1674plate.proj 3578R

RG
11366
v.574

Zone Observations & Reductions

& 12

From Nov. 2, 1871 to Dec. 12, 1871

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1871phae.proj.1578R

C12

Nov 21 1871 to Dec 12 1871

B 12 -

	h	m	s	
1st page -	22	53	44	Oct - 22
	23	39	47	"
	"	44	14	"
	"	8	17	"
	18	39	24	Aug - 11



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1.7
.05
.085

1.59
.05
.0795

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ns

	$T_m - T$	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											

Log 15 tan i = 0.12669 for all dates in this book.

When applied to Declinations the sign is negative,

or = 0.12669 m

See also C 8

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1871phae.proj.1578R

Date$_1$ = Oct. 22, 1871 (130) n = +.13 Observer A. M. Recorder W.A.R.

Date$_2$ = Nov. 2, 1871 (132) n = +.12 Observer A. M. Recorder W.A.R.

2.

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
22	h m s	° ′ ″		m	s								m
	51 41	55 00	8.9	51	16.6	41.7	45.8	48.8	52.1	55.1	2428	45.56	57 48.64
	00 58.6	54 54.7	8.5		18.6						-7.60		-7.76
					21.3								+19
	κ				18.8								-3
	((δ) − D) $\frac{\kappa'}{100}$												51 40.96
48 53	c_1												-2.47
													51 38.49
			8.8	51	21.6	43.1	46.5	50.4	53.8	57.2	25 10	50.20	51 50.20
					23.5						-9.34		-9.48
					25.6								+17
	κ				23.5								-3
	((δ) − D) $\frac{\kappa'}{100}$												51 40.86
	c_2												-2.21
													51 38.65
22	53 44	53 49	8.2	53	17.2	38.4	41.7	45.4	48.7	52.2	2264	45.28	53 45.28
22	52.43	53447	8.4		19.0						-7.61		-7.76
					21.3								+18
	κ												-3
	((δ) − D) $\frac{\kappa'}{100}$				19.1								53 37.67
	α_1												-2.46
													53 35.21
			8.9	53	32.3	39.7	43.4	46.9	50.1	53.6	23 37	46.74	53 46.74
					33.6						-9.34		-9.48
					36.1								+17
	κ												-3
	((δ) − D) $\frac{\kappa'}{100}$				34.0								53 37.40
	α_2												-2.22
													53 35.18
22	55 13	54 31	8.6	54	52.0	55 13.0	16.5	20.2	23.8	27.2	1007	20.14	55 20.14
	54 29.3	54 25.9	8.3		53.4						-7.61		-7.76
					55.9								+18
	κ												-3
	((δ) − D) $\frac{\kappa'}{100}$				53.4								55 12.53
	α_1												-2.50
													53 10.03
			8.6	54	54.7	55 14.5	18.3	21.6	25.2	28.7	1083	21.66	55 21.66
					56.0						-9.34		-9.48
					58.2								+17
	κ												-3
	((δ) − D) $\frac{\kappa'}{100}$				56.3								55 18.32
	α_2												-2.25
													55 16.07
22	57 14	54 33	7.8	56	61.8	57 13.7	17.4	20.8	24.3	27.9	1041	20.82	57 20.82
	56 30.6	54 27.8	6.5		53.7						-7.61		-7.76
					55.4								+18
	κ												-3
	((δ) − D) $\frac{\kappa'}{100}$				53.6								57 13.21
	α_1												-2.52
													57 10.69
			7.2	56	54.7	57 16.3	18.8	22.4	25.8	29.5	1182	22.36	57 22.36
					56.3						-9.34		-9.48
					57.8								+17
	κ												-3
	((δ) − D) $\frac{\kappa'}{100}$				56.2								57 13.02
	α_2												-2.27
													57 10.75
22	58 44	54 25	8.8	58	26.4	45.0	48.5	52.0	55.6	59.1	2602	52.04	58 52.04
	58 02	54 20.0	8.8		27.9						-7.61		-7.76
					30.0								+18
	κ												-44 3
	((δ) − D) $\frac{\kappa'}{100}$				28.1								58 50.43
	α_1												-2.53
													58 41.90
			9.0	58	29.0	46.6	50.0	53.7	57.2	60.5	2683	53.66	58 53.66
					30.7						-9.34		-9.48
					32.0								+17
	κ												-3
	((δ) − D) $\frac{\kappa'}{100}$				30.5								58 44.32
	α_2												-2.29
													58 42.03

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Oct. 22 +1′ 2.″72 −.″11

Runs Nov. 2 +1 1.56 −.11

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+29.8	3′ 27.″1	24.8″	23′	25.95″	59	22.40		20′	55 0 2.24	
	1.47422					55 0	25.12			− 23	+12.62
d	9.75859						− 22.88			− 37	
1.64	1.35950m									+1282	
((δ) − D) d′/100										+ 40	
										−2400	
+10.04 δ₁		51 48.61		1 7.5						59 50.86	
+1 16.68											
	+26.7	3 31.0	22.0	23	26.50	59	21.85		20	0 2.91	
	1.42651					55 0	23.41			− 18	+13.27
d	9.75859						− 20.50			− 37	
	1.31179m									+1332	
((δ) − D) d′/100										+ 50	
										−2605	
+10.04 δ₂		51 48.69		1 6.8						59 50.13	
+1 16.68											
	+26.2	3 26.4	24.3	33	25.35	49	23.00		30	53 50 5.02	
	1.41830					53 50	25.72			− 18	+11.43
46 d	9.77095						− 20.70			− 37	
	1.31594m									+1282	
((δ) − D) d′/100										+1160	
										+ 38	
										− 23.90	
+10.20 δ₁		53 45.41		51 9.4						49 52.55	
+1 16.88											
	+12.7	3 38.7	27.9	33	33.30	49	15.05		30	50 6.58	
	1.10380					53 50	16.61			− 5	+12.03
d	9.77095						− 10.03			− 39	
	1.00844m									+1207	
((δ) − D) d′/100										+ 40	
										− 2590	
+10.20 δ₂		53 45.38		51 9.6						49 52.71	
+1 16.88											
	+36.4	2 12.8	10.4	52	11.60	30	36.75		50	54 31 18.96	
	1.42160					54 31	39.47			− 18	+12.30
d	9.76378						− 20.51			− 24	
.62	1.31207m									+1232	
((δ) − D) d′/100										+ 40	
										−2385	
+10.20 δ₁		55 20.23		32 24.45						31 7.41	
+1 17.04											
	+25.4	2 15.1	6.0	52	10.53	30	37.80		50	31 19.62	
	1.40483					54 31	39.36			− 17	+12.83
d	9.76378						− 19.74			− 24	
	1.29530m									+1279	
((δ) − D) d′/100										+ 45	
										−2595	
+10.20 δ₂		55 20.27		32 23.5						31 6.50	
+1 17.04											
	+27.2	0 46.1	43.7	60	44.90	32	3.45		50	54 32 45.05	
	1.43457					54 33	6.17			− 19	+12.48
54 d	9.76342						− 21.12			− 8	
	1.32468m									+1235	
((δ) − D) d′/100										+ 40	
										−23.80	
+10.26 δ₁		57 20.95		33 51.0						32 33.73	
+1 17.24											
	+26.2	0 48.1	38.8	50	43.45	32	4.90		50	32 46.12	
	1.41830					54 33	6.46			− 18	+13.02
d	9.76342						− 20.34			− 8	
	1.30841m									+1283	
((δ) − D) d′/100										+ 45	
										−25.90	
+10.26 δ₂		57 21.01		33 50.5						32 33.24	
+1 17.24											
	+23.9	4 6.5	5.2	59	6.00	23	42.35		55	54 24 26.44	
	1.37840					54 24	45.07			− 15	+11.99
.62 d	9.76501						− 18.63			− 45	
	1.27010m									+12.19	
((δ) − D) d′/100										+ 40	
										−23.75	
+10.31 δ₁		58 52.21		25 32.1						24 14.68	
+1 17.40							42.25				
	+23.2	4 9.0	8.2	59	5.10	23	40.75		55	24 26.73	
	1.36549					54 24	42.81			− 14	+12.52
d	9.76501						− 18.08			− 93	
	1.25719m									+1267	
((δ) − D) d′/100										+ 44	
										−25.85	
+10.31 δ₂		58 52.34		25 30.8						24 13.40	
+1 17.40											

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Date$_1$ = 1871 Oct. 22. Observer W.A.R A.M. Recorder A.M. W.A.R

Date$_2$ = 1871 Nov. 2 Observer A. M. Recorder W. A. R.

Star. | α | δ | Mag. | T_δ | T_m | T_e | T_f | T_g | T_h | Sum | Mean | Red. to T_m | T

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
21	m 59 49 / 59 51.1 / κ	° ′ 54 43 / 54 38.1	9.2 / 9.0	m 59	s 34.3 / 36.0 / 37.8 / 36.0	s 49.4	s 53.4	s 57.1	s 60.5	s 64.3	25 48.5 −7.61	56.96	m 59	s 56.96 / −7.76 / +18 / −3 / 59 49.51 / −2.55 / 59 46.96
	((δ) − D) $\frac{\kappa'}{100}$													
	c_1													
			9.0	59	31.0 / 32.3 / 34.5 / 32.6	57.6	55.0	58.8	62.2	65.7	24 33.4 −9.34	58.66	59	58.66 / −9.48 / +17 / −3 / 59 49.32 / −2.31 / 59 47.01
	κ													
	((δ) − D) $\frac{\kappa'}{100}$													
	c_2													
22	2 19 / 1 34.3 / κ	54 20 / 54 14.1	9.5 / 9.4	2	2.9 / 4.7 / 6.5 / 4.7	19.5	23.1	26.6	30.0	33.8	1 33 02 −7.61	26.60	2	26.60 / −7.76 / +18 / −3 / 2 18.99 / −2.56 / 2 16.43
	((δ) − D) $\frac{\kappa'}{100}$													
	a_1													
			9.4	1	58.9 / 0.8 / 0.0 / 59.9	21.0	24.5	28.1	31.6	35.2	1 40 4 −9.34	28.05	2	28.05 / −9.48 / +17 / −3 / 2 18.74 / −2.33 / 2 16.41
	κ													
	((δ) − D) $\frac{\kappa'}{100}$													
	a_2													
23	3 48 / 3 2.8 / κ	53 ~~44~~ 43 / 53 38.4	8.8 / 8.5	3	25.4 / 27.1 / 29.3 / 27.2	48.7	52.1	55.6	59.1	2.6	27 8.1 −7.61	55.62	3	55.62 / −7.76 / +18 / −3 / 3 48.01 / −2.56 / 3 45.45
	((δ) − D) $\frac{\kappa'}{100}$													
	a_1													
			9.1	3	29.4 / 30.8 / 32.2 / 30.8	50.2	53.7	57.1	60.7	64.1	26 58.4 −9.35	57.16	3	57.16 / −9.48 / +16 / −3 / 3 47.81 / −2.33 / 3 45.48
	κ													
	((δ) − D) $\frac{\kappa'}{100}$													
	a_2													
23	6 07 / 5 22.1 / κ	55 02 / 54 56.3	9.0 / 8.8	5	54.7 / 56.5 / 59.4 / 56.8	6 7.3	10.8	14.4	18.1	21.7	7 23.3 −7.60	14.46	6	14.46 / −7.76 / +19 / −3 / 6 6.86 / −2.62 / 6 4.24
23 8 17 / 9 17	((δ) − D) $\frac{\kappa'}{100}$			6	28.9 / 32.4 / 36.0									
	a_1													
11 25 / 12 45 / 14 0 / 15 11 / 17 20			9.0	5	57.8 / 59.4 / 60.8 / 59.3	6 8.8	12.3	15.7	19.2	23.0	7 9 01.8 −9.34	15.80	6	15.80 / −9.48 / +17 / −3 / 6 6.46 / −2.38 / 6 4.08
κ														
((δ) − D) $\frac{\kappa'}{100}$														
a_2														
23	18 26 / 17 20.4 / κ	54 57 / 54 51.8	8.8 / 9.2	18	45 / 6.4 / 6.3 / ~~7.6~~ / 5.4	7.5	11.1	14.7	18.6	22.3	7 42.6 −7.61	14.84	18	14.84 / −7.77 / +17 / −3 / 18 7.23 / −2.75 / 18 4.48
	((δ) − D) $\frac{\kappa'}{100}$													
	a_1													
			9.0	17	21.0 / 22.5 / 23.7 / 22.4	39.1	42.5	46.0	49.5	53.3	23 04.6 −9.34	46.08	17	46.08 / −9.48 / +17 / −3 / 17 36.44 / −2.53 / 17 34.21
	κ													
	((δ) − D) $\frac{\kappa'}{100}$													
	a_2													

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1871phacproj.15788

Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+21.1	0′ 9.8′	6.1′	40′	7.95	42	4040		40′	54 43 26.80	
	1.32428				54	43	43.12			− 11	+12.81
d	9.76164						− 16.32			− 1	
54	1.21261									+1253	
((δ) − D) $\frac{d'}{100}$										+ 40	
										−23.75	
+10.32 δ_1		59 57.28		44 33.3						43 15.86	
+1 17.48											
	+26.1	0 7.2	58.0	40	2.60	42	45.75		40	43 27.13	
	1.41664				54	43	47.31			− 18	+13.29
d	9.76164						− 20.18			− 1	
	1.30497									+1301	
((δ) − D) $\frac{d'}{100}$										+ 47	
										−25.85	
+10.32 δ_2		59 57.33		44 32.0						43 14.57	
+1 17.48											
	+21.9	4 7.3	3.8	4	5.53	18	42.80		0	54 19 28.42	
	1.34044				54	19	45.52			− 13	+11.92
48 d	9.76590						− 17.10			− 45	
	1.23303									+1210	
((δ) − D) $\frac{d'}{100}$										+ 40	
										−23.65	
+10.43 δ_1		2 26.86		20 34.4						19 16.69	
+1 17.68											
	+28.2	4 1.9	52.3	3	57.10	18	51.25		0	19 30.79	
	1.45025				54	19	52.81			− 21	+12.37
d	9.76590						− 22.02			− 44	
	1.34284									+1259	
((δ) − D) $\frac{d'}{100}$										+ 43	
										−25.80	
+10.43 δ_2		2 26.84		20 35.0						19 17.36	
+1 17.68											
	+28.4	4 42.9	40.3	39	~~39.60~~ 41.60	43	6.75		35	53 43 46.98	✓
	1.45332				53	44	9.47			− 21	+11.13
54 d	9.77199						− 22.49			− 52	
	1.35200									+1149	
((δ) − D) $\frac{d'}{100}$										+ 37	
										−23.60	
+10.52 δ_1		3 55.97		44 52.4						43 34.51	
+1 17.84								6			
	+26.4	4 46.5	~~48.0~~ 3	39	47.25	43	~~7.10~~		35	43 47.75	✓
	1.42160				53	44	~~7.66~~			− 18	+11.64
d	9.77199						− 20.91			− 53	
	1.32028									+1195	
((δ) − D) $\frac{d'}{100}$										+ 40	
										−25.75	
+10.52 δ_2		3 56.80		44 50.5						43 ~~27.64~~ 27.82	
+1 17.84											
	+17.7	2 0.6	57.5	21	59.05	0	49.30		20	55 1 38.44	
	1.24797				55	1	52.02			− 8	+12.95
d	9.75823						− 13.58			− 22	
34	1.13289									+1285	
((δ) − D) $\frac{d'}{100}$										+ 40	
										−23.55	
+10.51 δ_1		6 14.75		2 45.9						1 27.84	
+1 18.04											
	+16.5	2 2.7	52.2	21	57.45	0	50.90		20	1 39.80	
	1.21748				55	1	52.46			− 7	+13.56
d	9.75823						− 12.66			− 22	
	1.10240									+1335	
((δ) − D) $\frac{d'}{100}$										+ 50	
										−25.75	
+10.51 δ_2		6 14.59		2 45.6						1 27.61	
+1 18.04											
	+9.4	1 34.5	49.2	26	~~41.85~~ 31.85	56	6.50		25	54 57 11.99	✓
	0.97313				54	57	19.22			− 3	+12.95
d	9.75913						− 7.23			− 19	diff. #'s ?
~~24~~	0.85895									+1277	
((δ) − D) $\frac{d'}{100}$										+ 40	
										−23.15	
+10.90 δ_1		18 15.38		~~45.4~~ 20.7						~~56 54.79~~ 57 18.2	
+1 18.88											
	+23.7	2 55.2	47.2	52	51.20	29	57.15		50	54 30 40.45	✓
	1.37475				5	30	58.71	✓		− 15	+13.30
d	76003						−18.26			− 32	
	12665									+1327	
((δ) − D) $\frac{d'}{100}$	126147									+ 50	
										−25.45	
δ_2										30 28.30	

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1871phae.pro1.1578R

Date$_1$ = 1871. Oct. 22. Observer A. M. Recorder W. A. R.

Date$_2$ = 1871. Nov. 2. Observer A. M. Recorder W. A. R.

Star.	α	δ	Mag.	T_s	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
21	m s	° ′		m	s	s	s	s	s				m
	18 51.0	54 38.3	6.5	19	12.2	36.5	40.2	43.8	47.2	50.8	21 8.5	43.70	19 43.70
			7.5		14.0						-7.62		- 7.77
					15.9								+ 18
					14.0								- 3
κ													
$((\delta) - D)\frac{\kappa'}{100}$													19 36.08
													- 2.73
c_1													19 33.35
			7.0	19	19.6	38.0	41.7	45.3	48.7	52.4	22 6.1	45.22	19 45.22
					21.2						-9.34		- 9.48
					24.6								+ 17
					21.8								- 3
κ													
$((\delta) - D)\frac{\kappa'}{100}$													19 35.88
													- 2.53
c_2													19 33.35
23	20 55	54 17	8.6	20	22.4	41.7	45.3	48.7	52.4	56.0	24 4.1	48.82	20 48.82
	~~20 9.0~~	~~54 11.5~~	8.6		23.6						-7.62		- 7.77
19	55.3 κ		8.7		26.0								+ 18
					23.6								- 3
$((\delta) - D)\frac{\kappa'}{100}$											20 38.46	20 41.20	
20	7.0			20	38.2	57.1	0.3	3.8	7.2	11.0	31 9.4	63.88	- 2.74
					39.8						-7.62		3.88
α_1					40.5								- 7.77
					39.4								+ 18
											20 53.51	20 56.26	- 3
	55.3		8.5	20	18.7	42.3	46.8	50.3	54.0	57.4	25 0.8	50.36	50.36
			8.5		20.7						-9.34		- 9.48
					22.0								+ 17
					20.4								- 3
κ													
$((\delta) - D)\frac{\kappa'}{100}$											20 38.48	20 41.82	
20	9.0			20	32.3	58.6	1.7	5.3	8.8	12.3	32 6.7	65.34	- 2.34
					34.2						-9.34	4.49	5.34
α_2					36.8								- 9.48
					34.4								+ 17
											20 53.46	20 56.80	- 3
23	21 52	54 58	8.2	21	35.6	52.5	57.0	60.6	64.1	67.9	30 3.1	60.62	- 2.22
	21 6.7	54 52.5	8.8		37.2						-7.61		0.62
					38.6								- 7.77
					37.1								+ 19
κ													- 3
$((\delta) - D)\frac{\kappa'}{100}$													21 53.01
													- 2.78
α_1													21 50.23
			8.3	21	41.5	55.1	58.8	62.1	65.8	69.3	31 11.6	62.22	22 2.22
					43.3						-9.35		- 9.49
					45.7								+ 17
					43.5								- 3
κ													
$((\delta) - D)\frac{\kappa'}{100}$													21 52.87
													- 2.67
α_2													21 50.20
23	23 05	55 02	9.0	22	46.0	23 6.8	10.6	14.2	17.6	21.3	7 0.5	14.10	23 14.10
	22 18.0	54 56.5	9.5		47.0						-7.61		- 7.77
					49.1								+ 19
					47.0								- 3
κ													
$((\delta) - D)\frac{\kappa'}{100}$													23 6.49
													- 2.78
α_1													23 3.71
			9.2	22	43.1	23 8.7	12.3	15.8	19.3	23.1	7 9.2	15.84	23 15.84
					44.8						-9.35		- 9.49
					46.6								+ 17
					44.8								- 3
κ													
$((\delta) - D)\frac{\kappa'}{100}$													23 6.49
													- 2.59
α_2													23 3.90
23	24 02	54 34	8.5	23	43.7	2.3	6.0	9.6	13.9	16.6	4 7.5	9.50	24 9.50
	23 15.0	54 28.3	8.0		45.0						-7.62		- 7.77
					46.3								+ 18
					45.0								- 3
κ													
$((\delta) - D)\frac{\kappa'}{100}$													24 1.78
													- 2.79
α_1													23 59.09
			8.3	23	47.0	24 3.9	7.5	11.1	14.7	18.2	5 5.4	11.08	24 11.08
					48.3						-9.35		- 9.49
					49.6								+ 17
					48.3								- 3
κ													
$((\delta) - D)\frac{\kappa'}{100}$													24 1.73
													- 2.59
α_2													23 59.14

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1871phaeproj.15788

Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+29.7	0′ 16.0	15.1	40	16,55	42	31,80		40	54 43 11.55	
	1.47276					54 43	34.52			− 23	+12.67
d	9.76164						− 22.97			− 3	
	1.36109									+1253	
((δ) − D) $\frac{d'}{100}$										+ 40	
										−23.05	
+10.96 δ_1		19 44.33		44 20.1						43 1.17	
	+23.4	0 25.0	16.6	40	20,80	42	27,55		40	43 11.01	
	1.36922					54 43	29.11			− 14	+13.31
d	9.76164						− 18.10			− 3	
	1.25785									+1301	
((δ) − D) $\frac{d'}{100}$										+ 47	
+10.96										−2540	
+1 18.96 δ_2		19 44.31		44 17.9						42 58.92	
	+25.2	2 28.3	25.7	7	~~29,90~~ 26,70	~~15~~	21,65		5	54 ~~16~~ 4.~~71~~ 67	~~16~~ 5.~~28~~ 23
	1.40140					54 ~~33~~ 16	24.37			− 17	+12.62 − 16 +12.03
d	9.76642						− 19.~~80~~ 70			− 26	− 26
+11.02	1.29~~1146~~						− 19.~~185~~			+1205	+ 1205
54	+24.5									+ 40	+ 40
+1 19.08 ((δ) − D) $\frac{d'}{100}$	1.38917									− 23.00	− 23.00
+11.02 46 δ_1	9.76~~64~~ 42	20 49.48	~~17 12.7~~	17 12.8						15 53.69	15 54.25
+1 19.08	1.28~~228~~	21 4.51		13.3							
	+30.0	2 25.0	15.9	7	20,45	15	27,90		5	16 6.01	16 5.30
	1.47712					54 16	29.46			− 23	+12.47 − 25 +12.46
d	9.76642						− 23.45			− 25	− 25
	1.37023						− 24.16			+1252	+1253
((δ) − D) $\frac{d'}{100}$	+30.9			7	20.45					+ 43	+ 43
+11.02	1.48996									−2530	−2530
+1 19.08 δ_2	9.76642	20 49.50		17 12.3						15 53.18	15 52.46
+~~11~~.03	1.38307	~~21~~ 4.49		11.5							
+1 19.08											
	+23.5	1 2.2	58.7	26	0,45	56	47,90		25	54 57 32.56	
	1.37107					54 57	50.62			− 14	+12.94
d	9.75895						− 18.06			− 11	
	1.25671									+1279	
((δ) − D) $\frac{d'}{100}$				41.7						+ 40	
+11.02										−22.95	
δ_1		22 1.25		58 ~~42.3~~						57 22.55	
+1 19.72											
	+18.7	1 9.4	~~55.0~~	26	4,70	56	~~48,65~~		25	57 ~~38.84~~ .58	
	1.27184				~~5,70~~	54 57	~~47.71~~			− 9	+13.~~60~~
d	9.75895				2,20		− 14.37			− 12	
	1.15748									+1329	
((δ) − D) $\frac{d'}{100}$										+ 50	
+11.02										−25.35	
δ_2		22 1.32		58 41.7						57 ~~19.07~~ 22.57	
+1 19.72											
	+27.1	1 49.1	46.4	21	47,75	1	0,60		20	55 1 42.53	
	1.43297					55 2	3,32			− 19	+ 12.86
d	9.75823						− 20.79			− 20	
54	1.31789									+1285	
((δ) − D) $\frac{d'}{100}$										+ 40	
+11.06										−2295	
δ_1		23 14.77		2 51.6						1 3244	
+1 19.20											
	+31.0	1 48.2	38.8	21	43,50	1	4,85		20	1 42.63	
	1.49136					55 2	6.41			− 23	+13.42
d	9.75823						− 23.78			− 19	
	1.37628									+1336	
((δ) − D) $\frac{d'}{100}$										+ 50	
+11.06										−2530	
δ_2		23 14.96		2 50.0						1 30.75	
+1 19.20											
	+24.5	0 2.7	58.0	60	0,35	32	48.00		50	54 32 31.70	
	1.38917					54 33	50.72			− 15	+12.62
d	9.76824						− 19.02			− 0	
.58	1.27910									+1237	
((δ) − D) $\frac{d'}{100}$										+ 40	
+11.11										−22.90	
δ_1		24 10.20		34 40.7						33 21.42	
+1 19.24											
	+22.8	0 4.4	54.0	49	59,25	32	49,10		50	33 32.96	
	1.35793					54 33	50.~~66~~			− 14	+13.19
d	9.76324						− 17.70			0	
	1.24786									+12.87	
((δ) − D) $\frac{d'}{100}$										+ 46	
+11.11										−25.25	
δ_2		24 10.25		34 40.1						33 20.90	
+1 19.24											

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1871phae.proj.1578R

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Date$_1$ = 1871 Oct. 22 — Observer A. M. — Recorder W. A. R

132

Date$_2$ = Nov. 2, 1871 — Observer A. M. — Recorder W. A. R

8

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
22 h	m s 25 05 24 18.5 κ 21.5	° ′ ″ 55 01 54 53.8 56.2	8.9 9.0	m 24	s 56.3 58.0 59.8 58.0	m s 25 9.1	s 12.8	s 16.4	s 19.9	s 23.6	8 18 −7.61	s 16.36	m 25 16.36 − 7.77 + 19 − 3 25 8.75 − 2.81 25 5.94	
(δ) − D $\frac{\kappa'}{100}$														
c_1														
			8.5	24	52.6 54.2 57.2 54.6	25 10.7	14.5	18.0	21.5	25.3	9 00 −9.35	18.00	25 18.00 − 9.49 + 17 − 3 25 8.65 − 2.61 25 6.04	
κ														
(δ) − D $\frac{\kappa'}{100}$														
c_2														
23	25 59 25 12.5	54 13 54 7.1	8.8 8.8	25	49.8 51.1 52.2 51.0	5 9.2	2.8	6.2	9.7	13.5	33 146 −7.62	6.28	26 6.28 − 7.77 + 18 − 3 25 58.66 − 2.80 25 55.86	
κ														
(δ) − D $\frac{\kappa'}{100}$														
a_1														
			8.3	25	53.3 54.9 56.4 54.8	26 0.7	4.4	7.8	11.3	14.9	3 91 −9.35	7.82	26 7.82 − 9.49 + 17 − 3 25 58.47 − 2.60 25 55.87	
κ														
(δ) − D $\frac{\kappa'}{100}$														
a_2														
23	28 07 27 20.0	54 47 54 41.3	8.0 7.3	27	48.1 49.6 51.8 49.8	25 7.5	11.1	14.6	18.3	21.6	7 31 −7.62	14.62	28 14.62 − 7.77 + 18 − 3 28 7.00 − 2.86 28 4.14	
κ														
(δ) − D $\frac{\kappa'}{100}$														
a_1														
			8.5	27	43.1 44.7 46.4 44.7	28 8.9	12.6	16.1	19.7	23.2	8 05 −9.35	16.10	28 16.10 − 9.49 + 17 − 3 28 6.75 − 2.63 28 4.12	
κ														
(δ) − D $\frac{\kappa'}{100}$														
a_2														
23	29 24 28 35.8	53 19 53 13.3	8.8 8.5	29	4.0 5.6 7.3 5.6	24.6	27.9	31.5	34.8	28.2	15 70 −7.63	31.40	29 31.40 − 7.77 + 17 − 3 29 23.77 − 2.80 29 20.97	
κ														
(δ) − D $\frac{\kappa'}{100}$														
a_1														
			8.5	29	5.5 7.3 9.0 7.2	26.1	29.5	32.8	36.4	40.0	16 48 −9.36	32.96	29 32.96 − 9.49 + 16 − 3 29 23.60 − 2.61 29 20.99	
κ														
(δ) − D $\frac{\kappa'}{100}$														
a_2														
23	31 01 30 13.5	54 27 54 21.4	9.8 9.5	30	39.0 41.1 43.4 41.1	31 4.1	7.7	11.1	14.8	18.3	5 60 −7.62	11.20	31 11.20 − 7.77 + 18 − 3 31 3.58 −2.85 31 0.73	
κ														
(δ) − D $\frac{\kappa'}{100}$														
a_1														
			9.3	30	43.3 44.8 47.0 45.0	31 5.8	9.3	12.7	16.5	19.9	64.21 −9.35	12.84	31 12.84 − 9.49 + 17 − 3 31 3.49 −2.66 31 0.83	
κ														
(δ) − D $\frac{\kappa'}{100}$														
a_2														

