40	53 11 46.95	53 11 43.56		25	53 11 40.16	+8.91
(δ) - D $\frac{d'}{100}$	9.89693 1.45326w	9.78869	1.34650w			-59.18	-22.21			46.35 -20 -138 +10.19 +30	12.28
-3.56 δ_1 -19.23		5 56.59		56 2.7						-36.70 56 2.93	
d	+31.70 1.50106 9.89624 1.51966w	4 30.0	30.0	4	30.00	53 18.35	53 18.07		25	53 18.35	+9.02
(δ) - D $\frac{d'}{100}$	9.89624 1.51966w	9.78869	1.41325w			-59.18	-25.90			49.17 -26 -153 +10.51 +30	12.83
-3.56 δ_2 -19.23		5 56.64		56 4.7						-36.10 56 2.90	

Date₁ = 1876 Dec. 5.Observer
RecorderDate₂ = Dec. 19Observer
Recorder

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Star.	α	δ	Mag.	T_a	T_m	T_e	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
25	29	53 12	9.2	1	25 26.1	25 40	7.8	11.1	14.8	18.0	25	11.44	
24	26.3	6.8	9.1		29.3					+37.75	+38.51		
κ					344						76		
(8) - D	κ'				2993						25	48.89	
c_1											-4.36	44.53	
			9.0		24 32.5	24 44.5	47.9	57.2	54.7	58.0	24	57.26	
κ					35.8					+57.26	+57.81		
(8) - D	κ'				393						25	48.52	
c_2					3587						-4.12	44.40	
27	28	54 4	8.8		26 31.7	27 3.6	7.0	10.5	13.9	17.6	27	10.52	
26	20.0	53 6.9	8.7		33.9					+37.72	+38.57		
κ					37.3						-7.9		
(8) - D	κ'				34.30						27	48.24	
a_1											-4.42	43.82	
			8.8		26 10.4	26 43.7	47.3	50.7	54.3	58.0	26	50.50	
κ					13.8					+57.24	+57.81		
(8) - D	κ'				16.6						27	48.04	
a_2					13.60						-4.18	43.86	
28	21	54 3	7.3		27 31.7	27 36.0	38.3	2.9	6.4	10.0	28	29.2	
27	17.6	53 5.3	7.0		34.8					+37.72	+38.57		
κ					38.5						-7.9		
(8) - D	κ'				35.00						28	40.64	
a_1											-4.44	36.20	
			7.5		27 29.5	27 36.0	39.7	43.1	46.6	50.0	27	43.08	
κ					31.8					+57.24	+57.81		
(8) - D	κ'				35.5						28	40.32	
a_2					32.27						-4.20	36.12	
29	29	53 27	8.0		28 59.2	29 57	83	120	15.4	18.9	39	11.94	
28	26.3	22.3	8.1		24					+37.74	+38.57		
κ					5.6						-7.7		
(8) - D	κ'				240						29	49.68	
a_1											-4.44	44.24	
			8.5		28 18.4	28 45.2	48.7	52.0	55.9	59.3	28	52.22	
κ					21.9					+57.27	+57.82		
(8) - D	κ'				23.8						29	49.99	
a_2					21.37						-4.20	45.79	
Dec. 5													
0	3 25	50 5	8.8	0	2 52.7	2 38.2	14	47	7.9	11.1	3	4.66	
2	34.5	0.0	8.4		53.5					+37.75	+38.43		
κ					58.8						-6.8		
(8) - D	κ'				55.67						3	42.41	
a_1											-2.99	39.42	
Dec. 5													
0	4 6	50 28	8.5	3	33.0	3 39.0	42.4	45.7	48.7	52.0	3	45.58	
3	15.4	22.5	8.6		34.7					+37.74	+38.43		
κ					37.5						-6.9		
(8) - D	κ'				35.07						4	25.30	
a_2											-3.50	20.30	

Runs.

+3.37

61

1876phae

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ'
d	-18.79 1.27398 9.90368 1.29997	3' 11.1 9.77711 1.17340	11.9	1.0	13' 11.50	53	9' 36.85 33.46 +19.95 +14.91	10	53 13' 53.10 15.57 48.37	13 48.37	9 +10.88 - 96 412.5 +11.58 + 3.5 -36.40 13 26.22
((8) - D) $\frac{d'}{100}$											
δ_1	-3.72 -18.67	25 40.81	13 7.6								
d	+15.39 1.18724 9.90368 1.21328	2 44.2 9.77711 1.08671	43.0	7.2	2 43.60	53	10 4.75 1.47 -16.34 -12.21	10	53 13 45.13 49.26 - 6 - 9.2 +11.94 + 30 -38.00 13 26.33	+11.26 15.07	
((8) - D) $\frac{d'}{100}$											
δ_2	-3.72 -18.67	25 40.68	13 7.7								
d	+36.22 1.55895 9.90860 1.58991	4 56.3 9.76800 1.44931	56.5	8	4 56.40	54	2 57.95 48.56 -38.90 -28.14	15	54 6 4.66 20.42 - 35 -148 +12.53 + 40 -36.40 5 58.49	+11.10 14.47	
((8) - D) $\frac{d'}{100}$											
δ_1	-3.76 -18.61	27 40.06	5 39.9								
d	+37.20 1.57054 9.90860 1.60150	4 53.5 9.76800 1.46090	51.4	4.9	4 52.45	54	2 55.90 52.62 -34.95 -28.44 50	15	54 6 12.67 24.58 - 37 -16.6 +12.44 + 40 -37.00 6 44.5	23.72 +11.31 15.12	
((8) - D) $\frac{d'}{100}$											
δ_2	-3.76 -18.61	27 40.10	5 43.3								
d	+27.92 1.44159 9.90860 1.47724	2 20.4 9.76852 1.33680	21.1	1.5	2 20.75	54	0 27.60 4 24.21 -36.01 -21.72	20	54 4 54.21 2.49 - 20 - 70 +12.47 + 40 -36.40 3 41.45	+11.94 15.36	
((8) - D) $\frac{d'}{100}$											
δ_1	-3.77 -18.59	28 32.43	3 22.9								
d	+10.81 1.03383 9.90832 1.06451	2 33.9 9.76852 0.92471	32.1	6.0	2 33.00	54	0 15.35 4 12.07 -14.60 -8.41	20	54 4 8.47 3.66 - 3 - 86 +12.87 + 40 -38.10 3 41.77	+12.40 16.21	
((8) - D) $\frac{d'}{100}$											
δ_2	-3.77 -18.59	28 32.35	3 23.2								
d	+9.54 0.97955 9.90506 1.00700	2 30.7 9.77456 0.87647	31.9	2.6	2 31.30	53	25 17.05 29 13.66 -10.16 -7.52	55	53 29 3.50 6.14 - 3 - 75 +11.86 + 35 -36.30 28 44.64	+11.43 14.80	
((8) - D) $\frac{d'}{100}$											
δ_1											
d	+30.85 1.48926 9.90518 1.51680	2 13.0 9.77456 1.38618	11.8	4.8	2 12.40	53	25 35.95 29 32.67 -32.84 -24.33	55	53 28 54.80 8.34 - 25 - 75 +12.22 + 35 -36.30 28 44.64	+11.57 15.38	
((8) - D) $\frac{d'}{100}$											
δ_2											
d	+08.99 0.95376 9.88510 0.96122	4 10.0 9.50686 0.78298	11.9	1.9	4 10.95	50	3 37.40 7 34.01 -9.15 -6.07	15	50 7 24.86 27.94 - 2 -12.5 + 8.78 + 25 -36.70 7 1.77	+11.16 10.53	
((8) - D) $\frac{d'}{100}$											
δ_1	-3.10 -20.05	3 36.32	6 41.7								
d	+10.49 1.02678 9.88741 1.03055	1 55.9 9.50351 0.94665	58.9	14.8	1 57.40	50	25 50.95 29 47.62 -10.73 -8.84	55	50 29 36.94 38.88 - 3 - 59 + 8.59 + 25 -36.40 29 13.72	+11.22 12.03	
((8) - D) $\frac{d'}{100}$											
δ_2	-3.10 -20.05	4 17.20	25 53.7								

Date₁ = 1876 Dec. 5

504

Observer
RecorderDate₂ =Observer
Recorder

62

Run

Star.	α	δ	Mag.	T_s	T_m	T_e	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
5 ^h 10 ^m 4 ^s	190	50° 46'	8.7 8.5	0	5 38 8.0 108 7.53	4 43.4	46.7	49.8	53.2	56.5 +37.74	4 ^m 49.92 +38.43 69 5 27.66 -3.01 24.65		
(8) - D	κ'_{100}												
α_1													
0 6 7 5 16.9		50 46 41.0	8.3 8.0	0	5 34.9 36.9 35.90	5 41.3	44.5	47.8	51.0	54.4 +37.74	5 47.80 +38.43 69 6 25.54 -3.02 22.52		
(8) - D	κ'_{100}												
α_2													
0 7 32 6 32.8		52 51 45.7	8.4 8.7	0	7 24.3 28.0 31.4 27.90	7 4.2	7.6	11.2	14.7	17.9 +37.69	7 11.12 +38.43 74 7 48.81 -3.03 45.78		
(8) - D	κ'_{100}												
α_1													
κ													
(8) - D	κ'_{100}												
α_2													
κ													
(8) - D	κ'_{100}												
α_1													
κ													
(8) - D	κ'_{100}												
α_2													
κ													
(8) - D	κ'_{100}												
α_1													
κ													
(8) - D	κ'_{100}												
α_2													

Runs

+ 3.37

63

	$T_m - T_0$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ'
d	-17.61 1.245762 9.88927 1.25739	4 11.6 9.80074 1.16886	12.8	4.4	39 12.20	43 36.15 50 47 32.46 -18.09 -14.75			35	50 47 14.67 18.01 -9 +7.85 -126 11.22 +889 +30 -36.80 46 52.42	
((8) - D) $\frac{d'}{100}$											
δ_1					38 -10						
d	+11.90 1.07555 9.88927 1.08718	3 30.1 9.80074 0.99865	32.8	29 3	31.48	44 16.90 50 48 13.62 -12.22 -9.97			35	50 48 14.0 3.65 -4 +8.11 -106 11.48 +891 +30 -36.80 47 38.33	
((8) - D) $\frac{d'}{100}$											
δ_2	-3.12 -20.05	6 19.40		47 18.3	33						
d	-16.8 9.90168	3 54.9 1.22531 9.78063 1.12830	56.5	11.4	33 55.70	48 52.65 52 52 49.26 +13.44			30	51 56 3.39 53 2.70 +10.20 -8 13.57 -118 +1116 +30 -3720 52 39.07	
((8) - D) $\frac{d'}{100}$											
δ_1	-3.13 -20.04	7 42.65		52 19.0							
d											
((8) - D) $\frac{d'}{100}$											
δ_2											
d											
((8) - D) $\frac{d'}{100}$											
δ_1											
d											
((8) - D) $\frac{d'}{100}$											
δ_2											
d											
((8) - D) $\frac{d'}{100}$											
δ_1											
d											
((8) - D) $\frac{d'}{100}$											
δ_2											

Date₁ = 1876 Dec. 6
η = -.59Observer
RecorderDate₂ = Dec. 23
η = -.39Observer
Recorder

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Star.	α	δ	Mag.	T _s	T _m	T _e	T _r	T _g	T _h	Sum	Mean	Red. to T _m	T
31	56	54 25	8.5	1 31	95 31	813	24.8	38.4	41.9	41.6	31	38.40	
30	53.3	20.2	8.2		12.4					+39.17		+40.00	
κ					14.8							-8.3	
(δ) - D	κ'				12.23						32	17.57	
α ₁												-4.49	
												13.08	
31			8.6	30	42.8	31 4.5	8.2	11.6	13.1	18.7	31	11.62	
κ					45.5					+65.60		+65.15	
(δ) - D	κ'				49.1						32	18.22	
α ₂					45.80							-4.19	
												13.03	
35	14	54 33	9.0	34	160	34 35.8	29.5	43.0	46.5	50.5	34	43.06	
34	12.6	28.5	8.8		19.4					+39.17		+40.00	
κ					22.9							-8.3	
(δ) - D	κ'				19.43						35	22.23	-4.55
α ₁					35 3.4	34 50.9	54.0	57.7	1.3	5.0	34	57.78	17.68
					6.9					+39.17		+40.00	
					10.0							-8.3	
					6.77						35	36.95	-4.55
κ			9.0	34	59.9	34 2.2	12.4	16.2	19.8	23.8	34	16.26	32.40
(δ) - D	κ'				8.3					+65.60		+65.15	
α ₂					6.2							-5.5	
					8.13						35	20.86	-4.25
			9.0	34	35.2	34 23.2	27.2	31.0	34.7	38.2	34	38.86	17.61
					88.6					+65.60		+65.15	
					42.7							-5.5	
					38.83						35	35.46	-4.26
36	42	54 38	8.5	35	52.7	36 16.8	20.4	23.9	27.6	31.0	36	33.94	32.20
35	38.0	25.7	8.4		56.7					+39.17		+40.00	
κ					0.1							-8.3	
(δ) - D	κ'				56.50						37	3.11	
α ₁												-4.57	
											36	58.54	
			8.2	35	28.4	35 50.0	53.7	57.0	0.8	4.2	35	57.14	
κ					26.1					+65.61		+65.16	
(δ) - D	κ'				29.6						37	1.45	
α ₂					26.37							-4.28	
											36	58.47	
37	44	54 42	8.8	36	55.3	37 17.6	21.2	24.7	28.4	31.9	37	24.76	
36	40.1	36.6	8.5		59.0					+39.17		+40.00	
κ					1.5							-8.3	
(δ) - D	κ'				58.60						38	3.93	
α ₁												-4.60	
											37	59.33	
			8.7	36	29.8	36 50.8	57.4	58.0	1.5	5.0	36	57.94	
κ					32.1					+65.61		+65.16	
(δ) - D	κ'				35.9						38	2.55	
α ₂					32.60							-4.31	
											37	59.24	
39	5	55 2	8.6	38	7.4	38 40.1	43.8	47.3	50.9	54.5	38	47.32	
38	0.9	54 57.4	8.6		10.5					+39.16		+40.00	
κ					13.0							-8.4	
(δ) - D	κ'				10.30						39	26.48	
α ₁												-4.64	
												22.54	
												21.84	
			8.5	37	53.0	38 13.4	17.0	20.6	24.2	27.9	38	20.62	
κ					57.0					+65.60		+65.16	
(δ) - D	κ'				2.0						39	25.22	
α ₂					58.67							-4.34	
												21.88	

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Date₁ = 1876 Dec. 6Observer
RecorderDate₂ = Dec. 23Observer
Recorder