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	δ	1 14.3	11.5	21	12,90	1	3545		20	55 2 24.05	
	+18.4					55 2	38.17			− 8	+13,05
	1.26482						− 14.12			− 13	
d	9.75823									+12.86	
64	1.14974n									+ 40	
((δ) − D) $\frac{d'}{100}$										−22.85	
+11.13											
+1 19.28 δ_1		25 17.07		3 33.5						2 14.25	
	+23.4	1 14.2	4.2	21	9,20	1	39.15		20	2 22.76	
	1.36922					55 2	40.71			− 14	+13.60
d	9.75823						− 17.95			− 12	
	1.25414n									+1336	
((δ) − D) $\frac{d'}{100}$										+ 50	
+11.13										−25.25	
+1 19.28 δ_2		25 17.17		3 30.4						2 11.11	
	+15.3	0 55.0	51.4	10	53,20	11	55.15		10	54 12 45.89	
	1.18469					64 12	57.87			− 6	+12.25
54 d	9.76695						− 11.98			− 10	
	1.07833n									+1201	
((δ) − D) $\frac{d'}{100}$										+ 40	
+11.19										−22.80	
+1 19.36 δ_1		26 7.05		13 54.7						12 35.34	
	+13.0	0 58.5	48.3	10	5340	11	54.95		10	12 46.33	
	1.11394					54 12	56.51			− 5	+12.74
d	9.76695						− 10.18			− 10	
	1.00758n									+1247	
((δ) − D) $\frac{d'}{100}$										+ 42	
+11.19										−25.15	
+1 19.36 δ_2		26 7.06		13 53.3						12 33.92	
	+24.8	1 47.1	44.8	36	4593-	46	2.40		35	54 46 45.97	
	1.39445					54 47	5.12			− 16	+12.66
d	9.76093						− 19.15			− 19	
48	1.28207n									+1261	
((δ) − D) $\frac{d'}{100}$										+ 40	
+11.24										−22.70	
+1 19.44 δ_1		28 15.38		47 55.4						46 35.93	
	+31.4	1 43.8	33.0	36	3840	46	9.95		35	46 47.27	
	1.49693					54 47	11.51			− 26	+13.14
d	9.76093						− 24.24			− 18	
	1.38455n									+13.10	
((δ) − D) $\frac{d'}{100}$										+ 48	
+11.24										− 25.15	
+1 19.44 δ_2		28 15.36		47 54.7						46 35.26	
	+25.8	0 8.1	5.9	3-	9.00	17	41.35		5	53 18 23.44	
	1.41162					53 18	44.07			− 17	+11.20
d	9.77626						− 20.63			− 1	
56	1.31457n									+1105	
((δ) − D) $\frac{d'}{100}$										+ 33	
+11.33										−22.65	
+1 19.52 δ_1		29 32.30		19 31.5						18 11.99	
	+25.8	0 10.1	2.1	3-	6.10	17	42.25		5	18 23.18	
	1.41162					53 18	43.81			− 17	+11.71
d	9.77626						− 20.63			− 1	
	1.31457n									+11.49	
((δ) − D) $\frac{d'}{100}$										+ 40	
+11.33										−25.00	
+1 19.52 δ_2		29 32.32		19 29.4						18 9.89	
	+30.1	2 9.9	6.3	57	8.10	25	40.25		55	54 26 19.53	
	1.47857					54 26	42.97			− 23	+12.18
64 d	9.76466						− 23.44			− 23	
	1.36992n									+1224	
((δ) − D) $\frac{d'}{100}$										+ 40	
+11.35										−22.60	
+1 19.60 δ_1		31 12.08		27 28.7						26 9.11	
	+27.8	2 13.5	4.5	57	9.50	25	39.35		55	26 19.26	
	1.44404					54 26	40.91			− 20	+12.73
d	9.76466						− 21.65			− 23	
	1.33539n									+12.72	
((δ) − D) $\frac{d'}{100}$										+ 44	
+11.35										−25.08	
+1 19.60 δ_2		31 12.18		27 26.6						26 6.959	

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Date$_1$ = Oct-22, 1871 Observer A. M. Recorder W. A. R

132

Date$_2$ = 1871 Nov-2. Observer A. M. Recorder W. A. R

10

Ru

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
23h	m 32 00	° ′ 54 31	8.0	m 31	s 40.7	32 3.4	7.0	10.4	14.1	17.3	5 22	10.44	32 10.44
	31 12.5	54 25.3	8.5		42.1						-7.62		− 7.77
	κ				43.6								+ 18
	((δ) − D) $\frac{\kappa'}{100}$				42.1								− 3
													32 2.82
	α_1												− 2.86
													31 59.96
			8.8	31	50.2	32 4.8	8.3	11.7	15.5	19.1	5 94	11.88	32 11.88
					57.8						9.35		− 9.49
	κ				53.8								+ 17
	((δ) − D) $\frac{\kappa'}{100}$				51.9								− 3
													32 2.53
	α_2												− 2.67
													31 59 86
23	38 09	54 25	9.2	32	50.7	33 12.6	16.1	19.7	23.1	27.0	9 85	19.70	33 19.70
	32 21.0	54 27.2	9.2		51.9						-7.62		− 7.77
	κ				53.0								+ 18
	((δ) − D) $\frac{\kappa'}{100}$				51.8								− 3
													33 12.08
	α_1												− 2.88
													33 9.20
			9.1	32	53.6	33 14.1	17.5	21.1	24.8	28.3	10 58	21.16	33 21.16
					55.0						-9.35		− 9.49
	κ				57.0								+ 17
	((δ) − D) $\frac{\kappa'}{100}$				55.2								− 3
													33 11.81
	α_2												− 2.69
													33 9.12
23	34 28	54 31	8.8	34	24.6	27.3	30.7	34.2	37.7	41.3	17 72	34.24	34 34.24
	33 39.7	54 25.3	8.8		26.5						-7.62		− 7.77
	κ				~~27.3~~								+ 18
	((δ) − D) $\frac{\kappa'}{100}$				25.5								− 3
													34 26.62
	α_1												− 2.89
													34 23.73
			8.3	34	17.0	28.5	32.1	35.5	39.2	42.7	17 80	35.60	34 35.60
					18.6						-9.35		− 9.49
	κ				20.3								+ 17
	((δ) − D) $\frac{\kappa'}{100}$				18.6								− 3
													34 26.25
	α_2												− 2.70
													34 23.55
23	35 42	53 59	9.0	35	20.1	42.7	46.1	49.5	53.0	56.7	24 80	49.60	35 49.60
	34 53.4	53 33.5	8.6		21.2						-7.62		− 7.77
	κ				22.3								+ 18
	((δ) − D) $\frac{\kappa'}{100}$				21.2								− 3
													35 41.98
	α_1												− 2.88
													35 39.10
			8.5	35	32.7	44.0	47.6	51.2	54.8	58.4	25 50	51.00	35 51.00
					34.0						-9.35		− 9.49
	κ				36.6								+ 17
	((δ) − D) $\frac{\kappa'}{100}$				34.4								− 3
													35 41.65
	α_2												− 2.70
													35 ~~38.95~~ 39.00
23	38 ~~10~~ 08	54 30	6.5	37	40.5	38 10.2	13.6	17.1	20.6	24.5	8 60	17.20	38 17.20
	37 20.4	54 24.3	6.8		42.7	13.9					-7.62		− 7.77
	κ				45.0	17.6							+ 18
	((δ) − D) $\frac{\kappa'}{100}$				42.7								− 3
													38 9.58
	α_1												− 2.92
													38 6.66
			8.2	37	51.1	38 11.7	15.2	18.8	22.2	25.9	9 38	18.76	38 18.76
					52.8						-9.35		− 9.49
	κ				55.7								+ 17
	((δ) − D) $\frac{\kappa'}{100}$				53.2								− 3
													38 9.41
	α_2												− 2.74
													38 6.67

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+28.3	2 15.8	13.0	52	14,40	30	33,95		50	54 31 14.68	
	1.45179					54 31	36.67			− 21	+ 12.28
44 d	9.76378						− 21.99			− 24	
	1.34226 m									+12.33	
((δ) − D) $\frac{d'}{100}$										+ 40	
										−22.55	
+1138 δ_1		32 11.34		32 24.0						31 4.41	
+1 19.60											
	+20.0	2 22.4	13.9	52	18,15	30	30,20		50	31 16.22	
	1.30103					54 31	31.76			− 16	+ 12.92
d	9.76378						− 15,54			− 25	
	1.19150 m									+12,82	
((δ) − D) $\frac{d'}{100}$										+ 45	
										−24.95	
+11.28 δ_2		32 11.24		32 23.8						31 4.19	
+1 19.60											
	+27.9	4 23.2	19.6	49	21,40	33	26,95		45	54 34 8.02	
	1.44560					54 34	29.67			− 20	+12.10
46 d	9.76324						− 21,65			− 48	
	1.33553 m									+1238	
((δ) − D) $\frac{d'}{100}$										+ 40	
										− 2250	
+11.41 δ_1		33 20.61		35 17.3						33 57.62	
+1 19.68											
	+26.0	4 26.6	16.8	49	21,70	33	26.65		45	34 8.03	
	1.41497					54 34	28,21			− 18	+12.67
d	9.76324						− 20,18			− 48	
	1.30490 m									+12.87	
((δ) − D) $\frac{d'}{100}$										+ 46	
										−24.95	
+11.41 δ_2		33 20.53		35 15.4						33 55.75	
+1 19.68											
	+8.7	3 50.6	47.3	53	48,95	28	59,40		50	54 29 55.36	
	0.93952					54 30	2,12			− 2	+ 12.27
36 d	9.76395						− 6.76			− 42	
	0.83016 m									+12.31	
((δ) − D) $\frac{d'}{100}$										+ 40	
										− 22.40	
+11.46 δ_1		34 35.19		31 5.0						29 45.23	
+1 19.72											
	+17.0	3 44.8	36.1	53	40,45	29	7,90		50	29 56.25	
	1.23046					54 30	9,46			− 7	+ 12.78
d	9.76395						− 13.21			− 40	
	1.12109 m									+12,80	
((δ) − D) $\frac{d'}{100}$										+ 45	
										− 24.90	
+11.46 δ_2		34 35.01		31 3.8						29 44.13	
+1 19.72											
	+28.4	4 23.6	19.9	24	21,75	58	26.60		20	53 59 6.96	
	1.45332					53 59	29,32			− 21	+ 11.48
40 d	9.76939						− 22,36			− 48	
	1.34940 m									+1177	
((δ) − D) $\frac{d'}{100}$										+ 40	
										− 22,35	
+11.51 δ_1		35 50.61		0 15.8						58 56.09	
+1 19.76											
	+16.6	4 33.5	24.1	24	28,80	58	19.55		20	59 8.04	
	1.22011					53 59	21.11			− 7	+ 12.06
d	9.76939						−13.07			− 49	
	1.11619 m									+1222	
((δ) − D) $\frac{d'}{100}$										+ 40	
+11.51										−24.80	
+1 19.76 δ_2		35 50.54		0 15.1						58 55.30	
	+34.5	3 47.0	45.0	53	46,90	29	2,35		50	54 29 38.25	
	1.53782					54 30	5,07			− 31	+ 11.98
56 d	9.76395						− 26.82			− 42	
	1.42846 m									+12,31	
((δ) − D) $\frac{d'}{100}$										+ 40	
										− 22.25	
+11.58 δ_1		38 18.24		30 47.82						29 27.98	
+1 19.84											
	+25.6	3 86.1	46.6	53	51,35	28	5700		50	29 38.66	
	1.40824					54 29	58.56			− 17	+ 12.65
d	9.76395						− 19.90			− 43	
	1.29888 m									+12,80	
((δ) − D) $\frac{d'}{100}$										+ 45	
										−24.75	
+11.58 δ_2		38 18.25		30 46.4						29 26,56	
+ 1 19.84											

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1871phae.proj.1578R

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Date$_1$ = 1871, Oct. 22. Observer A. M. Recorder W. A. R

132

Date$_2$ = 1871, Nov. 2. Observer A. M. Recorder W. A. R.

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Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
23	39 47	54 37	9.2	39	24.7 48.8	52.3	55.8	59.3	63.0	279 2 −7.62	55.84	39 55.84 − 7.77 + 18 − 3	
	(42 36	54 38	7.3)		26.6							39 48.22 − 2.93	+11.6
	38 K	54 30.8	9.0		28.6							39 45.29	+1 19
	((δ) − D) $\frac{\kappa'}{100}$ 0	139			26.6								
	α_1												
			9.3	39	27.3 30.4	54.1	57.3	61.1	64.6	284 −9.35	57.50	39 57.50 − 9.49 + 17 − 3	
					28.9							39 48.15 − 2.75	+11.6
	K				30.8							39 45.40	+1 19
	((δ) − D) $\frac{\kappa'}{100}$				29.0								
	α_2												
23	40 37	54 10	7.5	40	23.5 36.9	40.6	44.1	47.5	51.1	220 2 −7.62	44.04	40 44.04 − 7.77 + 18 − 3	
	39 47.7	54 3.8	7.3		25.5							40 36.42 − 2.93	+11.6
	K				27.6							40 33.49	+1 19
	((δ) − D) $\frac{\kappa'}{100}$				25.5								
	α_1												
			7.5	40	28.6 38.6	42.1	45.6	49.3	52.7	228 3 −9.35	45.66	40 45.66 − 9.49 + 17 − 3	
					30.6							40 36.31 − 2.76	+11.6
	K				32.6							40 33.55	+1
	((δ) − D) $\frac{\kappa'}{100}$				30.6								
	α_2												
23	42 15	54 56	8.8	41	53.7 42 14.9	18.6	22.1	25.7	29.4	11 07 −7.61	22.14	42 22.14 − 7.77 + 19 − 3	
	41 24.9	54 50.2	7.7		53.0 18.6							42 14.53 − 2.97	+11.7
	K				56.4 22							42 11.56	+1 2
	((δ) − D) $\frac{\kappa'}{100}$				55.0								
	α_1												
			8.0	42	0.3 16.0	19.8	23.6	27.1	30.8	117 3 −9.35	23.46	42 23.46 − 9.49 + 17 − 3	
					1.9							42 14.11 − 2.80	+11.7
	K				3.9							42 11.31	+1
	((δ) − D) $\frac{\kappa'}{100}$				2.0								
	α_2												
23	43 18	54 56	9.0	42	56.0 43 10.9	14.5	17.9	21.6	25.3	9 02 −7.61	16.04	43 16.04 − 7.77 + 19 − 3	
	42 21.5	54 50.2	8.2		57.6 J	J						43 10.43 − 2.98	+11.7
	K				59.6							43 7.45	+1 2
	((δ) − D) $\frac{\kappa'}{100}$				57.7								
	α_1												
			7.9	42	57.9 43 12.3	16.0	19.5	23.0	26.6	9 74 −9.35	19.48	43 19.48 − 9.49 + 17 − 3	
					55.6							43 10.13 − 2.81	+11.7
	K				56.0							43 7.32	+1
	((δ) − D) $\frac{\kappa'}{100}$				53.8								
	α_2												
23	44 14	54 25	8.7	44	6.6 18.3	22.0	25.3	28.8	32.4	126 8 −7.62	25.36	44 25.36 − 7.77 + 18 − 3	
28 ~~23 15 10~~		~~54 28 3~~	~~8.1~~		8.3							44 17.74 − 2.98	
2843 2443		54 18?	8.9		10.1							44 14.76	
K					8.3								
((δ) − D) $\frac{\kappa'}{100}$													
α_1													
			8.6	43	58.8 44 17.0	20.5	24.1	27.5	31.2	203 −9.35	24.06	44 24.06 − 9.49 + 17 − 3	
					60.4							44 14.71 − 2.81	+11
K				44	62.9							44 11.90	+1 2
((δ) − D) $\frac{\kappa'}{100}$					0.7								
α_2													

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+29.2	3′ 43.2	39.5	3′	41,35	19	400		0′	54 19 46.93	
	1.46538					54 20	9.72			− 22	+11.90
d	9.76572						− 22.79			− 41	
	1.35779m									+1213	
56 ((δ) − D) $\frac{d'}{100}$										+ 40	
+11.63										− 2220	
+1 19.92 δ_1		39 56.92		20 56.6						19 3663	
	+28.5	3 44.8	35.1	3	39,95	19	640		0	19 47.71	
	1.45484					54 20	9.96			− 21	+12.40
d	9.76572						− 22.25			− 41	
	1.34725m									+1259	
((δ) − D) $\frac{d'}{100}$										+ 43	
+11.63										−24.70	
+1 19.92 δ_2		39 57.03		20 55.3						19 35.41	
	+18.5	4 45.5	42.4	14	43,95	8	440		10	54 8 52.61	
	1.26717					54 9	7.12			− 9	+11.73
62 d	9.76765						− 14.51			− 52	
	1.16151m									+1194	
((δ) − D) $\frac{d'}{100}$										+ 40	
+11.66										−22.15	
+1 19.92 δ_1		40 45.15		10 2.1						8 42.19	
	+15.1	4 49.1	40.0	14	44,55	8	3.80		10	8 53.52	
	1.17898					54 9	5.36			− 6	+12.23
d	9.76765						− 11.84			− 52	
	1.07332m									+1240	
((δ) − D) $\frac{d'}{100}$										+ 41	
+11.66										−24.65	
+1 19.92 δ_2		40 45.21		10 1.0						8 41.10	
	+27.1	2 23.6	20.6	27	22,10	55	2625		25	54 56 8.13	
	1.43297					54 56	28.97			− 19	+12.71
32 d	9.75931						− 20.84			− 26	
	1.31897m									+1276	
((δ) − D) $\frac{d'}{100}$										+ 40	
+11.70										−2210	
+1 20.00 δ_1		42 23.26		57 18.7						55 58.74	
	+21.5	2 29.9	20.2	27	25,05	55	23.30		25	56 8.32	
	1.33244					54 56	24.86			− 11	+13.38
d	9.75931						− 16.54			− 26	
	1.21844m									+1325	
((δ) − D) $\frac{d'}{100}$										+ 50	
+11.70										− 24.60	
δ_2 +1 20.00		42 23.01		57 17.1						55 57.10	
	+20.3	4 38.2	53.1	26	54,65	55	53.70		25	54 56 40.81	
	1.30750					54 56	56.42			− 10	+12.86
d	9.75931						− 15.61			− 21	
44	1.19350m									+1277	
((δ) − D) $\frac{d'}{100}$										+ 40	
+11.73										− 2205	
δ_1 +1 20.00		43 19.18		57 51.6						56 31.92 6	✓
	+25.7	1 55.0	44.0	26	49.50	55	58.85		25	56 40.66	
	1.40993					54 57	0.41			− 17	+13.43
d	9.75913						− 19.75			− 20	
	1.29875m									+1330	
((δ) − D) $\frac{d'}{100}$										+ 50	
+11.73										− 29.55	
δ_2 +1 20.00		43 19.05		57 49.5						56 29.54	
	+17.1	4 28.9	25.9	54	27,40	28	20.90		50	54 29 10.32	✓
	1.23300					54 29	23.62			− 7	+12.13
d	9.76413						− 13.30			− 49	
	1.12382m									+1229	
((δ) − D) $\frac{d'}{100}$										+ 40	
										− 21.95	
δ_1				F.F						29 0.50	
	+23.4	4 24.0	15.0	59	19,50	23	28.85		55	24 12.21	✓
	1.36922					54 24	30.41			− 14	+12.54
d	9.76413						− 18.20			− 47	
	1.26004m									+12.70	
((δ) − D) $\frac{d'}{100}$										+ 45	
+11.78										− 24.50	
δ_2 +1 20.04		44 23.68		25 20.3						24 0.25	

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Date$_1$ = 1871, Oct-22. (130) Observer A. M. Recorder W. A. R.

Date$_2$ = 1871, Nov-2. (132) Observer A. M. Recorder W. A. R.

(14)

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
23	h m s 45 15 44 25.4 κ	° ′ ″ 54 20 54 14.4	9.4 9.0	44	s 57.2 58.9 60.1 58.9	m s 45 17.0	s 20.4	s 23.7	s 27.6	s 31.1	11 98 −7.62	23.96	m 45	s 23.96 − 7.77 + 18 − 3
	((δ) − D) $\frac{\kappa'}{100}$												45	16.34 − 2.98
	α_1												45	13.36
			8.8	45	0.0 1.2 3.3 1.5	45 18.4	21.8	25.3	28.9	32.5	12 69 −9.35	25.38	45	25.38 − 9.49 + 17 − 3
	κ												45	16.03 − 2.81
	((δ) − D) $\frac{\kappa'}{100}$													
	α_2												45	13.22
23	47 20 46 30.0 κ	54 11 54 4.7	9.8 9.3	46	55.1 56.7 58.1 56.6	47 21.1	24.6	28.2	31.8	35.4	14 11 −7.62	28.22	47	28.22 − 7.77 + 18 − 3
	((δ) − D) $\frac{\kappa'}{100}$												47	20.60 − 3.00
	α_1												47	17.60
			9.2	46	55.1 56.9 59.1 57.0	47 22.8 ~~26~~	26.0	29.~~4~~5	33.4	37.0	14 86 −9.35	29.72	47	29.72 − 9.49 + 17 − 3
	κ												47	10.37 − 2.83
	((δ) − D) $\frac{\kappa'}{100}$													
	α_2												47	17.54
	Oct-22													
22	48 55 48 12.1 κ	54 44 54 37.7	8.5 8.5	48	30.5 32.1 34.0 32.2	56.5	0.0	3.6	7.1	10.7	31 79 −7.60	63.56	49	3.56 − 7.78 + 18 − 3
	((δ) − D) $\frac{\kappa'}{100}$												48	55.98 − 2.43
	α_1												48	53.55
	Oct-22													
23	8 17 7 37.3 κ	53 06 53 0.0	8.2	7	57.1 59.3 60.6 59.0	8 23.6	27.1	30.4	34.0	37.3	15 24 −7.62	30.48	8	30.48 − 7.76 + 17 − 3
	((δ) − D) $\frac{\kappa'}{100}$												8	22.86 − 2.60
	α_2												8	20.26
	Oct-22													
23	9 17 8 32.6 κ	54 14 54 9.0	8.4 8.3	9	1.7 3.5 5.9 3.8	16.0	19.5	23.1	26.6	30.1	11 53 −7.61	23.06	9	23.06 − 7.76 + 18 − 3
	((δ) − D) $\frac{\kappa'}{100}$												9	15.45 − 2.63
	α_1												9	12.82
	Oct-22													
23	11 25 10 40.0 κ	54 47 54 41.5	9.1 9.5	11	1.7 3.2 5.3 3.4	23.2	26.9	30.3	34.2	37.8	15 24 −7.61	30.45	11	30.48 − 7.76 + 18 − 3
	((δ) − D) $\frac{\kappa'}{100}$												11	22.89 − 2.67
	α_2												11	20.20
	Oct-22													
23	12 4~~9~~ 12 0.4 κ	53 42 53 36.5	~~8.9~~ 8.8 8.8	12	24.8 26.0 28.7 26.5	48.0	51.3	54.8	58.2	62.0	27 43 −7.61	54.86	12	54.86 − 7.76 + 18 − 3
	((δ) − D) $\frac{\kappa'}{100}$												12	47.25 − 2.65
	α_1												12	44.60
	Oct-22													
23	14 00 13 15.0 κ	55 01 54 55.3	9.0 9.3	13	48.1 49.9 51.3 49.7	14 01.2	3.7	7.2	10.9	14.5	3 65 −7.60	7.30	14	7.30 − 7.76 + 19 − 3
	((δ) − D) $\frac{\kappa'}{100}$												13	59.70 − 2.70
	α_2												13	57.00

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+25.1	3 54.1	50.5	3′	52.30	18	56.05		0	54 19 39.18	
	1.39967					54 19	58.77			− 16	+11.94
d	9.76572						− 19.59			− 43	
	1.29208m									+1213	
42										+ 40	
((δ) − D) $\frac{d'}{100}$										−2290	
+11.81 δ_1		45 25.17		20 49.3						19 29.22	
+1 20.04											
	+23.9	3 55.1	45.2	3	50.15	18	5820		0	19 41.10	
	1.37840					54 19	59.76			− 15	+12.47
d	9.76572						− 18.66			− 43	
	1.27081m									+1262	
										+ 43	
((δ) − D) $\frac{d'}{100}$										−24.45	
+11.81 δ_2		45 25.03		20 49.2						19 29.12	
+1 20.04											
	+316	3 16.9	13.0	13	1495	9	3340		10	54 10 11.35	
	1.49969					54 10	36.12			− 26	+11.75
d	9.76747						− 24.77			− 35	
50	1.39385m									+1196	
((δ) − D) $\frac{d'}{100}$										+ 40	
+11.88										−2180	
δ_1 +1 20.08		47 29.48		11 21.4						10 1.30	
	+32.7	3 17.8	7.7	13	1275	9	3560		10	10 11.53	
	1.51455					54 10	37.16			− 28	+12.23
d	9.76747						− 25.63			− 38	
	1.40871m									+1244	
((δ) − D) $\frac{d'}{100}$										+ 42	
+11.88										−24.35	
δ_2 +1 20.08		47 29.42		11 19.5						9 59.41	
	+31.4	4 57.5	56.2	39	5685	42	51.50		35	54 43 29.95	
	1.49693					54 43	54.22			− 26	+12.13
d	9.76146						− 24.27			− 35	
	1.38508m									+1254	
((δ) − D) $\frac{d'}{100}$				3						+ 40	
+9.98										−2375	
+1 16.40 δ_1		49 3.53		44 44.7						43 25.33	
	+31.5	2 3.1	0.7	1 X 8	1.90	5	4645		15	53 6 23.86	
	1.49881					53 6	49.17			− 26	+10.58
d	9.77829						− 25.31			− 22	
	1.40329m									+1075	
((δ) − D) $\frac{d'}{100}$										+ 31	
+10.70										− 23.40	
δ_2 +1 18.20		8 30.96		6 29.2						48 11.04	
	+19.3	4 7.9	4.7	9	6.30	13	42.05		5	54 14 29.67	
	1.28556					54 14	44.77			− 9	+11.89
d	9.76660						− 15.10			− 45	
	1.17885m									+1203	
((δ) − D) $\frac{d'}{100}$										+ 40	
+10.66		3.								−2345	
δ_1 +1 18.28		9 24.48		15 36.4						14 18.11	
	+27.1	1 28.1	25.6	36	2685	46	21.50		35	54 47 3.30	
	1.43297					54 47	24.22			− 19	+12.67
d	9.76073						− 20.92			− 15	
	1.32059m									+1261	
((δ) − D) $\frac{d'}{100}$										+ 40	
+10.69										−2340	
δ_2 +1 18.44		11 30.89		48 11.0						46 52.57	
	+28.4	1 35.7	32.9	41	3430	41	14.05		40	53 41 54.26	
	1.45332					53 42	16.77			− 21	+11.46
d	9.77233						− 22.57			− 17	
	1.35234m									+1147	
((δ) − D) $\frac{d'}{100}$										+ 37	
+10.80										−23.30	
δ_1 +1 18.52		12 55.40		43 0.9						41 42.42	
	+17.6	2 19.7	16.8	2 X 2	18.25	0	30.10		20	55 2 19.32	
	1.24551					55 2	32.82			− 8	+13.05
d	9.75805					1	− 13.50			− 14	
	1.13025m									+1287	
((δ) − D) $\frac{d'}{100}$										+ 40	
+10.76										−2330	
δ_2 +1 18.60		14 9.76		2 27.7						2 9.07	
										1	

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Date$_1$ = Oct. 22. 1871 Observer A. M. Recorder W. A. R. Date$_2$ = Observer Recorder 16 Ru

Star.	α	δ	Mag.	T_s	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
23 h	m s 15 11 14 26.8	° ′ ″ 54 0 58 54 52.5	9.2 9.4	m s 14 56.7 56.1 59.5 58.1	m s 15 18.5	s 17.4	s 21.0	s 24.5	s 27.9	10 48 -760	20 86	m 15	s 20.86 − 7.76 + 19 − 3 15 13.76 − 2.74 15 11.55
κ													
((δ) — D) $\frac{\kappa'}{100}$													
α_1	Oct. 22												
23	17 20 16 25.7	54 23 54 17.7	9.2 9.0	17 4.0 17.3 7.2 5.5	23.6	29.4	31.0	34.5	38.1	15 49 570 -761	30 98 06	17	30.98 − 7.76 + 18 − 3 17 23.37 − 2.72 17 20.65
κ													
((δ) — D) $\frac{\kappa'}{100}$													
α_2													
κ													
((δ) — D) $\frac{\kappa'}{100}$													
α_1													
κ													
((δ) — D) $\frac{\kappa'}{100}$													
α_2													
κ													
((δ) — D) $\frac{\kappa'}{100}$													
α_1													
κ													
((δ) — D) $\frac{\kappa'}{100}$													
α_2													
κ													
((δ) — D) $\frac{\kappa'}{100}$													
α_1													
κ													
((δ) — D) $\frac{\kappa'}{100}$													
α_2													

$\Delta\sqrt{T} = 1.62 - [+.070] + 32 + 07 = 1.91$ [183]

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	δ	δ 41.7	38.4	25	40 00	54	8.30		25	54 57 53.50	
	+22.8					54 58	11.02			− 13	+13.00
d	1.35793						− 17.52			− 7	
$((\delta) - D)\frac{d'}{100}$	9.75895									+ 1280	
	1.24357									+ 40	
										− 23.25	
+10.81 δ_1		15 21.36		59 1.9						57 43.25	
+1.1868											
	+25.5	0 21.0	18.9	0	19 95	22	28.40		0	54 23 11.25	
	1.40654					54 23	31.12			− 17	+12.39
d	9.76501						− 19.87			− 3	
$((\delta) - D)\frac{d'}{100}$	1.29824									+ 1219	
										+ 40	
										− 23.15	
+10.91 δ_2		1 31.56		24 19.3						23 0.49	
+1.1884											
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											

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Date$_1$ = 1871 Nov 7 n = +.26 Observer W.A.R. Recorder A.M. Date$_2$ = 1871, Nov 9 n = +.23 Observer W.A.R. Recorder A.M.

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
21	m s 36 56 / 36 9.2	° ′ 51 53 / 57 48.5	8.5 / 8.5	36	56.5 / 58.1 / 58.8	52.4	56.8	59.0	62.2	65.6	29 50 −8.58	58.80	36 59.00 − 8.89 + 33 − 2
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$		8.5	36	26.8 / 28.9 / 31.1 / 26.9	52.6	56.0	59.5	62.7	66.1	29 69 −9.07	59.38	36 59.38 − 8.89 − 9.22 + 17 − 2
	α_1												36 50.42 − 1.88 36 48.54
			8.5	36	36.1 / 37.9 / 39.5 / 37.8	52.0	55.2	58.7	61.9	65.2	29 30 −8.29	58.60	36 58.89 − 8.57 + 30 − 2
	κ	31 52 / 32 42 / 33 32 / 34 46 / 35 43		36 [illegible] / 31 52 / 32 42 / 33 32 / 34 46 / 35 43									36 50.31 − 1.83 36 48.48
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												
22	38 11 / .37 20.4	51 32 / 51 27.7	9.2 / 8.7	38	2.0 / 2.8 / 5.6	3.5	6.8	10.1	13.3	16.8	5 05 −8.58	10.10	38 10.10 − 8.89 + 33 − 2
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$		8.8	37	53.1 / 54.7 / 57.0 / 54.9	38 4.0	7.1	10.5	13.9	17.0	5 25 −9.08	10.50	38 10.50 − 9.22 + 16 − 2
	α_1												38 1.42 − 1.92 37 59.63 59.50
			9.2 / 9.1	37	47.8 / 49.1 / 52.0 / 49.6	38 3.0	6.4	9.7	12.9	16.2	4 82 −8.30	9.64	38 1.61 − 8.57 + 29 − 2
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												38 1.34 − 1.84 37 59.50
	α_2												
22	38 57 / 38 16.3	51 31 / 51 25.9	9.4 / 9.3	38	50.9 / 53.2 / 55.3	39 0.3	3.7	7.1	10.4	13.6	3 51 −8.58	7.02	39 1.02 − 8.89 + 33 − 2
	κ			53.1	1.0								38 58.44
	$((\delta) - D)\frac{\kappa'}{100}$		9.0	38	42.0 / 43.4 / 46.6 / 44.0	39 4.3	7.6	10.8	14.0		3 77 −9.08	7.54	39 1.54 − 9.22 + 16 − 2
	α_1												38 56.53
			9.3	38	41.0 / 43.3 / 45.7 / 43.3	39 0.1	3.4	6.7	10.0	13.4	3 36 −8.30	6.72	39 1.72 − 8.57 + 29 − 2
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												38 58.42 − 1.85 38 56.57
	α_2												
22	40 27 / 39 46.5	51 51 / 51 45.6	9.0 / 9.0	40	8.4 / 10.0 / 12.7	29.5	32.8	36.3	39.5	42.8	18 09 −8.58	36.18	40 36.18 − 8.89 + 33 − 2
	κ			10.3	30.0								40 27.60
	$((\delta) - D)\frac{\kappa'}{100}$		9.0	40	3.2 / 5.8 / 8.4 / 5.8	30.4	36.7	40.1	43.4		18 26 −9.08	36.52	40 36.72 − 9.22 + 16 − 2
	α_1												1.92 25.68
			9.0	40	4.3 / 5.8 / 8.0 / 6.0	29.2	32.7	35.9	39.1	42.6	17 95 −8.30	35.90	40 27.44 − 1.84 25.60
	κ												40 27.60
	$((\delta) - D)\frac{\kappa'}{100}$												− 1.87 40 25.73
	α_2												
22	41 35 / 41 54.2	51 31 / 51 26.0	9.2 / 9.1	41	19.8 / 21.7 / 23.7	38.3	41.7	45.0	48.2	51.7	22 49 −8.58	44.98	41 44.98 − 8.89 + 33 − 2
	κ			21.7									
	$((\delta) - D)\frac{\kappa'}{100}$		9.1	41	13.9 / 16.6 / 18.5 / 16.3	38.9	42.1	45.4	48.5	51.2	22 74 −9.08	45.48	41 45.48 − 9.22 + 16 − 2
	α_1												41 36.40 − 1.93 34.47
			9.2	41	10.5 / 12.3 / 14.0 / 12.2	38.0	41.3	44.5	47.8	51.3	22 29 −8.30	44.58	41 44.58 − 8.57 + 29 − 2
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												41 36.28 − 1.88 41 34.40
	α_2												

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Nov. 7 +1′ 3.87 −.11
" 6 +1 3.81 −.11
Runs " 9 +1 3.13 −.11

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′	
	+1.2	0 2.8	50.0						36	51 53 31.93	53 35.75	
	0.07918	0 25.2	13.4	30	19.20	52	29.05			0	+10.45 − 25	+10.35
d	9.79031	9.99618m				51 53	32.92	−0.99		− 3	− 0	
	+30.5	0 2.8	50.0	29	58.40	52	51.95		30	+ 9.99	+ 10.11	
				30	16.0	51 53	55.76			+ 49	+ 49	
	1.48430						− 20.01			−26.65	− 26.50	
δ₁	9.79031	36 58.41		54 30.7						53 15.73	53 19.60	
	1.30130m	58.29		29.4							14.40	
	+20.8	0 28.2	13.4									
	1.31806	0 8.3	57.0	29	56.65	52	51.70		30	53 37.65		
d	9.79031			30	2.65	51 53	48 54.83			− 12	+10.42	
	1.23506m						− 17.18			+ 1		
((δ) − D) $\frac{d'}{100}$										+10.04		
+9.87										+ 49		
+1 15.00 δ₂		36 58.35		54 30.2						−26.90		
										53 21.17	15.20	
	+6.7	0 33.2	22.3		+1″				50	51 33 8.69	33 11.42	
40	0.82607	0 40.0	27.9	50	33.95	32	12.40			− 1	+10.03 − 7	+10.10
d	9.79367	0.74643m				51 33	18.27	−5.58		− 6	− 5	
+9.93	+15.6	0 33.2	22.3	50	27.75	32	20.60		50	+ 9.62	+ 9.74	
+1 15.16 ((δ) − D) $\frac{d'}{100}$						51 33	24.41			+ 48	+ 48	
	1.19312						− 12.99			−26.60	− 26.55	
86	9.79367	38 9.56		34 10.3						32 4.12	32 5.97	
+9.93 δ₁	1.11348m	9.43		10.1						55		
+1 15.16												
	+20.0	0 40.0	27.9									
	1.30103	0 27.3	17.2	50	22.25	32	26.10		50	33 12.58		
d	9.79367					51 33	29.23			− 11	+10.00	
	1.22139m						− 16.65			− 4		
((δ) − D) $\frac{d'}{100}$										+ 9.67		
+9.93										+ 48		
+1 15.16 δ₂		38 9.43		34 10.9						−26.85		
										32 55.73		
	+13.9	2 35.8	23.0	52	29.40	30	18.95		50	51 31 11.24	31 10.38	
	1.14301					51 31	22.82			− 5	+9.74 − 14	+9.78
d	9.79399						− 11.58			− 27	− 26	
+9.96	1.06369m											
+1 15.28 ((δ) − D) $\frac{d'}{100}$	+23.5	2 28.0	16.4	52	22.20	30	26.15		50	+ 9.58	+ 9.70	
						51 31	29.96			+ 48	+ 48	
	1.37107						− 19.58			−26.55	− 26.45	
82	9.79399	39 6.49		32 9.7						30 54.43	30 53.71	
+9.96 δ₁	1.29173m	6.49		9.0								
+1 15.28												
	+23.4	2 26.2	16.0	52	21.15	30	27.20		50	31 10.84		
	1.36922					51 31	30.33			− 14	+9.72	
d	9.79399						− 19.49			− 26		
	1.28990m									+ 964		
((δ) − D) $\frac{d'}{100}$										+ 48		
+9.96										−26.80		
+1 15.28 δ₂		39 6.53		32 9.0						30 53.76		
	+25.9	2 4.1	50.6	31	57.35	50	51.00		30	51 51 33.46	51 33.43	
34	1.41330					51 51	54.87			− 18	+10.04 − 25	+10.11
d	9.79063						− 21.41			− 22	− 21	
+9.97	1.33062m											
+1 15.44 ((δ) − D) $\frac{d'}{100}$	+30.1	1 59.7	47.0	31	53.35	50	55.00		30	+9.95	+10.09	
						51 51	58.81			+ 49	+ 48	
62	1.48714						− 25.38			−26.60	− 26.50	
δ₁	9.79063	40 35.65		52 32.3						51 16.90	51 17.04	
+9.97	1.40446m	35.66		32.5								
+1 15.44												
	+29.9	1 56.0	47.0	31	52.50	50	55.85		30	51 34.26		
	1.47567					51 51	58.98			− 24	+10.05	
d	9.79063						− 24.72			− 21		
	1.39299m									+1001		
((δ) − D) $\frac{d'}{100}$										+ 49		
+9.97										− 26.83		
+1 15.44 δ₂		40 35.70		52 32.9						51 17.46		
	+23.3	2 17.5	5.1	52	11.30	30	37.05		50	51 31 21.52	31 20.79	
	1.36736					51 31	40.92			− 14	+9.68 − 23	+9.73
50 d	9.79383						− 19.40			− 24	− 23	
+10.03	1.16119m											
+1 15.60 ((δ) − D) $\frac{d'}{100}$	+27.2	2 12.5	1.6	52	7.05	30	41.30		50	+ 958	+ 971	
						51 31	45.11			+ 48	+ 48	
	1.46538						− 24.32			−26.55	−26.45	
δ₁	9.79383	41 44.50		32 20.2						31 4.65	31 4.07	
+10.03	1.38590m	44.47		19.7								
+1 15.60												
	+32.4	2 8.7	57.8	52	3.25	30	45.10		50	31 21.25		
	1.51055					51 31	48.23			− 28	+9.61	
d	9.79383						− 26.98			− 23		
	1.43107m									+964		
((δ) − D) $\frac{d'}{100}$										+ 48		
+10.03										−26.80		
+1 15.60 δ₂		41 44.43		32 19.7						31 4.06		

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Date$_1$ = Nov 7 (134) Nov 6 (133)

Observer ~~A.H.~~ W.A.R.
Recorder ~~W.A.R.~~ W.A.R. A.M.

Date$_2$ = Nov 9 (136)

Observer ~~A.H.~~ W.A.R. 20
Recorder ~~W.A.R.~~ A.M.

Runs

Star.	α	δ	Mag.	T_s	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
21	m 42 28	° ′ 51 17	8.5	m 42	s 31.6	s 12.8	16.4	19.6	22.7	26.1	9 76	19.52	m 42 s 19.52
	41 ~~47.1~~ 28.6	51 ~~12.8~~ 10.4	8.2 7.8		37.0 32.3						−8.59		− 8.89
	κ												+ 32
	((δ) − D) $\frac{\kappa'}{100}$		6.5	42	~~54.5~~ 56.0	35.0	38.2				42	8.99	− 2
	41 47.1	51 12.3		42	8.8 10.6	32.2	35.5	39.0	42.0	45.3	19 40	38.80	42 10.93 ~~5.99~~ 38.80
	α_1			10.6	12.5						−9.08		− 1.94
											42	27.75	− 9 22
	41 47.1		8.0	42	53.7 55.3 58.7 55.7	31.4	34.6	38.1	41.3	44.7	19 01	38.02	+ 16
	κ										−8.31		− 2 29.72
	((δ) − D) $\frac{\kappa'}{100}$												42 38.02 − 1.97
	α_2												− 8 57 ~~8.99~~
													+ 28 ~~26.85~~
													− 2 ~~27.75~~
													42 29.71
													− 1.89
													42 27.82
22	43 35	51 16	8.5	43	58.0	38.3	41.7	45.0	48.1	51.5	22 46	44.92	43 44.92
	42 ~~64.3~~	51 ~~11.4~~	8.6		59.7						−8.59		− 8.89
	κ			59.9	62.0						43	34.37	+ 32
	((δ) − D) $\frac{\kappa'}{100}$		8.3	43	9.1	39.0	42.0	45.4	48.5	52.0	22 69	45.38	43 36.33 − 1.96
					10.8						−9.08		44.38
	α_1				12.5								− 9 22
					10.8						43	34.32	+ 16
													43 36.30
													− 1.98
			6.8										
	κ												
	((δ) − D) $\frac{\kappa'}{100}$												
	α_2												
22	45 15	51 ~~52.8~~	8.1	45	21.1	39.5	42.8	46.0	49.4	52.7	23 04	46.08	45 ~~46.15~~ 10
	44 ~~44.7~~ 55.5	51 ~~40.7~~ 30.1	7.2		22.9 26.0						−8.58		− 8.89
	κ		~~7.0~~		23.3								+ 33
	((δ) − D) $\frac{\kappa'}{100}$												− 2
													45 37.50
	α_1												− 1.98
													45 35.52
			6.5	45	10.6 12.6 15.3 12.8	39.3	42.0	45.8	49.3	52.6	22 96	45.92	45.97
	κ										−8.30		− 8 57
	((δ) − D) $\frac{\kappa'}{100}$												+ 29
													− 2
	α_2												45 37.62
													− 1.9x3
													45 35.69 91
22	46 43	51 21	9.8	46	39.0 ~~43.0~~	46.1	49.5	52.7	55.9	59.0	26 32	52.64	46 52.64
	46 10	51 15.4	9.4		41.0 43.3 41.1						−8.58		− 8.89
	κ												+ 33
	((δ) − D) $\frac{\kappa'}{100}$												− 2
													46 44.06
	α_1												− 1.99
													46 42.07
			9.7	46	~~28.8~~ 29.8 31.0 29.8	46.0	49.2	52.4	55.6	~~59.0~~ 57.0	26 22	52.44	46 52.44
	κ										−8.30		− 8 57
	((δ) − D) $\frac{\kappa'}{100}$												+ 29
													− 2
	α_2												46 44.14
													− 1.9x4
													46 42.20
22	47 53	52 02	8.8	47	43.4 45.3 47.3 45.3	54.7	58.0	61.3	64.5	68.1	30 66	61.32	48 ~~1.32~~
	47 11.1	51 57.2	8.7								−8.58		− 8.89
	κ												+ 33
	((δ) − D) $\frac{\kappa'}{100}$												− 2
													47 52.74
	α_1												− 2.01
													47 50.73
			8.4	47	34.1 36.0 38.7 36.2	~~54.4~~	57.7	61.2	64.4	67.7	30 54	61.08	48 1.08
	κ										−8.30		− 8 58
	((δ) − D) $\frac{\kappa'}{100}$												+ 30
													− 2
	α_2												47 52.88
													− 1.96
													47 50.82

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	s'
							30.05			44.65	
	−12.8	3′ 26.4	45.2	8′	35.80	11	42.35		5′	51 15 27.45	18 12.36
+1006					18.30	51 15	+6.42	83.92		− 4	+9.32 − 21 +9.70
+1 1568 d	1.107212n						+ 10.73			− 40	− 3
	9.796552	0 22.1	10.3	3	16.20	17	32.15		5	+ 9.30	+ 947
((δ) − D) $\frac{d'}{100}$	1.03042			43.1		51 18	35.96			+ 46	+ 47
	+28.2						− 23.60			−26.50	diff. #
18 δ_1	1.45025	42 19.05		16 25.6					Retrieve.	15 9.97	− 26.40
	9.795891	37.83		19 11.3		16	54.26			27.47	17 55.66
+1008	1.57 3.8 3n	3 9.8	58.4	8	385−	14	44.50		5	16 246	8 1222
+1 1568				5	34.05	51 17	47.63	57.39		− 9	+9.40
	−17.7						+ 14.83			− 34	
d	1.24797n									+ 937	
	9.796356									+ 46	
((δ) − D) $\frac{d'}{100}$	1.17102									−26.80	
+1008				19 10.5						75 45.01	
+1 1568 δ_2		42 37.90		17 0.74						17 54.82	
	−15.0	1 27.8	15.7	6	21.75−	16	26.60		5	51 17 43.03	17 42.15
	1.17609n					51 17	30.47			− 6	+9.60 − 32 +9.53
46 d	9.796805						+12.56			− 15	− 8
	1.04883	0 47.3	34.8	3	41.05	17	7.30		5	+ 935	+ 947
+1010 ((δ) − D) $\frac{d'}{100}$	+34.6					51 18	11.11			+ 46	+ 46
+1 1580	1.53908						− 28.96			−26.50	−26.40
	9.796005	43 44.47		18 41.9						17 26.13	17 25.28
+1010 δ_1	1.46182n	44.42		41.1							
+1 1580		0 [illegible]	47.2	3−	52.60	16	55.75		5		
						51 17	58.88				
d											
((δ) − D) $\frac{d'}{100}$											
δ_2											
	+22.8	3 14.7	1.9	48	8.30	34	40.05		45	51 35 24.96	
	1.35793					51 35	43.92			− 14	+9.65
d	9.795319						− 18.96			− 34	
	1.27781n									+ 965	
16 ((δ) − D) $\frac{d'}{100}$										+ 48	
+1014 δ_1		45 45.66		36 24.0						−26.53	
+1 1604										35 8.06	
	+33.1	3 4.2	53.4	47	5880	34	49.55		45	35 25.16	
	1.51983					51 35	52.68			− 29	+9.57
d	9.795319						− 27.52			− 33	
	1.43971n									+ 971	
((δ) − D) $\frac{d'}{100}$										+ 48	
+1014 δ_2		45 45.83		36 24.0						−26.80	
+1 1604										35 7.93	
	+11.5	3 7.8	53.4	3	0.35−	19	48.00		0	51 20 42.25	
	1.06070					51 20	51.87			− 3	+9.51
d	9.795558						− 9.62			− 33	
20	0.98297n									+ 940	
((δ) − D) $\frac{d'}{100}$										+ 47	
+1019 δ_1		46 52.26		21 41.42						−26.50	
+1 1616										20 25.26	
	+22.6	2 54.8	40.4	2	47.60	20	0.75		0	20 44.98	
	1.35411					51 21	3.88			− 14	+9.48
d	9.795558						− 18.90			− 31	
	1.27638n									+ 946	
((δ) − D) $\frac{d'}{100}$										+ 47	
+1019 δ_2		46 52.39		21 43.9						−26.75	
+1 1616										20 27.71	
	+16.0	0 44.9	32.8	20	38.85−	2	9.50		20	52 3 0.20	
	1.20412					52 3	13.37			− 7	+10.52
d	9.788586						− 13.17			− 5	
24	1.11967n									+ 1016	
((δ) − D) $\frac{d'}{100}$										+ 50	
+1017										−26.53	
+1 1628 δ_1		48 0.90		4 0.4						2 44.17	
	+24.9	0 36.7	25.8	20	31.25−	2	17.10		20	2 59.95	
	1.39620					52 3	20.25			− 17	+10.49
d	9.788586						− 20.60			− 6	
	−1.31175n									+1022	
((δ) − D) $\frac{d'}{100}$										+ 50	
+1017										−26.80	
+1 1628 δ_2		48 0.99		3 59.9						2 43.64	

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1871phae.proj.1578R

Date$_1$ = 1871, Nov. 7 / Nov. 6 — Observer ~~A. M.~~ W. A. R. — Recorder ~~W. A. R.~~ A. M.

Date$_2$ = Nov. 9 — Observer ~~A. M.~~ W. A. R. — Recorder ~~W. A. R.~~ A. M.

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
2	49m 43s	51° 12′	9.8	49m	19.8s	47.0s	50.2s	53.4s	56.6s	60.0s	26 72	53.44s	49m 53.44s
	49 1.3	51 6.4	9.3		22.0						−8.59		− 8.89
	κ				25.1								+ 32
	((δ) — D) $\frac{\kappa'}{100}$				22.3								− 2
													49 44.85
	c_1												− 2.03
													49 42.82
			9.4	49	12.3	46.7	49.9	53.1	56.4	59.7	26 58	53.16	49 53.16
	κ				14.3						−8.32		− 8.58
					17.1								+ 28
	((δ) — D) $\frac{\kappa'}{100}$				14.5								− 2
													49 44.84
	c_2												− 1.98
													49 42.86
2.2	51 04	51 28	9.2	50	44.6	51 7.0	10.3	13.5	16.7	20.0	6 75	13.50	51 13.50
	50 22.5	51 19.4	9.0		46.7						−8.58		− 8.89
	κ				49.2								+ 33
	((δ) — D) $\frac{\kappa'}{100}$				46.8								− 2
													51 4.92
	a_1												− 2.04
													51 2.88
			9.0	50	38.9	51 6.6	9.7	13.0	16.5	19.7	6 55	13.10	51 13.10
	κ				40.7						−8.31		− 8.58
					43.5								+ 29
	((δ) — D) $\frac{\kappa'}{100}$				41.0								− 2
													51 4.79
	a_2												− 2.00
													51 2.79
2.2	53 36	51 57	6.2	53	13.6	39.4	42.8	46.2	49.4	52.9	23 07	46.14	53 46.14
	52 52.8	51 54.8	6.0		15.9						−8.58		− 8.89
	κ				18.1								+ 33
	((δ) — D) $\frac{\kappa'}{100}$				15.8								− 2
													53 37.56
	a_1												− 2.08
													53 35.48
			6.5	53	12.3	34.1	42.5	45.9	49.1	52.6	22 92	45.84	53 45.84
	κ				13.6						−8.30		− 8.58
					16.7								+ 30
	((δ) — D) $\frac{\kappa'}{100}$				14.2								− 2
													53 37.54
	a_2												− 2.03
													53 35.51
2.2	54 26	51 42	9.0	54	26.8	28.1	36.3	34.7	37.9	41.3	17 25	34.66	54 34.66
	53 43.3	51 36.6	8.8		28.6						−8.58		− 8.89
	κ				31.0								+ 33
	((δ) — D) $\frac{\kappa'}{100}$				28.8								− 2
													54 26.08
	a_1												− 2.08
													54 24.00
			9.0	54	12.7	27.9	31.2	34.4	37.6	41.0	17 21	34.42	54 34.42
	κ				14.0						−8.31		− 8.58
					15.5								+ 29
	((δ) — D) $\frac{\kappa'}{100}$				14.0								− 2
													54 26.15
	a_2												− 2.04
													54 24.27
2.2	57 15	51 30	9.2	56	50.1	57 1.6	23.0	26.3	29.6	32.8	13 03	26.26	57 26.26
	56 33.3	51 25.1	9.2		51.8						−8.58		− 8.89
	κ				54.7								+ 33
	((δ) — D) $\frac{\kappa'}{100}$		9.0	57	30.0	0.5	4.0	7.2	10.7	14.1	3 68	7.36	− 2
					32.0						−9.08		57 17.68
	a_1				35.2								57 15.56
					32.4								+ 16
													− 2
													56 58.18
			9.2	55	40.2	56 3.7	7.2	10.6	13.8	17.1	5 03	10.06	56 10.06
	55 17.3	51 40.8			42.5						−8.30		− 8.58
	κ			44.1	45.7								+ 30
	((δ) — D) $\frac{\kappa'}{100}$				47.9								− 2
				56	51.7	57 19.7	22.8	26.0	29.4	32.7	13 06	26.12	56 26.12
	56 33.3	51 25.1			54.0						−8.30		− 8.58
	a_2				51.4								+ 30
					54.0								− 2
													57 17.82
													− 2.06
													54 15.76

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1871phaa.proj.15760

Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+31.1	1 56.8	34.2	11′	40.50	11	985		20″	51 11 45.63	
	1.49276					51 12	11.72			− 26	+9.27
d	9.79699						− 26.09			− 18	
18	1.41644n									+ 925	
((δ) — D) $\frac{d'}{100}$										+ 46	
+10.28										−26.45	
+1 16.48 δ₁		49 53.10		12 44.9						11 28.45	
	+38.7	1 38.6	26.9	11	32.75	11	1560		10	11 46.27	
	1.587771					51 12	18.73			− 40	+9.18
d	9.79699						− 32.46			− 17	
	1.51139n									+929	
((δ) — D) $\frac{d'}{100}$										+ 46	
+10.28										−26.70	
+1 16.48 δ₂		49 53.14		12 45.2						11 28.75	
	+26.7	4 1.2	47.2	58	54.20	23	5415		55	51 24 35.73	
	1.426511					51 24	58.02			− 19	+9.33
d	9.79494						− 22.29			− 43	
49	1.34814n									+ 948	
((δ) — D) $\frac{d'}{100}$										+ 47	
+10.30										−26.45	
+1 16.64 δ₁		51 13.18		25 35.2						24 18.61	
	+32.1	3 55.1	42.9	58	49.00	23	5935		55	24 35.68	
	1.506511					51 25	2.48			− 27	+9.30
d	9.79494						− 26.80			− 43	
	1.42814n									+953	
((δ) — D) $\frac{d'}{100}$										+ 47	
+10.30										−26.70	
+1 16.64 δ₂		51 13.09		25 34.9						24 18.28	
	+30.3	0 34.1	18.2	25−	2465−	57	2370		25	51 58 2.58	
	1.481144					51 58	27.57			− 24	+10.28
d	9.78967						− 24.99			− 4	
30	1.39780n									+10,06	
((δ) — D) $\frac{d'}{100}$										+ 50	
+10.34										−26.50	
+1 16.88 δ₁		53 45.82		59 3.2						57 46.36	
	+31.6	0 28.6	17.7	25−	23.15−	57	2520		25	58 2.26	
	1.499669					51 58	28.33			− 26	+10.32
d	9.78967						− 26.07			− 4	
	1.41605n									+10~~78~~	
((δ) — D) $\frac{d'}{100}$										+ 50	
+10.34										−26.75	
+1 16.88 δ₂		53 45.85		59 2.7						57 45.83	
	+5.9	1 42.0	27.7	41	34.85−	41	1350		40	51 42 12.48	
	1.770851					51 42	17.37			− 1	+10.08
d	9.79224						− 4.89			− 18	
24	0.68978n									+9.78	
((δ) — D) $\frac{d'}{100}$										+ 49	
+10.38										−26.45	
+1 16.96 δ₁		54 34.38	[1]	43 13.1						41 56.11	
	~~4~~	1 26.4	36.9	41	~~4~~ 1.65−	41	2670		40	42 ~~1~~ 52.90	
	~~−19.6~~					51 42	29.83			− 11	+10.06
d	+20.4						− 16.93			− 15	
	1.309163	~~3 17.4 5.3~~								+983	
((δ) — D) $\frac{d'}{100}$	9.79224									+ 49	
+10.38	1.22856n									−26.70	
+1 16.96 δ₂		54 34.45		43 13.2						41 56.26	
	+34.1	2 56.3	~~54.3~~	52	50.30	29	6805		60	51 30 33.51	30 11.71 ✓
	1.532755					51 31	1.92			− 31 +9.44	− 33 +9.49
d	9.79399	1.45343n					− 28.41			− 32	− 35
14	+35.0	3 17.4	5.3	53	11.35−	29	3700		50	+ 9.59	+ 969
+10.47 ((δ) — D) $\frac{d'}{100}$ +1 17.24	1.544407					51 36	40.87			+ 48	+ 48
	9.79399						− 29.16			−26.85	− 26.25
δ₁	1.46475n	57 26.03		31 33.8						30 16.60	29 54.95
	~~+26.4~~	2 57.9	46.7	52	52.30	29	5605		50	30 ~~32.44~~ 37.19	30 ~~32.44~~ ✓
+10.44	1.421160					51 30	59.18			− 18 +9.62	~~37.47~~ +9.53
+1 17.24 d	9.79399						~~−21.99~~			− 31	− 27
	1.34228n						− 26.74			+963	− 31
((δ) — D) $\frac{d'}{100}$	+32.1									+ 48	+ 963
	1.506511									−26.65	+ 48
δ₂	9.79399	56 10.53									− 26.65
+10.46	1.42719n	57 26.22		31 32.6						30 ~~1541~~ 20.16	30 ~~2007~~ 15.32
+1 17.24											

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1871phae.proj.1578R

Date$_1$ = 1871, Nov. 7, 133 Nov. 6. 134

Observer W. A. R. A. M. W. A. R.
Recorder A. M. W. A. R. A. M.