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Star.	α	δ	Mag.	T_s	T_m	T_e	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
40 3 38 58.4 K	55 3 54 58.3	8.2 8.0	1	39 21.6 25.9 28.0 28.17	39 8.0	42.6	46.2	48.9	53.5 +39.17	39	46.24 +40.01 -8.4 25.41 -4.66 20.75		
(8) - D) $\frac{\kappa'}{100}$													
a_1													
K		8.3		38 45.6 49.6 52.0 49.07	39 12.2	15.8	19.4	23.1	26.8 +65.60	39	19.46 +65.96 -5.6 24.06 -4.36 20.70		
(8) - D) $\frac{\kappa'}{100}$													
a_2													
41 37 40 33.2 K	54 14 8.9	9.1 9.2		40 46.7 49.5 52.7 49.63	41 13.5	17.0	20.4	24.0	27.6 +39.19	41	20.48 +40.01 -8.2 59.67 -4.65 55.02		
(8) - D) $\frac{\kappa'}{100}$													
a_1													
K		9.2		40 31.4 34.0 36.8 34.07	40 46.7	30.4	53.8	57.5	0.8 +65.63	40	53.84 +65.97 -5.4 58.47 -4.37 55.10		
(8) - D) $\frac{\kappa'}{100}$													
a_2													
42 54 41 49.6 K	54 46 41.0	8.1 8.4		41 56.5 59.3 22 59.33	42 27.0	30.6	34.0	37.7	41.3 +39.18	42	34.12 +40.01 -8.3 13.30 -4.69 8.61		
(8) - D) $\frac{\kappa'}{100}$													
a_1													
K		8.0		41 32.4 36.3 39.0 35.90	42 0.2	3.7	7.3	11.0	14.5 +65.62	42	7.34 +65.97 -5.5 11.96 -4.41 8.55		
(8) - D) $\frac{\kappa'}{100}$													
a_2													
43 50 42 47.5 K	54 45 40.5	9.0 9.0		43 34 6.8 8.5 6.23	43 28.3	31.8	35.3	39.0	42.5 +39.18	43	35.38 +40.01 -8.3 14.56 -4.71 9.85		
(8) - D) $\frac{\kappa'}{100}$													
a_1													
K		9.0		42 40.9 43.4 46.9 43.73	43 1.5	4.9	8.7	12.2	15.7 +65.62	43	8.60 +65.97 -5.5 13.22 -4.43 9.79		
(8) - D) $\frac{\kappa'}{100}$													
a_2													
45 18 44 14.3 K	54 08 52.9	6.8 6.6		44 24.3 28.5 30.3 27.70	44 55.1	58.6	2.0	5.7	-9.2 +39.17	45	2.12 +40.01 -8.4 41.29 -4.74 36.55		
(8) - D) $\frac{\kappa'}{100}$													
a_1													
K		6.8		44 2.3 4.3 7.9 4.83	44 28.3	31.9	35.3	38.9	42.6 +65.61	44	35.82 +65.97 -5.6 40.01 -4.46 36.55		
(8) - D) $\frac{\kappa'}{100}$													
a_2													

Runs

67

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	$+ 3.88$ z	$8'$
d	+21.07 1.32366 9.91389 1.35991	0 58.6 9.45451 1.20353m	59.8	18.4	20 59.20	55 5	49.15 45.66 -22.90 -15.98		20	55 5 22.76 29.68 - 11 - 30 +13.49 + 40 -36.00 5 10.65	+13.48 16.97
$(\delta) - D) \frac{d'}{100}$											
δ_1	-3.88 -18.17	40 16.87		11 52.5	20						
d	+30.39 1.48273 9.91389 1.51898	0 52.1 9.45451 1.36260m	48.9	99.0	0 49.50	55 5	58.85 55.22 -33.03 -23.05		20	55 5 22.79 32.17 - 24 - 28 +14.03 + 40 -38.20 5 11.76	+13.91 17.99
$(\delta) - D) \frac{d'}{100}$											
δ_2	-3.88 -18.17	40 16.82		4 53.6	10						
d	+30.85 1.48926 9.90942 1.52104	0 49.8 9.46642 1.37804m	49.4	12.0	0 49.60	54 15	58.75 55.26 -33.19 -23.88		10	54 15 22.67 31.38 - 24 - 24 +12.59 + 40 -35.80 5 11.76	+12.51 16.00
$(\delta) - D) \frac{d'}{100}$											
δ_1	-3.87 -18.11	41 51.15		14 53.5	10						
d	+19.77 1.29601 9.90942 1.32779	0 56.9 9.46642 1.18479m	56.2	1.1	0 56.55	54 15	57.80 48.17 -21.27 -15.30		10	54 15 22.44 32.87 - 10 - 32 +13.08 + 40 -35.00 15 11.81	+12.06 16.94
$(\delta) - D) \frac{d'}{100}$											
δ_2	-3.87 -18.11	41 51.23		14 53.7	38						
d	+34.79 1.54145 9.91230 1.57611	3 32.9 9.46075 1.43456m	33.4	6.3	3 33.15	54 48	52.20 11.71 -37.68 -27.20		35	54 47 34.03 44.51 - 31 - 106 +13.19 + 40 -35.90 47 24.32	+12.22 15.71
$(\delta) - D) \frac{d'}{100}$											
δ_1	-3.90 -18.06	43 4.71		47 6.3	38						
d	+31.44 1.44748 9.91230 1.53214	3 34.6 9.46075 1.38059m	32.9	7.5	3 33.75	54 48	14.60 10.97 -34.05 -24.02		35	54 47 36.92 46.95 - 26 - 123 +13.68 + 40 -38.10 47 25.32	+12.59 16.47
$(\delta) - D) \frac{d'}{100}$											
δ_2	-3.90 -18.06	43 4.65		47 7.3	38						
d	+29.15 1.46464 9.91005 1.49705	3 49.9 9.46519 1.35219m	49.9	3	3 49.90	54 47	58.45 54.96 -34.44 -22.50		35	54 47 23.55 47 32.46 - 22 - 114 +13.17 + 40 -35.80 47 12.36	+12.21 15.70
$(\delta) - D) \frac{d'}{100}$											
δ_1	-3.90 -18.02	44 5.95		46 54.3	38						
d	+24.87 1.39568 9.91230 1.43034	3 52.3 9.46075 1.27879m	52.5	2.8	3 51.40	54 47	56.45 53.32 -26.44 -19.00		35	54 47 26.38 34.32 - 16 - 134 +13.68 + 40 -38.00 47 12.78	+12.58 16.46
$(\delta) - D) \frac{d'}{100}$											
δ_2	-3.90 -18.02	44 5.89		46 54.8	26						
d	+34.42 1.53681 9.91336 1.57253	1 52.4 9.45859 1.41776m	52.0	-5.4	1 52.70	54 59	55.65 52.16 -37.87 -26.17		25	54 59 14.79 25.99 - 30 - 57 +13.40 + 40 -38.80 59 6.61	+12.93 16.42
$(\delta) - D) \frac{d'}{100}$											
δ_1	-3.92 -17.97	45 32.63		58 48.6	26						
d	+30.54 1.45430 9.91336 1.52102	1 54.2 9.45859 1.36625m	54.1	3	1 54.15	54 59	54.20 50.57 -32.44 -23.24		25	54 59 18.53 27.33 - 24 - 67 +13.92 + 40 -38.00 59 6.62	+13.44 17.29
$(\delta) - D) \frac{d'}{100}$											
δ_2	-3.92 -17.97	45 32.63		58 48.6							

Date₁ = 1876 Dec. 6Observer
RecorderDate₂ = Dec. 23Observer
Recorder

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Star.	α	δ	Mag.	T_s	T_m	T_e	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
46	22	54 7'	9.0	1	45 44.9	45 58.0	1.5	5.0	8.6	120	46 50.2		
	158	27	9.0		48.7					+39.20	+40.01		
	κ				57.4						-81		
	(δ) - D				46.33						46 44.22		
	α_1										-4.72		
											39.50		
			9.0		45 7.1	45 31.0	34.5	38.4	41.8	45.3	45 38.20		
	κ				11.1					+65.63	+65.17		
	(δ) - D				14.1						-54		
	α_2				10.77						46 42.83		
											-4.46		
											39.37		
47	15	54 57	8.0		46 29.2	46 52.1	53.8	59.3	2.9	66	46 59.34		
	10.2	52.0	8.0		33.0					+39.17	+40.01		
	κ				36.0						-84		
	(δ) - D				32.73						47 38.51		
	α_1										-4.78		
											33.73		
			8.4		46 7.3	46 25.3	29.0	32.5	36.2	39.8	46 33.53		
	κ				10.4					+65.62	+65.17		
	(δ) - D				14.3						-55		
	α_2				10.67						47 37.18		
											-4.50		
											33.68		
49	21	54 44	9.1		48 27.1	48 52.0	0.8	4.2	7.8	114	49 42.4		
	15.9	39.5	9.2		30.9					+39.30	+40.01		
	κ				33.8						-71		
	(δ) - D				30.60						49 43.54		
	α_1										-4.80		
											38.74		
			9.1		48 5.7	48 30.4	33.9	37.5	41.0	44.7	48 37.20		
	κ				9.0					+65.70	+65.17		
	(δ) - D				12.6						-47		
	α_2				9.10						49 42.40		
											-4.53		
											38.87		
50	17	54 58	8.0		49 45.5	49 53.4	37.1	0.6	4.1	7.8	50 0.60		
	11.9	52.3	7.6		47.8					+39.20	+40.02		
	κ				57.8						-82		
	(δ) - D				48.37						50 39.80		
	α_1										-4.83		
											34.97		
			7.7		49 4.6	49 26.6	30.3	33.9	37.5	41.1	49 33.88		
	κ				7.9					+65.64	+65.18		
	(δ) - D				11.0						-54		
	α_2				7.83						50 35.52		
											-4.56		
											34.96		
81	6	54 12	8.8		50 23.2	50 40.0	43.6	47.1	50.8	34.1	50 47.12		
	59.7	7.0	9.0		26.5					+39.21	+40.02		
	κ				29.6						-81		
	(δ) - D				26.63						51 26.33		
	α_1										-4.80		
											26.53		
			9.0		50 25.8	50 13.3	17.0	20.4	24.0	27.5	50 20.44		
	κ				28.9					+65.64	+65.18		
	(δ) - D				32.2						-54		
	α_2				28.97						51 25.08		
											-4.54		
											21.54		

Runs

+3.49

69

+3.88

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	8'
d	+16.69 1.22246 9.90869 1.25351	4 9.6 9.46782 1.11264m	9.2	.8	19.4 9.40	3 38.95 7 35.46 -17.43 -12.96	15	54 7	14.55 22.50 -7 -123 +1245 +40 -35.60 7 1.94	+4.55 15.04	
(8) - D $\frac{d'}{100}$	-3.90 -17.92	46 35.60	6 44.0	18	3 59.00	3 49.35 7 45.72 -24.16 -21.30	15	54 7	16.26 24.42 -19 -140 +1291 +40 -37.80 7 2.22	+11.72 15.60	
d	+27.43 1.43823 9.90869 1.46928	3 59.9 9.76782 1.32841m	58.1	18.0	3 59.00	3 49.35 7 45.72 -24.16 -21.30	15	54 7	16.26 24.42 -19 -140 +1291 +40 -37.80 7 2.22	+11.72 15.60	
(8) - D $\frac{d'}{100}$	-3.90 -17.92	46 35.47	6 44.3	28	3 0.95	54 58 47.40 54 58 43.91 -26.49 -20.24	25	54 58	15.02 23.67 -18 -90 +13.37 +40 -37.90 7 2.22	+12.69 16.18	
d	+26.61 1.42504 9.91328 1.46068	3 1.0 9.75877 1.30617m	0.9	1.9	3 0.95	54 58 47.40 54 58 43.91 -26.49 -20.24	25	54 58	15.02 23.67 -18 -90 +13.37 +40 -37.90 7 2.22	+12.69 16.18	
(8) - D $\frac{d'}{100}$	-3.93 -17.89	47 29.80	57 46.3	28	3 2.90	54 58 47.40 54 58 43.91 -26.49 -20.24	25	54 58	15.02 23.67 -18 -90 +13.37 +40 -37.90 7 2.22	+12.69 16.18	
d	+21.89 1.341025 9.91328 1.37589	3 3.9 9.75877 1.22138m	1.9	5.8	3 2.90	54 58 47.40 54 58 43.91 -26.49 -20.24	25	54 58	15.02 23.67 -18 -90 +13.37 +40 -37.90 7 2.22	+12.69 16.18	
(8) - D $\frac{d'}{100}$	-3.93 -17.89	47 29.75	57 47.4	40	0 13.0	54 58 47.40 54 58 43.91 -26.49 -20.24	25	54 58	15.02 23.67 -18 -90 +13.37 +40 -37.90 7 2.22	+12.69 16.18	
d	+33.64 1.52686 9.91328 1.53839	0 13.0 9.80059 1.45011m	13.0	0	0 13.0	54 58 47.40 54 58 43.91 -26.49 -20.24	25	54 58	15.02 23.67 -18 -90 +13.37 +40 -37.90 7 2.22	+12.69 16.18	
(8) - D $\frac{d'}{100}$	-3.94 -17.81	49 34.80	45 29.5	40	9.20	54 58 47.40 54 58 43.91 -26.49 -20.24	25	54 58	15.02 23.67 -18 -90 +13.37 +40 -37.90 7 2.22	+12.69 16.18	
d	+28.60 1.45637 9.91328 1.46790	0 15.1 9.80059 1.37962m	14.1	9.20	14.60	54 58 47.40 54 58 43.91 -26.49 -20.24	25	54 58	15.02 23.67 -18 -90 +13.37 +40 -37.90 7 2.22	+12.69 16.18	
(8) - D $\frac{d'}{100}$	-3.94 -17.81	49 34.93	45 30.2	27	3.93	54 58 47.40 54 58 43.91 -26.49 -20.24	25	54 58	15.02 23.67 -18 -90 +13.37 +40 -37.90 7 2.22	+12.69 16.18	
d	+12.23 1.08743 9.91328 1.12307	2 42.6 9.75877 0.96856m	41.3	3.93	4.95	54 58 47.40 54 58 43.91 -26.49 -20.24	25	54 58	15.02 23.67 -18 -90 +13.37 +40 -37.90 7 2.22	+12.69 16.18	
(8) - D $\frac{d'}{100}$	-3.96 -17.77	50 31.01	58 16.8	27	2.05	54 58 47.40 54 58 43.91 -26.49 -20.24	25	54 58	15.02 23.67 -18 -90 +13.37 +40 -37.90 7 2.22	+12.69 16.18	
d	+26.05 1.41581 9.91328 1.45145	2 29.4 9.75877 1.29694m	28.5	17.9	28.95	54 58 47.40 54 58 43.91 -26.49 -20.24	25	54 58	15.02 23.67 -18 -90 +13.37 +40 -37.90 7 2.22	+12.69 16.18	
(8) - D $\frac{d'}{100}$	-3.96 -17.77	50 31.00	58 17.5	13	3 3.8	54 58 47.40 54 58 43.91 -26.49 -20.24	25	54 58	15.02 23.67 -18 -90 +13.37 +40 -37.90 7 2.22	+12.69 16.18	
d	+20.69 1.31576 9.90924 1.34736	3 3.8 9.75877 1.20489m	3.9	1.7	3 3.8	54 58 47.40 54 58 43.91 -26.49 -20.24	25	54 58	15.02 23.67 -18 -90 +13.37 +40 -37.90 7 2.22	+12.69 16.18	
(8) - D $\frac{d'}{100}$	-3.94 -17.73	51 17.59	12 47.3	13	3 23.9	54 58 47.40 54 58 43.91 -26.49 -20.24	25	54 58	15.02 23.67 -18 -90 +13.37 +40 -37.90 7 2.22	+12.69 16.18	
d	-8.53 0.93095 9.90915 0.96246	3 23.9 9.75877 0.82026	25.1	9.0	24.50	54 58 47.40 54 58 43.91 -26.49 -20.24	25	54 58	15.02 23.67 -18 -90 +13.37 +40 -37.90 7 2.22	+12.69 16.18	
(8) - D $\frac{d'}{100}$	-3.94 -17.73	51 17.60	12 47.6	13	3 23.85	54 58 47.40 54 58 43.91 -26.49 -20.24	25	54 58	15.02 23.67 -18 -90 +13.37 +40 -37.90 7 2.22	+12.69 16.18	

505

507

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Date₁ = 1876 Dec. 6Observer
RecorderDate₂ = Dec. 23Observer
Recorder

Ru

Star.	α	δ	Mag.	T_s	T_m	T_e	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
53	25	54° 10'	8.8	1	32 18.3	53 0.6	4.0	7.7	11.2	14.8	53	76.87	
	52	19.0	9.0		21.8					+39.21		+40.02	
	κ				24.4							-1.38	
	(δ) - D	κ'			21.58						53	46.20	89
	a_1											-4.84	
												42.03	
			8.8		52 16.8	53 88.8	37.3	41.0	44.4	48.0	52	40.90	
	κ				19.5					+65.64		+6.918	
	(δ) - D	κ'			22.8							-5.9	
	a_2				19.70							45.51	
												-4.61	
												41.93	
54	34	54 37	7.7		53 28.4	54 8.9	13.4	16.9	20.5	24.1	54	16.96	
	52	27.7	7.9		33.0					+39.19		+40.02	
	κ				35.8							-8.3	
	(δ) - D	κ'			32.73						54	56.15	
	a_1											-4.88	
												51.27	
			8.0		53 16.6	53 43.1	46.6	50.2	53.8	57.3	53	50.20	
	κ				19.4					+65.63		+6.918	
	(δ) - D	κ'			22.7							-5.8	
	a_2				19.57						54	58.53	
												-4.62	
												51.21	
53	27	54 57	9.3		54 44.2	53 3.2	6.8	10.2	14.0	17.6	53	10.36	
	54	20.6	9.3		47.4					+39.18		+40.02	
	κ				57.4							-8.4	
	(δ) - D	κ'			47.67						55	49.54	
	a_1											-4.91	
												44.63	
			9.4		54 16.4	54 36.3	40.2	48.8	47.4	50.8	54	43.50	
	κ				19.2					+65.62		+6.918	
	(δ) - D	κ'			22.0							-5.6	
	a_2				19.37						55	48.32	
												-4.66	
												44.66	
56	24	55 1	6.6		55 38.5	56 0.2	3.8	7.2	10.9	14.6	56	73.4	
	53	17.9	6.9		86.6					+39.18		+40.02	
	κ				39.9							-8.4	
	(δ) - D	κ'			38.67						56	46.52	
	a_1											-4.93	
												41.59	
			6.3		55 20.2	55 33.4	37.0	40.6	44.2	47.7	55	40.58	
	κ				23.3					+65.62		+6.918	
	(δ) - D	κ'			25.6							-5.6	
	a_2				23.13						56	45.20	
												-4.68	
												41.52	
57	15	54 19	9.0		56 31.4	56 37.3	5.8	8.3	1.8	5.5	56	58.34	
	56	8.6	8.9		35.7					+39.20		+40.02	
	κ				38.6							-8.2	
	(δ) - D	κ'			35.23						57	37.54	
	a_1											-4.91	
												32.63	
			9.0		56 13.0	56 24.4	28.0	31.6	35.1	38.7	56	31.56	
	κ				16.5					+65.64		+6.918	
	(δ) - D	κ'			19.0							-5.4	
	a_2				16.17						57	36.20	
												-4.66	
												32.54	

Runs

+3.49

71

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	$+3.88$ z	8'
d	+46.16 1.664127 9.90915 1.69578w	4 13.2	13.2		14 13.20	8 35.15			10	54 11 42.05	
(8) - D) $\frac{d'}{100}$						54 12 31.66				55.89	
δ_1	-3.95 -17.64	53 38.08		11 17.7		-49.63 -35.77				-56 -126 +1254 +40	+11.12 14.61
d	+21.20 1.32634 9.90906 1.35776w	4 31.4	30.5	1.9	4 30.95	8 17.40			10	54 11 50.98	
(8) - D) $\frac{d'}{100}$						54 12 13.77				57.33	
δ_2	-3.95 -17.64	53 37.98		11 17.9		-22.49 -16.44				-12 -158 +13.00 +40 -37.40	+14.40 13.58
d	+44.23 1.64572 9.91149 1.68957w	2 52.7	51.6	4.3	2 52.15	34 56.20			45	54 38 37.8	
(8) - D) $\frac{d'}{100}$						54 38 52.71				18.79	
δ_1	-3.98 -17.59	54 47.29		37 41.5		-48.43 -33.92				-51 -87 +1301 +40 -35.20	+12.03 15.52
d	+30.63 1.48615 9.91149 1.52000w	3 0.9	0.1	1.0	3 0.50	34 47.85			45	54 38 11.11	
(8) - D) $\frac{d'}{100}$						54 38 44.22				20.73	
δ_2	-3.98 -17.59	54 47.23		37 42.1		-32.11 -23.49				-24 -105 +13.50 +40 -37.50	+12.61 16.49
d	+22.69 1.35583 9.91319 1.39138w	3 22.0	21.4	3.4	3 21.70	54 26.65			25	54 58 58.54	
(8) - D) $\frac{d'}{100}$						54 58 23.16				5.90	
δ_1	-3.99 -17.55	55 40.64		57 29.2		-24.62 -17.26				-13 -100 +1337 +40 -35.30	+12.64 16.13
d	+24.33 1.38614 9.91319 1.42169w	3 18.5	16.4	14.9	3 17.45	54 30.90			25	54 58 0.86	
(8) - D) $\frac{d'}{100}$						54 58 27.27				8.76	
δ_2	-3.99 -17.55	55 40.67		57 30.6		-26.11 -18.51				-15 -116 +13.87 +40 -37.50	+12.96 16.84
d	+30.67 1.48671 9.91354 1.52261w	4 23.9	24.7	8.6	4 24.30	58 24.05			20	55 1 44.25	
(8) - D) $\frac{d'}{100}$						55 2 20.56				57.26	
δ_1	-4.00 -17.51	56 37.59		1 20.3		-33.31 -23.30				-24 -132 +1346 +40 -35.20	+12.30 15.79
d	+17.55 1.24428 9.91354 1.28018w	4 34.1	32.2	6.3	4 33.15	58 15.20			20	55 1 52.51	
(8) - D) $\frac{d'}{100}$						55 2 11.57				58.24	
δ_2	-4.00 -17.51	56 37.52		1 19.9		-47.06 -13.33				-8 -159 +13.96 +40 -37.40	+12.69 16.57
d	+23.11 1.36380 9.90987 1.40663w	1 10.0	10.1	.1	1 10.05	16 38.30			5	54 20 43.4	
(8) - D) $\frac{d'}{100}$						54 20 34.81				16.96	
δ_1	-3.99 -17.48	57 28.64		19 40.4		-25.17 -17.85				-14 -36 +1268 +40 -35.20	+12.58 16.07
d	+15.39 1.18724 9.90987 1.21947w	1 13.6	13.0	.6	1 13.30	16 35.05			5	53 56 14.64	
(8) - D) $\frac{d'}{100}$						54 20 31.42				19.53	
δ_2	-3.99 -17.48	57 28.55		19 41.6		-16.58 -11.89				-7 -42 +13.14 +35 -37.30	+13.00 16.88

Date₁ = 1876 Dec. 6Observer
RecorderDate₂ = Dec. 23Observer
Recorder

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Star.	α	δ	Mag.	T_d	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
59	43	54 38	9.3	1	58 41.3	59 20.0	23.5	26.9	30.6	843	59	27.06	
58	36.9	82.6	9.2		45.0					+39.19	0	+40.02	
	κ				48.0							-8.3	
	(δ) - D				44.77						0	6.25	
	α_1											-4.97	
												1.28	
	κ		9.4		58 28.4	58 58.0	56.8	0.3	2.6	7.5	59	0.24	
	(δ) - D				30.6					+65.64	0	+64.19	
	α_2				82.4							-3.5	
					30.57						0	4.58	
												-4.72	
												1.16	
2	14	54 53	8.8	2	0 14.7	0 50.9	54.6	58.2	1.7	5.3	0	58.14	
0	7.4	47.9	8.6		18.4					+39.18	0	+40.03	
	κ				21.6						1	-8.4	
	(δ) - D				18.23							37.33	
	α_1											-5.00	
												32.33	
	κ		8.8		0 0.0	0 24.0	27.8	31.4	34.9	38.5	0	34.32	
	(δ) - D				8.2					+65.63	0	+63.19	
	α_2				6.1						1	-5.6	
					3.10							35.95	
												-4.76	
												32.19	
Single Observation													
1	34 0	53 28	9.3	1	82 50.0	83 7.9	11.5	14.7	18.2	21.7	33	14.80	
82	56.1	22.7	9.2		54.0					+65.62		+40.00	
	κ				57.4							+64.15	
	(δ) - D				53.80							-5.3	
	α_1										34	19.42	
												-4.21	
												16.21	
	κ												
	(δ) - D												
	α_2												
	κ												
	(δ) - D												
	α_3												
	κ												
	(δ) - D												
	α_1												
	κ												
	(δ) - D												
	α_2												

Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	$+3.49$ z	δ'
d	+42.29 1.62624 9.91158 1.66018	2' 14.4 9.46218	13.8 1.51078	8.2	4.1 2' 14.10	35 54 39	34.25 30.76 -45.73 -32.42		45	54 38' 45.02 58.34 -47 -66 +13.03 +40 -34.90 38 39.23	+12.30 15.79
$((\delta) - D) \frac{d'}{100}$	-4.01 -17.37										
δ_1		59 57.27		38 21.9	4.7						
d	+29.67 1.47232 9.91149 1.50617	2 22.8 9.76236	21.2 1.35704	4.0	2 22.00	35 54 39	26.35 22.72 -32.08 -22.75		45	54 38 54.64 59.97 -23 -84 +13.55 +40 -37.30 38 39.43	+12.58 16.76
$((\delta) - D) \frac{d'}{100}$	-4.01 -17.37										
δ_2		59 57.15		38 22.1	3.2						
d	+39.91 1.65108 9.91292 1.63636	2 19 9.75949	2.2 1.48293	4.1	2 2.05	50 54 54	46.30 42.81 -43.29 -30.40		30	54 53 54.52 54 12.41 -41 -60 +13.31 +40 -34.50 53 53.80	+12.70 16.19
$((\delta) - D) \frac{d'}{100}$	-4.03 -17.30										
δ_1		1 28.30		53 36.5	3.2						
d	+28.22 1.45056 9.91292 1.48584	2 8.1 9.75949	8.1 1.33241	2	8.10	50 54 54	40.25 36.62 -30.61 -21.50		30	54 54 6.41 15.12 -21 -74 +13.53 +40 -37.30 53 54.98	+13.28 17.16
$((\delta) - D) \frac{d'}{100}$	-4.03 -17.30										
δ_2		1 28.16		53 37.7	5.7						
d	+21.00 1.32222 9.90518 1.34976	2 18 9.77439	1.8 1.21897	2	1.80	25 53 29	46.55 42.92 -22.37 -16.55		55	53 29 20.53 26.37 -12 -70 +12.21 +35 -38.00 29 3.64 3.99	+14.74 13.62
$((\delta) - D) \frac{d'}{100}$	-3.79 -18.39										
δ_1		34 12.42		28 45.6							
d											
$((\delta) - D) \frac{d'}{100}$											
δ_2											
d											
$((\delta) - D) \frac{d'}{100}$											
δ_1											
d											
$((\delta) - D) \frac{d'}{100}$											
δ_2											

Date₁ = 1876 Dec. 24

n = -42

Star. α

Observer
RecorderDate₂ = Dec. 24

n = -36

Observer
Recorder

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Ru

Star. α	δ	Mag.	T _a	T _m	T _e	T _f	T _g	T _h	Sum	Mean	Red. to T _m	T
10 52 10 76 κ	52 32 263	6.0 5.4	23 9 27.1 29.5 32.8 29.80	9 51.0	54.4	57.7	1.1	4.6 +67.34	9 57.76 +67.79 35 11 5.00 -1.60 3.40			
(δ) - D) $\frac{\kappa'}{100}$												
a ₁		XX										
κ		5.8	9 16.5 18.2 22.0 18.68	9 45.2	48.6	52.0	53.2	58.7 +73.03	9 57.94 +73.50 47 11 4.97 -1.52 3.45			
(δ) - D) $\frac{\kappa'}{100}$												
a ₂												
17 47 17 25 κ	54 53 498	5.8 8.7	23 16 29.1 33.0 36.0 32.70	16 46.9	50.5	54.0	57.7	1.3 +67.20	16 54.08 +67.80 60 18 1.28 -1.58 17 59.70			
(δ) - D) $\frac{\kappa'}{100}$												
a ₁												
κ		9.0	16 26.0 28.9 31.2 28.70	16 44.6 41.1	45.0 44.7	48.2	52.0	55.5 +73.00	16 45.46 +73.51 51 18 1.46 -1.50 17 59.96 80			
(δ) - D) $\frac{\kappa'}{100}$												
a ₂												
19 3 18 17.6 κ	54 23 179	8.0 7.5	17 32.0 35.6 37.6 35.07	18 0.7	4.3	7.8	11.5	15.0 +67.21	18 7.86 +67.80 59 19 15.07 -1.64 13.43			
(δ) - D) $\frac{\kappa'}{100}$												
a ₁												
κ		8.1	17 44.9 47.3 50.8 47.67	17 53.0	58.4	2.0	5.5	9.2 +73.01	18 2.05 +73.51 50 19 15.03 -1.56 13.47			
(δ) - D) $\frac{\kappa'}{100}$												
a ₂												
21 11 20 25.6 κ	54 10 4.2	8.3 7.9	19 44.6 47.7 50.2 47.50	20 11.4	14.7	18.5	21.8	25.5 +67.22	20 18.38 +67.80 58 21 25.60 -1.69 23.91			
(δ) - D) $\frac{\kappa'}{100}$												
a ₁												
κ		8.0	19 33.0 37.0 40.2 36.73	20 5.4	9.0	12.8	16.0	19.5 +73.03	20 12.54 +73.52 49 21 25.57 -1.61 23.96			
(δ) - D) $\frac{\kappa'}{100}$												
a ₂												
28 16 22 29.3 κ	54 27 214	8.5 7.8	22 0.4 2.9 6.5 3.27	22 13.0	16.6	20.2	23.6	27.1 +67.22	22 20.10 +67.81 59 23 27.52 -1.71 25.81			
(δ) - D) $\frac{\kappa'}{100}$												
a ₁		XXX										
κ		8.6	21 53.2 56.1 59.3 56.20	22 7.2	10.7	14.3	17.7	21.3 +73.02	22 14.24 +73.52 50 23 27.26 -1.63 25.63			
(δ) - D) $\frac{\kappa'}{100}$												
a ₂												

Dec 24 +3' 56.09 μ_1 -35
 27 +3' 56.63 μ_2 -36

Runs

+3.87

75

+3.50

	$T_m - T_f$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	Σ	δ'
d	+27.96 1.44654 9.78395 1.35285 _m	3' 18.9	18.9	53 3	18.90	29 52 33	29.15 25.54 -22.54		50	52 33	3.00 -21 -1.16 +11.27 +30 -3460 32 42.47
$(\delta) - D) \frac{d'}{100}$											+10.20 1404
δ_1	-2.70 -19.60	11 0.70		32 22.9	53						
d	+33.37 1.52336 9.78395 1.42967 _m	8 14.2	16.0	102 3	15.70	29 52 33	33.25 29.88 -26.90		50	33 29.8	-29 -1.19 +10.93 +30 -3430 32 41.95
$(\delta) - D) \frac{d'}{100}$											+9.77 15.27
δ_2	-2.70 -19.60	11 0.75		32 22.3	4						
d	+21.38 1.33001 9.75913 1.21150 _m	4 30.9	29.6	60.5 4	30.25	53 54 59	18.10 14.19 -16.27		25	54 56 57.92	-11 -1.58 +14.01 +40 -35.60 56 38.91
$(\delta) - D) \frac{d'}{100}$											+12.72 16.59
δ_1	-2.72 -19.72	17 56.98		56 19.2	29						
d	+19.76 1.29579 9.75913 1.17728 _m	4 29.8	21.9	61.7 4	30.85	53 54 57	17.50 14.13 -15.04		25	56 59.09	-10 -1.62 +13.58 +40 -35.40 56 39.45
$(\delta) - D) \frac{d'}{100}$											+12.26 15.76
δ_2	-2.72 -19.72	17 57.08		56 19.7	29						
d	+32.79 1.51574 9.76484 1.40294 _m	1 42.0	40.3	2.3 1	41.15	21 54 25	7.20 3.29 -25.29		0	54 24 38.00	+12.92 -28 -59 +13.39 +40 -35.60 24 19.19
$(\delta) - D) \frac{d'}{100}$											+11.92 16.74
δ_1	-2.74 -19.74	19 10.69		23 59.4	15						
d	+14.35 1.15685 9.76484 1.05405 _m	1 55.1	57.1	12.2 1	56.10	20 54 24	52.25 48.88 -11.33		0	24 37.55	-5 -69 +12.97 +30 -35.40 24 18.18
$(\delta) - D) \frac{d'}{100}$											+12.55 16.03
δ_2	-2.74 -19.74	19 10.73		23 58.4	15						
d	+30.88 1.45968 9.76712 1.37916 _m	0 2.5	1.6	4.1 0	20.5	7 54 11	46.30 42.39 -23.94		15	54 11 18.45	-25 -01 +13.14 +40 -35.70 10 59.90
$(\delta) - D) \frac{d'}{100}$											+13.28 17.15
δ_1	-2.76 -19.77	21 21.15		10 40.1	14						
d	+35.81 1.54630 9.76712 1.43578 _m	4 56.0	56.9	9 4	56.45	4 54 11	51.90 48.53 -27.25		10	11 21.28	-34 -1.78 +12.73 +30 -35.50 11 0.19
$(\delta) - D) \frac{d'}{100}$											+10.91 14.41
δ_2	-2.76 -19.77	21 21.20		10 40.4	58						
d	+16.83 1.22608 9.76431 1.11275 _m	3 59.9	59.4	1.3 3	59.65	23 54 27	48.40 44.79 -12.96		55	54 27 81.83	-7 -1.40 +13.45 +40 -35.90 27 12.18
$(\delta) - D) \frac{d'}{100}$											+12.38 16.25
δ_1	-2.77 -19.80	23 22.84		26 52.4	58						
d	+18.04 1.25625 9.76431 1.14292 _m	3 56.8	58.4	15.2 3	57.60	23 54 27	50.75 47.38 -13.90		55	27 33.48	-8 -1.42 +13.93 +30 -35.70 27 13.11
$(\delta) - D) \frac{d'}{100}$											+11.83 15.33
δ_2	-2.77 -19.80	23 22.86		26 53.3	58						