Date$_2$ = 1871 Nov. 9 136

Observer A. M. W. A. R. 24
Recorder W. A. R. A. M.

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
22½	m s 58 30 57 54.8 κ	° ′ ″ 51 26 51 20.6	8.9 8.9	m s 58 12.3 13.7 14,0 16.0	40.9	44.3	47.5	50.8	54.1	s 23 76 −8.58	47.52	m s 58 47.52 − 8.89	
	$((\delta) - D)\frac{\kappa'}{100}$		8.8	58 14.6 16.8 17.0 16.8	41.3	44.7	48.0	51.1	54.5	23 96 −9.08	47.92	+ 33 − 2 58 35 58.94 − 2.13 58 47.92 48.23 − 9 22 58 36.81 + 16 − 2	
	a_1											58 38.84 58 36.69 − 2.09 15	
	κ		9.2	57 47.8 52.1 52.3 50.0	58 0.1	3.5	6.9	10.0	13.5	3 40 −8.31	6.80	58 6.80 − 8.58 + 29 − 2	
	$((\delta) - D)\frac{\kappa'}{100}$											57 58.49 − 2.08 57 56.41	
	a_2												
23	0 37 59 55.5 κ	51 27 51 22.0	8.6 8.0	0 10.6 12.6 12.7 15.0	42.0	45.4	48.6	52.0	55.3	24 33 −8.58	48.66	0 48.66 − 8.89 + 33	
	$((\delta) - D)\frac{\kappa'}{100}$		8.4	0 15.0 16.9 18.5 16.9	42.5	45.7	49.1	52.4	55.6	24 53 −9.08	49.06	0 40.08 − 2.18 49.06 29.35 − 9 22 37.93 + 16 − 2	
	a_1											0 39.98 0 37.80 − 2.18	
	κ		8.5	0 14.5 17.0 18.8 16.7	41.9	45.0	48.3	51.5	54.7	24 14 −8.31	48.28	0 48.28 − 8.58 + 29 − 2	
	$((\delta) - D)\frac{\kappa'}{100}$											0 39.97 − 2.10 0 37.87	
	a_2												
23	1 49 1 52 κ	51 54 51 48.0	9.5 9.4	1 49.0 50.7 50.9 53.2	52.0	55.0	58.4	61.6	64.8	29 18 −8.58	58.36	1 58.36 − 8.89 + 33	
	$((\delta) - D)\frac{\kappa'}{100}$		9.5	1 52.7 54.1 57.3 54.7	57.0	55.5	58.7	2.0	5.3	29 35 −9.07	58.70	1 49.72 − 2.17 1 58.70 47.61 − 9 22 + 17 − 2	
	a_1											47.44 1 49.63	
	κ		9.6	1 58.6	51.2	54.6	—	61.2	64.8	−8.31		1 89.95 − 8.58 + 29 − 2	
	$((\delta) - D)\frac{\kappa'}{100}$											1 89.64 − 2.13	
	a_2											1 49.51 47.51	
23	3 56 3 12.2 κ	51 25 51 19.8	9.0 9.0	3 43.3 45.6 45.3 47.0	4 0.2	3.7	6.8	10.1	13.4	3 42 −8.58	6.84	4 6.84 − 8.89 + 33	
	$((\delta) - D)\frac{\kappa'}{100}$		8.8	3 25.0 29.7 32.6 30.1	4 0.7	4.0	7.3	10.5	13.9	3 64 −9.07	7.28	3 58.26 − 2.19 4 4.28 3 56.07 − 9 21 + 16 − 2	
	a_1											3 56.00 3 58.21 − 2.21	
	κ		9.0	3 31.9 33.8 36.6 34.1	3.9.8	3.2	6.6	9.7	13.9 13.0	3 33 −8.31	6 6.46	4 6.46 − 8.58 + 29 − 2	
	$((\delta) - D)\frac{\kappa'}{100}$											3 58.15 − 2.15 3 56.00	
	a_2												
23	5 09 4 25.4 κ	51.14 51 8.5	8.9 9.0	4 46.6 49.5 49.4 52.3	5 13.1	16.4	19.7	23.0	26.2	9 84 −8.58	19.68	5 19.68 − 8.89 + 32	
	$((\delta) - D)\frac{\kappa'}{100}$		8.9	4 46.0 47.6 49.4 47.6	5 13.7	16.9	20.2	23.4	26.7	10 09 −9.09	20.18	5 11.09 − 2.28 5 8.81 − 9 21 + 16 − 2	
	a_1											5 8.80 5 11.11 − 2.22	
	κ		9.2	4 44.8 46.4 48.2 46.4	5 12.8	16.2	19.5	22.7	25.9	9 71 −8.33	19.42	5 19.42 − 8.89 + 28 − 2	
	$((\delta) - D)\frac{\kappa'}{100}$											5 11.09 − 2.16 5 8.93	
	a_2												

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1871phaeproj.15788

Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	S	2 89.9	25.8	57	32.85		1550		50	51 51.46	24 51.69
	+33.5					51 31	19.37			− 30 +9.49	− 26 +9.41
40 d	1.52504						− 27.91			− 28	− 40
+10.52	9.79399	3 40.7	28.3	57	34.50	24	13.85		55	+ 959	+ 960
+1 17.36 ((δ) − D) d′/100	1.41439m					51 25	17.66			+ 48	+ 47
	+37.1						− 25.97			−26.35	−26.20
δ1	1.49276	58 47.78 33		26 52.0						30 34.60	24 34.90
+10.52	9.79494	47.21		25 52.3						25	
+1 17.36	1.41439m			26 54							
	+16.8	4 83.2	22.3		2775	28	20.60		50	29 9.72	
	1.22531					51 29	23.73			− 8 +9.50	
d	9.79431						− 14.01			− 49	
	1.14631m									+960	
((δ) − D) d′/100										+ 47	
										−26.65	
δ2										28 52.57	
	+36.0	0 46.2	32.9	53	39.53	27	8.80		55	51 27 42.65	27 42.20
	1.55630					51 28	12.67			− 35 +9.58	− 28 +9.74
40 d	9.72447						− 30.02			− 7	− 8
+10.57	1.47746m										
+1 17.56 ((δ) − D) d′/100	+32.2	0 49.2	37.0	58	43.10	27	5.25		55	+ 953	+963
	1.50786					51 28	9.06			+ 47	+ 47
75 δ1	9.79447						− 26.86			− 26.30	−26.20
+10.57	1.42902m	0 48.50		28 43.5						27 25.93	27 25.74
+1 17.56		48.37		43.3							
	+31.6	0 46.2	37.0	53	42.60	27	5.75		55	27 42.53	
	1.49966					51 28	8.88			− 26 +9.71	
d	9.79447						− 26.35			− 8	
	1.42085m									+ 958	
((δ) − D) d′/100										+ 47	
+10.57										−26.55	
δ2		0 48.44		28 43.2						27 25.69	
+1 17.56											
	+7.5	0 25.2	12.9	30	19.05	52	29.30		30	51 53 26.97	53 26.28
	0.87506					51 53	33.17			− 2 +10.42	− 15 +10.43
34 d	9.79031						− 6.20			− 3	− 1
+10.58	6.79296m										
+1 17.64 ((δ) − D) d′/100	+24.0	0 12.3	59.8	30	6.05	52	42.30		30	+ 998	+10.10
	1.38021					51 53	46.11			+ 49	+ 49
75 δ1	9.79031						− 19.83			− 26.35	− 26.25
+10.58	1.29721m	1 58.19		54 28.7						53 11.04	53 10.46
+1 17.64		58.02		28.1							
	−10.7	0 31.2	21.8	30	24.50	52	21.85		30	53 29.98	
	0.08451m					51 53	24.98			− 0 +10.47	
d	9.79031						+ 1.00			− 5	
	0.00151									+1003	
((δ) − D) d′/100										+ 49	
+10.58	δ2	1 58.09		54 27.5						−26.60	
+1 17.64										53 9.85	
	+21.5	3 13.0	0.0	58	6.50	24	41.85		55	51 25 27.78	25 27.41
	1.33244					51 25	45.72			− 12 +9.49	− 38 +9.37
44 d	9.79478						− 17.94			− 34	− 32
+10.67	1.37251m										
+1 17.84 ((δ) − D) d′/100	+37.2	3 0.2	47.2	59	53.70	24	54.65		55	+ 948	+ 960
	1.57054					51 25	58.46			+ 47	+ 47
82 δ1	9.79478						− 31.05			−26.25	−26.05
+10.67	1.49201m	4 6.76		26 28.86						25 11.02	25 10.73
+1 17.84		6.67		28.57							
	+32.4	3 2.2	49.9	57	56.05	24	52.30		55	25 28.39	
	1.51055					51 25	55.43			− 28 +9.40	
d	9.79478						− 27.04			− 32	
	1.43202m									+ 953	
((δ) − D) d′/100										+ 47	
+10.67	δ2	4 6.67		26 29.08						−26.53	
+1 17.84										25 11.24	
	+30.3	4 31.6	18.0	9	24.80	13	23.55		5	51 14 2.02	14 1.98
	1.48144					51 14	27.42			− 25 +9.02	− 28 +9.14
50 d	9.79668	1.40481m					− 25.40			− 48	− 44
+10.71	+32.6	4 29.5	15.9	9	22.85	13	25.50		5	+929	+940
+1 17.96 ((δ) − D) d′/100						51 14	29.31			+ 46	+ 46
	1.51322	60					− 27.33			−26.25	−2610
76 δ1	9.79668	5 19.55		15 2.8						13 44.79	13 45.02
+10.71	1.43659m	19.55		3.0							
+1 17.96											
	+33.0	4 26.4	14.3	9	20.35	13	28.00		5	14 3.47	
	1.51851					51 14	31.13			− 29 +9.07	
d	9.79668						− 27.66			− 43	
	1.44188m									+ 933	
((δ) − D) d′/100										+ 46	
+10.71										−26.50	
+1 17.96	δ2	5 19.64		15 4.0						13 46.04	

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Date$_1$ = 1871 Nov 7 (134) Nov 6 (133) Observer ~~A. M.~~ W.A.R. Recorder ~~W.A.R.~~ A.M.

Date$_2$ = 1871 Nov 9 (136) Observer ~~A. M.~~ W.A.R. (26) Recorder ~~W.A.R.~~ A.M.

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
23	h m s 6 03	° ′ ″ 51 40	9.1	m s 43.0	m s 6 6.7	s 10.0	s 13.5	s 16.6	s 20.0	6 65	s 13.36	m s 13.36	
	5 19.2	51 35.1	9.1	44.9						−8.58		−8.89	
	κ			44.8 46.6								+ 33	
	((δ) − D) $\frac{\kappa'}{100}$		8.8	5 56.1	6 7.2	10.5	13.5	17.1	20.6	69 2	13.84	6 4.78 13.82	
				57.6						−9.07		− 2.26	
	c_1			58.4								6 2.56	
				57.7								+ 16	
												− 2	
												6 2.53 6 4.77	
			9.0	5 46.9	6 6.4	9.8	13.2	16.4	19.8	6 56	13.12	6 13.12	
				48.5						−8.32		− 8.59	
	κ			51.1								+ 29	
	((δ) − D) $\frac{\kappa'}{100}$			48.8								− 2	
												6 4.80	
	c_2											− 2.18	
												6 2.62	
23	6 51	51 11	8.3	6 51.5	28.0	31.4	34.7	37.8	41.1	1730	34.60	6 34.60	
	~~6~~ 7.6	51 ~~57~~	8.0	52.1						−8.59		−8.89	
	5 κ 40.4	9.6		53.8								+ 32	
	((δ) − D) $\frac{\kappa'}{100}$		7.9	50.5 56.7								− 2	
	6 7.6	51 5.7		6 52.6	56.2	59.4	2.8	6.1	9.2	31 37	62.74	6 26.01 2.94	
	a_1			54.0						−9.07		− 2.22	
				56.7								6 23.79	
				54.4								+ 16	
												− 2	
												6 53.67	
	6 7.6		8.0	6 32.7	55.4	58.6	6 2.0	6 5.1	68.5	3096	61.92	− 2.24	
				34.1						−8.33		6 51.43 1.92	
	κ			35.7								− 8.59	
	((δ) − D) $\frac{\kappa'}{100}$			34.1								+ 28	
												− 2	
												6 53.59	
	a_2											− 2.18	
												6 51.41	
23	8 49	51 24	—	8 22.0	52.0	~~54.6~~	58.6	61.9	65.1	2929	58.58	8 58.58	
	8 5.1	51 17.5	8.8	23.9		55.3				−8.58		−8.89	
	κ			23.9 26.0								+ 33	
	((δ) − D) $\frac{\kappa'}{100}$		9.0	9 1.1	28.2	31.5	34.7	38.1	41.4	1739	34.78	8 50.00	
	8 39.4	51 21.3		2.5						−9.07		− 2.26	
	a_1			5.0								8 47.74	
				29 33								+ 16	
												− 2	
												9 23.44	
	8 5.1	51 19.5	8.9	8 24.2	51.7	55.0	58.4	61.6	64.8	29 15	58.30	8 58.30	
				25.7						−8.32		− 8.59	
	κ			29.0								+ 29	
	((δ) − D) $\frac{\kappa'}{100}$			26.3								− 2	
												8 49.98	
	a_2											− 2.20	
												8 47.78	
23	9 23	51 26	9.1	9 28.5	~~26.2~~	(27.2)	34.3	37.8	40.8			9 34.40	
	8 39.4	51 21.3	8.7	31.8	28.0	31.3				−8.58		− 8.89	
	κ		~~8.9~~	30.1								+ 33	
	((δ) − D) $\frac{\kappa'}{100}$											− 2	
												9 25.86	
	a_1											− 2.25	
												9 23.61	
			9.2	9 39.0	10 0.9	4.4	7.4	10.6	14.1	3 74	7.48	10 7.48	
				40.7						−8.32		− 8.59	
	κ			43.6								+ 29	
	((δ) − D) $\frac{\kappa'}{100}$			41.1								− 2	
												9 59.16	
	a_2											− 2.22	
												9 56.94	
23	11 41	51 36	9.0	11 16.3	46.1	49.4	52.7	56.0	59.2	26 34	52.68	11 52.68	
	10 57.7	51 30.6	9.0	18.5						−8.57		−8.88	
	κ			21.1								+ 33	
	((δ) − D) $\frac{\kappa'}{100}$			18.6								− 2	
												11 44.11	
	a_1											− 2.28	
												11 41.83	
			9.2	11 19.1	45.7	49.0	52.2	55.5	58.9	26 13	52.26	11 52.26	
				22.0						−8.32		− 8.59	
	κ			24.3								+ 29	
	((δ) − D) $\frac{\kappa'}{100}$			21.8								− 2	
												11 43.94	
	a_2											− 2.24	
												11 41.70	

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1871phaeproj.15788

Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′	
	+28.6	2 39.3	45.7	42	52,50	39	5585		40	51 40 35.98	40 34.50	
	1.456371					51 40	59.72			− 22	+9.70 − 7	+9.95
48 d	9.792401	1.37546m					− 23.74			− 32	− 34	
+10.71	+16.1	3 10.8	57.8	43	430	39	44.05		40	+ 976	+ 988	
+1 18.00 ((δ) − D) $\frac{d'}{100}$	1.206831					51 40	47.86			+ 48	+ 48	
72	9.792401	6 13.27		41 37.4			− 13,36			−26.25	−26.15	
δ1 +10.71	1.125921m	13.24		36.3						40 19.43	40 18.30	
+1 18.00	+24.3	3 0.5	49.9	42	55,35	39	53.00		40	40 35.96		
	1.385611					51 40	56.13			− 16	+9.81	
d	9.792401						− 20,17			− 32		
	1.304701m									+ 981		
((δ) − D) $\frac{d'}{100}$										+ 48		
+10.71										−26.55		
δ2 +1 18.00		6 13.33		41 37.2						40 19.22		
	−18.9	3 35.0	24.0	8	3,100	14	1935		5	51 15 37.06	11 21.49	
+10.75	1.276461m					51 15	21.22			− 10	+9.29 − 2	+9.53
d +1 18.04	9.796521						+ 15.84			− 39	− 26	
	1.199671	2 30.2	17.2	12	2370	10	24.65		10	+ 932	+ 935	
((δ) − D) $\frac{d'}{100}$	+ 8.3					51 11	28.46			+ 46	+ 46	
82	0.919081						− 6.97			−26.20	−26.05	
δ1 +10.76	9.797151	6 34.54		16 38.2						15 20.15	11 [illegible]	
+1 18.08	0.842921m	7 2.19		12 23.0								
	+27.8	2 11.8	1.1	12	2.42	10	4540		10		11 21.70	
	1.444041				6.45	51 11	48.03				− 20	+9.32
d	9.797151						− 23,33				− 22	
	1.367881m										+ 928	
((δ) − D) $\frac{d'}{100}$											−26.50	
+10.76											+ 46	
δ2 +1 18.08		7 2.17		12 22.6							11 [illegible]	
	+34.7	3 34.9	19.8	58	2735	24	2100		55	51 24 55.90	26 43.70	
	1.540331					51 25	24.87			− 32	+9.26 − 27	+9.64
d	9.794941						− 28,97			− 37	− 19	
20 +10.80	1.461761m	1 48.0	35.7	56	4185	26	650		55	+ 948	+ 963	
+1 18.24 ((δ) − D) $\frac{d'}{100}$	+31.9					51 27	10.31			+ 47	+ 47	
	1.503791			57			− 26.61			−26.20	−26.05	
+10.82 δ1	9.794631	8 58.56		25 [illegible]						24 38.96	26 27.29	
+1 18.24	1.425111m	9 34.30		27 45.5								
	+32.0	3 34.5	24.0	58	29.25	24	1910		55	24 55.51		
	1.505151					51 25	22.29			− 27	+9.35	
d	9.794941						− 26.72			− 38		
	1.426781m									+ 953		
((δ) − D) $\frac{d'}{100}$										+ 47		
+10.80										−26.45		
δ2 +1 18.24		8 58.58		25 56.6						24 38.41		
	+4.3	2 9.9	56.7	57	3.30	25	4505		55	51 26 45.33		
	0.633471					51 26	48.92			− 0	+9.76	
d	9.794631						− 3,59			− 23		
	0.554791m									+ 952		
((δ) − D) $\frac{d'}{100}$										+ 47		
+10.82										−26.20		
δ1 +1 18.28		9 34.43		27 47.2						26 28.89		
	+26.4	2 44.2	33.1	47	38,65	35	970		45	51 [illegible]		
	1.421601					51 36	21.83			35 − 18	+9.73	
d	9.793191						− 21,95			− 29		
	1.341481m									+ 972		
((δ) − D) $\frac{d'}{100}$										+ 48		
										−26.45		
δ2										35 43.16		
	+34.1	2 16.6	3.7	47	10,15	35	3820		45	51 36 13.72		
	1.532751					51 36	42.07			− 31	+9.61	
d	9.793191						− 28,35			− 24		
	1.452631m									+ 968		
((δ) − D) $\frac{d'}{100}$										+ 48		
+10.88										−26.15		
δ1 +1 18.44		11 52.71		37 15.6						35 57.18		
	+30.5	2 17.2	6.3	47	11,75	35	3660		45	36 14.38		
	1.484301					51 36	39.73			− 25	+9.71	
d	9.793041						− 25,35			− 24		
	1.404031m									+ 972		
((δ) − D) $\frac{d'}{100}$										+ 48		
+10.88										−26.45		
δ2 +1 18.44		11 52.58		37 16.1						35 57.64		

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Date$_1$ = 1871, Nov. 7 (134) Observer A. A. R Recorder A. M

Date$_2$ = 1871 Nov. 9 (136) Observer ~~A. M.~~ W. D. R. (28) Recorder ~~W. A. R~~ A. M.

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
23h	12m 51s	50° 40′	9.4	12m	49.1	55.0	58.3	61.4	64.7	67.8	307.2	61.44	m 13 1.48
	12 6.7	50 25.3	9.0		51.3						-8.58		-.888
	κ				52.8								+ 32
	((δ) — D) $\frac{\kappa'}{100}$				51.0								- 2
													12 52.22
13 45	α_1	15 2. S N											- 2.28
													12 ~~49.94~~ 50.38
			9.2	12	24.8	54.6	57.8	60.9	64.3	67.4	305.0	61.00	13 1.00
					26.2						-8.33		-.859
	κ				28.2								+ 28
	((δ) — D) $\frac{\kappa'}{100}$				26.4								- 2
													12 52.67
	α_2												- 2.24
													12 50.43
23	15 02	81 52	9.0	14	49.6	15 6.6	10.0	13.3	16.6	19.8	663	13.26	13 13.26
	14 18.7	51 46.3	9.0		51.3						-8.57		-.888
	κ				54.0								+ 33
	((δ) — D) $\frac{\kappa'}{100}$				51.6								- 2
													15 4.69
	α_1												- 2.32
													15 2.~~88~~17
			9.2	14	42.7	15 6.4	8.7	13.0	16.3	19.7	641	12.82	15 12.82
					45.3						-8.32		-.859
	κ				47.9								+ 29
	((δ) — D) $\frac{\kappa'}{100}$				45.0								- 2
													15 4.50
	α_2												- 2.28
													15 2.22
23	17 22	51 24	7.6	16	52.6	17 25.3	28.5	31.8	35.1	38.3	1590	31.80	17 31.80
	16 36.6	51 18.3	8.0		54.6						-8.57		-.888
	κ				57.0								+ 33
	((δ) — D) $\frac{\kappa'}{100}$				54.7								- 2
													17 23.23
	α_1												- 2.34
													17 20.89
			7.5	17	0.3	24.9	28.1	31.6	34.8	38.1	1575	31.50	17 31.50
					1.7						-8.32		-.859
	κ				4.5								+ 29
	((δ) — D) $\frac{\kappa'}{100}$				2.1								- 2
													17 23.18
	α_2												- 2.30
													17 20.88
23	18 34	82 42	9.2	18	22.3	36.1	39.5	42.9	46.2	49.7	2144	42.88	18 42.88
	17 45.1	82 36.3	9.2		24.0						-8.56		-.888
	κ				25.7								+ 34
	((δ) — D) $\frac{\kappa'}{100}$				24.0								- 2
													18 34.34
	α_1												- 2.38
													18 31.96
			9.0	18	17.4	36.0	39.3	42.7	46.0	49.4	2134	42.68	18 42.68
					19.9						-8.31		-.859
	κ				22.1								+ 30
	((δ) — D) $\frac{\kappa'}{100}$				19.8								- 2
													18 34.37
	α_2												- 2.34
													18 32.03
23	20 36	52 44	9.0	20	3.2	39.0	42.5	46.0	49.3	52.7	2295	45.90	20 45.90
	19 50.8	52 38.6	9.0		5.7						-8.56		-.888
	κ				8.7								+ 34
	((δ) — D) $\frac{\kappa'}{100}$				5.8								- 2
													20 37.34
	α_1												- 2.40
													20 34.94
			8.8	20	17.0	38.9	42.2	45.6	49.1	52.6	2284	45.68	20 45.68
					19.0						-8.31		-.859
	κ				21.8								+ 30
	((δ) — D) $\frac{\kappa'}{100}$				19.2								- 2
													~~48.56~~
	α_2												20 37.37
													- 2.36
													20 35.01

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+10.4	2 58.8	44.9	42	5,85	39	56.50		40	50 40 51.55	
	1.01703					50 41	0,37			− 3	+8.78
d	9.88182						− 8.82			− 32	
44	0.94554n									+ 870	
((δ) − D) $\frac{d'}{100}$										+ 43	
										−26.05	
+10.96 δ_1		13 1.54		41 52.8						40 34.28	
+1 18.52											
	+34.6	2 35.7	23.4	42	29,33	40	18,80		40	40 52.58	
	1.53908					50 41	21.93			− 32	+8.58
d	9.80182						− 29,35			− 27	
	1.46759n									+ 874	
((δ) − D) $\frac{d'}{100}$										+ 43	
										−26.35	
+10.96 δ_2		13 1.39		41 53.3						40 34.81	
+1 18.52											
	+21.7	1 34.7	41.2	31	47,75	51	0.40		30	51 51 46.33	
	1.33646					51 52	4.27			− 13	+10.12
44 d	9.79063						− 17.94			− 20	
	1.25378n									+ 9.96	
((δ) − D) $\frac{d'}{100}$										+ 49	
										−26.15	
+10.96											
+1 18.68 δ_1		15 13.13		52 49.0						51 30.30	
	+27.8	1 46.5	36.2	31	41,35	51	7.00		30	51 47.15	
	1.44404					51 52	10.13			− 20	+10.82 ✓
d	9.79063						− 22.98			− 19	
	1.36136n									+ 1002	
((δ) − D) $\frac{d'}{100}$										+ 49	
										−26.40	
+10.96											
+1 18.68 δ_2		15 13.18		52 49.6						51 30.87	
	+37.1	4 28.2	14.0	59	24,10	23	27.25		55	51 24 0.13	
	1.56937					51 24	31.12			− 37	+9.08
d	9.79570						− 30.99			− 48	
30	1.49116n									+946	
((δ) − D) $\frac{d'}{100}$										+ 47	
										−26.05	
+11.05											
+1 18.84 δ_1		17 31.94		25 2.0						23 43.16	
	+29.4	4 34.0	22.0	59	28,00	23	20.35		55	23 58.93	
	1.46835					51 24	23.48			− 23	+9.26
d	9.79510						− 24.56			− 49	
	1.39014n									+951	
((δ) − D) $\frac{d'}{100}$										+ 47	
										−26.80	
+11.05 δ_2		17 31.93		25 0.7						23 41.89	
+1 18.84											
	+18.9	2 0.4	47.1	41	53,75	40	54.60		40	52 41 43.14	
	1.27646					52 41	58.47			− 10	+11.05
d	9.78246						− 15,33			− 21	
20	1.18561n									+1086	
((δ) − D) $\frac{d'}{100}$										+ 50	
										−26.10	
+11.03											
+1 18.92 δ_1		18 42.99		42 47.0						41 28.09	
	+22.9	1 [illegible]	43.4	41	48,70	40	59.65		40	41 44.20	
	1.35984					52 42	2.78			− 14	+11.08
d	9.78246						− 18,58			− 20	
	1.26899n									+1092	
((δ) − D) $\frac{d'}{100}$										+ 50	
										−26.45	
+11.03											
+1 18.92 δ_2		18 43.06		42 47.8						41 28.43	✓
	+40.1	4 9.8	56.2	39	3,00	43	46.35		35	52 44 16.72	
	1.60314					52 44	49.22			− 42	+10.55
22 d	9.78197						− 32.50			− 44	
	1.51180n									+1091	
((δ) − D) $\frac{d'}{100}$		20								+ 50	
		30 46.03		45 20.3						−26.05	
+11.09 δ_1										44 1.22	
+1 19.04											
	+26.5	4 18.1	7.6	39	12,83	43	35.50		35	44 17.16	
	1.42325					52 44	38.63			− 18	+10.81
d	9.78197						− 21.47			− 46	
	1.33191n									+1096	
((δ) − D) $\frac{d'}{100}$										+ 50	
										−26.40	
+11.09 δ_2		20 46.10		45 20.6						44 1.57	
+1 19.04											

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134

Date$_1$ = 1871 Nov. 7 — Observer W.A.R. — Recorder A.M.

136

Date$_2$ = 1871 Nov. 9. — Observer ~~A.M.~~ W.A.R. — Recorder ~~W.A.R.~~ A.M.