Date₁ = Dec 24Observer
RecorderDate₂ = Dec 27Observer
Recorder

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Star.	α	δ	Mag.	T_a	T_m	T_a	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
27 26	37 37	53 49	8.0 8.0	23 26	29.8 33.0 36.0 32.93	26 37.1	40.7	44.1	47.7	51.4 +67.23	26 44.20 +67.81 51.43 -1.82 49.61		
(8) - D	κ'_{100}												
a_1													
κ			7.8	26	3.0 6.0 8.6 5.57	26 31.2	34.7	38.2	41.7	45.2 +73.03	26 38.20 +73.52 51.23 -1.75 49.48		
(8) - D	κ'_{100}												
a_2													
29 28	33 46.4	53 32	8.8 8.8	28 54.3	28 35.1 34.7 42.0 55.03	28 35.1	38.7	42.0	45.6	48.9 +67.25	28 42.06 +67.82 57 49.31 -1.87 47.44		
(8) - D	κ'_{100}												
a_1													
κ			8.9	27	58.0 2.1 4.8 28 1.63	28 33.3	32.7	36.2	39.7	43.2 +73.03	28 36.22 +73.52 49 49.25 -1.80 47.45		
(8) - D	κ'_{100}												
a_2													
31 30	27 82.5	54 14	9.0 8.9	29 52.5	30 27.0 55.7 59.5 55.90	30 27.0	30.5	34.0	37.6	41.2 +67.24	30 34.06 +67.82 58 41.30 -1.87 39.43		
(8) - D	κ'_{100}												
a_1													
κ			9.0	32	52.3 54.0 56.8 53.70	30 21.2	24.5	28.1	31.6	35.3 +73.03	30 28.14 +73.52 49 41.14 -1.44 39.48 38		
(8) - D	κ'_{100}												
a_2													
32 31	24 30.4	54 6	8.6 8.5	31 5.7	31 22.8 8.9 11.8 8.80	31 22.8	26.3	29.8	33.4	37.0 +67.24	31 29.86 +67.82 58 37.10 -1.90 35.20		
(8) - D	κ'_{100}												
a_1													
κ			8.0	31	0.1 2.6 6.0 2.90	31 19.0	20.4	24.1	27.6	31.1 +73.04	31 24.04 +73.53 49 37.08 -1.82 35.26		
(8) - D	κ'_{100}												
a_2													
34 33	33 44.9	54 26	7.4 7.9	33 0.5	33 32.6 3.6 6.8 3.63	33 32.6	36.0	39.6	43.2	46.1 +67.24	33 39.50 +67.82 58 46.76 -1.92 44.82		
(8) - D	κ'_{100}												
a_1													
κ			7.7	32	47.3 50.2 52.6 50.03	33 26.7	30.2	33.6	37.3	40.9 +73.03	33 33.74 +73.53 50 46.77 -1.84 44.93		
(8) - D	κ'_{100}												
a_2													

Runs

+ 3.87

77

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	$+ 3.50$ z	δ'
d	+11.27 1.05192 9.77695 0.94523 _m	1 40.8	40.1	.9	36 40.4	53 46.1	190 3.99	35	53 49 55.18	- 3 +12.52 - 58 16.39	
$(\delta) - D) \frac{d'}{100}$							- 8.81			+12.73 + 40 - 36.00 49 35.51	
-2.82 δ_1 -19.86		27 46.79	49 15.65		36 41						
d	+32.33 1.50961 9.77095 1.40292 _m	1 23.7	24.3	5.0	1 24.00	53 21.6	24.35 20.98	35	49 54.69	- .27 +11.88 - 50 15.38	
$(\delta) - D) \frac{d'}{100}$							- 25.29			+12.35 + 30 - 35.80 49 34.27	
-2.82 δ_2 -19.86		27 46.66	49 14.48		53						
d	-15.94 1.20330 _m 9.77387 1.09953	3 48.3	47.8	16.1	3 48.05	53 29 32	0.30 56.39	50	53 33 8.96	- 7 +11.36 - 1.83 15.23	
$(\delta) - D) \frac{d'}{100}$							+ 12.57			+12.41 + 35 - 36.10 32 48.09	
-2.83 δ_1 -19.88		29 44.61	32 28.2		53						
d	+34.59 1.53895 9.77387 1.43518 _m	3 5.4	6.1	11.5	3 5.75	53 29 33	42.60 39.23	50	33 11.99	- 30 +10.91 - 1.12 14.41	
$(\delta) - D) \frac{d'}{100}$							- 27.24			+12.03 + 30 - 35.90 32 50.50	
-2.83 δ_2 -19.88		29 44.62	32 30.6		10						
d	+38.16 1.58161 9.76642 1.47039 _m	0 4.7	4.8	1.5	0 4.75	54 12 16	43.60 39.69	10	54 16 10.15	- 38 +12.22 - 3 17.09	
$(\delta) - D) \frac{d'}{100}$							- 29.54			+13.23 + 40 - 36.40 15 50.84	
-2.84 δ_1 -19.90		31 36.59	15 30.9		10						
d	+34.44 1.53706 9.76642 1.42584 _m	0 5.1	6.8	11.9	0 5.95	54 12 16	42.10 39.03	10	16 12.37	- 30 +12.84 - 4 16.34	
$(\delta) - D) \frac{d'}{100}$							- 26.66			+12.83 + 35 - 36.20 15 52.51	
-2.84 δ_2 -19.90		31 36.54	15 32.6		18						
d	+21.06 1.32346 9.76782 1.21364 _m	3 49.5	48.4	17.9	3 48.95	54 3 7	54.10 53.49	15	54 7 39.14	- 11 +12.02 - 1.34 15.89	
$(\delta) - D) \frac{d'}{100}$							- 16.35			+13.07 + 40 - 36.40 7 18.63	
-2.85 δ_1 -19.91		32 32.35	6 58.7		18						
d	+21.14 1.32510 9.76782 1.21528 _m	3 49.8	48.7	18.5	3 49.25	54 3 7	59.10 53.73	15	7 39.31	- 11 +11.49 - 1.37 14.99	
$(\delta) - D) \frac{d'}{100}$							- 16.42			+12.67 + 30 - 36.20 7 18.10	
-2.85 δ_2 -19.91		32 32.41	6 58.2		58						
d	+35.84 1.55473 9.76431 1.44140 _m	3 14.0	12.9	6.9	3 13.45	54 28	34.90 30.99	55	54 28 3.36	- 34 +12.40 - 1.13 16.27	
$(\delta) - D) \frac{d'}{100}$							- 27.63			+13.47 + 40 - 36.60 27 43.03	
-2.87 δ_1 -19.93		34 41.95	27 23.1		58						
d	+43.71 1.64058 9.76431 1.52725 _m	3 5.6	6.5	12.1	3 6.05	54 28	42.30 38.93	55	28 5.26	- 50 +11.78 - 1.12 15.28	
$(\delta) - D) \frac{d'}{100}$							- 33.67			+13.05 + 35 - 36.40 27 44.14	
-2.87 δ_2 -19.93		34 42.06	27 24.2								

Date₁ = Dec 24Observer
RecorderDate₂ = Dec 27Observer
Recorder

Star.	α	δ	Mag.	T_s	T_m	T_a	T_r	T_e	T_h	Sum	Mean	Red. to T_m	T
35 11 34 22.5 κ	53° 39'	32.5	8.9 9.0	23 34 9.7 12.3 14.2 12.07	34 11.0	15.0	18.0	21.3	24.4 +67.23	34	18.00 +67.82 57 25.25 -1.95 23.30		
(8) - D $\frac{\kappa'}{100}$													
α_1													
κ			8.8	34 31.1 34.2 38.0 34.43	34 5.3	8.3	12.0	15.5	19.0 +73.04	34	12.02 +73.53 49 25.06 -1.88 23.18		
(8) - D $\frac{\kappa'}{100}$													
α_2													
37 23 36 36.8 κ	52 16	10.7	9.0	36 7.1 10.4 13.7 10.40	36 24.8 26.1	28.1	31.6 31.6	34.8	38.3 +67.39	36	31.52 +67.83 54 38.81 -2.06 36.75		
(8) - D $\frac{\kappa'}{100}$													
α_1													
κ			9.0	35 56.6 59.6 2.6 59.60	36 19.0	22.4	25.7	29.7 29.7	32.6 +73.07	36	25.00 +73.53 46 38.97 -1.99 36.88		
(8) - D $\frac{\kappa'}{100}$													
α_2													
40 36 39 47.7 κ	54 10	38	7.8 7.3	39 8.4 12.0 15.0 11.80	39 35.6	39.2	42.6	46.2	49.8 +67.25	39	32.68 +67.83 58 49.93 -2.04 47.89		
(8) - D $\frac{\kappa'}{100}$													
α_1													
κ			7.7	39 11.0 13.7 17.0 13.90	39 29.8	33.4	37.0	40.4	43.8 +73.04	39	36.88 +73.54 50 49.92 -1.97 47.95		
(8) - D $\frac{\kappa'}{100}$													
α_2													
42 20 41 31.4 κ	54 24	18.9	9.0 9.1	40 49.8 54.3 57.3 40 52.80	41 20.4 47.5	24.3 57.1	27.6 57.9	31.4 58.2	35.0 +67.24	41	27.44 +67.83 59 34.98 -2.06 32.92		
(8) - D $\frac{\kappa'}{100}$													
α_1													
κ			9.0	40 53.0 56.6 0.0 56.53	41 14.7	18.2	21.7	25.3	28.9 +73.04	41	21.76 +73.54 50 34.80 -1.99 32.81		
(8) - D $\frac{\kappa'}{100}$													
α_2													
43 48 42 07.7 κ	54 25	18.6	9.5 9.5	42 25.2 27.6 30.6 42 27.80	42 47.2	51.0	54.9	58.1	1.6 +67.25	42	54.58 +67.84 59 1.81 -2.09 59.72		
(8) - D $\frac{\kappa'}{100}$													
α_1													
κ			9.3	42 21.2 23.9 27.7 42 24.27	42 41.6	45.4	48.7	52.6	55.7 +73.04	42	48.80 +73.54 50 1.84 -2.02 59.82		
(8) - D $\frac{\kappa'}{100}$													
α_2													

Runs

+3.87

79

+3.50

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	8'
d	+5.93 0.77305 9.77250 0.66791 _n	0 53.5	52.2	5.7	45 1 52.85	36 1 55.50	53 40 51.59		45 53 40 46.94		
(8) - D $\frac{d'}{100}$											
δ_1	-2.88 -19.94	35 20.42	40 7.0								
d	-22.41 1.35044 _n 9.77268 1.24548	1 12.7	13.3	6.0	46 1 13.00	36 35.35	53 40 31.98		45 40 49.58		
(8) - D $\frac{d'}{100}$											
δ_2	-2.88 -19.94	35 20.30	40 8.8								
d	+21.12 1.32469 9.78642 1.23347 _n	3 33.6	33.7	1.3	8 3 33.65	14 14.70	52 18 10.79		5 52 17 53.67		
(8) - D $\frac{d'}{100}$											
δ_1	-2.90 -19.96	37 33.55	17 11.2								
d	+26.30 1.41996 9.78642 1.32874 _n	3 27.1	28.8	15.9	8 3 27.95	14 20.40	52 18 17.03		5 17 55.71		
(8) - D $\frac{d'}{100}$											
δ_2	-2.90 -19.96	37 33.98	17 12.7								
d	+30.88 1.48968 9.76730 1.37934 _n	0 38.9	38.3	1.2	15 0 38.60	7 9.75	54 11 5.84		15 54 10 41.89		
(8) - D $\frac{d'}{100}$											
δ_1	-2.92 -19.98	40 44.97	10 2.0								
d	+22.98 1.36135 9.76730 1.25106 _n	0 44.1	44.0	1.0	15 0 44.05	7 4.30	54 11 0.93		15 10 43.11		
(8) - D $\frac{d'}{100}$											
δ_2	-2.92 -19.98	40 45.03	10 2.6								
d	+34.94 1.54332 9.76466 1.43034 _n	0 42.9	42.3	12.0	15 0 42.60	22 5.75	54 26 1.84		0 54 25 34.90		
(8) - D $\frac{d'}{100}$											
δ_1	-2.93 -20.00	42 29.99	24 55.0								
d	+25.23 1.40192 9.76466 1.28894 _n	0 48.1	48.1	17.2	0 48.60	21 59.75	54 25 56.38		0 25 36.93		
(8) - D $\frac{d'}{100}$											
δ_2	-2.93 -20.00	42 29.88	24 56.4								
d	+26.76 1.42749 9.76466 1.31451 _n	0 30.0	30.5	2.1	5.0 30.25	22 18.10	54 26 14.19		0 54 25 53.56		
(8) - D $\frac{d'}{100}$											
δ_1	-2.94 -20.00	43 56.78	25 13.8								
d	+24.53 1.38970 9.76466 1.27672 _n	0 29.0	29.9	1.9	0 29.45	22 18.90	54 26 15.53		0 25 56.62		
(8) - D $\frac{d'}{100}$											
δ_2	-2.94 -20.00	43 56.88	25 16.2								

Date₁ = Dec 24Observer
RecorderDate₂ = Dec 27Observer
Recorder

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Star.	α	δ	Mag.	T_s	T_m	T_e	T_r	T_g	T_b	Sum	Mean	Red. to T_m	T
43-45 44 55.4 κ		54 45 39.2	8.8 8.8	23 44 17.4 21.3 25.7 44 21.47	44 44.9	48.2	52.0	55.4	58.9 +67.24	44 +57.88 +67.84 60 45 -59.12 -2.11 57.01			
(8) - D $\frac{\kappa'}{100}$													
a_1													
κ			8.8	44 17.0 20.6 23.1 44 20.23	44 38.9	42.4	45.9	49.6	53.3 +73.03	44 46.02 +73.54 51 45 -59.05 -2.03 57.02			
(8) - D $\frac{\kappa'}{100}$													
a_2													
47 20 46 32.0 κ		54 11 4.7	9.2 9.3	45 57.3 10.8 4.2 46 0.77	46 20.0	23.6	27.2	30.6	34.5 +67.24	46 27.18 +67.84 58 47 -34.44 -2.17 32.27			
(8) - D $\frac{\kappa'}{100}$													
a_1													
κ			9.1	45 49.4 52.6 55.1 45 52.37	46 14.2	17.7	21.4	24.8	28.4 +73.04	46 21.30 +73.54 50 47 -34.34 -2.09 32.25			
(8) - D $\frac{\kappa'}{100}$													
a_2													
48 46 47 56.3 κ		54 37 31.2	9.1 9.0	47 18.9 21.6 24.0 47 21.50	47 47.5	51.0	54.7	58.5	1.9 +67.25	47 54.72 +67.84 59 49 1.94 -2.18 57.79			
(8) - D $\frac{\kappa'}{100}$													
a_1													
κ			8.8	47 10.8 14.2 17.4 47 14.13	47 41.7	45.4	49.2	52.7	56.1 +73.05	47 49.02 +73.55 50 49 2.07 -2.10 59.97			
(8) - D $\frac{\kappa'}{100}$													
a_2													
49 45 48 33.5 κ		54 28 22.5	8.8 9.0	48 19.0 21.9 25.0 48 21.97	48 44.7	48.2	52.1	55.5	59.0 +67.25	48 57.90 +67.84 59 49 59.15 -2.20 56.95			
(8) - D $\frac{\kappa'}{100}$													
a_1													
κ			8.6	48 15.5 18.8 22.0 48 18.77	48 38.9	42.4	46.0	49.7	53.3 +73.05	48 46.06 +73.55 50 49 59.11 -2.12 56.99			
(8) - D $\frac{\kappa'}{100}$													
a_2													
50 29 49 32.6 κ		51 27 21.4	8.5 8.1	49 17.1 19.9 22.6 49 19.87	49 30.9	34.2	37.6	41.0	44.3 +67.31	49 37.60 +67.84 53 50 44.91 -2.31 42.60			
(8) - D $\frac{\kappa'}{100}$													
a_1													
κ			8.4	49 11.6 14.2 16.8 49 14.20	49 25.0	28.5	31.9	35.0	38.4 +73.10	49 31.76 +73.55 45 50 44.86 -2.24 42.62			
(8) - D $\frac{\kappa'}{100}$													
a_2													

Runs

+3.87

81

+3.50

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ'
	+30.41	4' 41.1	39.4	80.5	39' 40.25	43	8.10		35	54 46 40.95	
d	1.45302					54 47	4.19			-23	+12.37
	9.76093						23.24			-1.63	16.24
(8) - D	1.36631									+13.83	
δ_1	-2.95	45 54.06	45 59.9							+40	
	-20.02									-37.50	
										46 19.89	
	+25.79	4 42.9	42.1	1.0	4 42.50	43	5.85		35	46 42.77	
d	1.41145					54 47	2.48			-1.44	+11.93
	9.76093						19.71			-1.40	15.43
(8) - D	1.29474									+13.40	
δ_2	-2.95	45 54.07	46 0.0							+40	
	-20.02									-37.20	
										46 21.00	
	+26.41	4 23.4	23.6	1.0	4 23.50	8	24.85		10	54 12 0.46	
d	1.42177					54 12	20.94			-18	+11.84
	9.76712						20.48			-1.54	15.71
(8) - D	1.31125									+13.16	
δ_1	-2.97	47 29.30	11 19.0							+40	
	-20.02									-37.20	
										11 38.97	
	+28.93	4 20.1	20.1		4 20.10	8	28.25		10	54 12 2.45	
d	1.46135					54 12	24.88			-22	+11.28
	9.76712						22.43			-1.56	14.78
(8) - D	1.35083									+12.76	
δ_2	-2.97	47 29.28	11 20.1							+30	
	-20.02									-37.10	
										11 40.13	
	+33.22	2 52.9	52.9		2 52.90	34	55.45		45	54 38 26.06	
d	1.52140					54 38	51.54			-28	+12.78
	9.76236						25.48			-1.01	16.65
(8) - D	1.40612									+13.67	
δ_1	-2.98	48 56.81	37 45.23							+40	
	-20.03									-37.40	
										38 5.31	
	+34.89	2 50.1	50.0		2 50.05	34	58.30		45	38 28.14	
d	1.54270					54 38	54.93			-31	+12.27
	9.76236						26.76			-1.02	15.77
(8) - D	1.42742									+13.25	
δ_2	-2.98	48 56.99	37 46.6							+35	
	-20.03									-37.30	
										38 6.64	
	+29.93	1 12.6	10.5	3.1	1 11.53	26	36.80		55	54 30 9.85	
d	1.47611					54 30	32.89			-23	+13.27
	9.76395						23.04			-42	17.14
(8) - D	1.36242									+13.52	
δ_1	-2.99	49 53.96	29 29.6							+40	
	-20.03									-37.40	
										29 49.59	
	+29.29	1 11.9	13.2	5.1	1 12.55	26	35.80		55	30 11.43	
d	1.43600					54 30	32.43			-19	+12.81
	9.76395						21.00			-45	16.31
(8) - D	1.32231									+13.10	
δ_2	-2.99	49 54.00	29 30.4							+35	
	-20.03									-37.30	
										29 50.44	
	+17.73	2 42.9	43.5	6.4	2 43.20	25	5.15		55	51 28 46.61	
d	1.24871					51 29	1.24			-8	+9.31
	9.79451						14.63			-95	13.18
(8) - D	1.16538									+10.09	
δ_1	-3.00	50 39.60	28 3.0							+25	
	-20.04									-36.80	
										28 22.99	
	+17.56	2 42.0	43.1	5.1	2 42.55	25	5.80		55	28 47.94	
d	1.24452					51 29	2.43			-8	+8.95
	9.79451						14.49			-98	12.45
(8) - D	1.16119									+9.76	
δ_2	-3.00	50 39.62	28 3.6							+25	
	-20.04									-36.70	
										28 23.69	

508

Date₁ = Dec 24Observer
RecorderDate₂ = Dec 27Observer
Recorder

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Star.	α	δ	Mag.	T_a	T_m	T_c	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
52	19	52° 57'	8.3	23	50	54.0	51	20.6	24.0	27.2	30.7	34.2	
51	29.4	51.9	8.2			57.8						+67.29	
	κ					6.6							
	(δ - D)	$\frac{\kappa'}{100}$				50	57.47						
	a_1												
			8.3		50	55.7	51	14.6	18.0	21.4	25.0	28.4	
	κ					56.2						+73.07	
	(δ - D)	$\frac{\kappa'}{100}$				50	58.18						
	a_2												
54	10	53° 0'	9.0		52	45.9	53	11.1	15.0	18.4	21.9	25.6	
53	20.3	54 53.9	9.0			49.6						+67.25	
	κ					53.9							
	(δ - D)	$\frac{\kappa'}{100}$				52	49.83						
	a_1												
52	50.9	54 54.0	8.8		532	12.0	52	37.6	41.1	44.7	48.2	51.9	
	κ					16.0						+73.04	
	(δ - D)	$\frac{\kappa'}{100}$				52	15.73						
	a_2												
56	03	54 52	8.4		54	29.4	55	2.5	6.3	9.7	13.2	17.0	
55	12.6	46.9	8.3			32.7						+67.25	
	κ					35.5							
	(δ - D)	$\frac{\kappa'}{100}$				56	32.53						
	a_1												
			8.3		54	30.0	54	56.7	0.4	3.7	7.4	11.0	
	κ					34.0						+73.04	
	(δ - D)	$\frac{\kappa'}{100}$				54	33.53						
	a_2												
Single Observations													
23	15 27	54 30	9.0		14	16.4	14	25.2	28.8	32.6	35.8	39.6	
14	42.1	24.9	8.9			18.7						+67.21	
	κ					21.8							
	(δ - D)	$\frac{\kappa'}{100}$				14	18.97						
	a_1												
23	16 33	53 25	9.0		15	26.5	15	32.0	35.4	38.7	42.2	45.7	
15	47.1	18.9	8.5			29.6						+67.23	
	κ					32.2							
	(δ - D)	$\frac{\kappa'}{100}$				15	27.43						
	a_2												
23	20 05	54 24	8.8		18	40.2	19	4.7	8.2	11.7	15.2	19.0	
19	19.6	18.7	8.8			43.5						+67.21	
	κ					46.7							
	(δ - D)	$\frac{\kappa'}{100}$				18	43.47						
	a_1												
23	22 22	54 39	9.1		20	55.1	21	20.0	23.5	27.1	30.8	34.4	
21	36.7	32.3	9.1			59.1						+67.22	
	κ					2.0							
	(δ - D)	$\frac{\kappa'}{100}$				20	58.73						
	a_2												

Runs

+3.87

83

+3.50

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	$8'$
d	+2987 1.47524 9.77946 1.37706 _n	2 3.6	4.6	8.2	27 40	55 59	44.25 40.34 -23.83		25	52 59 16.51	
(8) - D	$\frac{d'}{100}$									- .24 - .72 +11.49 + .30 - 37.20 58 54.31	+11.13 15.00
δ_1	-3.01 -2.004	52 29.32	58 34.3		27						
d	+2385 1.37199 9.77946 1.27381 _n	2 7.9	8.0	15.9	2 7.95	55 59	40.40 37.03 -18.79 63		25	59 18.24 40	
(8) - D	$\frac{d'}{100}$									- .15 - .77 +11.42 + .30 - 37.10 58 55.47 60	+10.88 14.30
δ_2	-3.01 -2.004	52 29.32	58 35.6		24						
d	+2890 1.46090 9.75823 1.34149 _n	4 6.9	6.3	1.2	4 6.60	55 59	41.75 37.84 -21.95		20	55 2 15.89	
(8) - D	$\frac{d'}{100}$									- .22 - .44 +14.13 + .40 - 37.80 1 54.83	+12.87 16.74
δ_1	-3.02 -2.005	54 20.37	1 34.8		25						
d	+2897 1.46195 9.75541 1.34272 _n	0 28.8	30.2	59.0	0 29.50	55 59	18.83 15.48 -22.02		25	55 0 53.46	
(8) - D	$\frac{d'}{100}$									- .23 - .18 +16.67 + .40 - 37.60 0 33.02	+13.44 17.16
δ_2	-3.02 -2.005	58 52.55	0 13.0		32						
d	+3721 1.57066 9.75967 1.45269 _n	2 58.5	58.0	.5	2 58.25	54 53	50.10 46.19 -28.36		30	54 53 17.83	
(8) - D	$\frac{d'}{100}$									- .35 - .104 +13.96 + .40 - 37.80 52 56.87	+12.97 16.84
δ_1	-3.04 -2.005	56 11.65	52 36.8		33						
d	+3031 1.48144 9.75967 1.36347 _n	3 2.2	2.6	.8	3 2.40	49 53	45.95 42.58 -23.09		30	53 19.49	
(8) - D	$\frac{d'}{100}$									- .23 - .1.09 +13.52 + .40 - 37.70 52 57.89	+12.60 16.10
δ_2	-3.04 -2.005	56 11.62	52 37.8		54						
d	+1343 1.12808 9.76369 1.01409 _n	4 20.0	20.6	.6	4 20.30	54 32	28.05 24.14 -10.33		50	54 32 13.81	
(8) - D	$\frac{d'}{100}$									- .05 - .152 +13.54 + .40 - 35.40 31 54.65	+12.37 16.24
δ_1	-2.71 -19.68	15 35.33	31 35.0		54						
d	+937 0.97174 9.77507 0.86917 _n	0 89.8	40.8	80.6	0 40.30	53 26	8.05 4.14 -7.40		0	53 25 56.74	
(8) - D	$\frac{d'}{100}$									- .18 - .23 +12.27 + .30 - 35.20 25 37.57	+12.16 16.03
δ_2	-2.73 -19.70	16 24.69	25 17.9		46						
d	+2529 1.45763 9.76466 1.33865 _n	0 31.8	31.9	1.7	0 31.55	54 26	16.50 12.59 -21.81		0	54 25 50.78	
(8) - D	$\frac{d'}{100}$									- .20 - .20 +13.43 + .40 - 35.70 25 32.38	+12.48 17.30
δ_1	-2.75 -19.75	20 14.56	25 12.6		46						
d	+2543 1.45378 9.76218 1.33832 _n	1 32.2	31.6	3.8	1 31.90	54 40	16.45 12.54 -21.79		45	54 39 50.75	
(8) - D	$\frac{d'}{100}$									- .20 - .54 +13.70 + .40 - 35.90 39 32.08	+12.86 17.23
δ_2	-2.76 -19.79	22 29.94	39 12.3		46						

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Runs

+3.87

85

+3.50

	$T_m - T_j$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ'
d	+3066 1.48657 976271 1.37164 _m	4 16.9	16.2	11 49 16.35	33 31.80	54 37 27.89	-23.53		45 54 37 4.36	+13.30 +13.30 -25 -1.49 +13.64 +40 -36.00 36 44.53	16.17
(δ) - D) $\frac{d'}{100}$											
δ_1	-2.78 -19.82	24 53.57	36 24.7	31							
d	+2047 1.31112 978030 1.21378 _m	1 56.4	57.1	13.5 1 56.70	50 51.60	52 54 47.69	-16.36		30 52 54 31.33	-10 -68 +11.68 +30 -35.70 54 10.70	+11.20 15.07
(δ) - D) $\frac{d'}{100}$											
δ_2	-2.81 -19.83	25 58.41	53 50.9	3							
d	+2357 1.37236 978520 1.28032 _m	3 15.8	15.4	12 3 15.60	19 32.75	52 23 28.84	-19.07		0 52 23 9.77	-14 -1.14 +11.08 +30 -35.70 22 48.04	+10.40 13.97
(δ) - D) $\frac{d'}{100}$											
δ_1	-2.82 -19.85	27 2.50	22 28.2	51							
d	-2538 1.40449 _m 976307 1.28992	1 51.4	52.1	3.5 1 51.75	30 56.60	54 34 53.23	+19.50		50 54 34 12.73	-16 -67 +13.18 +35 -36.70 34 52.23	+12.70 16.20
(δ) - D) $\frac{d'}{100}$											
δ_2	-2.83 -19.86	44 22.36	25 21.3	9 0 53.45	21 54.90	54 25 51.53	+10.31		0 54 26 18.4	-5 -32 +13.02 +35 -35.00 25 41.34 12.00	+13.00 16.50
(δ) - D) $\frac{d'}{100}$											
δ_1	-2.96 -19.87										
d											
(δ) - D) $\frac{d'}{100}$											
δ_2											
d											
(δ) - D) $\frac{d'}{100}$											
δ_1											
d											
(δ) - D) $\frac{d'}{100}$											
δ_2											
d											
(δ) - D) $\frac{d'}{100}$											
δ_1											
d											
(δ) - D) $\frac{d'}{100}$											
δ_2											

Date₁ = 1877 Jan 4
n = -25Observer
RecorderDate₂ = 510 X
Jan 13 n = -41
Jan 14 n = -35Observer
Recorder

86

Star.	α	δ	Mag.	T_0	T_m	T_e	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
50 49	27 14.8	53° 49 45.1	8.8 8.5		30 33.0	36.7	40.2	40.2		50 40.10 +86.64 -34			
	κ												
	$(\delta) - D$	$\frac{\kappa'}{100}$											
	a_1												
13	48 41.4	53 47.3	8.9	2	50 33.6	50 33.0	36.7	40.2	44.0	47.6	406 50	40.328	
	κ				56.4		40.2	40.2	40.5	47.6	406	-24.02	
	$(\delta) - D$	$\frac{\kappa'}{100}$			59.1					40.5	406	-5.5	
	a_2				56.37							50 15.7383	
												-89	
												14.73	
													Add +0.09 to (D+m) Jan 13. It has been added to sum of the corrections and to final R.A.
14	49 14.8	53 45.1	9.0		50 57.7	51 7.8	11.3	15.0	18.4	22.0	51	14.90	
	κ				53.2					22.0	51	-23.647	
	$(\delta) - D$	$\frac{\kappa'}{100}$			57.4					22.0	51	-47	
	a_1				54.77							50 50.79	
												-87	
												49.69	
													Add +0.12 to (D+m) Jan 14. It has been added to sum of the corrections and to final R.A.
4	53 27	53 46	8.7										
	κ											+86.04	
	$(\delta) - D$	$\frac{\kappa'}{100}$										-34	
	a_2												
13			8.5		53 58.2	54 10.1	13.6	17.2	20.7	24.3	54	17.218	
	κ				1.2					24.3	54	-24.02	
	$(\delta) - D$	$\frac{\kappa'}{100}$			45					24.3	54	-5.5	
	a_1				130							53 52.55	
												-93	
												57.628	
												69	
14			8.8		53 37.7	54 9.7	13.2	16.7	20.5	24.1	54	16.88	
	κ				41.1					24.1	54	-23.647	
	$(\delta) - D$	$\frac{\kappa'}{100}$			44.7					24.1	54	-47	
	a_2				41.7							53 52.77	
												-91	
												57.834	
4	55 52	52 8	7.7										
	κ												
	$(\delta) - D$	$\frac{\kappa'}{100}$											
	a_1												
13			8.0		56 0.5	56 33.2	36.4	39.8	43.2	46.5	56	39.82	
	κ				2.6					46.5	56	-24.02	
	$(\delta) - D$	$\frac{\kappa'}{100}$			5.9					46.5	56	-5.5	
	a_2				8.0							56 15.27	
												-95	
												14.323	
14			7.5		56 7.1	56 32.7	36.0	39.4	42.9	46.2	56	39.44	
	κ				10.4					46.2	56	-23.647	
	$(\delta) - D$	$\frac{\kappa'}{100}$			13.0					46.2	56	-4.5	
	a_1				10.7							56 15.35	
												-93	
												14.401	
Jan 4	56 59	52 34	8.9										
	κ											+86.05	
	$(\delta) - D$	$\frac{\kappa'}{100}$										-33	
	a_2												

Runs

Jan 4 + 3' 56.56 - .37 + 0.67
 13 - 4 22.13 - .37 + 0.77
 14 - 4 21.90 - .36 + 0.62.