30

Star.	α	− δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
23h	m s / 21 28	° ′ / 52 22	9.6	21m s / 22.6	31.4	35.2	38.5	41.7	45.3	1926	38.52	m / 21	38.52
	20 42.6	52 16.0	9.5	24.6						−8.56			− 8.88
	κ			27.1									+ 34
	((δ) − D) $\frac{\kappa'}{100}$			24.7									− 2
												21	29.96
	a_1												− 2.41
												21	27.55
			9.7	21 27.3	30.4	35.0	38.4	41.7	45.0	1905	38.30	21	38.30
				29.6						−8.31			− 8.59
	κ			31.8									+ 30
	((δ) − D) $\frac{\kappa'}{100}$			29.5									− 2
												21	29.99
	a_2												− 2.36
	Nov. 7											21	27.63
23	13 45	50 58	9.0	13 53.1	49.2	52.5	55.8	58.8	62.1	2784	55.68	13	55.68
	13 0.6	50 52.3	9.0	54.4						−8.58			− 8.88
	κ			53.7									+ 32
	((δ) − D) $\frac{\kappa'}{100}$		0 17 20										− 2
			18 44									13	47.10
	a_1												− 2.30
	Nov. 9											13	44.80
22	31 52	51 14	8.2	31 33.4	53.6	56.9	60.1	63.4	66.8	3008	60.16	32	0.16
	31 11.7	51 8.9	8.4	34.7						−8.30			− 8.57
	Observed with κ A.M. Rec			35.2 37.5	Add 4 sec. to all								+ 29
	Nov. 6		8.5	31 24.2	50.5	53.8	57.0	0.2	2.6	3041	0.82	31 51.86	− 2
	((δ) − D) $\frac{\kappa'}{100}$			26.0						9.08		− 1.7732	0.82
				25.0								31 50.09	− 9.22
	a_2			27.6									+ 16
	Nov. 9			26.9									− 2
												49.89 31	51.74
22	32 42	51 23	9.0	32 33.1	43.8	47.1	50.4	53.8	57.0	2521	50.42	32	50.42
	32 1.7	51 17.9	9.0	35.2						−8.30			− 8.57
	κ			35.4 37.9	Add 4 sec. to all								+ 29
	Nov. 6		9.2	32 30.7	40.8	44.2	47.4	50.7	53.9	2540	51.40	32 42.12	− 2
	((δ) − D) $\frac{\kappa'}{100}$			32.6						−9.08		− 1.732	1.40
				35.0								40.34	− 9.22
	a_1			32.7									+ 16
	Nov. 9												− 2
												32 40.47 32	42.32
22	33 32	51 09	8.9	33 25.4	34.9	38.1	41.6	44.7	47.9	2072	41.44	33	41.44
	32 54.9	51 4.1	9.0	27.0						−8.30			− 8.57
	κ			27.3 29.6	Add 4 sec to all								+ 29
	Nov. 6		9.0	33 32.2	31.6	35.5	—	41.5	44.9			33 33.14	− 2 33 31.35
	((δ) − D) $\frac{\kappa'}{100}$			37.1						−9.08		− 1.783	42.38
				38.3									− 9.22
	a_2			37.2									+ 16
	Nov. 9												− 2
												33 33.30	31.45
22	34 46	52 03	9.4	34 27.2	48.1	54.9 51.5	58.2	61.8		2745	54.90	34	54.90
	34 5.1	51 58.2	9.1	27.0						−8.59			− 8.57
	κ			31.0	Add 4 sec to all								+ 30
	Nov. 6		9.4	29.0 34 26.3	45.1	48.4	50.8	55.1	58.3	2709	55.54	34 46.61	− 2 34 44.81
	((δ) − D) $\frac{\kappa'}{100}$			28.0						−9.09		− 1.834	54.54
				30.0									− 9.22
	a_1			31.4									+ 17
	Nov. 9			28.9									− 2
												34 46.47	44.59
22	35 43	51 05	6.0	35 22.6	45.4	48.7	51.9	55.0	58.5	2596	51.92	35	51.92
	35 2.9	51 0.2	7.1	24.9						−8.30			− 8.57
	κ			23.9 25.3	Add 4 sec to all								+ 29
	Nov. 6		7.0	35 21.7	42.0	45.3	48.6	51.9	55.2	2630	52.60	35 43.62	− 2 35 41.81
	((δ) − D) $\frac{\kappa'}{100}$			18.8						−9.08		− 1.81	52.60
				21.0									− 9.22
	a_2			19.1									+ 16
	Nov. 9												− 2
												35 43.52	3
22	35 ~~59~~	51 46	9.5									35	41.63
	35 17.3	51 40.8	9.0										
	κ												
	Nov. 6		9.2										
	((δ) − D) $\frac{\kappa'}{100}$												
	a_1												
	κ												
	((δ) − D) $\frac{\kappa'}{100}$												
	a_2												

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′	
	+13.8	2′ 16.7	3.7	2	10,20	20	38,15		0	52 21 30.74		
	1.13988					52 21	42,02			− 5	+10.72	
d	9.78576						− 11,28			− 24		
	1.05233n									+1051		
((δ) − D) $\frac{d'}{100}$										+ 50		
										−26.00		
+11.13 δ₁		21 38.68		22 34.5						21 15,46		
+1 19.08												
	+8.8	2 19.0	9.3	2	14,15	20	3420		0	21 30.14		
	0.944448					52 21	37,33			− 2	+10.78	
d	9.78576						− 7,19			− 24		
	0.85693n									+1054		
((δ) − D) $\frac{d'}{100}$										+ 50		
										−26.35		
+11.13 δ₂		21 38.76		22 33.6						21 14.57		
+1 19.08												
	+2.0	0 − 3.8	− 18.3	24	48,95	59	5940		25	50 59 1.58		
	0.30103					50 59	3,27			− 0	+9.50	
d	9.79903						~~−16.86~~			+ 2		
	0.22675n						− 1,69			+903		
((δ) − D) $\frac{d'}{100}$										+ 45		
										−25.85		
+10.97 δ₁		13 55.77		0 3,8						58 45.23		
+1 18.60												
	+25.0	4 22.2	11.3	9	16,75	13	31,60		5	51 14 13.77	14 10.59	
	1.39794					51 14	34,73			− 17	+9.15 − 31	+9.09
d	9.79668						− 20,96			− 47	∓ 46	
+9.79	1.32131n	4 19.2	7.1	9	13,15	13	3520		5	+933	+940	
+1 14.36 ((δ) − D) $\frac{d'}{100}$	+33.9					51 14	39.01			+ 46	+ 46	
	1.53020						− 28,42			−26.80	−26.45	
+9.79 δ₂	9.79668	31 59.88		15 10,5						13 56.12	13 53.23	
+1 14.36	1.45357n	59.68		7,6								
	+15.0	0 26.0	15.6	0	20,80	22	2755		0	51 23 18.15	23 14.79	
	1.17609					51 23	30,68			− 6	+9.87 − 10	+9.90
d	9.79510						− 12,53			− 3	− 3	
+9.80	1.09788n	0 28.2	15.3	0	21,75	22	2660		0	+949	+956	
+1 14.48 ((δ) − D) $\frac{d'}{100}$	+18.7					51 23	30,41			+ 47	+ 47	
	1.27184	50					− 15,62			−26.80	−26.45	
+5.80 δ₁	9.79510	32 ~~49.14~~		24 15.7						23 1.22	22 58.24	
+1 14.48	1.19363n	50 ~~49.27~~		12,4								
	+14.1	4 19.2	7.0	14	13,10	8	3525		10	51 9 26.54	9 22.34	
	1.14922					51 9	38,38			− 5	+9.19 − 1	+9.28
d	9.79731						− 11,84			− 46	− 48	
+9.84	1.07322n	4 31.8	19.1	14	25,45	8	2290		10	+924	+931	
+1 14.60 ((δ) − D) $\frac{d'}{100}$	+5.2					57 9	26,71			+ 46	+ 46	
	0.71600						− 4,37			−26.80	−26.45	
+9.84 δ₂	9.79731	33 41.19		10 23.5						9 8.93	9 5.17	✓
+1 14.60	0.64000n	41.24		19,8								
	+25.9	0 5.3	54.9	20	0,10	2	4825		20	52 3 30.07	3 26.62	
+9.80	1.41330					52 3	51,38			− 18	+10.55 − 19	+10.59
d	9.78869						− 21,31			− 0	− 1	
+1 14.76	1.32868n	0 10.1	57.2	20	3,65	2	4470		20	+1023	+1029	
((δ) − D) $\frac{d'}{100}$	+26.6					52 3	48,81			+ 50	+ 50	
	1.42488						− 21,89			−26.90	−26.55	
+5.80 δ₁	9.78869	34 54.60		4 28.5						3 13.72	3 10,66	
+1 14.76	1.34026n	54.39		25,4								
	+28.0	3 8.2	58.0	18	3,10	4	4525		15	51 5 24.84	5 21.60	
+9.91	1.44716					51 5	48,38			− 21	+9.07 − 30	+9.07
d	9.79793						− 23,54			− 34	− 33	
+1 14.88	1.37178n	3 9.9	54.9	18	2,40	4	4595		15	+917	+924	
((δ) − D) $\frac{d'}{100}$	+33.5					51 5	49,76			+ 45	+ 46	
	1.62504						− 28,16			−26.80	−2640	
+9.91 δ₂	9.79793	35 51.72		6 22.0						5 7.11	5 4.27	
+1 14.88	1.44966n	51.54		19,2								
		2 31.2	20.0	37	25,60	45	22,75		35			
						46	25,88					
d												
		3 14.9	4.7	34	9,80	45	38,55		35			
((δ) − D) $\frac{d'}{100}$						486	42,36					
δ₁												
d												
((δ) − D) $\frac{d'}{100}$												
δ₂												

$\Delta(\Delta T + 2m) = -.30 \left(\pm .040\right) - .02 - .03 = -.35$ [-.36]

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Date$_1$ = Nov. 7, 1871. Observer A. M.
n = +.27 Recorder W. A. R.

Date$_2$ = 1871. Nov. 9 Observer A. M.
n = +.20 Recorder W. A. R.

Ru

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
	m s	° ′		m s	s	s	s	s	s		s	m s	
	20 42	50 45	8.5	20 28.0	47.7	51.0	54.4	57.5	60.5	27 11	54.20	20 54.20	
	19 51.6	50 39.6	8.9	29.4						-8.61		− 8.92	
				31.1								+ 33	
				29.5								− 2	
												20 45.61	
												− 2.97	
												20 42.62	
			9.2	20 20.8	47.6	50.9	54.1	57.4	60.6	27 06	54.12	20 54.12	
				22.7						-8.42		− 8.92	
				25.0								+ 24	
				22.8								− 2	
												20 45.71	
												− 2.96	
												20 42.76	
0	22 40	51 36	9.1	22 23.1	43.3	46.9	50.1	53.2	56.8	25 03	50.06	22 50.06	
	21 46.1	51 30.1	9.3	24.3						-8.60		− 8.92	
				25.8								+ 34	
				24.4								− 2	
												22 41.46	
												− 3.04	
												22 38.42	
			9.0	22 37.6	43.3	46.4	49.8	52.8	56.4	24 87	49.74	22 49.74	
				34.6						-8.40 39		− 8.92	
				41.0								+ 25	
				39.4								− 2	
												22 41.34	
												− 3.01	
												22 38.34	
0	24 18	51 27	9.2	24 2.6	21.5	24.7	28.1	31.3	34.7	14 03	28.06	24 28.06	
	23 23.8	51 20.6	9.5	4.0						-8.60		− 8.92	
				5.8								+ 34	
				4.1								− 2	
												24 19.46	
												− 3.05	
												24 16.41	
			9.2	23 56.1	24 21.0	24.6	27.9	31.2	34.6	13 93	27.86	24 27.86	
				57.1						-8.40 39		− 8.92	
				58.4								+ 25	
				57.2								− 2	
												24 19.46	
												− 3.02	
												24 16.45	
0	25 22	51 22	8.9	25 9.0	24.6	27.9	31.1	34.5	37.8	15 59	31.18	25 31.18	
	24 27.6	51 17.0	8.5	10.4						-8.61		− 8.93	
				11.8								+ 34	
				10.4								− 2	
												25 22.57	
												− 3.06	
												25 19.51	
			8.8	25 5.0	24.2	27.6	30.9	34.4	37.7	15 48	30.96	25 30.96	
				6.0						-8.39		− 8.62	
				8.1								+ 25	
				6.8								− 2	
												25 22.57	
												− 3.03	
												25 19.54	
0	29 39	51 57	9.0	26 20.3	42.4	45.6	49.1	52.2	55.6	24 49	48.98	26 48.98	
	26 44.8	51 54.7	9.2	21.6						-8.61		− 8.93	
	2			23.5								+ 34	
				21.8								− 2	
												26 40.37	
												− 3.09	
												26 37.28	
			8.9	26 21.7	42.1	45.5	48.6	52.1	55.6	24 39	48.78	26 48.78	
				23.5						-8.39		− 8.62	
				25.3								+ 25	
				23.5								− 2	
												26 40.39	
												− 3.06	
												26 37.33	

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Nov. 7 +1′ 3.06 −.11
" 9 +1 4.14 −.11

Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+24.7	3′ 21.3	7.2	38	14.25	44	34.10		35	50 45 16.25	
	1.392 70					50 45	37.16			− 16	+8.83
d	9.801 05						− 20.91			− 35	
	1.320 44 m									+ 8 90	
((δ) − D) $\frac{d'}{100}$										+ 44	
+12.88										−23.70	
+1 19.88 δ_1		20 55.50		46 21.3						45 1.38	
	+31.3	3 15.5	2.5	38	14.00	44	34.35		35	45 10.99	
	1.495 54					50 45	38.49			− 27	+8.71
d	9.801 05						− 26.50			− 35	
	1.423 28 m									+8 89	
((δ) − D) $\frac{d'}{100}$										+ 44	
+12.88										−24.15	
+1 19.88 δ_2		20 55.64		46 21.4						~~44 56.55~~ 45 1.55	
	+25.7	2 54.8	39.8	47	47.30	35	1.05		45	51 35 42.74	
	1.409 93					51 36	4.11			− 18	+9.70
32 d	9.793 19						− 21.37			− 31	
	1.329 81 m									+ 9.71	
((δ) − D) $\frac{d'}{100}$										+ 48	
+12.96										−23.70	
+1 19.80 δ_1		22 51.38		36 48.5						35 28.74	
	+10.3	3 7.8	54.9	48	1.35	34	47.00		45	35 42.58	
	1.012 84					51 35	51.14			− 3	+9.85
d	9.793 19						− 8.56			− 33	
	0.932 72 m									+ 9.73	
((δ) − D) $\frac{d'}{100}$										+ 48	
+12.96										−24.15	
+1 19.80 δ_2		22 51.30		36 48.1						35 28.28	
	+24.0	2 25.8	11.0	57	18.40	25	29.95		55	51 26 12.99	
	1.380 21					51 26	33.01			− 15	+9.60
20 d	9.794 63						− 20.02			− 25	
	1.301 53 m									+ 9.53	
((δ) − D) $\frac{d'}{100}$										+ 47	
+13.00										−23.60	
+1 19.76 δ_1		24 29.41		27 18.7						25 58.99	
	+30.7	2 20.4	7.8	57	14.10	25	34.25		55	26 12.78	
	1.487 14					51 26	38.39			− 25	+9.51
d	9.794 63						− 25.61			− 25	
	1.408 46 m									+9 54	
((δ) − D) $\frac{d'}{100}$										+ 47	
+13.00										−24.05	
+1 19.76 δ_2		24 29.45		27 18.0						25 58.24	
	+20.8	1 18.8	3.7	1	11.25	21	37.10		0	51 22 22.78	
	1.318 06					51 22	40.16			− 12	+9.68
22 d	9.795 26						− 17.38			− 13	
	1.240 01 m									+ 9 46	
((δ) − D) $\frac{d'}{100}$										+ 47	
+13.03										−23.55	
+1 19.72 δ_1		25 32.54		23 28.6						22 8.91	
	+24.7	1 13.1	− 0.3	1	6.40	21	41.95		0	22 25.45	
	1.392 70					51 22	46.09			− 16	+9.66
d	9.795 26						− 20.64			− 12	
	1.314 65 m									+ 947	
((δ) − D) $\frac{d'}{100}$										+ 47	
+13.03										−24.00	
+1 19.72 δ_2		25 32.57		23 30.8						22 11.11	
	+27.2	1 16.4	1.0	26	8.70	56	39.65		25	51 57 20.28	
	1.434 57					57 57	42.71			− 20	+10.27
d	9.789 67						− 22.43			− 12	
	1.350 93 m									+1009	
((δ) − D) $\frac{d'}{100}$										+ 50	
+13.08										−23.50	
+1 19.68 δ_1		26 50.36		58 26.7						57 7.05	
	+25.3	1 16.1	3.0	26	9.05	56	39.30		25	57 22.57	
	1.403 12					51 57	43.44			− 17	+10.31
d	9.789 67						− 20.87			− 12	
	1.319 48 m									+1010	
((δ) − D) $\frac{d'}{100}$										+ 50	
+13.08										−23.95	
+1 19.68 δ_2		26 50.41		58 28.6						57 8.93	

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Date$_1$ = 1871 Nov. 7 (136) Observer A. M. Recorder W. A. R.

Date$_2$ = Nov. 9, 1871 (137) Observer A. M. Recorder W. A. R.

(34)

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
h	m s	° ′		m	m s	s	s	s	s		s	m s	s
	25 10	51 08	7.0	27	50.9	28 12.1	15.3	18.6	22.0	25.1	9 31	18.62	28 1 18.2
	27 15.2	51 2.8	7.8		37.1						−8.62		− 8.93
	κ				54.0								+ 33
					52,3								− 2
	((δ) − D) $\frac{\kappa'}{100}$												28 10.00
													− 3.07
	α_1												28 6.93
			6.8	27	44.0	28 11.8	15.0	18.3	21.8	25.0	9 19	18.38	28 18.38
					50.7						−8.39		− 8.62
	κ				52.0								+ 25
					50,5								− 2
	((δ) − D) $\frac{\kappa'}{100}$												28 9.99
													− 3.04
	α_2												28 6.95
0	29 51	51 40	9.8	29	42.0	30.6	53.7	57.5	60.7	64.0	28 6 5	57.30	29 57.30
	28 56.9	51 34.9	9.5		44.7						−8.61		− 8.93
	κ				43.3								+ 34
													− 2
	((δ) − D) $\frac{\kappa'}{100}$												29 48.69
													− 3.14
	α_1												29 45.58
			10.0	29	35.0	35.0	58.2	61.4	64.7	68.1	30 7 4	61.48	30 1.48
					34.1						−8.39		− 8.62
	κ				37.7								+ 25
					36.2								− 2
	((δ) − D) $\frac{\kappa'}{100}$												29 53.09
													− 3.08
	α_2												29 50.01
0	31 04	51 33	9.1	30	57.0	31 6.5	10.3	13.6	16.8	20.1	6 79	13.46	31 13.46
	30 8.4	51 27.8	9.3		59.0						−8.61		− 8.93
	κ				61.0								+ 34
					59,0								− 2
	((δ) − D) $\frac{\kappa'}{100}$												31 4.85
													− 3.12
	α_1												31 1.73
			9.1	30	45.2	31 6.5	9.8	13.1	16.2	19.6	6 52	13.04	31 13.04
					46.7						−8.39		− 8.62
	κ				48.6								+ 25
					46.8								− 2
	((δ) − D) $\frac{\kappa'}{100}$												31 4.65
													− 3.09
	α_2												31 1.56
0	32 24	51 52	8.6	32	4.0	27.1	30.3	33.7	37.0	40.4	16 8-5	33.70	32 33.70
	31 28.9	51 46.1	8.7		5.3						−8.61		− 8.93
	κ				7.5								+ 34
					5,6								− 2
	((δ) − D) $\frac{\kappa'}{100}$												32 25.09
													− 3.14
	α_1												32 21.95
			8.7	31	59.0	32 26.8	30.0	33.2	36.5	39.9	16 6 4	33.28	32 33.28
					60.3						−8.39		− 8.62
	κ				61.5								+ 25
				32.	0.2								− 2
	((δ) − D) $\frac{\kappa'}{100}$												32 24.89
													− 3.12
	α_2												32 21.77
0	33 30	51 15	8.5	33	12.6	32.9	36.0	39.4	43.1	46.2	19 7 6	39.52	33 89.02
	32 34.4	51 9.2	9.0		13.5						−8.62		− 8.93
	κ		8.6		14.2								+ 33
					13,4								− 0
	((δ) − D) $\frac{\kappa'}{100}$			33	8.6	42.2	45.4	49.1	52.0	55.5	244 2	4884	33 39.92 33 27.77
					10.1						−8.62		33 31.84
	α_1				11.8								− 8.93
					10,1								+ 33
													− 2
			8.8	33	11.0	32.6	36.0	39.2	42.3	45.6	19 57	39.14	33 40.23 33 37.09
			9.0		11.5						−8.39		33 31.83
	κ				12.0								− 8.62
					11,8								+ 25
	((δ) − D) $\frac{\kappa'}{100}$			33	7.3	41.8	45.0	48.7	52.0	55.4	24 29	4 8.58	− 2
					9.1						−8.39		33 30.75 33 27.65
	α_2				8,2								33 48.58
													− 8.62
													+ 25
													− 2
													33 40.19
													− 3.10
													33 37.09

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+26.3	0 30.4	15.0	13	22.70	7	25.65		15	51 8 6.62	
	1.41996					51 8	28.71			− 18	+9.44
24 d	9.79762						− 22.09			− 4	
	1.34427 m									+920	
((δ) − D) $\frac{d'}{100}$										+ 46	
+13.10										−23.40	
+1 19.60 δ_1		28 20.03		9 12.3						7 52.66	
	+27.9	0 26.1	12.5	15	19.30	7	29.05		15	8 9.75	
	1.44560					51 8	33.19			− 21	+9.44
d	9.79762						− 23.44			− 3	
	1.36991 m									+922	
((δ) − D) $\frac{d'}{100}$										+ 46	
+13.10										−23.80	
+1 19.60 δ_2		28 20.05		9 15.0						7 55.39	
	+1.40	4 26.0	11.3	44	18.65	38	29.70		40	51 37 21.14	✓
	1.14613					51 39	32.76			− 5	+9.72
d	9.79256						− 11.62			− 47	
	1.06538 m									+976	
((δ) − D) $\frac{d'}{100}$										+ 48	
										−23.35	
δ_1										39 7.51	
	+25.3	3 12.3	−0.7	43	5.80	39	42.55		40	40 25.68	✓
	1.40312					51 40	46.69			− 17	+9.76
d	9.79256						− 21.01			− 34	
	1.32237 m									+979	
((δ) − D) $\frac{d'}{100}$										+ 48	
+13.17				2						−23.80	
+1 18.52 δ_2		30 3.18		41 31.X						40 11.64	
	+14.5	0 22.5	8.0	50	15.40	32	32.95		50	51 33 23.94	
	1.16137					51 33	36.01			− 6	+10.05
42 d	9.79351						− 12.07			− 3	
	1.08157 m									+9.66	
((δ) − D) $\frac{d'}{100}$										+ 48	
+13.20										−23.25	
+1 19.48 δ_1		31 14.93		34 30.2						33 10.74	
	+26.2	0 18.8	−2.0	50	4.40	32	43.95		50	33 26.29	
	1.41830					51 33	48.09			− 18	+9.96
d	9.79351						− 21.80			− 1	
	1.33850 m									+967	
((δ) − D) $\frac{d'}{100}$				0						+ 48	
+13.20										−23.70	
+1 19.48 δ_2		31 14.76		34 32.X						33 12.85	
	+28.1	X 6.0	51.5	5931	58.90	5X0	49.45		30	51 57 29.29	✓
	1.44871					51 57	52.51			1 − 21	+10.17
42 d	9.79047						− 23.22			− 11	
	1.36587 m									+1000	
((δ) − D) $\frac{d'}{100}$										+ 49	
+13.25										−23.20	
+1 19.44 δ_1		32 35.20		52 35.7						52 16.26	
	+33.1	1 59.9	46.4	31	53.15	50	55.20		30	51 31.99	✓
	1.51983					51 51	59.34			− 29	+10.00
d	9.79047						− 27.35			− 21	
	1.43699 m									+1001	
((δ) − D) $\frac{d'}{100}$										+ 49	
+13.25										−23.65	
+1 19.44 δ_2		32 35.02		52 37.8						51 18.34	
	+26.1	3 52.1	37.5	8	44.80	14	3.55		5	51 14 44.74	14 34.18
	1.41664					51 15	6.61			− 18	+9.21 − 40 +8.99
38 d	9.79652						− 21.87			− 41	− 41
7.77 +13.26	1.33985 m						− 32.43			+934	+934
+1 19.36 ((δ) − D) $\frac{d'}{100}$	+38.7									+ 46	+ 46
	1.58771									−23.10	−23.10
δ_1	1.74652	33 41.03		15 50.2						14 30.85	14 20.07
1.09 +13.26	1.51092 m	50.35		39.4							
+1 19.36	+27.3	3 49.9	36.4	8	43 15	14	5.20		5	14 46.46	14 35.49
26	1.43616					51 15	9.34			− 20	+9.20 − 44 +8.96
4.65 d	9.79652						− 22.88			− 41	− 41
	1.35937 m						− 33.85			+935	+935
((δ) − D) $\frac{d'}{100}$	+40.4									+ 46	+ 46
+13.26	1.60638									−23.55	−23.55
+1 19.36 δ_2	1.79652	33 40.91		15 51.5						14 32.11	14 20.90
	1.52959 m	50.35		40.3							
+13.26											
+1 19.36											

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Date$_1$ = 1871, Nov. 7 — Observer A. M. — Recorder W. A. R.

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Date$_2$ = 1871. Nov. 9 — Observer A. M. — Recorder W. A. R.

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Run

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
h	34 34	51 26	8.5	34	36.3	39.6	42.8	46.1	49.6	21 44	42.88	34	42.88
	38 38.6	51 21.0	8.5	24.3						-8.61			- 8.93
	κ			26.0									+ 34
	((δ) — D) $\frac{\kappa'}{100}$			29.0									- 2
				26.4								34	34.27
	α_1												- 3.14
												34	31.13
			8.5	34	36.0	39.3	42.4	45.9	49.3	21 29	42.58	34	42.58
				19.4						-8.39			- 8.62
	κ			24.0									+ 25
	((δ) — D) $\frac{\kappa'}{100}$			22.3									- 2
				20.9								34	34.19
	α_2												- 3.12
												34	31.07
0	35 27	51 38	7.6	35	29.7	32.8	36.1	39.4	42.9	18 09	36.18	35	36.18
	34 31.0	51 33.0	7.0	14.7						-8.61			- 8.93
	κ			16.0									+ 34
	((δ) — D) $\frac{\kappa'}{100}$			13.4									- 2
				16.0								35	27.57
	α_1												- 3.16
												35	35.59 24.41
			6.5	35	29.3	32.7	36.2	39.8	42.7	18 02	36.04	35	36.04
				16.3						-8.39			+ 8.62
	κ			18.0									+ 25
	((δ) — D) $\frac{\kappa'}{100}$			19.9									- 2
				18.0								35	27.65
	α_2												- 3.14
												35	24.51
0	36 35	51 32	8.8	36	44.1	47.7	51.0	54.1	57.6	25 45	50.90	36	50.90
	35 45.7	51 27.0	8.9	18.0						-8.61			- 8.93
	κ			19.8									+ 34
	((δ) — D) $\frac{\kappa'}{100}$			21.6									- 2
				19.9								36	42.29
	α_1												- 3.13
												36	39.12
			8.9	36	43.8	47.3	50.7	54.0	57.1	25 29	50.58	36	50.58
				15.0						-8.39			- 8.62
	κ			16.7									+ 25
	((δ) — D) $\frac{\kappa'}{100}$			18.0									- 2
				16.5								36	42.19
	α_2												- 3.14
												36	39.05
0	38 09	51 23	9.0	37	46.0	38 11.0	14.3	17.6	20.8	24.1	8 78	17.56	38 17.56
	37 12.1	51 18.0	9.0	48.2							-8.62		- 8.94
	κ			50.4									+ 34
	((δ) — D) $\frac{\kappa'}{100}$			48.2									- 2
												38	8.94
	α_1												- 3.18
												38	5.76
			8.9	37	43.8	38 10.8	14.1	17.4	20.6	24.0	8 69	17.38	38 17.38
				45.5							-8.39		- 8.62
	κ			48.4									+ 25
	((δ) — D) $\frac{\kappa'}{100}$			45.8									- 2
												38	8.99
	α_2												- 3.16
												38	5.83
0	39 54	51 49	8.9	39	37.3	55.7	58.9	62.3	65.7	69.0	31 16	62.32	40 2.32
	38 57.6	51 43.3	8.57	35.6							-8.62		- 8.94
	κ			41.0									+ 34
	((δ) — D) $\frac{\kappa'}{100}$			38.9									- 2
												39	53.70
	α_1												- 3.21
												39	50.49
			8.8	39	34.3	55.3	59.0	62.1	65.3	68.7	31 04	62.08	40 2.08
					36.0						-8.39		- 8.62
	κ				38.0								+ 25
	((δ) — D) $\frac{\kappa'}{100}$				36.1								- 2
												39	53.69
	α_2												- 3.19
												39	50.50

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+18.5	2 18.0	3.7	57	10,85	25	37.50		55	51 26 26.79	
	1.217448					51 26	40.56			− 7	+9.69
d 30	9.794463						− 13.77			− 24	
	1.138880n									+953	
((δ) − D) $\frac{d'}{100}$										+ 47	
+13.30										−23.05	
+1 19.32 δ_1		34 44.43		27 32.8						26 13.43	
	+21.7	2 11.6	5 8.9	57	38	25	43.10		55	51 26 29.14	
	1.336461			57	5125	26	47.24			− .13	+9.66
d	9.794637				7.12		− 18.10			− 22	
	1.257778n									+ 9.54	
((δ) − D) $\frac{d'}{100}$										+ 47	
+13.30										− 23.45	
+1 19.32 δ_2		34 44.37		27 32.8						26 15.35	1348
	+20.2	0 42.4	28.2	43	35,30	37	13.05		45	51 37 59.32	
	1.305351					51 38	16.11			− 12	+10.03
d	9.792888						− 16.79			− 7	
	1.224922n									+ 9.74	
((δ) − D) $\frac{d'}{100}$										+ 48	
+13.33										−23.00	
+1 19.24 δ_1		35 37.74		39 5.6						37 46.35	
	+18.0	0 43.7	2 39.0	45	4.35	37	7.00		45	37 56.18	
	1.255274				36.	51 38	16.14			− 9	+10.07
d	9.792818						− 14.96			− 8	
	1.174844n									+ 976	
((δ) − D) $\frac{d'}{100}$										+ 48	
+13.33										−23.40	
+1 19.24 δ_2		35 37.84		39 7.1						37 72.85	
	+31.3	1 17.0	2.6	57	9.80	31	38.56		50	51 32 15.65	
	1.495544					51 32	41.61			− 26	+9.73
d 32	9.793671						− 26.06			− 12	
	1.415901n									+ 963	
((δ) − D) $\frac{d'}{100}$										+ 48	
+13.36										−22.90	
+1 19.20 δ_1		36 52.48		33 21.6						32 2.38	
	+34.1	1 13.4	0.2	57	6.80	31	41.55		50	32 17.30	
	1.532455					51 32	45.69			− 31	+9.69
d	9.793671						− 28.39			− 12	
	1.453111n									+ 964	
((δ) − D) $\frac{d'}{100}$										+ 48	
+13.36										−23.30	
+1 19.20 δ_2		36 52.41		33 22.9						32 3.69	
	+29.4	4 49.1	35.9	59	42.50	23	5.85		55	51 23 44.36	
	1.468355					51 24	8.91			− 23	+9.22
d 18	9.795710						− 24.55			− 52	
	1.390141n									+ 950	
((δ) − D) $\frac{d'}{100}$										+ 47	
+13.40										−22.85	
+1 19.08 δ_1		38 19.16		24 49.8						23 30.73	
	+31.6	4 47.6	35.0	59	41,30	23	7.05		55	23 44.80	
	1.499669					51 24	11.19			− 26	+9.20
d	9.795710						− 26.39			− 52	
	1.421148n									+ 951	
((δ) − D) $\frac{d'}{100}$										+ 47	
+13.40										−23.20	
+1 19.08 δ_2		38 19.23		24 49.9						23 30.80	
	+23.4	4 52.4	27.7	34	4585	48	3.30		30	51 48 47.00	
	1.369222					51 49	6.36			− 14	+9.77
d 24	9.791111						− 19.36			− 52	
	1.287022n									+ 994	
((δ) − D) $\frac{d'}{100}$										+ 49	
+13.47										−22.80	
+1 19.00 δ_1		40 3.96		49 53.0						48 33.97	
	+26.0	4 48.7	36.2	34	42,45	48	5.90		30	48 48.52	
	1.414997					51 49	10.04			− 18	+9.75
d	9.791111						− 21.52			− 52	
	1.332777n									+ 996	
((δ) − D) $\frac{d'}{100}$										+ 49	
+13.47										−23.25	
+1 19.00 δ_2		40 3.97		49 54.0						48 35.02	

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Date$_1$ = 1871, Nov. 7 Observer A.M. Recorder W.A.R.