+0.67
 +0.77
 +0.62

87

	T _m - T	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	8'
d	16.4 1' 12.5	11.4		3.9	36' 11.95	46'	36.40		35		
(8) - D	9.90704 9.77078					53 50	32.96				
δ ₁											
d	16.4 4 59.2	5.2		124.4	5 22.0	57	46.15		20		
(8) - D	1.20602 9.77078					53 63	24.02				
δ ₂	1.53569 1.10061						84				
d	16.4 2 51.4	58.5		9.9	2 54.95	54	53.40		25		
(8) - D	1.30354 9.77078					53 50	31.30				
δ ₁	1.38333 1.19678						15.73				
d	16.4 4 6.0	5.1		11.1	4 55.5	43	42.80		35		
(8) - D	9.90685 9.77130					53 47	39.36				
δ ₂	9.80051						5.1				
d	16.4 0 45.7	51.1		96.8	0 48.40	51	59.95		30		
(8) - D	1.99921 9.77130					53 47	37.82				
δ ₁	9.90685 1.22842						12.44				
d	16.4 0 30.3	38.4		8.7	0 34.35	52	14.00		30		
(8) - D	1.55249 9.77130					53 47	52.10				
δ ₂	9.90685 1.58200						28.07				
d	16.4 2 45.9	45.3		1.2	2 45.60	52	2.75		15		
(8) - D	9.89742 9.77758					52 8	46.79				
δ ₁							59.31				
d	16.4 3 59.7	3.4		123.1	4 15.5	52	46.80		5		
(8) - D	1.56608 9.77758					52 9	24.64				
δ ₂	9.89742 1.58586						38.54				
d	16.4 4 5.0	11.4		16.4	4 8.20	52	40.15		5		
(8) - D	9.89742 9.77758					52 9	18.25				
δ ₁	1.48620 1.37846						23.90				
d	16.4 2 6.7	6.5		12.2	2 6.60	30	41.75		50		
(8) - D	9.89995 9.78362					52 34	45.79				
δ ₂							38.31				

Date₁ = 1877 Jan. 4Observer
RecorderDate₂ = Jan. 13 570
Jan. 14 511Observer
Recorder

Run

Star.	α	δ	Mag.	T_s	T_m	T_e	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
13	56 59 53 390 κ	52 34 293	9.2 8.3	2	57 46.9	57 32.7	26.3	38.9	42.3	46.6 -24.54	57 39.76 -24.02 53 57 15.21 -96 14.25 ⁶		
	(δ) - D) $\frac{\kappa'}{100}$												
	a_1												
Jan 14			9.0		57 27.7	57 32.3	35.9	39.4	42.7	46.1 -24.11	57 39.28 -23.69 ⁶ 46 57 15.18 -94 ³ 14.22 ³		
	κ				25.8 32.8 30.13								
	(δ) - D) $\frac{\kappa'}{100}$												
	a_2												
4	3 0 31 2 59 19.1 κ	53 41 375	8.6 8.4	3							+86.05 -34		
	(δ) - D) $\frac{\kappa'}{100}$												
	a_1												
13			8.1		0 40.6	1 11.9	15.4	18.8	22.5	26.0 -24.56	1 18.92 -24.02 55 0 54.35 -1.02 ⁴ 53.38		
	κ				45.6 49.0 45.07								
	(δ) - D) $\frac{\kappa'}{100}$												
	a_2												
14			8.8		0 41.9	1 11.6	15.1	18.5	22.0	23.6 -24.12	1 18.58 -23.68 ⁶ 47 0 54.46 -1.00 53.42 ⁴		
	κ				45.4 48.2 45.17								
	(δ) - D) $\frac{\kappa'}{100}$												
	a_1												
4	3 27 2 14.1 κ	54 16 125	8.7 9.0								+86.06 -35		
	(δ) - D) $\frac{\kappa'}{100}$												
	a_2												
13			8.9		3 45.0	4 9.2	12.7	16.0	20.0	23.4 -24.57	4 16.26 -24.02 56 3 51.68 -1.06 ³ 50.62		
	κ				48.4 52.0 48.47								
	(δ) - D) $\frac{\kappa'}{100}$												
	a_1												
14			8.9		3 48.3	4 8.3	12.0	15.7	19.1	23.0 -24.13	4 15.62 -23.68 ⁶ 48 3 51.51 -1.04 ⁵ 50.42		
	κ				51.0 53.3 50.87								
	(δ) - D) $\frac{\kappa'}{100}$												
	a_2												
Jan 4	4 28 3 18.4 κ	54 16 123	8.9 8.7								+86.06 -35		
	(δ) - D) $\frac{\kappa'}{100}$												
	a_1												
Jan 13			9.1		5 96	5 13.4	17.0	20.6	24.1	27.8 -24.58	5 20.08 -24.02 57 4 55.99 -1.07 ³ 54.92		
	κ				12.8 16.0 12.80								
	(δ) - D) $\frac{\kappa'}{100}$												
	a_2												

Runs

+0.67

+0.77

+0.62

z

8'

89

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke		
d	-7.14 0.85370 9.59985 0.87591	3' 55.1 9.78379 0.76185	2.1	117.2	43 58.60	38' 49.75 52 34 27.62 + 7.57 + 5.78			40	52 34 33.34 - 2 - 148 + 1132 + 45 - 20.9 34 23.54	40 +10.27 +11.04
(S) - D	$\frac{d'}{100}$										
δ_1	-8.58 -28.72	57 5.68		33 54.8	43						
d	+9.15 0.96142 9.89995 0.98373	3 42.0 9.78862 0.86920	49.0	110.3	45.50	39 2.85 52 34 40.95 - 4.63 - 1.34			40	52 34 33.58 - 2 - 133 + 1131 + 45 - 21.0 34 23.58	+1444 11.03
(S) - D	$\frac{d'}{100}$										
δ_2	-8.58 -28.72	57 5.65		33 54.9	43						
d	9.90639 9.77216		49.6	100.7	50.35	38 58.00 53 42 54.56			40		
(S) - D	$\frac{d'}{100}$										
δ_1											
d	+33.85 1.52956 9.90639 1.55831	0 12.8 9.77216 0.42582	18.9	11.7	0 15.85	47 32.50 53 43 10.37 - 26.17 - 26.88			35	53 42 13.84 - 30 - 7 + 12.61 + 50 - 21.1 42 36.12	41 +12.74 13.51
(S) - D	$\frac{d'}{100}$										
δ_2	-8.73 -28.26	0 44.61		42 7.9	35 14.16						
d	+33.39 1.52362 9.90639 1.55237	0 11.5 9.77216 0.41994	19.0	10.5	0 15.25	47 33.10 53 43 11.20 - 35.68 - 26.39			35	53 42 45.90 - 29 - 7 + 12.61 + 50 - 21.2 42 38.7	+12.75 13.37
(S) - D	$\frac{d'}{100}$										
δ_1	-8.73 -28.26	0 44.71		42 9.8	9						
d	9.90960 9.76607	4 29 9.76607	1.0	3.9	4 19.5	54 13 46.40 54 17 42.96			5	54 - 1.48 + 13.25 + 55	
(S) - D	$\frac{d'}{100}$										
δ_2											
d	+27.79 1.44389 9.90960 1.47585	0 34.9 9.76607 1.33412	40.2	75.1	0 37.55	22 10.80 54 17 48.64 - 29.67 - 21.58			0	54 17 27.18 - 20 - 22 + 13.26 + 50 - 21.2 17 20.00	141.09 +13.34 141.1
(S) - D	$\frac{d'}{100}$										
δ_1	-8.82 -27.90	3 41.81		16 52.1	77.8 38.90						
d	+24.75 1.39358 9.90960 1.42554	0 35.6 9.76607 1.28381	42.2	77.3	0 43.65	22 8.70 54 17 42.80 - 26.64 - 19.22	22 9.45 17 47.58 - 19.22		0	17 28.33 - 16 - 22 + 13.26 + 50 21.3 17 21.03	+13.38 140.0
(S) - D	$\frac{d'}{100}$										
δ_2	-8.82 -27.90	3 41.63		16 53.1	77.4 4.35						
d	9.91328 9.76607	4 4.9 9.76607	3.8	16.5	27.9 4.35	55 30.10 54 59 26.66	13 44.00 17 40.56		55		
(S) - D	$\frac{d'}{100}$										
δ_1											
d	+7.48 0.89087 9.91328 0.92659	8 24.3 9.76607 0.78128	28.5	12.8	2 26.70	4 21.95 54 59 59.82 - 8.11 - 5.74	21 45.05 17 12.72 - 6.04		0	54 17 16.88 54 59 59.88 - 2 - 38 + 13.26 + 50 - 21.2 17 9.81	+13.36 141.3
(S) - D	$\frac{d'}{100}$										
δ_2	-8.83 -27.78	4 46.10		16 42.0							

Date₁ = 1877 Jan. 4

Observer
Recorder

Date₂ = Jan. 13 570
Jan. 14 571

Observer _____
Recorder _____

90

Ru

Star.	α	δ	Mag.	T_s	T_m	T_o	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
1876phae. 14													
4	28	54° 16'	8.9	3	4	44.3	5-13.0	16.5	20.1	24.0	27.3	5	20.18
	3 15.4	12.3	8.7			47.1							-23.685
	κ					5-14						4	56.07
	(δ) - D	κ'_{100}				47.60							-105
	α_1												55.02
4	58	52 59	9.4										+86.06
	5 45.2	54.8	9.5										-33
	κ												
	(δ) - D	κ'_{100}											
	α_2												
13			9.4	7	28.8	7	40.4	43.6	47.3	50.5	54.1	7	47.18
	κ				33.2								-24.082
	(δ) - D	κ'_{100}			35.8								-59
	α_1				32.60								22.63
												7	-1.09
													21.63
14			9.5	7	13.8	7	40.2	43.4	46.6	50.0	53.5	7	46.74
	κ				17.4								-23.685
	(δ) - D	κ'_{100}			20.2								-46
	α_2				17.13								22.65
												7	-1.07
													21.65
4	30	54 31	9.0										+86.07
	7 16.2	57.1	9.0										-35
	κ												
	(δ) - D	κ'_{100}											
	α_1												
13				8	43.8	9	18.7	17.1	20.6	24.1	27.8	9	20.66
	κ				46.3								-24.082
	(δ) - D	κ'_{100}			49.5								-58
	α_2				46.53								56.07
												8	-112
													54.94
14				8	59.3	9	18.1	16.7	20.0	23.8	27.3	9	20.18
	κ				26								-23.685
	(δ) - D	κ'_{100}			6.9								-47
	α_1				2.93								56.07
												8	-110
													54.94
4	19	54 56	8.4										+86.07
	8 5.1	57.7	8.4										-36
	κ												
	(δ) - D	κ'_{100}											
	α_2												
13				9	57.8	10	2.0	5.8	9.1	12.6	16.2	10	9.14
	κ				54.7								-24.01
	(δ) - D	κ'_{100}			57.8								-58
	α_1				54.77								44.55
												9	-114
													43.42
14				10	1.3	10	1.9	5.0	8.8	12.5	16.0	10	8.84
	κ				4.0								-23.685
	(δ) - D	κ'_{100}			7.0								-50
	α_2				4.10								44.72
												9	-112
													43.57

Runs

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	$T_m - T_j$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	$+0.67$ $+0.77$ $+0.62$ z	δ'
d	+32.58 1.51295 9.90960 1.54491m	0' 40.0 9.76607 1.40318m	47.3	73	0' 43.65	22' 4.70 54 17 22.80 -25.20			0'	54° 17' 17.60 -28 -25 +13.26 +50 -213 17 10.15	+13.23 13.85
(8) - D) $\frac{d'}{100}$											
δ_1	-8.83 -27.78	4 46.18	16 42.4	27	16.5 2 18.25	55 30.10 52 59 26.66			25		
d	9.90225 9.77963	2 19.1	17.4	16.5	2 18.25	55 30.10 52 59 26.66			25		
(8) - D) $\frac{d'}{100}$											
δ_2											
d	+14.58 1.16346 9.90235 1.18847m	3 24.3 9.77946 1.06558m	28.5	128	3 26.40	4 21.95 52 59 59.82 -11.63			15	52 59 48.19 -16 -126 +1179 +45 -209 59 38.98	+10.92 11.69
(8) - D) $\frac{d'}{100}$											
δ_1	-8.73 -27.46	7 12.81	59 11.5	18	12.65	4 35.70 53 0 13.80 -23.62			15	52 59 50.18 -23 -115 +1179 +45 -210 59 40.66	+10.86 11.48
d	+29.61 1.47144 9.90235 1.49615m	3 9.4 9.77946 1.37326m	15.9	203	3 12.65	4 35.70 53 0 13.80 -23.62			15	52 59 50.18 -23 -115 +1179 +45 -210 59 40.66	+10.86 11.48
(8) - D) $\frac{d'}{100}$											
δ_2	-8.73 -27.46	7 12.84	59 13.2	53	51.75	28 56.60 54 32 53.16			50		
d		3 51.9	51.6	1.5	3 51.75	28 56.60 54 32 53.16			50		
(8) - D) $\frac{d'}{100}$											
δ_1											
d	+34.13 1.53314 9.76342 1.42072m	0 17.9 9.76342 1.42072m	22.4	403	0 20.15	37 28.20 54 33 28.07 -26.35			45	54 32 39.72 -30 -11 +1386 +53 -212 32 32.99	+12.70 14.47
(8) - D) $\frac{d'}{100}$											
δ_2	-8.90 -27.24	8 46.05	32 5.8	45	33.85	37 28.20 54 32 52.60 -13.32			45	32 39.28 -7 -22 +1386 +50 -213 32 32.37	+12.77 14.39
d	+17.25 1.28679 9.76346 1.12441m	0 30.2 9.76346 1.12441m	37.5	77	0 33.85	37 28.20 54 32 52.60 -13.32			45	32 39.28 -7 -22 +1386 +50 -213 32 32.37	+12.77 14.39
(8) - D) $\frac{d'}{100}$											
δ_1	-8.90 -27.24	8 46.05	32 5.1	30	9.35	52 39.00 54 56 38.56			30		
d		0 10.1	8.6	18.7	0 9.35	52 39.00 54 56 38.56			30		
(8) - D) $\frac{d'}{100}$											
δ_2											
d	+14.37 1.15746 9.75913 1.04075m	1 24.0 9.75913 1.04075m	28.5	12.5	1 26.25	1 22.10 54 56 59.97 -10.78			20	54 56 48.99 -5 -52 +14.02 +58 -213 56 42.46	+14.00 14.77
(8) - D) $\frac{d'}{100}$											
δ_1	-8.95 -27.14	9 34.47	56 15.3	21	34.75	1 13.60 54 56 51.70 -3.62			20	56 48.08 -1 -58 +14.02 +50 -214 56 41.23	+13.93 14.55
d	+14.74 0.67578 9.75913 0.55907m	1 31.4 9.75913 0.55907m	38.1	9.5	1 34.75	1 13.60 54 56 51.70 -3.62			20	56 48.08 -1 -58 +14.02 +50 -214 56 41.23	+13.93 14.55
(8) - D) $\frac{d'}{100}$											
δ_2	-8.95 -27.14	9 34.63	56 14.1								