Date$_2$ = 1871. Nov. 9 Observer A.M. Recorder W.A.R.

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
	m s	° ′		m	s	s	s	s	s		s		
	40 46	51 34	8.3	40	32.6	48.9	52.1	53.4	58.5	62.0	27 69	55.38	40 55.38
	39 49.0	51 29.0	8.5		34.9						−8.62		− 8.94
	κ				37.5								+ 34
					35.0								− 2
	((δ) − D) $\frac{\kappa'}{100}$												40 46.76
													− 3.21
	α_1												40 43.55
			8.3	40	28.8	48.5	51.7	55.1	58.3	61.6	27 52	55.04	40 55.04
					30.1						−8.39		− 8.62
	κ				32.0								+ 25
					30.3								− 2
	((δ) − D) $\frac{\kappa'}{100}$												40 46.65
													− 3.19
	α_2												40 43.46
0	42 17	51 15	8.7	41	58.0	42 19.2	22.6	25.9	29.1	32.4	12 93	25.86	42 25.86
	41 26.0	51 9.1	9.0		57.7						−8.63		− 8.94
	κ				61.9								+ 33
					59.8								− 2
	((δ) − D) $\frac{\kappa'}{100}$												42 17.23
													− 3.21
	α_1												42 14.02
			8.0	41	56.1	42 19.4	22.6	26.7	29.1	32.3	12 89	25.78	42 25.78
					57.7						−8.39		− 8.62
	κ				59.6								+ 25
					57.8								− 2
	((δ) − D) $\frac{\kappa'}{100}$												42 17.39
													− 3.19
	α_2												42 14.20
0	43 45	51 36	8.8	43	24.5	47.7	51.0	54.4	57.5	61.0	27 16	54.32	43 54.32
	42 48.6	51 30.1	8.7		26.3						−8.62		− 8.94
	κ				28.6								+ 34
					26.4								− 2
	((δ) − D) $\frac{\kappa'}{100}$												43 45.70
													− 3.24
	α_1												43 42.46
			8.8	43	24.0	47.4	50.7	54.0	57.4	60.7	27 02	54.04	43 54.04
					25.3						−8.39		− 8.62
	κ				27.0								+ 25
					25.4								− 2
	((δ) − D) $\frac{\kappa'}{100}$												43 45.65
													− 3.22
	α_2												43 42.43
0	45 21	52 0.2	8.6	45	0.0	23.4	26.6	29.9	33.3	36.6	14 98	29.96	45 29.96
	44 24.4	51 56.9	8.5		1.4						−8.61		− 8.94
	κ				3.4								+ 35
					1.6								− 2
	((δ) − D) $\frac{\kappa'}{100}$												45 21.35
													− 3.27
	α_1												45 18.08
			8.5	44	55.4	45 23.1	26.3	29.8	33.1	36.4	14 87	29.74	45 29.74
					57.0						−8.38		− 8.62
	κ				58.9								+ 26
					57.1								− 2
	((δ) − D) $\frac{\kappa'}{100}$												45 21.36
													− 3.25
	α_2												45 18.11
0	4 6 25	52 0 0	9.0	45	59.7	46 26.3	29.6	33.0	36.3	39.8	16 50	33.00	46 33.00
	45 27.6	51 54.0	6.8		62.2						−8.61		− 8.94
	κ		6.3	46	0.9								+ 35
													46 24.39 46 21.11
	((δ) − D) $\frac{\kappa'}{100}$			46	3.7	27.0	30.6	33.8	37.1	40.5	16 90	33.80	− 3.28
											−8.61		46 33.80
	α_1												− 8.94
													+ 35
													− 2 46 25.19
			9.5	46	1.0	26.1	29.4	32.8	35.8	39.7	16 38	32.76	46 32.76 − 3.28 21.91
			6.8		3.6						−8.38		− 8.62
	κ				2.3								+ 26
													− 2 46 24.36
	((δ) − D) $\frac{\kappa'}{100}$			46	5.8	26.8	30.3	33.5	36.8	40.1	16 76	33.52	46 33.52 − 3.27
					8.7						−8.38		− 8.62 46 21.11
	α_2				7.2								+ 26
													− 2
													46 25.14
													− 3.27
													21.87

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+20.4	4 15.9	1.4	49	8,65	33	39.70		45	51 34 25.79	
	1.30963					51 34	42.76			− 11	+9.61
d	9.79335						− 16.97			− 45	
	1.22967									+ 9.69	
34										+ 48	
$((\delta) - D)\ \frac{d'}{100}$										− 22.75	
+13.48											
δ_1		40 57.03		35 31.6						34 12.65	
+/ 18.92											
	+24.7	4 11.5	− 1.8	49	4,35	33	44.00		45	34 27.59	
	1.39270					51 34	48.14			− 16	+9.56
d	9.79335						− 20.55			− 45	
	1.31274									+ 9.69	
										+ 48	
$((\delta) - D)\ \frac{d'}{100}$										− 23.15	
+13.48											
δ_2		40 56.94		35 32.9						34 14.00	
+/ 18.92											
	+26.1	3 49.6	35.7	8	4265	14	5.70		5	51 14 46.89	
	1.41664					51 15	8.76			− 18	+9.22
d	9.79652						− 21.87			− 41	
48	1.33985									+ 9.35	
										+ 46	
$((\delta) - D)\ \frac{d'}{100}$										− 22.63	
+13.51											
δ_1		42 27.53		15 52.3						14 33.46	
+/ 18.80											
	+28.0	3 48.1	34.0	8	4105	14	7.30		5	14 47.78	19
	1.44716					51 15	11.44			− 21	+9.20
d	9.79652						− 23.46			− 41	
	1.37037									+ 9.35	
										+ 46	
$((\delta) - D)\ \frac{d'}{100}$										− 23.05	
+13.51											
δ_2		42 27.71		15 52.9						14 34.12	
+/ 18.80											
	+27.9	8 5.3	50.3	47	57,80	34	50.55		45	51 35 30.41	
	1.44560					51 35	53.61			− 21	+9.66
d	9.79319						− 23.20			− 33	
28	1.36548									+ 9.72	
										+ 48	
$((\delta) - D)\ \frac{d'}{100}$										− 22.60	
+13.57											
δ_1		43 56.03		36 36.2						35 14.47	
+/ 18.76											
	+28.6	3 1.5	~~10.7~~ ~~46.3~~ 49.3	47	55,40	34	52.95		45	35 33.31	
	1.45697					51 35	57.09			− 22	+9.66
d	9.79319						− 23.78			− 32	
	1.37625									+ 9.72	
										+ 48	
$((\delta) - D)\ \frac{d'}{100}$										− 22.95	
+13.57											
δ_2		43 56.00		36 38.8						35 20.02	
+/ 18.76											
	+28.4	1 27.6	13.0	21	20,30	1	28.05		20	52 2 7.72	
	1.45382					52 2	31.11			− 21	+10.34
d	9.78902						− 23.39			− 14	
24	1.36903									+1019	
										+ 50	
$((\delta) - D)\ \frac{d'}{100}$										−22.50	
+13.64											
δ_1		45 31.72		3 14.2						1 55.56	
+/ 18.64											
	+32.6	1 23.9	11.9	21	17,90	1	30.45		21	2 7.74	
	1.51322					52 2	34.59			− 28	+10.28
d	9.78902						− 26.85			− 14	
	1.42893									+1020	
										+ 50	
$((\delta) - D)\ \frac{d'}{100}$										−22.85	
+13.64											
δ_2		45 31.75		3 13.8						1 55.17	
+/ 18.64											
+13.67											
+/ 18.56	+32.1	4 0.4	47.7	23	5405	58	54.30		20	51 59 30.90	5N ~~0~~ ~~16.89~~ 32.51
24 d	1.50651					51 59	57.36		59 30.90	− 27	59 ~~37.83~~
	9.78934			23	53,49		− 26.46		+ 9.95	− 43	− 15 + 10.07
	1.42254						− ~~19.53~~ 20.47			+1015	− 43
$((\delta) - D)\ \frac{d'}{100}$	(+30.1)	30 1.47857								+ 50	+1015
	(−17.6)	7833								−2245	+ 50
	1.37475	12665									− 22.45
	9.78934	.29460		46 34.78	0 37.0					59 18.40	59 ~~25.45~~ 20.73
	1.29078	30 1		35.58	39.3						
+13.67	+30.5	4 3.8	− 10.6	23	5660	58	51.75		20	59 30.75	59 34.21
+/ 18.56	1.48430					51 59	55.89		59 30.75	− 25	− 18 + 10.05
d	9.78934						− 25.14		+ 9.98	− 43	− 43
	1.40033						− 21.68			+ 10.16	+ 10.16
	+26.3									+ 50	+ 50
$((\delta) - D)\ \frac{d'}{100}$										− 22.80	− 22.80
+13.67	1.41996										
δ_2	9.78934		46 34.78	0 36.5						59 17.93	59 21.46
+/ 18.56	1.33579		46 35.54	40.0							
+13.67											
+/ 18.56											

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135

Date$_1$ = 1871 Nov 7 Observer A. M. Recorder W. A. R.

137

Date$_2$ = 1871 Nov 9 Observer A. M. Recorder W. A. R.

40

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
h	m s	° ′ ″		m s	s	s	s	s	s	s	s	m s	
	47 35	50 30	8.2	47	26.6	39.4	43.1	46.5	49.7	52.9	23 21	46.42	47 46.42
	46 40.6	50 25.0	8.6		28.0						−8.63		− 8.94
	κ				30.6								+ 33
	((δ) − D) $\frac{\kappa'}{100}$				28.4								− 2
	α_1												47 37.79
													− 3.23
													47 34.56
			8.7	47	22.0	39.7	43.0	46.1	49.4	52.7	23 09	46.18	47 46.18
					23.3						−8.40		− 8.62
	κ				24.7								+ 24
	((δ) − D) $\frac{\kappa'}{100}$				23.3								− 2
	α_2												47 37.78
													− 3.22
													47 34.56
0	48 50	51 48	7.8	48	32.0	53.2	56.6	59.9	63.0	66.4	29 91	59.82	48 59.82
	47 52.9	51 42.1	8.4		34.1						−8.63		− 8.95
	κ				36.4								+ 34
	((δ) − D) $\frac{\kappa'}{100}$				34.1								− 2
	α_1												48 51.19
													− 3.29
													48 47.90
			8.2	48	29.8	52.8	56.1	59.6	63.0	66.2	29 77	59.54	48 59.54
					31.0						−8.39		− 8.62
	κ				32.7								+ 25
	((δ) − D) $\frac{\kappa'}{100}$				31.1								− 2
	α_2												48 51.15
													− 3.28
													48 47.87
0	49 55	51 33	7.0	47	45.7	58.3	1.4	4.8	8.2	11.6	32 53	64.86	50 4.86
	48 57.8	51 27.3	7.3		47.6						−8.63		− 8.95
	κ				48.3								+ 34
	((δ) − D) $\frac{\kappa'}{100}$				47.5								− 2
	α_1												49 56.23
													− 3.28
													49 52.95
			7.5	49	36.4	58.0	1.2	4.7	7.8	11.1	32 26	64.56	50 4.56
					37.6						−8.39		− 8.62
	κ				39.1								+ 25
	((δ) − D) $\frac{\kappa'}{100}$				37.7								− 2
	α_2												49 56.17
													− 3.28
													49 52.89
0	51 31	51 50	8.3	51	6.6	33.7	36.8	40.2	43.6	46.9	20 12	40.24	51 40.24
	50 33.1	51 44.1	7.8		8.1						−8.62		− 8.95
	κ				10.2								+ 35
	((δ) − D) $\frac{\kappa'}{100}$				8.3								− 2
	α_1												51 31.62
													− 3.31
													51 28.31
			8.7	51	1.1	33.4	36.7	40.0	43.2	46.8	20 01	40.02	51 40.02
					2.5						−8.38		− 8.62
	κ				5.0								+ 2.6
	((δ) − D) $\frac{\kappa'}{100}$				2.8								− 2
	α_2												51 34.64
													− 3.31
													51 28.33
0	52 54	51 27	8.0	52	29.3	56.4	59.5	63.0	66.3	69.6	31 51	63.02	53 3.02
	51 56.1	51 21.3	7.8		31.0						−8.63		− 8.95
	κ				33.7								+ 34
	((δ) − D) $\frac{\kappa'}{100}$				31.3								− 2
	α_1												52 54.39
													− 3.31
													52 51.08
			8.3	52	32.4	56.1	59.5	62.7	65.8	68.3	31 34	62.66	53 2.68
					33.7						−8.39		− 8.62
	κ				35.4								+ 25
	((δ) − D) $\frac{\kappa'}{100}$				33.8								− 2
	α_2												52 54.29
													− 3.31
													52 50.98

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	8	3′16.9	2.″7	58′	9.80	29	38.56		50	50 30 26.29	
	+18.0					50 30	41.61			− 9	+ 8.54
d	1.255227						− 15.32			− 34	
	9.80336									+ 864	
24	1.18532n									+ 43	
((δ) − D) $\frac{d'}{100}$										− 22.25	
+1.63										30 12.58	
+1.1848 δ_1		47 48.19		31 31.1							
	+22.9	3 12.2	− 1.0	53	560	29	42.75		50	30 27.40	
	1.359984					50 30	46.89			− 13	+ 8.51
d	9.80336						− 19.49			− 34	
	1.28989n									+ 856	
((δ) − D) $\frac{d'}{100}$										+ 43	
+1.63										− 2260	
+1.1848 δ_2		47 48.19		31 31.8						30 13.31	
	+25.7	0 56.0	40.7	35	48.35	47	00 00		35	51 47 41.78	
	1.40993					51 48	3.06			− 18	+ 10.15
28 d	9.79128						− 21.28			− 9	
	1.32790n									+ 993	
((δ) − D) $\frac{d'}{100}$										+ 49	
+1.73										− 2230	
+1.1840 δ_1		49 1.63		48 48.0						47 29.63	
	+28.4	0 51.3	38.2	35	44.75	47	3.60		35	47 41.23	
	1.45332					51 48	7.74			− 22	+ 10.11
d	9.79128						− 23.51			− 8	
	1.37129n									+ 992	
((δ) − D) $\frac{d'}{100}$										+ 49	
+1.73										− 22.60	
+1.1840 δ_2		49 1.60		48 50.1						47 31.74	
	+17.4	1 3.1	48.0	50	55.55	31	52.80		50	51 32 41.38	
	1.240055					51 32	55.86			− 8	+ 9.96
30 d	9.79367						− 14.48			− 10	
	1.16091n									+ 966	
((δ) − D) $\frac{d'}{100}$										+ 48	
+1.74 δ_1										− 22.20	
+1.1832		50 6.69		33 47.5						32 29.14	
	+26.9	0 64.2	40.7	50	47.45	32	0.90		50	32 42.65	
	1.42975					51 33	5.04			− 19	+ 9.87
d	9.79367						− 22.39			− ~~10~~	
	1.35011n									+ 967	
((δ) − D) $\frac{d'}{100}$										+ 48	
+1.74 δ_2										− 22.53	
+1.1832		50 6.63		33 48.3 4						32 29.97	
	+31.9	40.4	45.8	33	53.10	48	55.25		30	51 49 31.92	
	1.50370					51 49	58.31			− 27	+ 9.75
22 d	9.79095						− 26.39			− 43	
	1.42143n									+ 996	
((δ) − D) $\frac{d'}{100}$										+ 49	
+1.81										− 2215	
+1.1823 δ_1		51 42.12		50 37.7						49 19.52	
	+37.2	3 56.2	4 3.4	33	49.80	48	58.55		30	49 31.92	
	1.57054					51 50	2.69			− 38	+ 9.66
d	9.79095						− 30.77			− 42	
	1.48818n									+ 997	
((δ) − D) $\frac{d'}{100}$										+ 49	
+1.81										− 2240	
+1.1820 δ_2		51 42.14		50 37.4						49 19.18	
	+31.7	1 44.7	29.3	56	27.50	26	11.35		55	51 26 47.96	
	1.50106					51 27	14.41			− 26	+ 9.59
34 d	9.79463						− 26.45			− 18	
	1.42238n									+ 966	
((δ) − D) $\frac{d'}{100}$										+ 47	
+1.82 δ_1										− 22.05	
+1.1808		53 4.90		27 53.6						26 35.50	
	+28.9	1 46.7	34.6	56	40.65	26	7.70		55	26 47.73	
	1.46090					51 27	11.84			− 22	+ 9.62
d	9.79463						− 24.11			− 19	
	1.38222n									+ 956	
((δ) − D) $\frac{d'}{100}$										+ 47	
+1.82 δ_2										− 22.30	
+1.1808		53 4.80		27 53.1						26 35.08 5	

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1871phae.proj.1578R

135

Date$_1$ = 1871 Nov 7 Observer A. M. Recorder W. A. R

137

Date$_2$ = 1871 Nov 9 Observer A. M. Recorder W. A. R,

42

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
0	m s 53 46 52 48.6	° ′ ″ 51 22 51 16.5	7.8 7.5	m s 53 30.0 31.7 33.6 31.7	s 48.9	s 52.4	s 53.6	s 58.9	s 62.3	s 27 81 −8.63	s 55.62	m s 53 55.62 − 8.95 + 34 − 2 53 46.99 − 3.32 53 43.67	+13.8 +1 1
			8.0	53 28.0 29.3 31.0 29.4	48.6	52.0	53.2	58.5	62.1	27 67 −8.39	55.34	53 55.34 − 8.62 + 25 − 2 53 46.95 − 3.32 53 43.63	+13. +1 1
0	55 17 54 19.9	51 15 51 9.2	9.0 9.0	54 56.8 58.2 60.2 58.4	21.0	24.3	27.4	30.8	34.1	13 76 −8.64	27.52	55 27.52 − 8.95 + 33 − 2 55 18.88 − 3.33 55 15.55	26 +13.8 +1 1
			—	55 3.0 4.8 6.7 4.8	20.7	23.7	27.2	30.6	33.9	13 63 −8.39	27.26	55 27.26 − 8.62 + 25 − 2 55 18.87 − 3.32 55 15.55	+13.8 +1 1
0	19 36 18 42.4	51 44 51 38.3	9.0 8.7	19 13.0 14.4 16.6 14.6	39.4	42.6	46.0	44.4	52.7	23 01 −8.60	46.02	19 46.02 − 8.92 + 34 − 2 19 37.42 − 3.01 19 34.41	32 +12.8 +1 15
0	17 20 16 26.6	51 18 51 13.0	6.0 6.0	17 1.5 2.9 4.1 3.0	24.1	27.4	30.1	34.0	37.3	15 35 −8.~~40~~ 39	30.70	17 30.70 − 8.~~62~~ 62 + 25 − 2 17 22.30 − 2.95 17 19.36	(+12.8 +1 2
0	18 44 17 50.6	51 17 51 11.9	9.1 9.0	18 25.5 26.7 25.5 26.9	46.6	49.7	53.8	58.3	59.5	26 49 −8.~~40~~ 39	52.98	18 52.98 − 8.~~62~~ 62 + 25 − 2 18 44.58 − 2.96 18 41.63	(+12. +1 1

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1871phaeproj.1578R

Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+23.9	1 ′ 61.0	35.3	1 ′	43.15	21	5.20		0 ′	51 21 48.28	
d	1.37840					51 22	8.26			− 15	+9.60
28	9.79542						−19.98			− 19	
((δ) − D) $\frac{d'}{100}$	1.30051m									+9.47	
+13.85										+ 47	
δ_1		53 57.52		22 53.9						−2200	
+/1800										21 35.88	
	+25.9	1 47.9	34.6	1	41.25	21	7.10		0	21 49.59	
d	1.41330					51 22	1.24			− 18	+9.59
	9.79542						− 21.65			+ 19	
((δ) − D) $\frac{d'}{100}$	1.33541m									+ 9.47	
+13.85										+ 47	
δ_2		53 57.48		22 54.9						−2225	
+/1800										21 36.93	
	+29.1	4 4.3	50.3	8	57.30	13	51.05		5	51 14 29.73	
d	1.46389					51 14	54.11			− 22	+9.14
	9.79652						− 24.38			− 43	
26	1.38710n									+ 933	
((δ) − D) $\frac{d'}{100}$				34.9						+ 46	
+13.88										−21.80	
δ_1		55 29.43		15 35.6						14 17.07	
+/17.88											
	+22.5	4 10.6	− 3.0	9	3.80	13	44.55		5	14 29.84	
d	1.35218					51 14	48.69			− 13	+9.23
	9.79652						− 18.85			− 45	
((δ) − D) $\frac{d'}{100}$	1.28539n									+ 9.47	
+13.88										+ 46	
δ_2		55 29.43		15 34.8						−2210	
+/17.88										14 16.97	
	+31.4	4 25.0	11.6	39	18.30	43	30.05		35	51 44 7.08	
d	1.49693					51 44	33.11			− 26	+9.63
	9.79176						− 26.03			− 47	
32	1.41538n									+ 987	
((δ) − D) $\frac{d'}{100}$										+ 49	
+12.87										−2385	
δ_1		19 47.28		45 12.8						43 52.86	
+/19.92											
	+27.7	0 3.1(4)	50.9	4	57.80	17	51.35		5	51 18 32.31	
d	1.44248					51 18	55.49			− 20	+9.69
	9.79589						− 23.18			− 0	
((δ) − D) $\frac{d'}{100}$	1.36506n									+ 942	
+12.80										+ 47	
δ_2		17 32.16		19 37.6						−2435	
+/2000										18 17.65	
	+26.1	0 44.7	32.0	3	38.35	17	10.00		5	51 17 52.29	
d	1.41664					51 18	14.14			− 18	+9.64
	9.79605						− 21.85			− 7	
((δ) − D) $\frac{d'}{100}$	1.33938n									+ 942	
+12.84										+ 47	
δ_1		18 54.47		18 57.6						−2430	
+/19.96										17 37.63	
d											
((δ) − D) $\frac{d'}{100}$											
δ_3											
d											
((δ) − D) $\frac{d'}{100}$											
δ_1											
d											
((δ) − D) $\frac{d'}{100}$											
δ_2											

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Date$_1$ = 1871 Nov. 19. Observer W. A. R. Recorder W. A. R. n = +.31

Date$_2$ = 1871. Nov. 22. Observer W. A. R. Recorder W. A. R. n = +.21

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
22 h	m s	° ′ ″		m s	s	s	s	s	s		s	m s	
	45 25	50 56	7.8	45 45.6	—	27.4	30.8	34.0	37.4			45 30.77	
	44 436	50 50.8	7.6	47.5						-5.09		− 5.45	
	κ			49.6								+ 38	
				47.5								− 2	
	((δ) − D) $\frac{\kappa'}{100}$											45 25.68	81
48												− 1.67	
	a_1											45 24.01	+10.1
													+1 16
			7.5	44 59.6	45 23.4	26.6	30.1	33.2	36.5	14 982	2996	45 29.96	
				60.2						-4.32		− 4.56	
	κ			61.7								+ 26	
				64.4								− 2	
	((δ) − D) $\frac{\kappa'}{100}$			45 1.4								45 25.64	
												− 1.60	
	a_2											45 24.04	+10
													+1 1
22	49 54	50 54	9.1	49 32.0	53.7	57.0	60.3	63.4	66.7	30 11	6 022	50 0.22	
	49 11.2	50 49.2	8.9	34.0						-5.09		− 5.45	
	κ			36.1								+ 38	
				34.0								− 2	
	((δ) − D) $\frac{\kappa'}{100}$											49 55.13	88
												− 1.73	
	a_1											49 53.40	+10.3
													+1 16
			9.0	49 25.0	52.7	56.1	59.4	62.6	65.9	29 67	59.34	49 59.34	
				26.7						-4.32		− 4.56	
	κ			29.0								+ 26	
				26.9								− 2	
	((δ) − D) $\frac{\kappa'}{100}$											49 55.02	
												− 1.65	
	a_2											49 53.37	+10.3
													+1 16
22	51 55	50 55	8.7	51 35.2	54.4	57.7	61.0	64.2	67.4	30 47	60.94	52 0.94	
	51 12.4	50 53.3	8.7	37.1						-5.09		− 5.45	
	κ			39.4								+ 38	
				37.2								− 2	
	((δ) − D) $\frac{\kappa'}{100}$											51 55.85	94
												− 1.76	
	a_1											51 54.09	+10.3
													+1 16
			8.8	51 33.0	53.4	56.8	60.1	63.2	66.5	30 00	6 0.00	52 0.00	
		53 57		35.0						-4.33		− 4.57	
	κ			37.6								+ 26	
				35.2								− 2	
	((δ) − D) $\frac{\kappa'}{100}$											51 55.69	
												− 1.68	
	a_2											51 53.99	+10.3
													+1 16
22	56 08	50 09	7.8	55 40.8	56 4.4	11.6	14.8	18.0	21.2	7 40	14.80	56 14.80	
	55 25.5	50 4.4	7.5	43.0						-5.10		− 5.45	
	κ			44.7								+ 37	
				42.8								− 2	
	((δ) − D) $\frac{\kappa'}{100}$											56 9.40	88
												− 1.81	
	a_1											56 7.89	+10.
													+1 17
			7.5	55 39.7	56 7.6	10.7	13.8	17.1	20.4	6 96	13.92	56 13.92	
				41.3						-4.34		− 4 57	
	κ			42.9								+ 25	
				41.3								− 2	
	((δ) − D) $\frac{\kappa'}{100}$											56 9.58 3	
												− 1.70	
	a_2											56 7.85	+10.
													+1 17
22	58 27	50 49	9.4	58 49.4	38.0	41.2	44.4	47.7	51.0	222 3	4 4.46	58 44.46	
	57 54.2	50 44.1	9.0	51.6						-5.19		− 5.45	
	κ			54.3								+ 38	
				51.7								− 2	
	((δ) − D) $\frac{\kappa'}{100}$											58 39.27	
												− 1.84	
	a_1											58 37.43	+10.3
													+1 17
			9.3	58 10.7	36.9	40.3	43.8	46.7	50.0	21 37	4 3.54	58 43.54	
				12.6						-4.33		− 4.57	
	κ			15.6								+ 26	
				12.9								− 2	
	((δ) − D) $\frac{\kappa'}{100}$											58 39.21 6	
												− 1.78	
	a_2											58 37.45	+10.5
													+1 17

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1871phacs.proj.15788

Nov. 19 +1′ 3.″57 −.″11
" 22 +1 2.61 −.11

45

Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	5	3′ 6.″2	53.″3	29	59.″75	54	48.60		25′	50 56 6.26	
	~~+43.3~~					50 55	52.17			− 8	+9.19
d	−14.7						+ 14.09			− 33	
81 ((δ) − D) $\frac{d'}{100}$	1.222472 m									+ 9.11	
	9.799150									+ 49	
+10.18	1.14891									−27.55	
+1 16.04 δ_1		45 34.19		57 3.9						55 47.90	
	+28.6	2 25.0	15.0	27	2170	55	28.35		25	56 6.83	
d	1.456237					50 56	30.96			− 22	+8.92
	9.799370						− 24.13			− 27	
((δ) − D) $\frac{d'}{100}$	1.382566 m									+ 887	
+10.18										+ 54	
+1 16.04 δ_2		45 34.22		57 4.1						−27.70	
										55 48.05	
	~~+26.2~~ ~~−33.8~~	3 52.1	40.3	28	46.20	54	2.15		25	50 54 43.61	
d	+26.2					50 55	5.72			− 18	+8.98
	1.418304						− 22.11			− 42	
88 ((δ) − D) $\frac{d'}{100}$	9.799655									+ 9.09	
	1.344464 m									+ 49	
+10.31										−27.55	
+1 16.52 δ_1		50 3.71		55 41.6						54 25.04	
	+32.4	3 45.7	34.7	28	40.20	54	8.16		25	54 43.42	
d	1.510555					50 55	10.76			− 28	+8.72
	9.799655						− 27.34			− 40	
((δ) − D) $\frac{d'}{100}$	1.436891 m									+ 886	
+10.31										+ 54	
+1 16.52 δ_2		50 3.68		55 41.0						−27.70	
										54 24.41	
	+23.7	4 49.8	37.0	24	43.40	58	4.95		20	50 58 48.55	
d	1.374755					50 59	8.52			− 15	+8.99
	9.799903						− 19.97			− 52	
94 ((δ) − D) $\frac{d'}{100}$	1.300471 m									+ 916	
+10.36										+ 50	
+1 16.72 δ_1		52 4.45		59 46.7						−27.60	
										58 29.94	
	+24.8	4 46.2	34.9	24	40.55	58	7.80		20	58 49.51	
d	1.394445					50 59	10.41			− 16	+8.80
	9.799903						− 20.90			− 52	
((δ) − D) $\frac{d'}{100}$	1.320171 m									+ 893	
+10.36										+ 55	
+1 16.72 δ_2		52 4.35		59 47.3						−27.75	
										58 30.56	
	+32.0	3 45.7	32.3	13	39.50	9	9.35		10	50 9 45.48	
d	1.505155					50 10	12.92			− 28	+8.06
	9.806556						− 27.44			− 40	
88 ((δ) − D) $\frac{d'}{100}$	1.438401 m									+ 828	
+10.53										+ 46	
+1 17.12 δ_1		56 18.42		10 43.2						−27.45	
										9 26.09	
	+32.6	3 44.0	31.0	13	37.50	9	10.85		10	9 45.50	
d	1.513222					50 10	13.46			− 29	+7.84
	9.806556						− 27.96			− 40	
((δ) − D) $\frac{d'}{100}$	1.446778 m									+ 807	
+10.53										+ 46	
+1 17.12 δ_2		56 18.38		10 42.8						−27.65	
										9 25.69	
	~~2.8~~ ~~+7.2~~	4 27.0	14.3	34	20.65	48	27.70		30	50 49 37.36	
d	−7.2					50 49	31.27			− 1	+9.01
	0.857338 m						+ 6.09			− 47	
52 ((δ) − D) $\frac{d'}{100}$	9.800558									+ 900	
	0.78460									+ 49	
+10.58										−22.55	
+1 17.36 δ_1		58 47.98		50 36.2						49 18.82	
	+30.6	3 54.6	43.2	33	48.90	48	56.45		30	49 36.18	
d	1.485772					50 50	2.06			− 25	+8.63
	9.800658						− 25.88			− 42	
((δ) − D) $\frac{d'}{100}$	1.412991 m									+ 877	
+10.58										+ 53	
+1 17.36 δ_2		58 48.00		50 34.4						−27.75	
										49 17.06	

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Date$_1$ = 1871, Nov. 19. 135 Observer W. A. R. Recorder W. A. R.

Date$_2$ = 1871, Nov. 22. 139 Observer W. A. R. Recorder W. A. R.

4.6

Ru

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
23	h m s 0 33	° ′ ″ 50 29	7.4	8 m s 10.8	s 24.6	s 27.9	s 31.1	s 34.6	s 37.6	15 5 8	s 31.16	m 0	s 31.16
	59 40.9	50 25.7	8.1	12.9						-5.81			- 5.45
	κ			15.1						5.09			+ 38
	((δ) — D) $\frac{\kappa'}{100}$			12.9									- 2
												0	26.07
	α_1												- 1.86
												0	24.21
			9.6	0	15.0	23.7	27.2	30.2	33.4	36.7	15 12	30.24	0 30.24
					17.3						-4.33		- 4.57
	κ				19.7								+ 26
	((δ) — D) $\frac{\kappa'}{100}$				17.3								- 2
												0	25.91
	α_2												- 1.79
												0	24.12
23	2 33	50 30	8.2	2	1.6	31.4	34.7	37.9	41.1	44.3	18 9 4	37.68	2 37.68
	1 48.6	50 25.0	8.1		3.6						-5.09		- 5.45
	κ				5.14								+ 38
	((δ) — D) $\frac{\kappa'}{100}$				3.5								- 2
												2	32.79
	α_1												- 1.89
												2	30.90
			8.5	2	2.2	30.7	33.8	37.1	40.2	43.4	18 5 2	37.04	2 37.04
					4.6						-4.33		- 4.57
	κ				5.9								+ 26
	((δ) — D) $\frac{\kappa'}{100}$				4.2								- 2
												2	32.71
	α_2												- 1.82
												2	30.89
23	5 01	50 47	8.6	4	33.2	5 0.2	3.4	6.8	9.9	13.1	3 34	6.68	5 6.68
	4 16.5	50 41.8	8.7		35.3						-5.09		- 5.45
	κ				37.5								+ 38
	((δ) — D) $\frac{\kappa'}{100}$				35.3								- 2
												5	1.59
	α_1												- 1.92
												4	59.67
			8.5	4	30.8	59.4	2.4	5.7	9.1	12.4	32 9 0	65.80	5 5.80
					32.6						-4.33		- 4.57
	κ				34.7								+ 26
	((δ) — D) $\frac{\kappa'}{100}$				32.7								- 2
												5	1.47
	α_2												- 1.84
												4	59.63
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+18.3	4 ~~28.0~~ 27.0	~~16.0~~ 15.0	54	~~27.0~~ 27.0	28	~~27.35~~ 27.35		50′	50 29 ~~16.33~~ 19.33	
d	1.26245				32	50 29	~~25.92~~ 25.92			− 9	+9.61
	9.80366						− 13.59			− 49	
92	1.19280m									+962	
((δ) − D) $\frac{d'}{100}$										+ 47	
+1062										−27.50	
δ_1 +/17.52		0 34.83		30 13.9						28 54.34	
	+12.9	4 31.5	19.8	54	2565	28	22.70		50	29 14.32	
d	1.11059					50 29	25.31			− 5	+8.37
	9.80366						− 10.99			− 48	
	1.04094m									+840	
((δ) − D) $\frac{d'}{100}$										+ 50	
+1062										−27.70	
δ_2 +/17.52		0 34.74		30 12.5						28 54.99	
	+34.4	3 15.3	3.0	53	9.15	29	39.20		50	50 30 13.49	
d	1.53656					50 30	42.77			− 32	+8.45
	9.80336						− 29.28			− 34	
84	1.46661m									+864	
((δ) − D) $\frac{d'}{100}$										+ 47	
+1068										−27.50	
δ_1 +/17.72		2 41.58		31 12.2						29 54.44	
	+32.8	3 15.3	4.1	53	9.70	29	38.65		50	30 13.34	
d	1.51587					50 30	41.26			− 29	+8.28
	9.80336						− 27.92			− 35	
	1.44592m									+842	
((δ) − D) $\frac{d'}{100}$										+ 50	
+1068										−27.70	
δ_2 +/17.72		2 41.57		31 11.6						29 53.92	
	+31.4	1 19.3	7.7	36	13.50	46	34.85		35	50 47 ~~16.33~~	
d	1.49693					50 47	38.42			11.85	+9.04
	9.80074						~~− 22.10~~			− 27	
88	1.42436m						− 26.57			− 13	
((δ) − D) $\frac{d'}{100}$										+ 8.95	
+1073										+ 49	
δ_1 +/17.92		5 10.40		48 11.3						−27.55	
										46 53.34	
	+33.1	1 16.5	5.0	36	10.75	46	37.60		35	47 12.20	
d	1.51983					50 47	40.21			− 30	+8.82
	9.80074						− 28.01			− 13	
	1.44726m									+872	
((δ) − D) $\frac{d'}{100}$										+ 53	
+1073										−27.75	
δ_2 +/17.92		5 10.36		48 11.2						46 53.27	
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											

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138

Date$_1$ = 1871 Nov. 19. Observer W. A. R. Recorder W. A. R.

139

Date$_2$ = 1871, Nov. 22. Observer W. A. R. Recorder W. A. R.

48

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
22 h	7 m 40 s	50° 49′	9.3	7 m 26.4 s	39.8 s	43.1 s	46.1 s	49.5 s	52.7 s	231 2	46.24 s	7 m	46.24
	6 55.8	50 44.1	9.3	28.7						−5.09			− 5.45
	κ			31.5									+ 38
	((δ) − D) $\frac{\kappa'}{100}$			28.8									− 2
												7	41.15
	α_1												− 1.95
												7	39.20
			9.2	7 20.0	39.0	42.1	45.4	48.7	52.0	227 2	45.44	7	45.44
	κ			21.8						−4.33			− 4.57
				24.6									+ 26
	((δ) − D) $\frac{\kappa'}{100}$			22.1									− 2
												7	41.11
	α_2												− 1.88
												7	39.23
23	10 09	50 08	9.3	9 42.5	10 8.4	11.4	14.5	17.8	21.0	7 81	14.62	10	14.62
	9 24.0	50 3.8	9.0	44.7						−5.10			− 5.45
	κ			47.2									+ 37
	((δ) − D) $\frac{\kappa'}{100}$			44.8									− 2
12 51												10	9.52
14 38	α_1												− 1.98
												10	7.54
			9.3	9 39.7	10 7.3	10.6	13.8	17.0	20.3	6 96	13.80	10	13.80
	κ			41.7						−4.34			− 4.57
				44.6									+ 25
	((δ) − D) $\frac{\kappa'}{100}$			42.0									− 2
												10	9.46
	α_2												− 1.91
												10	7.55
23	16 49	50 20	7.6	16 37.6	48.5	51.7	54.9	58.1	61.3	27 45	54.90	16	54.90
	16 34	50 15.1	7.4	39.3						−5.10			− 5.45
	κ			42.1									+ 37
	((δ) − D) $\frac{\kappa'}{100}$			39.6									− 2
19 2												16	49.80
	α_1												− 2.06
												16	47.74
			8.0	16 20.5	47.6	50.8	54.0	57.3	60.6	27 03	54.06	16	54.06
	κ			21.8						−4.33			− 4.57
				24.6									+ 26
	((δ) − D) $\frac{\kappa'}{100}$			22.8									− 2
												16	49.73
	α_2												− 1.99
												16	47.74
23	22 09	50 39	7.8	22 9.3	8.8	12.0	15.1	18.4	21.6	7 59	13.18	22	13.18
	21 23.1	50 34.0	7.7	10.6						−5.10			− 5.45
	κ			17.0									+ 37
	((δ) − D) $\frac{\kappa'}{100}$			9.9									− 2
												22	10.08
	α_1												− 2.13
												22	7.95
			7.5	21 39.6	22 7.8	11.1	14.2	17.5	20.8	7 14	14.28	22	14.28
	κ			41.6						−4.34			− 4.58
				43.5									+ 26
	((δ) − D) $\frac{\kappa'}{100}$			41.5									− 2
												22	9.94
	α_2												− 2.06
												22	7.88
23	24 28	50 16	9.0	24 8.3	26.9	30.2	33.4	36.5	40.0	18 70	33.40	24	33.40
	23 42.3	50 10.7	9.0	10.3						−5.10			− 5.45
	κ			12.0									+ 37
	((δ) − D) $\frac{\kappa'}{100}$			10.2									− 2
												24	28.30
	α_1												− 2.15
												24	26.15
			9.6	24 3.2	—	—	32.7	35.8	39.0	−4.35		24	32.60
	κ			5.0									− 4.58
				7.8									+ 25
	((δ) − D) $\frac{\kappa'}{100}$			5.3									− 2
												24	28.25
	α_2												− 2.09
												24	26.16

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+15.4	3 30.8	18.6	33	24.70	49	23.65		30	50 50 12.51	
d	1.240555					50 50	27.22			− 8	+9.01
	9.800431						− 14.71			− 37	
80	1.167677 m									+ 900	
((δ) − D) $\frac{d'}{100}$										+ 49	
+10.80										−27.50	
δ_1		7 50.00		58′ 12.2						49 54.05	
	+23.3	3 25.3	13.1	38	19.20	49	29.15		30	50 12.06	
d	1.367336					50 50	31.76			− 14	+8.80
	9.800431						− 19.70			− 36	
	1.294488 m									+ 877	
((δ) − D) $\frac{d'}{100}$										+ 53	
+10.80										−27.75	
δ_2		7 50.03		51′ 11.3						49 54.41	
	+29.8	4 25.7	11.3	14	18.50	8	29.85		10	50 9 7.86	
d	1.474226					50 9	33.42			− 23	+8.02
	9.806576						− 25.56			− 47	
82	1.407477 m									+ 826	
((δ) − D) $\frac{d'}{100}$										+ 46	
+10.91										−27.40	
δ_1		10 18.45		10 6.8						8 48.48	
+1 18.32											
	+31.8	4 21.0	9.0	14	15.50	8	33.35		10	9 8.69	
d	1.502443					50 9	35.96			− 27	+7.78
	9.806576						− 27.27			− 46	
	1.435685 m									+ 805	
((δ) − D) $\frac{d'}{100}$										+ 46	
+10.91										−27.65	
δ_2		10 18.46		10 7.1						8 48.82	
+1 18.32											
	+15.3	2 1.2	47.3	2	54.25	19	54.10		0	50 20 44.60	
d	1.184469					50 20	57.67			− 4	+8.58
	9.804773						− 13.07			− 32	
84	1.116111 m									+ 849	
((δ) − D) $\frac{d'}{100}$										+ 47	
+11.08										−27.35	
δ_1		16 58.82		21 44.6						20 25.83	
	+31.8	2 45.2	32.4	2	38.80	20	9.55		0	20 45.00	
d	1.502443					50 21	12.16			− 27	+8.18
	9.804773						− 27.16			− 29	
	1.433385 m									+ 826	
((δ) − D) $\frac{d'}{100}$										+ 48	
+11.08										−27.65	
δ_2		16 58.82		21 44.3						20 25.53	
	+5.3	4 22.6	9.5	44	16.05	38	32.30		40	50 39 31.37	
d	0.724228					50 39	35.87			− 1	+8.83
	9.801197						− 4.50			− 47	
80	0.525294 m									+ 883	
((δ) − D) $\frac{d'}{100}$										+ 48	
+11.22										−27.35	
δ_1		22 19.17		40 32.0						39 12.85	
	+32.8	3 57.1	44.3	43	50.70	38	57.65		40	39 32.43	
d	1.515847					50 40	0.26			− 29	+8.36
	9.801917						− 27.83			− 42	
	1.444453 m									+ 859	
((δ) − D) $\frac{d'}{100}$										+ 48	
+11.22										−27.65	
δ_2		22 19.10		40 32.3						39 13.14	
	+23.2	2 18.0	5.2	7	11.60	15	36.75		5	50 16 20.47	
d	1.365449					50 16	40.32			− 14	+8.49
	9.805550						− 19.85			− 24	
80	1.297668 m									+ 840	
((δ) − D) $\frac{d'}{100}$										+ 47	
+11.30										−27.30	
δ_1		24 37.45		17 20.9						16 1.66	
+1 19.28											
	+27.3	2 14.8	1.8	7	8.30	15	40.05		5	16 19.31	
d	1.436166					50 16	42.66			− 20	+8.22
	9.805550						− 23.35			− 23	
	1.368356 m									+ 817	
((δ) − D) $\frac{d'}{100}$										+ 48	
+11.30										−27.55	
δ_2		24 37.46		17 19.3						15 59.98	
+1 19.28											

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Date$_1$ = 1871, Nov- 19. Observer W. A. R. Recorder W. A. R.

Date$_2$ = 1871. Nov - 22. Observer W. A. R. Recorder W. A. R.

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
23	26 27	50 16	8.0	26	0.1	28.2	31.5	34.8	37.8	41.1	173 3	34.66	26 34.66
	25 41.6	50 11.7	8.4		1.8						−5.10		− 5.45
	κ				4.0								+ 37
					1.9								− 2
	((δ) − D) $\frac{\kappa'}{100}$												26 29.56
													− 2.18
	c_1												26 27.38
			—	26	6.3	27.4	30.7	34.0	37.0	40.3	16 94	33.88	26 33.88
					8.5						−4.35		− 4.58
	κ				10.6								+ 25
					8.5								− 2
	((δ) − D) $\frac{\kappa'}{100}$												26 29.53
													− 2.11
	c_2												26 27.42
23	28 31	50 39	8.7	28	2.6	30.8	34.0	37.2	40.4	43.8	186 2	37.24	28 37.24
	27 44.6	50 34.4	8.2		4.5						−5.09		− 5.45
	κ				6.7								+ 38
					4.6								− 2
	((δ) − D) $\frac{\kappa'}{100}$												28 32.15
													− 2.20
	a_1												28 29.95
23	30 2		—	28	13.9	1st wire gone 33.4	36.6	39.6	42.9				28 36.48
					15.6						−4.34		− 4.58
	κ				18.5								+ 26
					16.0								− 2
	((δ) − D) $\frac{\kappa'}{100}$												28 32.14
													− 2.14
	a_2												28 30.00
23	30 21	50 24	8.5	29	57.7	30 20.7	23.8	27.0	30.2	33.3	13 90 2 699		30 27.00
	29 34.2	50 17.8	8.9		61.5						−5.10		− 15.46
	κ				62.2								+ 38
					62.1								− 2
	((δ) − D) $\frac{\kappa'}{100}$												30 21.90
													− 2.23
	a_1												30 19.67
			—	30	17.3	~~18.6~~	~~21.0~~						
					18.6	20.0	23.1	26.3	29.5	32.6	131 5	26.30	30 26.30
	κ				21.0						−4.34		− 4.58
					18.9								+ 26
	((δ) − D) $\frac{\kappa'}{100}$												− 2
													30 21.96
	a_2												− 2.16
													30 19.80
23	32 37	50 48	8.8	32	2.5	37.0	40.4	43.6	46.8	50.2	21 80	43.60	32 43.60
	31 49.7	50 43.0	9.0		5.8						−5.10		− 5.46
	κ				8.1								+ 38
					5.4								− 2
	((δ) − D) $\frac{\kappa'}{100}$												32 38.50
													− 2.26
	a_1												32 36.24
			8.8	32	12.0	36.2	39.6	42.7	45.9	49.2	21 36	42.72	32 42.72
					14.6						−4.34		− 4.58
	κ				17.8								+ 26
					14.6								− 2
	((δ) − D) $\frac{\kappa'}{100}$												32 38.38
													− 2.19
	a_2												32 36.19
23	34 59	50 58	8.0	34	37.0	~~58.6~~	2.0	5.1	8.2	11.6	32 55	65.10	35 5.10
	34 11.7	50 52.0	8.0		39.0						−5.10		− 5.46
	κ				40.9								+ 38
					38.9								− 2
	((δ) − D) $\frac{\kappa'}{100}$												35 00.00
													− 2.29
	a_1												34 57.71
			7.9	34	31.0	57.6	1.0	4.3	7.4	10.8	32 11	64.22	35 4.22
					33.0						−4.34		− 4.58
	κ				34.8								+ 26
					32.9								− 2
	((δ) − D) $\frac{\kappa'}{100}$												34 59.88
													− 2.22
	a_2												34 ~~58.02~~ 57.66

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	δ	1′ 16.3	3.6	6′	9.95	16	3840		5′	50 17 13.92	
	+32.8					50 17	41.97			− 29	+8.48
	1.515879						− 28.05			− 12	
d	9.805314									+ 842	
78	1.447904									+ 47	
((δ) − D) $\frac{d'}{100}$										−27.25	
+1135 δ₁		26 38.73		18 14.5						16 55.15	
+1 19.36											
	+25.4	1 20.7	5.2	6	14.45	16	3390		5	17 14.79	
	1.404483					50 17	36.51			− 17	+8.37
d	9.805534						− 21.72			− 13	
	1.336886									+ 819	
((δ) − D) $\frac{d'}{100}$										+ 48	
+1135 δ₂		26 38.77		18 15.0						−27.55	
+1 19.36										16 55.61	
	+32.6	3 27.0	15.3	43	21.5	39	2720		40	50 40 3.12	
	1.513228					50 40	30.77			− 29	+8.66
d	9.801822						− 27.65			− 36	
76	1.441736									+883	
((δ) − D) $\frac{d'}{100}$										+ 48	
+11.40 δ₁		28 41.35		41 4.0						−27.30	
+1 19.48										39 44.48	
	+20.6	3 37.0	25.2	43	31.0	39	1725		40	40 2.39	
	1.313877					50 40	19.86			− 12	+8.60
d	9.801822						− 17.47			− 39	
	1.242380									+ 859	
((δ) − D) $\frac{d'}{100}$										+ 52	
+1140 δ₂		28 41.40		41 2.9						−27.60	
+1 19.48										39 43.39	
	+24.9	3 30.6	17.3	58	23.95	24	2440		55	50 25 6.73	
	1.396420					50 25	27.97			− 17	+8.49
d	9.804428						− 21.24			− 37	
70	1.327177									+856	
((δ) − D) $\frac{d'}{100}$										+ 47	
+11.46 δ₁		30 31.13		26 7.6						−27.20	
+1 19.56										24 48.02	
	+7.4	3 42.7	30.6	58	36.65	24	1170		55	25 8.00	
	0.869230					50 25	14.31			− 2	+8.40
d	9.804428						− 6.31			− 40	
	0.800200									+ 833	
((δ) − D) $\frac{d'}{100}$										+ 49	
+11.46 δ₂		30 31.26 [42.2]		26 8.5						−27.50	
+1 19.56					35.50		~~12.95~~			24 48.90	
	+38.2	4 12.2	28.8	34	20.50	48	2785	12.85	30	50 48 ~~59.12~~ 44.12	
	1.582066					50 49	31.42	16.42		− 40	+8.57
d	9.800043						− 32.30			− 57	
88	1.509189									+ 899	
((δ) − D) $\frac{d'}{100}$										+ 49	
+11.51 δ₁		32 47.75		49 45.1						−27.25	
+1 19.64										48 25.44	
	+28.1	4 50.2	37.5	34	43.85	48	4.50		30	48 43.35	
	1.448871					50 49	7.11			− 21	+8.55
d	9.800043						− 23.76			− 52	
	1.375830									+ 875	
((δ) − D) $\frac{d'}{100}$										+ 53	
+11.51 δ₂		32 47.70		49 44.0						−27.55	
+1 19.64										48 24.35	
	+26.2	0 5.1	52.9	24	59.90	54	49.35		25	50 58 30.84	
	1.418300					50 58	52.92			− 18	+9.49
d	9.799903						− 22.08			− 0	
88	1.344022									+ 917	
((δ) − D) $\frac{d'}{100}$										+ 50	
+11.57 δ₁		35 9.28		59 32.8						−27.25	
+1 19.76										58 13.08	
	+31.3	4 59.7	47.8	24	58.75	54	5460		20	58 30.83	
	1.495540					50 58	57.21			− 26	+8.68
d	9.799903						− 26.38			− 54	
	1.421260									+ 893	
((δ) − D) $\frac{d'}{100}$										+ 55	
+11.57 δ₂		35 9.23		59 31.7						−27.55	
+1 19.76										58 11.96	

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Date$_1$ = 1871, Nov. 19. Observer W.A.R. Recorder W.A.R.

139

Date$_2$ = 1871, Nov. 22. Observer W.A.R. Recorder W.A.R.