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Ru

Star.	α	δ	Mag.	T_0	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
10 08	53° 14'	8.4	3 10 47.1										
8 53.4	11.2	8.0	47.10									+86.07	
κ												-33	
$((\delta) - D) \frac{\kappa'}{100}$													
a_1													
13		8.6	10 47.1 10 57.4	53.0	58.3	1.8	5.1			10 58.32			
κ			50.3				-24.55			-24.01			
$((\delta) - D) \frac{\kappa'}{100}$			53.6							-5.5			
a_2			50.33							10 33.76			
κ										-1.13			
$((\delta) - D) \frac{\kappa'}{100}$										32.634			
a_1													
14		8.3	11 12.0 10 50.8	54.3	57.7	1.1	4.6			10 57.70			
κ			15.3				-24.11			-23.625			
$((\delta) - D) \frac{\kappa'}{100}$			18.0							* 4.7			
a_2			15.10							10 33.61			
κ										-1.11			
$((\delta) - D) \frac{\kappa'}{100}$										32.488			
a_1													
4	11 46	53 40	8.8										
10 31.8	36.4	8.8										+86.07	
κ												-34	
$((\delta) - D) \frac{\kappa'}{100}$													
a_2													
13		8.8	11 58.6 12 26.7	50.2	53.8	37.2	40.6			12 33.70			
κ			1.8				-24.55			-24.01			
$((\delta) - D) \frac{\kappa'}{100}$			4.4							-5.5			
a_1			1.60							12 9.14			
κ										-1.16			
$((\delta) - D) \frac{\kappa'}{100}$										7.989			
a_2													
14		8.8	12 40 12 26.7	29.8	33.3	36.7	40.2			12 33.34			
κ			6.8				-24.11			-23.625			
$((\delta) - D) \frac{\kappa'}{100}$			9.4							-4.7			
a_2			6.73							12 9.25			
κ										-1.14			
$((\delta) - D) \frac{\kappa'}{100}$										6.089			
a_1													
4	13 14	54 03	8.4									+86.08	
11 52.0	58 58.4	8.3										-34	
κ													
$((\delta) - D) \frac{\kappa'}{100}$													
a_2													
13		8.5	12 31.6 13 34.5	1.0	4.5	8.2	11.4			14 4.52			
κ			35.7				-24.56			-24.01			
$((\delta) - D) \frac{\kappa'}{100}$			38.6							-5.6			
a_2			35.20							13 39.95			
κ										-1.18			
$((\delta) - D) \frac{\kappa'}{100}$										38.788			
a_1													
14		8.8	13 33.8 13 57.0	0.5	3.7	7.6	11.2			14 4.00			
κ			38.0				-24.12			-23.625			
$((\delta) - D) \frac{\kappa'}{100}$			41.4							-4.8			
a_2			37.73							13 39.90			
κ										-1.16			
$((\delta) - D) \frac{\kappa'}{100}$										38.712			
a_1													
Jan 4	14 16	53 48	8.8									+86.08	
13 22	43.7	8.7										-34	
κ													
$((\delta) - D) \frac{\kappa'}{100}$													
a_2													

Runs

+ 0.67

+ 0.77

+ 0.62

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	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	8'
d		1' 12.0	12.1	.1	11' 12.05	11'	36.30		10		
(δ) - D) $\frac{d'}{100}$	9.90386	9.77677				53 15	32.86				
δ ₁										44 + 2.07 + 50	
d	+7.99 0.90255 9.90386 0.92877	2 25.4 9.77677 2.080348	30.1	55.5	27.75	20	20.60		0	53 15 52.14	1
(δ) - D) $\frac{d'}{100}$						53 15	58.47 - 6.36				+11.56 12.36
δ ₂	-8.79 -27.06	10 23.85	15 16.5							- 20.9 15 43.57	
d	-17.40 1.241055	2 43.9	51.2	95.1	47.55	20	0.80		0	53 15 52.75	
(δ) - D) $\frac{d'}{100}$	9.90386 1.26677	9.77677 1.141.48				53 15	38.90 + 13.77			53 15 20.06	+11.45 12.07
δ ₁	-8.79 -27.06	10 23.69	15 16.8							- 101 + 12.09 + 45	
d		4 37.7	36.9	146	4	37.30	38	11.05	40	15 43.82	
(δ) - D) $\frac{d'}{100}$						53 42	7.61				
δ ₂										- 1.70 + 12.58 + 50	
d	+32.10 1.50651	1 13.0	18.1	11.1	15.55	46	32.80		35	53 41 110.78	38
(δ) - D) $\frac{d'}{100}$	9.90630 1.53517	9.77233 2.140300				53 42	10.67 -25.29			- 27 - 44 + 12.59 + 50	+12.38 13.15
δ ₁	-8.85 -26.84	11 59.14	41 10.7							- 21.0 41 37.53	
d	+26.61 1.42504	1 16.5	23.5	40.0	1	20.00	46	28.35	35	53 41 145.57	48
(δ) - D) $\frac{d'}{100}$	9.90630 1.245370	9.77233 1.321532				53 42	6.45 -20.88			- 16 - 47 + 12.59 + 50	+12.43 13.05
δ ₂	-8.85 -26.84	11 59.24	41 10.6							- 21.1 41 37.43	
d		3 2.4	1.4	3.8	3	1.90	59	46.45	20		
(δ) - D) $\frac{d'}{100}$	9.90832	9.76852				54 3	43.01				
δ ₁										- 1.11 + 12.58 + 50	
d	+29.22 1.46568	4 43.4	47.1	10.5	4	45.25	8	3.10	10	54 3 18.45	
(δ) - D) $\frac{d'}{100}$	9.90832 1.49636	9.76852 2.135836				54 3	40.77 -22.72			- 22 - 174 + 12.99 + 50	+12.53 13.30
δ ₂	-8.90 -26.64	13 29.88	2 43.8							- 21.0 3 10.45	
d	+26.27 1.41946	4 45.6	49.9	13.4	4	47.75	8	0.60	10	3 18.18	
(δ) - D) $\frac{d'}{100}$	9.90832 1.45014	9.76852 2.131242				54 3	38.70 -20.52			- 18 - 173 + 18.00 + 50	+11.59 12.21
δ ₁	-8.90 -26.64	13 29.82	2 42.6							- 21.1 3 9.29	
d		3 19.7	19.0	7.3	7.35	44	29.00		35		
(δ) - D) $\frac{d'}{100}$	9.90685	9.77130				53 48	25.56			- 122 + 12.69 + 50	
δ ₂											

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Run

Star.	α	δ	Mag.	T_a	T_m	T_o	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
Jan. 13 14 16 13 22 κ	53° 48'	9.0	3	14 39.4 42.8 47.7 43.40	14 59.6	2.3	6.7	10.3	13.7 -24.55	15 6.72 -24.01 55 14 42.16 -1.19 40.97			
(8) - D) κ'_{100}													
Jan. 14 c ₁													
κ	8.9			14 43.0 46.8 50.0 46.60	14 59.3	2.8	6.2	9.8	13.4 -24.12	15 6.30 -23.624 47 14 42.01 -1.17 41.02			
(8) - D) κ'_{100}													
c ₂													
4 15 14 14 20 κ	53 38	8.3											
κ	338	8.7											
(8) - D) κ'_{100}													
a ₁													
13													
κ	8.7			15 34.4 39.2 41.4 38.33	15 59.9	1.3	4.8	8.2	11.7 -24.55	16 4.78 -24.01 55 15 40.22 -1.20 39.02			
(8) - D) κ'_{100}													
a ₂													
14													
κ	8.9			15 44.0 48.0 51.0 47.67	15 57.4	1.0	4.7	8.0	11.3 -24.10	16 4.48 -23.624 47 15 40.49 -1.18 39.31			
(8) - D) κ'_{100}													
a ₁													
4 16 15 15 0.9 κ	53 29	6.8											
κ	246	6.3											
(8) - D) κ'_{100}													
a ₂													
13													
κ	7.0			16 31.0 34.4 37.1 34.17	16 53.8	59.2	2.7	6.2	9.6 -24.55	17 2.70 -24.01 55 16 38.14 -1.21 36.93			
(8) - D) κ'_{100}													
a ₁													
14													
κ	7.3			16 35.3 38.5 41.5 38.43	16 53.4	58.8	2.2	5.7	9.0 -24.10	17 2.22 -23.624 47 16 38.14 -1.19 36.92			
(8) - D) κ'_{100}													
a ₂													
Jan. 4 18 17 17 2.4 κ	54 44	8.4											
κ	400	8.6											
(8) - D) κ'_{100}													
a ₁													
Jan. 13													
κ	9.0			18 26.8 30.0 33.0 29.93	19 1.2	4.8	8.3	11.8	13.7 -24.55	19 8.36 -24.01 58 18 43.77 -1.25 42.52			
(8) - D) κ'_{100}													
a ₂													

Runs

+0.67

+0.77

+0.62

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	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	8'
d	+23.32 1.36773 9.90685 1.39694w	4 54.8 9.77130 1.26319w	58.2	13.0	29 4 56.50	53 52' 51.85	48 29.72		25	53 48' 11.56 39	
(8) - D) $\frac{d'}{100}$							-18.26			-14 11.24 -1.82 1201 +12.70 +50 -2.09	
δ_1	-8.89 -26.52	14 32.09		47 36.0	29					48 2.50	
d	+19.70 1.29447 9.90685 1.32368w	4 56.7 9.77130 1.18993w	3.1	11.8	4 59.90	53 52 48.45	48 26.55		25	53 48 11.06	
(8) - D) $\frac{d'}{100}$							-15.49			-10 11.31 -1.80 93 +12.71 +50 -2.10	
δ_2	-8.89 -26.52	14 32.14		47 35.5	48					48 1.99	
d	+26.75 1.42241 9.90602 1.45081w	3 10.5 9.77285 1.31944w	9.5	20.0	3 10.00	53 34 38.35	38 34.91		45		
(8) - D) $\frac{d'}{100}$										-1.18 +12.50 +50	
δ_1					39						
d	+26.45 1.42241 9.90602 1.45081w	4 42.9 9.77285 1.31944w	47.5	10.4	4 45.20	53 43 3.16	38 41.02		35	53 38 20.24 15	
(8) - D) $\frac{d'}{100}$							-20.78			-18 11.09 -1.74 11.86 +12.51 +50 -20.9	
δ_2	-8.88 -26.38	15 30.15		37 44.7	39					38 11.11	
d	+16.94 1.22814 9.90602 1.25652w	4 49.9 9.77285 1.25355w	55.5	106.4	4 52.70	53 42 55.65	38 33.75		35	53 38 20.44	
(8) - D) $\frac{d'}{100}$							-13.25			-17.6 +12.52 +50 -2.10	
δ_1	-8.88 -26.38	15 30.32		37 44.8	57					38 11.22	
d	9.90509	2 28.5	27.3	10.8	2 27.90	53 25 20.45	29 17.01		55		
(8) - D) $\frac{d'}{100}$										-92 +12.33 +50	
δ_2					48						
d	+28.53 1.45530 9.90518 1.48284w	3 45.0 9.77439 1.35385w	50.9	95.9	3 47.95	53 34 0.40	29 38.27		45	53 29 15.76	
(8) - D) $\frac{d'}{100}$							-22.59			-21 11.94 -1.41 +12.34 +45 -20.8	
δ_1	-8.88 -26.24	16 28.06		28 40.6	48					29 6.82	
d	+23.79 1.37639 9.90518 1.40393w	3 48.8 9.77439 1.27494w	54.1	102.9	3 51.45	53 33 56.90	29 35.00		45	53 29 16.24	
(8) - D) $\frac{d'}{100}$							-18.76			-15 11.25 -1.40 87 +12.33 +45 -20.9	
δ_2	-8.88 -26.24	16 28.05		28 40.9	41					29 7.184	
d	9.91203	1 45.8	46.3	12.1	1 46.05	54 41 2.30	44 58.86		40		
(8) - D) $\frac{d'}{100}$										-67 +13.78 +55	
δ_1					33						
d	+38.43 1.58467 9.91203 1.61906w	3 14.1 9.746129 1.46032w	18.5	12.6	3 16.30	54 49 32.05	45 09.92		30	54 44 44.52	
(8) - D) $\frac{d'}{100}$							-28.85 -29.40			-38 11.25 -1.22 13.51 +13.79 +55 -21.1	
δ_2	-9.03 -25.98	18 33.50		44 7.5						44 33.48	

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Run

Star.	α	δ	Mag.	T_s	T_m	T_a	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
Jan 14	18 17 17 24 K	54 44 400 8.6	3	18 32.4 36.2 38.8 35.80	19 0.8	4.3	7.9	11.6	15.2 -24.12	19	79.1 -23.614 -49 18 43.86 -1.23 42.62		
	$(\delta) - D) \frac{\kappa'}{100}$												
Jan 4	20 14 18 59.4 K	55 1 54 57.2 4.8									+86.09 -36		
	$(\delta) - D) \frac{\kappa'}{100}$												
Jan 13		5.0		20 23.7 28.0 30.6 27.43	20 56.4	0.1	3.5	7.3	10.8 -24.59	21	3.62 -24.01 -59 20 39.02 -1.28 37.74 ⁵		
	$(\delta) - D) \frac{\kappa'}{100}$												
14		5.5		20 24.4 28.6 31.3 28.10	20 56.0	57.5	3.2	6.7	10.3 -24.13	21	3.14 -23.614 -50 20 39.03 -1.26 37.74 ⁵		
	$(\delta) - D) \frac{\kappa'}{100}$												
4	22 54 21 14.6 K	53 58 54.2 9.2									+86.09 -34		
	$(\delta) - D) \frac{\kappa'}{100}$												
13		9.1		23 100 13.2 16.1 13.10	23 38.5	42.0	45.3	48.8	52.4 -24.56	23	45.40 -24.01 -56 23 20.83 -1.30 19.53 ⁴		
	$(\delta) - D) \frac{\kappa'}{100}$												
14		9.1		23 18.7 22.2 26.9 22.93	23 37.9	41.3	45.2	48.7	52.4 -24.11	23	45.10 -23.614 -48 23 21.01 -1.28 19.70 ¹		
	$(\delta) - D) \frac{\kappa'}{100}$												
4	25 14 23 59.2 K	53 31 270 8.8									+86.09 -34		
	$(\delta) - D) \frac{\kappa'}{100}$												
13		8.8		25 30.3 34.2 36.8 33.97	25 57.1	0.4	3.9	7.3	10.9 -24.55	26	3.92 -24.081 -55 25 39.37 -1.32 38.04 ⁵		
	$(\delta) - D) \frac{\kappa'}{100}$												
14		9.0		25 39.8 42.6 46.4 42.93	25 56.7	0.1	3.4	7.1	10.3 -24.10	26	3.52 -23.674 -47 25 39.44 -1.30 38.11 ²		
	$(\delta) - D) \frac{\kappa'}{100}$												

Runs

+0.67

+0.77

+0.62

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	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ'
d	+32.16 1.50732 9.91203 1.54171	3' 17.8 9.76129 1.39277	23.9	44.7	33' 20.8	49' 15.60 54 45	27.50 15.60 -24.60 -24.70		30	54 14 40.90 - 27 - 119 + 13.81 + 50 - 212 44 33.17	+12.85 13.47
((8) - D) $\frac{d'}{100}$	-9.03 δ_1 -25.98	18 33.58	44 7.2	24	57.25	57 1	57.10 53.66		20	- 1.82 + 14.11 + 60	
d	9.91354	4 57.7	50.8	2.5	4 57.25	55	57.10 53.66		20		
((8) - D) $\frac{d'}{100}$											
δ_2											
d	+36.19 1.55859 9.91354 1.59449	1 21.1 9.75823 1.44098	25.3	6.4	16 23.20	6 2 55	25.15 23.02 -27.60		15	55 1 35.42 - 34 - 52 + 14.12 + 53 - 21.1 1 28.90	+12.85 13.47
((8) - D) $\frac{d'}{100}$	-9.08 δ_1 -25.72	20 28.67	1 3.2	16	24.50	6 2	23.80 1.90 -26.62		15	55 1 35.42 - 31 - 50 + 14.14 + 53 - 212 1 28.47	+12.85 14.58
d	+35.24 1.54456 9.91354 1.58046	1 21.2 9.75823 1.42695	27.9	9.1	1 24.50	6 2 55	23.80 1.90 -26.62		15	55 1 35.42 - 31 - 50 + 14.14 + 53 - 212 1 28.47	+12.85 14.58
((8) - D) $\frac{d'}{100}$	-9.08 δ_2 -25.72	20 28.67	1 2.8	27	47.50	53 58	0.80 57.36		25	- 104 + 12.90 + 50	
d	9.90787	2 47.3	47.8	1.1	2 47.50	53 58	0.80 57.36		25		
((8) - D) $\frac{d'}{100}$											
δ_1											
d	+32.30 1.50920 9.90787 1.53943	4 17.1 9.76939 1.40275	21.0	38.1	19 19.05	3 59 53	29.30 7.17 -25.47		15	53 58 42.00 - 27 - 159 + 12.91 + 50 - 208 58 33.41	+11.55 12.82
((8) - D) $\frac{d'}{100}$	-8.99 δ_2 -25.36	29 10.55	58 8.0	19	28.50	3 58	19.85 57.95 35 -17.28		15	53 58 40.67 - 13 - 162 + 12.93 + 50 - 20.9 58 32.00	+11.55 12.82
d	+22.14 1.34577 9.90787 1.37600	4 25.6 9.76939 1.23932	31.4	57.0	4 28.50	3 58	19.85 57.95 35 -17.28		15	53 58 40.67 - 13 - 162 + 12.93 + 50 - 20.9 58 32.00	+11.55 12.82
((8) - D) $\frac{d'}{100}$	-8.99 δ_1 -25.36	29 10.55	58 6.6	54	56.35	27 31	52.00 48.56		50	- 1.81 + 12.39 + 50	
d	9.90537	4 58.0	54.7	12.7	4 56.35	27 31	52.00 48.56		50		
((8) - D) $\frac{d'}{100}$											
δ_2											
d	+29.95 1.47640 9.90537 1.50413	1 33.5 9.77405 1.37461	39.0	12.6	1 36.25	36 31 53	12.10 49.97 69 -23.59		45	53 31 26.28 - 24 - 59 + 12.38 + 50 - 20.7 31 18.40	+12.05 12.82
((8) - D) $\frac{d'}{100}$	-8.97 δ_1 -25.04	25 29.08	30 53.4	46	44.05	36 31	42.40 -16.29		45	53 31 26.18 - 11 - 61 + 12.40 + 50 - 20.8 31 18.11	+12.48 12.80
d	+20.59 1.31366 9.90537 1.34139	1 40.6 9.77405 1.21187	47.5	8.1	1 44.05	36 31	42.40 -16.29		45	53 31 26.18 - 11 - 61 + 12.40 + 50 - 20.8 31 18.11	+12.48 12.80
((8) - D) $\frac{d'}{100}$	-8.97 δ_2 -25.04	25 29.15	30 53.1								

Date₁ = 1877 Jan 4Observer
RecorderDate₂ = Jan. 13 570
Jan. 14 571Observer
Recorder

Run

Star.	α	δ	Mag.	T_{δ}	T_m	T_o	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
4	27 27 26 119 K	53 33 292	8.7 8.4								+86.10 -34		
	(δ) - D) $\frac{\kappa'}{100}$												
	α_1												
13			7.8	27 304 336 263 3350	28 90	12.5	15.9	19.3	23.2 -24.55	28 15.98 -24.081 -55 27 51.43 -1.34 50.089			
	K												
	(δ) - D) $\frac{\kappa'}{100}$												
	α_2												
14			8.6	27 380 417 447 41.47	28 89	12.0	15.5	19.2	22.5 -24.10	28 15.62 -23.684 -47 27 51.55 -1.32 50.1920			
	K												
	(δ) - D) $\frac{\kappa'}{100}$												
	α_1												
Single Observations													
4	2 43 14 42 32 K	53 29 264	9.0 8.9								+86.02 -34		
	(δ) - D) $\frac{\kappa'}{100}$												
	α_2												
14	2 43 14 42 32 K	53 29 264	9.2 8.9	2 43 385 417 445 41.57	43 55.7	59.2	2.5	6.0	9.5 -24.13	44 25.88 -24.08 -23.687 -47 43 38.46 -78 37.667			
	(δ) - D) $\frac{\kappa'}{100}$												
	α_1												
4	2 45 33 44 224 K	54 1 53 57.1	9.0 8.7								+86.02 -34		
	(δ) - D) $\frac{\kappa'}{100}$												
	α_2												
14	2 45 33 44 224 K	54 1 53 57.1	9.4 8.7	2 45 356 400 424 39.33	46 168	20.1	23.8	27.1	30.6 -24.14	46 23.68 -23.657 -48 45 59.55 -0.813 58.723			
	(δ) - D) $\frac{\kappa'}{100}$												
	α_1												
4	2 47 38 46 270 K	54 41 53.5	9.0 8.8								+86.03 -35		
	(δ) - D) $\frac{\kappa'}{100}$												
	α_2												
13	(δ) - D) $\frac{\kappa'}{100}$												
	α_2												
14	2 47 38 46 270 K	54 41 53.5	8.8 8.8	2 48 243 278 305 27.53	48 228	26.3	30.0	33.6	37.0 -24.15	48 23.18 -24.02 -58 47 58.58 -23.687 -49 48 58.0 -85 49.34			
	(δ) - D) $\frac{\kappa'}{100}$												
	α_1												
4	2 48 53 47 434 K	54 40 53.9	9.0 9.0								+86.03 -35		
	(δ) - D) $\frac{\kappa'}{100}$												
	α_2												

Runs

+0.67

+0.77

+0.62

99

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ'
d	9.90565	1 50.6	47.6	100.2	51' 58"10	30' 53 34	58.25 54.81		50		
((δ) - D) $\frac{d'}{100}$										67 +12.45 + 50	
δ_1					43						
d	+42.48 1.62818 9.90565 1.65619	3 19.1	22.9	42.0 3	21.00	39 53 35	27.35 5.22		40	53 34 31.66	
((δ) - D) $\frac{d'}{100}$	9.77353 1.52587						-33.42 -33.56			-47 -122 +12.46 + 50 -20.7 34 23.00	+11.27 12.04
δ_2	-9.00 -24.74	27 41.09		33 58.3	43						
d	+34.15 1.53339 9.90565 1.56140	3 25.9	31.8	57.7 3	28.83	39 53 34	19.50 5.760		40	53 34 30.73	
((δ) - D) $\frac{d'}{100}$	9.77353 1.43108						-24.84 -26.98			-30 -126 +12.46 + 50 208 34 21.84	+11.40 12.02
δ_1	-9.00 -24.74	27 41.20		33 57.1	56						
d	9.90518	1 24.0	24.7	.7 1	24.35	26 53 30	24.00 20.56		55		
((δ) - D) $\frac{d'}{100}$										-52 +12.35 + 50	
δ_2					47						
d	+21.01 1.32243 9.90527 1.35086	2 49.3	57.0	106.3 2	53.15	34 53 30	55.20 33.30		45	53 30 16.74	
((δ) - D) $\frac{d'}{100}$	9.77422 1.2081						-16.56 -16.63			-12 -104 +12.34 + 50 -213 30 7.67	+11.68 12.45
δ_1	-8.51 -30.32	43 29.16		29 37.4	24						
d	9.90823	4 11.9	10.1	2.0 4	11.00	58 54 2	37.35 33.91		20		
((δ) - D) $\frac{d'}{100}$										-155 +12.28 + 50	
δ_2					15						
d	+44.35 1.64689 9.90823 1.67748	0 41.9	49.1	12.0 0	45.50	7 54 2	2.85 40.95		15	54 2 6.44	
((δ) - D) $\frac{d'}{100}$	9.76870 1.3975						-34.5 -34.65			-51 -25 +12.985 + 50 -214 1 57.71 58.21	+12.69 13.31
δ_1	-8.58 -30.06	45 50.15		1 28.2	43						
d	9.91185	3 57.6	57.4	1.0 3	57.50	38 54 42	50.85 47.41		40	54	
((δ) - D) $\frac{d'}{100}$	+13.71 1.13704 9.91336 1.17276	3 33.9	39.2	13.1 3	36.50	4 54 59	11.80 49.67		15		
δ_2	-8.70 -29.82	9.45859 1.01979	47 49.02	59 1.7	35		-10.47				
d	+24.1 0.38202 9.91185 0.41623	0 42.9	50.0	9.29 0	46.45	47 54 42	1.90 40.00		35	54 42 38.16	
((δ) - D) $\frac{d'}{100}$	9.76164 0.26782						-1.85			-15 = 0 -29 +13.74 + 50 -216 42 31.12	+13.95 14.57
δ_1	-8.67 -29.82	47 56.27		42 1.3	45						
d	9.91176	0 2.1	3.1	5.2 0	2.60	37 54 41	45.76 42.31		45		
((δ) - D) $\frac{d'}{100}$										-13.23 + 50	
δ_2											

Date₁ = 1877 Jan. 4Observer
RecorderDate₂ = Jan. 13 570
Jan. 14 571Observer
Recorder

Run

Star.	α	δ	Mag.	T_s	T_m	T_a	T_e	T_g	T_h	Sum	Mean	Red. to T_m	T
14	48 53 47 43.4 K	54 40 53.9	9.0 8.0	2	49 14.4 17.2 19.8 17.13	49 37.0	40.6	44.1	47.8	37.4 -24.15	49 44.18 -23.64 -2.49 49 20.05 -8.5 19.17		
	$(\delta) - D) \frac{\kappa'}{100}$												
	a_1												
2	58 6 56 54.0 K	53 59 53.3	8.8 8.5								+86.05 -34		
	$(\delta) - D) \frac{\kappa'}{100}$												
	a_2												
14	58 6 56 54.0 K	53 59 53.3	9.0 8.5	2	59 20.7 24.0 27.4 24.03	58 46.4	50.0	53.6	57.0	0.3 -24.13	58 53.46 -23.686 -48 58 29.35 -97.6 28.35		
	$(\delta) - D) \frac{\kappa'}{100}$												
	a_1												
3	2 16 1 8.5 K	53 49 43.4	9.2 9.0								+86.05 -34		
	$(\delta) - D) \frac{\kappa'}{100}$												
	a_2												
13	2 16 1 3.5 K	53 49 43.4	9.5 9.0	3	2 24.8 28.6 32.0 28.47	2 58.4	1.9	5.3	8.8	12.5 -24.56	3 53.8 -24.02 -55 2 40.81 -104 38.77		
	$(\delta) - D) \frac{\kappa'}{100}$												
	a_1												
13	23 53 22 44.6 K	51 27 28.2	9.1 9.0	3	24 30.2 33.0 35.8 33.00	24 40.0	43.3	46.7	50.0	53.0 -24.52	24 46.60 -24.01 -52 24 22.07 -1.27 20.80		
	$(\delta) - D) \frac{\kappa'}{100}$												
	a_2												
14	23 53 22 44.6 K	51 27 28.2	9.5 9.0	3	24 32.2 35.4 38.1 35.23	24 39.7	42.9	46.4	49.5	52.8 -24.08	24 46.26 -23.644 -44 24 22.21 -1.25 20.93		
	$(\delta) - D) \frac{\kappa'}{100}$												
	a_1												
	K												
	$(\delta) - D) \frac{\kappa'}{100}$												
	a_2												
	K												
	$(\delta) - D) \frac{\kappa'}{100}$												
	a_1												
	K												
	$(\delta) - D) \frac{\kappa'}{100}$												
	a_2												

Runs

+0.67

+0.77

+0.62

8'

101

	$T_m - T_s$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	
d	+27.05 1.43214 9.91176 1.46629	1' 36.1 9.76182 1.31815	43.1	79.2	36' 39.60	46' 8.75 54 41 46.85 -20.72			35	54 41 26.13 - 19 +13.44 - 58 14.06 +13.71 + 50 -21.5 41 18.61
((S) - D) $\frac{d'}{100}$	-8.68 δ_1 -29.66	49 10.50	40 57.2	48.9	26					
d	9.90796	1 55.3	55.9	1.2	1 55.60	55 52.75 53 69 49.31			25	- 70 +12.72 + 50
((S) - D) $\frac{d'}{100}$										
δ_2										
d	-30.57 1.48530 9.90796 1.51562	3 11.1 9.76922 1.34868	17.2	8.3	18 14.15	4 34.20 54 0 12.30 +23.92			15	54 0 36.12 - 24 +12.04 - 115 66 +12.93 + 50 -21.4 0 27.48
((S) - D) $\frac{d'}{100}$	-8.73 δ_1 -28.56	58 19.63	59 58.9	35						
d	9.90713	0 42.4	41.5	3.9	0 41.95	47 6.40 53 51 2.96			35	- 26 +12.76 + 50
((S) - D) $\frac{d'}{100}$										
δ_2										
d	+36.91 1.56714 9.90713 1.59663	2 11.8 9.77078 1.46208	16.9	8.7	27 14.36	55 34.00 53 51 11.87 -28.98			25	53 50 42.80 - 36 +12.09 - 81 86 +12.76 + 50 -21.1 50 34.65
((S) - D) $\frac{d'}{100}$	-8.76 δ_1 -28.04	2 31.02	50 6.6	49						
d	+13.60 1.13854 9.89344 1.15434	4 3.8 9.79431 1.05701	9.8	13.6	4 6.80	33 41.85 51 29 19.42 40 -11.36			45	51 29 08.06 - 5 +8.90 - 152 9.67 +10.07 + 40 -202 28 57.49
((S) - D) $\frac{d'}{100}$	-8.75 δ_2 -25.22	24 12.06	28 32.3	49						
d	+11.03 1.04258 9.89344 1.05838	4 5.8 9.79431 0.96105	11.9	17.7	4 8.85	33 39.50 51 29 17.60 - 9.14			45	51 29 8.59 - 3 +8.96 - 148 9.58 +10.07 + 40 28 20.3 28 57.74
((S) - D) $\frac{d'}{100}$	-8.75 δ_1 -25.22	24 12.18	28 32.5							
d										
((S) - D) $\frac{d'}{100}$										
δ_2										
d										
((S) - D) $\frac{d'}{100}$										
δ_1										
d										
((S) - D) $\frac{d'}{100}$										
δ_2										

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Observer
Recorder

Run

[illegible]

Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ'
d											
$((\delta) - D) \frac{d'}{100}$											
δ_1											
d											
$((\delta) - D) \frac{d'}{100}$											
δ_2											
d											
$((\delta) - D) \frac{d'}{100}$											
δ_1											
d											
$((\delta) - D) \frac{d'}{100}$											
δ_2											
d											
$((\delta) - D) \frac{d'}{100}$											
δ_1											
d											
$((\delta) - D) \frac{d'}{100}$											
δ_2											
d											
$((\delta) - D) \frac{d'}{100}$											
δ_1											
d											
$((\delta) - D) \frac{d'}{100}$											
δ_2											
d											
$((\delta) - D) \frac{d'}{100}$											
δ_1											
d											
$((\delta) - D) \frac{d'}{100}$											
δ_2											

Date ₁ =		Observer Recorder		Date ₂ =		Observer Recorder							
Star.	α	δ	Mag.	T_s	T_m	T_a	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
κ													
$((\delta) - D) \frac{\kappa'}{100}$													
α_1													
κ													
$((\delta) - D) \frac{\kappa'}{100}$													
α_2													
κ													
$((\delta) - D) \frac{\kappa'}{100}$													
α_1													
κ													
$((\delta) - D) \frac{\kappa'}{100}$													
α_2													
κ													
$((\delta) - D) \frac{\kappa'}{100}$													
α_1													
κ													
$((\delta) - D) \frac{\kappa'}{100}$													
α_2													
κ													
$((\delta) - D) \frac{\kappa'}{100}$													
α_1													
κ													
$((\delta) - D) \frac{\kappa'}{100}$													
α_2													

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