52

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
22 h	m s	° ′		m s	m s	°	°	°	°			m	s
	37 07	50 11	8.0	36 37.7	37 6.3	9.5	12.7	15.8	19.1	6 34	12.68	37	12.68
	36 19.2	50 6.3	7.6	40.0						−5.11			−5.46
	κ			43.5									+ 37
				40.5									− 2
	((δ) − D) $\frac{\kappa'}{100}$											37	7.57
39	37 α_1												− 2.31
												37	5.26
			7.8	36 40.0	37 5.4	8.7	11.9	15.0	18.2	5 92	11.84	37	11.84
				42.1						−4.35			− 4.58
	κ			44.8									+ 25
				42.3									− 2
	((δ) − D) $\frac{\kappa'}{100}$											37	7.49
	α_2												− 2.24
												37	5.25
23	42 54	50 17	9.0	42 26.2	53.5	56.6	59.8	63.1	66.2	29 92	59.84	42	59.84
	42 5.7	50 12.5	8.8	28.0						−5.11			− 5.46
	κ			29.9									+ 37
				28.0									− 2
	((δ) − D) $\frac{\kappa'}{100}$											42	54.73
	α_1												− 2.37
												42	52.36
			9.3	42 33.2	52.6	55.8	59.1	62.1	65.4	29 50	59.00	42	59.00
				35.1						−4.36			− 4.59
	κ			36.8									+ 25
				35.0									− 2
	((δ) − D) $\frac{\kappa'}{100}$											42	54.64
	α_2												− 2.31
												42	52.33
23	44 45	50 37	8.0	44 27.6	44.7	47.8	51.2	54.4	57.7	25 56	51.16	44	51.16
	43 56.4	50 31.9	8.0	29.0						−5.10			− 5.46
	κ			31.7									+ 38
				29.4									− 2
	((δ) − D) $\frac{\kappa'}{100}$											44	46.06
	α_1												− 2.40
												44	43.66
			8.2	44 19.6	43.8	46.9	50.2	53.6	56.7	25 12	50.24	44	50.24
				21.8						−4.35			− 4.59
	κ			23.8									+ 26
				21.7									− 2
	((δ) − D) $\frac{\kappa'}{100}$											44	45.89
	α_2												− 2.34
												44	43.55
23	47 07	50 47	9.0	46 43.1	47 6.1	9.3	12.7	15.7	19.0	6 25	12.56	47	12.56
	46 17.2	50 41.7	7.0	45.1						−5.10			− 5.46
	κ 46 19.3	50 42.7	9.1	46.4									+ 38
				44.9									− 2
	((δ) − D) $\frac{\kappa'}{100}$			47 32.1	7.3	10.6	13.8	17.0	20.4	6 91	13.82	47	7.46 47 5.03
	α_1			33.8						−5.10			− 2.43
				36.0									13.82
				33.9									− 5.46
													+ 38
													− 2
												47	8.72
	46 17.2	50 41.7	9.2	46 37.3	47 4.4	8.5	11.8	14.9	18.1	5 97	11.94	47	11.94 − 2.43
	46 19.3	50 42.7	7.0	35.3						−4.35			− 4.59 47 6.29
	κ			37.8									+ 26
				35.4									− 2
	((δ) − D) $\frac{\kappa'}{100}$			47 22.6	—	9.8	13.0	16.2	19.5			47	7.39 − 2.37
	α_2			24.4						−4.35			12.99 − 4.59 47 5.02
				27.2									+ 26
				24.7									− 2
												47	8.64
23	48 54	50 09	9.0	48 47.0	54.0	57.0	60.4	63.6	66.8	30 18	60.36	49	0.36 − 2.37
	48 4.3	50 4.2	8.7	49.1						−5.11			− 5.46 6.27
	κ			51.3									+ 37
				49.1									− 2
	((δ) − D) $\frac{\kappa'}{100}$											48	55.25
	α_1												− 2.45
												48	52.80
			9.5	49 53.8	48 53.3	56.4	59.5	62.8	66.0	24 80	59.60	48	59.60
				56.3						−4.36			− 4.59
	κ			54.5									+ 25
				25.0									− 2
	((δ) − D) $\frac{\kappa'}{100}$			26.8								48	55.24
	α_2			29.6									− 2.38
				26.9								48	52.86

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+32.2	1 38.2	25.8	11	32.00	11	16.35		10	50 11 52.33	
	1.50786				50 12	19.92				− 29	+8.33
d	9.80625					− 27.59				− 17	
84	1.44080n									+ 833	
((δ) − D) d′/100										+ 46	
										−27.05	
+11.65 δ1		37 16.91		12 53.4						11 33.61	
+119.84											
	+29.5	1 39.1	26.4	11	32.75	11	15.60		10	11 52.93	
	1.46982				50 12	18.21				− 23	+8.17
d	9.80625					− 25.28				− 17	
	1.40276n									+ 816	
((δ) − D) d′/100										+ 47	
										−27.40	
+11.65 δ2		37 16.90		12 53.5						11 33.70	
+1 19.84											
	+31.8	0 45.0	33.0	5	39.00	17	9.35		5	50 17 45.73	
	1.50243				50 18	12.92				− 27	+9.55
d	9.80534					− 27.19				− 7	
84	1.43446n									+ 943	
((δ) − D) d′/100										+ 46	
										−26.95	
+1.81 δ1		43 4.17		18 48.3						17 28.33	
+1 20.00											
	+24.0	0 57.5	39.0	5	45.25	17	9.10		5	17 45.19	
	1.38021				50 18	5.71				− 15	+8.46
d	9.80534					− 20.52				− 8	
	1.31224n									+ 821	
((δ) − D) d′/100										+ 48	
										−27.30	
+1.81 δ2		43 4.14		18 46.4						17 26.35	
+1 20.00											
	+21.8	0 52.6	40.2	45	46.40	37	1.95		45	50 37 47.01	
	1.33846				50 38	5.52				− 13	+9.06
d	9.80228					− 18.51				− 9	
72	1.26743n									+ 880	
((δ) − D) d′/100										+ 48	
										−26.95	
+11.86 δ1		44 55.52		38 49.2						37 29.22	
+1 20.04											
	+28.5	0 45.3	32.0	45	38.65	37	9.70		45	37 48.11	
	1.44484				50 38	12.31				− 22	8.78
d	9.80228					− 24.20				− 7	
	1.38381n									+ 856	
((δ) − D) d′/100										+ 51	
										−27.30	
+11.86 δ2		44 55.41		38 49.6						37 29.59	
+1 20.04											
+11.92	+27.8	0 39.0	27.5	35	33.25	47	15.10		35	50 47 55.15	48 ~~5.27~~ 35.68 0
+1 20.08	1.44404	0 39.0	27.5	35	33.25	50 48	18.67		35	− 21 +9.20	− 11 +9.31
d	9.80074						− 23.52			− 6	− 6
74	1.37147n						− ~~3.38~~			+ 898	+ 898
((δ) − D) d′/100	+~~3~~9.9	−20.1					+ 17.01			+ 49	+ 49
	0.60994	1.30320n								−26.90	−26.90
δ1	9.80074	9.80074	47 16.95	48 57.5						47 37.45	48 18.08
+11.92	0.52894n	1.23063	18.21	49 38.2							
+1 20.08											
	+36.3	0 30.2	18.6	35	24.40	47	23.95		35	47 55.85	48 36.46
	1.55991	0 30.2	18.6	35	24.40	50 48	26.56		35	− 36 +8.86	− 4 +9.18
d	9.80074						− 30.71			− 4	− 4
83	1.48734n						+ 9.90			+ 873	+ 873
((δ) − D) d′/100	−11.7									+ 53	+ 53
	1.06819n									−27.30	−27.30
+11.92 δ2	9.80074	47 16.94		48 57.5						47 37.41	48 18.34
+1 20.08	0.99562	18.19		49 38.4							
+11.92	+~~48.3~~	3 57.8	45.3	13	51.53	8	56.80		10	50 9 50.68	
+1 20.08	+1.3					50 10	0.37			− 3	+8.30
d	1.05308						− 9.69			− 43	
76	9.80656									+ 830	
((δ) − D) d′/100	0.98633n									+ 46	
										−26.80	
+11.98 δ1		49 4.78		10 52.3						9 32.18	
+1 20.12											
	+~~32.7~~	4 28.8	17.0	14	22.90	8	25.45		10	9 51.47	
	−28.3					50 9	28.06			− 20	+7.85
d	1.43616n						+ 23.41			− 48	
	9.80656									+ 807	
((δ) − D) d′/100	1.36941									+ 46	
										−27.15	
+11.98 δ2		49 4.84		10 52.3						9 32.17	
+1 20.12											

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Date$_1$ = 1871, Nov- 19. Observer W.A.R. Recorder W.A.R. Date$_2$ = Nov- 22, 1871. Observer W.A.R. Recorder W.A.R. 54

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
21h	51m 34s	50° 66	8.7	57m 5s.8	3s 40.0	37.1	40.5	43.6	46.8	20 20	40.40	51	40.40
	50 44.5	50 1.8	8.4	7.6						-5.11			- 5.46
	κ			9.4									+ 37
	((δ) — D) $\frac{\kappa'}{100}$			9.6									- 2
	a_1											51	35.29
													- 2.47
												51	32.82
			9.2	57	44.0 16.8	33.3	36.3	39.7	42.9	46.1	19 83	39.66	51 39.66
					19.3						-4.36		- 4.59
	κ				16.7								+ 25
	((δ) — D) $\frac{\kappa'}{100}$												- 2
	a_2											51	35.30
	Nov- 19												- 2.41
												51	32.89
22	48 01	50 49	8.2	47 44.7 46.4	48 0.9	3.8	7.1	10.4	13.5	35 7	7.14	48	7.14
	47 18.8	50 45.3	8.0	48.8						-5.10			- 5.45
	κ			50.8									+ 38
	((δ) — D) $\frac{\kappa'}{100}$			47.8									- 2
	a_1											48	2.05
	Nov- 19												- 1.71
												48	0.34
23	12 51	50 40	9.1	13 17.2	12 51.3	54.3	57.5	60.8	64.0	28 79	57.58	12	57.58
	12 6.7	50 35.3	9.0	19.9						-5.09			- 5.45
	κ			22.1									+ 38
	((δ) — D) $\frac{\kappa'}{100}$			19.7									- 2
	a_2											12	42.49
	Nov- 19												- 2.02
												12	50.47
23	14 38	50 47	9.0	14 36.0	39.4	42.5	45.8	48.9	52.1	22 87	45.74	14	45.74
	13 53.8	50 42.4	9.0	37.7						-5.09			- 5.45
	κ			36.8									+ 38
	((δ) — D) $\frac{\kappa'}{100}$												- 2
	a_1											14	40.65
	Nov- 19												- 2.04
												14	38.61
23	19 02	50 17	9.0	18 45.6	19 1.8	5.0	8.2	11.3	14.6	4 09	8.18	19	8.18
	18 16.6	50 12.0	9.0	48.0						-5.10			- 5.45
	κ			50.4									+ 37
	((δ) — D) $\frac{\kappa'}{100}$			48.0									- 2
	a_2											19	3.08
	Nov- 19												- 2.09
												19	0.99
23	39 37	50 33	9.4	39 31.3	48.2	51.3	54.6	57.8	61.0	27 29	54.58	39	54.58
	38 59.7	50 28.0	9.0	34.0						-5.10			- 5.46
	κ			35.6									+ 38
	((δ) — D) $\frac{\kappa'}{100}$			33.6									- 2
	a_1											39	49.48
	Nov- 22												- 2.34
												39	47.14
22	5 3 57.8	50 19	8.3	53 6.0	60	11.1	14.3	17.5	21.0	72 9	14.58	53	14.58
	~~5 3 ~~ ~~11.0~~	50 14.4	8.2							-4.34			- 4.57
	52 26.0												+ 25
	κ												- 2
	((δ) — D) $\frac{\kappa'}{100}$											53	10.04
	a_2												- 1.67
												53	8.37
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	♂	1′ 4.1	56.8	18	57.45	6	50.90		15′	50 7 26.32	
	+32.8					50 7	54.47			− 29	+8.31
d	1.51587						− 28.15			− 11	
	9.80686									+ 825	
((δ) − D) $\frac{d'}{100}$	1.44942n									+ 46	
										− 27.70	
+12.06 δ_1		51 44.88		8 28.1						7 7.93	
+1 20.16											
	+23.0	1 10.2	−2.0	16	4.10	6	4425		15	7 27.12	
	1.36173					50 7	46.86			− 14	+8.22
d	9.80686						− 19.74			− 12	
	1.29528n									+ 802	
((δ) − D) $\frac{d'}{100}$										+ 46	
										− 27.10	
+12.06 δ_2		51 44.95		8 28.4						7 8.24	
+1 20.16											
	+19.3	2 39.2	26.6	32	32.90	50	1545		30	50 51 2.71	
	1.28556					50 51	19.02			− 10	+9.12
d	9.80027						− 16.31			− 28	
	1.21252n									+ 903	
((δ) − D) $\frac{d'}{100}$										+ 49	
										− 27.55	
+10.26											
+1 16.32 δ_1		48 10.60		52 0.6						50 44.28	
	+~~37.9~~ −22.1	3 23.1	11.2	43	17.15	39	3120		40	50 40 53.52	
	1.34439n					50 40	34.77			− 13	+8.85
d	9.80182						+ 18.75			− 36	
	1.27290									+ 886	
((δ) − D) $\frac{d'}{100}$										+ 48	
										− 27.45	
+10.96 δ_2		13 1.43		41 53.4						40 34.92	
+1 18.52											
	+8.9	0 47.0	35.0	35	41.00	49	7.35		35	50 48 3.39	
	0.94939					50 48	10.92			− 2	+7.37
d	9.80074						− 7.53			− 8	
	0.87682n									+ 898	
((δ) − D) $\frac{d'}{100}$										+ 49	
										− 27.45	
+11.00 δ_1		14 49.61		49 4.0						47 45.31	
+1 18.68											
	+20.2	~~0~~ 1.3	−11.2	~~45~~	55.05	146	53.30		5	50 18 39.60	80
	1.30535					50 187	56.87			7 − 13	+8.~~88~~
d	9.80519						− 17.27			+ ~~80~~	
	1.23723n									+ 845	
((δ) − D) $\frac{d'}{100}$										+ 47	
										− 27.35	
+11.14 δ_2		19 12.13		18 40.0						18 21.05	
+1 18.96											
	+21.0	~~0~~ 4 59.0	−13.3	~~60~~ 49	52.85	3x2	55.50		~~50~~ 45	50 3~~2~~3 41.21	9
	1.32222					50 3~~2~~3	59.07			− 12	+8.~~88~~
d	9.80305						− 17.86			~~77~~ 10	
	1.25196n									+ 872	
((δ) − D) $\frac{d'}{100}$										+ 48	
										− 27.05	
+11.72 δ_1		39 58.86		34 43.1						32 23.~~14~~ 3	
+1 18.52											
	+8.4	3 50.2	38.2	3	44.20	19	4.15		0	50 19 59.58	
	0.92428					50 20.	6.76			− 2	+8.29
d	9.80304						− 7.18			− 41	
	0.85601n									+ 824	
((δ) − D) $\frac{d'}{100}$										+ 48	
+10.44										− 27.65	
+1 16.84 δ_2		53 18.81		20 57.1						19 40.22	
d											
((δ) − D) $\frac{d'}{100}$											
δ_1											
d											
((δ) − D) $\frac{d'}{100}$											
δ_2											

4 UT = −84 (+929) + 0 + 07 = 91 [illegible]

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Date$_1$ = 1871, Nov 23. η = +.18 — Observer W.A.R. — Recorder W.A.R.

Date$_2$ = 1876 Nov 24. η = +.27, C = −.05 — Observer W.A.R. — Recorder W.A.R.

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Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
2	m s 51 34 50 44.5 κ	° ′ 50 16 50 1.8	8.8 8.4	m 51	s 1.1 2.8 5.4 3.1	32.9	36.1	39.3	42.4	45.7	1964 −4.24	39.28	m s 51 39.28 − 4.43 + 21 − 2 51 35.04 − 2.39 51 32.65
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
			8.6	51	23.3 25.0 28.0 25.4	32.0	35.2	38.4	41.6	44.9	1921 −3.37	38.42	57 38.42 − 3.59 + 32 − 8 − 2 51 35.05 − 2.35 51 32.70
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												
23	53 39 52 44.2 κ	50 33 50 28.6	8.9 8.9	53	10.8 12.9 15.4 13.0	38.1	41.2	44.4	47.6	50.8	2221 −4.23	44.42	53 44.42 − 4.43 + 22 − 2 53 40.19 − 2.41 53 37.78
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
			8.6	53	15.3 17.5 19.7 17.5	27.2	40.3	43.8	46.8	50.2	2180 −3.36	43.60	53 43.60 − 3.59 + 33 − 8 − 2 53 40.24 − 2.37 53 37.87
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												
23	56 05 55 15.5 κ	50 45 50 40.1	7.9 7.8	55	30.8 32.2 34.6 32.5	56 3.9	7.2	10.4	13.4	16.9	518 −4.23	10.36	56 10.36 − 4.43 + 22 − 2 56 6.13 − 2.45 56 3.68
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
			7.6	55	46.8 48.7 51.3 48.9	56 3.1	6.3	9.5	12.7	16.0	476 −3.36	9.52	56 9.52 − 3.59 + 33 − 8 − 2 56 6.16 − 2.41 56 3.75
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												
23	56 20 57 20.5 κ	50 28 50 22.6	8.0 8.2	57	45.4 46.8 49.0 47.0	58 19.8	23.0	26.3	29.5	32.7	1313 −4.23	26.26	58 26.26 − 4.43 + 22 − 2 58 22.03 − 2.48 58 19.55
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
			8.2	58	50.6 52.1 54.0 52.2	58 19.0	22.2	25.3	28.6	31.8	1269 −3.36	25.38	58 25.38 − 3.59 + 33 − 8 − 2 58 22.02 − 2.44 58 19.58
	κ	0 1 10											
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												
0	3 7 2 16.6 κ	50 02 50 −3.4	9.1 9.0	2	47.0 49.2 51.9 49.3	3 6.9	10.1	13.3	16.5	19.8	666 −4.23	13.32	0 13.32 − 4.42 + 21 − 2 3 9.09 − 2.53 3 6.56
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
			9.2	3	1.0 2.8 41.5 2.4	6.1	9.3	12.4	15.6	18.9	623 −3.37	12.46	3 12.46 − 3.59 + 32 − 8 − 2 3 9.09 − 2.49 3 6.60
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												

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Nov. 23 +1′ 2.″~~38~~ −.″11
" 25 +1 ~~3.06~~ 2.63 −.11

Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	∞	1′ 0.″0	46.″7	15	5′ 3.35	6	55.00		15′	+ 0.36	
	+36.2					50 7	57.02			50 7 25.96	
d	1.55871						− 31.06			− 36	+8.35
86	9.80686									− 10	
((δ) − D) $\frac{d'}{100}$	1.49226n									+ 835	
+12.06										+ 46	
δ_1		51 44.71		8 27.6						−27.20	
+1 20.16										7 7.47	
										− 0.43	
	+13.0	1 19.5	7.1	16	13.30	6	3505		15	7 26.95	
d	1.11394					50 7	38.11			− 5	+8.~~37~~ 49 ✓
	9.80686						− 11.16			− 13	
((δ) − D) $\frac{d'}{100}$	1.04749n									+ 821	
+12.06										+ 46	
δ_2		51 44.76		8 27.8						−27.40	
+1 20.16										7 7.61	
	+31.4	4 17.0	3.6	49	10.20	33	3805		45	50 34 13.38	
	1.49693					50 34	40.07			− 27	+8.64
d	9.80274						− 26.69			− 46	
82	1.42636n									+ 886	
((δ) − D) $\frac{d'}{100}$										+ 51	
+12.11										−27.25	
δ_1 +1 20.20		53 49.89		35 15.3						33 55.13	
	+26.1	4 20.3	4.0	49	14.15	33	3420		45	34 15.07	
	1.41664					50 34	37.26			− 18	+8.56
d	9.80290						− 22.19			− 46	
	1.34623n									+ 869	
((δ) − D) $\frac{d'}{100}$										+ 51	
+12.11										−27.45	
δ_2 +1 20.20		53 49.98		35 16.0						33 55.75	
	+37.9	2 53.0	39.7	37	46.35	45	200		35	50 45 31.93	
	1.57864					50 46	4.02			− 39	+8.88
d	9.80105						− 32.09			− 31	
84	1.50638n									+ 906	
((δ) − D) $\frac{d'}{100}$										+ 52	
+12.18										− 27.20	
δ_1 +1 20.20		56 18.86		46 34.2						45 13.97	
	+30.6	3 6.2	54.9	38	00.10	44	4825		35	45 33.87	
	1.31384					50 45	51.01			− 12	+8.97
d	9.80105						− 17.44			− 33	
	1.24161n									+ 890	
((δ) − D) $\frac{d'}{100}$										+ 52	
+12.18										− 27.45	
δ_2 +1 20.20		56 15.93		46 35.2						45 14.96	
	+39.3	0 22.3	9.7	53	16.40	24	32.35		55	50 28 0.89	
	1.59439					50 28	34.37			− 42	+8.78
d	9.80366						− 33.48			− 3	
88	1.52474n									+ 873	
((δ) − D) $\frac{d'}{100}$										+ 50	
+12.24										− 27.10	
δ_1 +1 20.20		58 31.79		29 3.1						27 42.93	
	+33.2	0 24.7	12.7	53	18.70	27	29.65		55	28 4.43	
	1.52114					50 28	32.71			− 31	+8.74
d	9.80366						− 28.28			− 3	
	1.45149n									+ 858	
((δ) − D) $\frac{d'}{100}$										+ 50	
+12.24										− 27.35	
δ_2 +1 20.20		58 31.82		29 5.6						27 45.39	
	+24.0	1 40.0	25.3	21	32.65	1	15.70		20	50 1 57.08	
	1.38021					50 2	17.72			− 15	+8.39
d	9.80777						− 20.64			− 17	
86	1.31467n									+ 826	
((δ) − D) $\frac{d'}{100}$										+ 45	
+12.38										− 26.90	
δ_1 +1 20.20		3 18.94		2 59.1						1 38.93	
	+9.8	1 50.6	37.8	21	44.20	1	4.15		20	1 58.78	
	0.99123					50 2	7.21			− 3	+8.35
d	9.80777						− 8.43			− 19	
	0.92569n									+ 812	
((δ) − D) $\frac{d'}{100}$										+ 45	
+12.38										− 27.10	
δ_2 +1 20.20		3 18.98		2 59.8						1 39.53	

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Date$_1$ = 1871 Nov. 23. Observer W.A.R. Recorder W.A.R. Date$_2$ = 1871 Nov. 25. Observer W.A.R. Recorder W.A.R. 58 Run

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
0	m s 3.7 4 16.7	° ′ ″ 50 16 50 10.7	9.1 9.0	m s 4 48.0 50.0 52.3 51.1	m s 5 7.3	s 10.5	s 13.7	s 16.9	s 20.2	6 66 −4.22	13.72	m s 5	13.72 −4.42 +22 −2
	κ											5	9.50 −2.56
	((δ) − D) $\frac{\kappa'}{100}$											5	6.94
	c_1												
			9.2	4 49.0 51.3 53.3 51.2	5 6.3	9.6	12.8	15.8	19.3	6 39 −3.37	12.78	5	12.78 −3.59 +32 −8 −2
	κ											5	9.41 −2.57
	((δ) − D) $\frac{\kappa'}{100}$											5	6.84
	c_2												
0	7 9 6 18.7 7 κ 4.8	50 50 52 44.3 50 48.9	8.0 9.5	7 27.0 28.7 31.0 28.9	7 54.9	58.0	61.0	64.3	67.6	30 56 −4.22	61.16	8	1.16 −4.42 +22 −2
	((δ) − D) $\frac{\kappa'}{100}$											7	56.94 −2.56
	c_1											7	54.38
			8.0	7 23.0 25.0 27.2 25.0	53.8	57.1	6 0.3	63.5	66.8	30 15 −3.36	60.30	8	0.30 −3.59 +33 −8 −2
	κ											7	56.94 −2.56
	((δ) − D) $\frac{\kappa'}{100}$											7	54.38
	c_2												
0	11 2 10 11.4	50 22 50 16.3	8.7 8.7	10 33.7 35.4 37.1 35.4	11 2.0	5.1	8.4	11.5	14.8	4 16 −4.22	8.36	11	8.36 −4.42 +22 −2
	κ											11	4.14 −2.68
	((δ) − D) $\frac{\kappa'}{100}$											11	1.51
	c_1												
			8.5	10 37.7 41.7 43.9 41.1	11 1.0	4.2	7.4	10.5	13.9	3 70 −3.36	7.40	11	7.40 −3.59 +33 −8 −2
	κ											11	4.04 −2.56
	((δ) − D) $\frac{\kappa'}{100}$											11	1.45
	c_2												
0	13 26 12 35.2	49 57 ~~50 49~~ 49 52.1	8.9 8.6	13 7.8 9.6 13.1 10.1	26.5	29.7	33.0	36.1	39.3	16 46 −4.28	32.92	13	32.92 −4.42 +21 −2
	κ											13	28.69 −2.65
	((δ) − D) $\frac{\kappa'}{100}$											13	26.04
	c_1												
			8.6	12 59.6 1.8 4.4 1.8	13 25.7	29.0	32.1	35.3	38.6	16 07 −3.37	32.14	13	32.14 −3.59 +32 −8 −2
	κ			18.								13	28.77 −2.66
	((δ) − D) $\frac{\kappa'}{100}$											13	26.16
	c_2												
0	16 22 15 31.4	50 29 50 23.6	8.3 8.8	15 55.2 57.0 58.8 57.0	16 22.5	25.6	29.0	32.3	35.4	14 48 −4.22	28.96	16	28.96 −4.42 +22 −2
	κ											16	24.74 −2.65
	((δ) − D) $\frac{\kappa'}{100}$											16	22.04
	c_1												
			8.5	16 0.1 1.8 4.3 2.0	21.7	24.9	28.1	31.3	34.6	14 06 −3.36	28.12	16	28.12 −3.59 +33 −8 −2
	κ											16	24.76 −2.65
	((δ) − D) $\frac{\kappa'}{100}$											16	22.11
	c_2												

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	s	2′ 2.9″	49.0	6′	55.95	15	52.40		5	+ 0.36	
	+23.6					50 16	54.42			50 16 34.23	
d	1.37291						− 20.19			− 15	+ 8.65
54	9.80550									− 21	
((δ) − D) $\frac{d'}{100}$	1.30510 m									+ 853	
										+ 48	
										− 26.90	
+12.43 δ_1		5 19.37		17 36.5						16 16.34	
+1 20.20										− 0.42	
	+21.6	2 2.2	49.9	6	56.05	15	52.30		5	16 36.88	
d	1.33445					50 16	55.36			− 13	+ 8.53
	9.80550						− 18.48			− 21	
((δ) − D) $\frac{d'}{100}$	1.26664 m									+ 839	
										+ 48	
										− 27.15	
+12.43 δ_2		5 19.32		17 38.0						16 14.83	
+1 20.20											
	+32.3	4 13.2	0.1	29	6.65	53	41.70		25	50 54 16.46	
d	1.50920					50 54	43.72			− 28	+ 9.02
	9.79965						− 27.26			− 45	
86	1.43554 m									+ 921	
((δ) − D) $\frac{d'}{100}$										+ 54	
										− 26.90	
+12.52 δ_1		8 6.86		55 19.1						53 58.94	
+1 20.16											
	+35.3	4 9.6	56.9	29	3.25	53	45.10		25	54 18.37	
d	1.54777					50 54	48.16			− 34	+ 8.79
	9.79965						− 29.79			− 45	
	1.47411 m									+ 904	
((δ) − D) $\frac{d'}{100}$										+ 54	
										− 27.15	
+12.52 δ_2		8 6.90		55 19.4						53 59.53	
+1 20.16											
	+33.0	1 43.6	29.8	1	36.70	21	11.65		0	50 21 45.49	
d	1.51851					50 22	13.67			− 30	+ 8.62
	9.80473						− 28.18			− 18	
96	1.44993 m									+ 862	
((δ) − D) $\frac{d'}{100}$										+ 48	
										− 26.90	
+12.60 δ_1		11 14.11		22 47.8						21 28.72	
+1 20.12											
	+25.7	1 49.0	36.0	1	42.50	21	5.85		0	21 46.96	
d	1.40993					50 22	8.91			− 18	+ 8.58
	9.80473						− 21.95			− 19	
	1.34135 m									+ 847	
((δ) − D) $\frac{d'}{100}$										+ 48	
										− 27.00	
+12.60 δ_2		11 14.05		22 48.2						21 28.11	
+1 20.12											
	+23.8	1 3.3	48.0	25	53.65	56	52.70		25	49 57 35.09	
d	1.35793					49 57	54.72			− 14	+ 8.39
	9.80837						− 19.63			− 10	
78	1.29299 m									+ 818	
((δ) − D) $\frac{d'}{100}$										+ 45	
										− 26.75	
+12.66 δ_1		13 38.70		58 37.3						57 17.24	
+1 20.08											
	+30.3	0 55.5	41.8	25	48.65	56	59.70		25	57 36.67	
d	1.48144					49 58	2.76			− 25	+ 8.15
	9.80837						− 26.09			− 9	
	1.41650 m									+ 804	
((δ) − D) $\frac{d'}{100}$										+ 45	
										− 27.00	
+12.66 δ_2		13 38.82		58 37.6						57 17.49	
+1 20.08											
	+32.0	4 28.1	15.3	54	21.70	28	26.65		50	50 29 1.41	
d	1.50515					50 29	28.67			− 27	+ 8.50
	9.80366						− 27.26			− 48	
84	1.43350 m									+ 875	
((δ) − D) $\frac{d'}{100}$										+ 50	
										− 26.60	
+12.75 δ_1		16 34.79		30 3.7						28 43.67	
+1 20.00											
	+26.1	4 32.0	19.8	54	25.90	28	22.45		50	29 3.28	
d	1.41664					50 29	25.51			− 18	+ 8.44
	9.80366						− 22.23			− 48	
	1.34699 m									+ 860	
((δ) − D) $\frac{d'}{100}$										+ 50	
										− 26.90	
+12.75 δ_2		16 34.86		30 4.4						28 44.44	
+1 20.00											

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Date$_1$ = 1871, Nov 22. Observer W.A.R. Recorder W.A.R.

Date$_2$ = 1871 Nov 25. Observer W.A.R. Recorder W.A.R.

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
	m s	° ′		s	s	s	s	s	s		s		
0	18 22	50 52	9.1	18	22.9	26.1	29.3	32.6	35.8	14 67	29.34	18	29.34
	17 31.9	50 46.3	9.1	2.6						−4.22			− 4.42
	κ			4.6									+ 22
	((δ) — D) $\frac{\kappa'}{100}$			7.6									− 2
	a_1			4.9								18	25.12
													− 2.73
												18	22.39
			9.3	18	22.0	25.2	28.5	31.8	34.9	14 24	28.48	18	28.48
			9.5	3.8						−3.36			− 3.59
	κ			5.6									+ 33
	((δ) — D) $\frac{\kappa'}{100}$			7.6									− 8
	a_2			5.6									− 2
												18	25.12
													− 2.69
												18	22.43
0	22 49	57 54	8.3	22	48.1	51.5	54.7	57.9	61.4	27 26	54.72	22	54.72
	21 53.8	57 49.0	8.5	16.8						4.22			− 4.42
	κ			18.8									+ 22
	((δ) — D) $\frac{\kappa'}{100}$			21.5									− 2
	a_1			19.0								22	50.50
													− 2.81
												22	47.69
			8.1	22	24.7	27.2	30.5	33.7	37.2	26 92	53.84	22	53.84
					26.3	27.2	30.5	33.7	37.2	−3.36			− 3.59
	κ				29.3								+ 33
	((δ) — D) $\frac{\kappa'}{100}$				26.7								− 8
	a_2												− 2
												22	50.48
													− 2.77
												22	47.71
0	25 29	50 23	7.9	25	31.7	34.8	38.1	41.3	44.7	19 06	38.12	25	38.12
	24 38.2	50 18.1	8.0	8.6						4.22			− 4.42
	κ			10.3									+ 22
	((δ) — D) $\frac{\kappa'}{100}$			12.8									− 2
	a_1			10.5								25	33.90
													− 2.80
												25	31.10
			7.8	25	30.9	34.0	37.3	40.4	43.7	18 63	37.26	25	37.26
				3.0						−3.36			− 3.59
	κ			5.0									+ 33
	((δ) — D) $\frac{\kappa'}{100}$			6.3									− 8
	a_2			4.7									− 2
												25	33.90
													− 2.76
												25	31.14
0	27 31	50 44	8.0	27	31.0	34.2	37.5	40.8	44.0	18 75	37.50	27	37.50
	26 39.76	50 39.2	8.9	6.4						−4.22			− 4.42
	κ			8.9									+ 22
	((δ) — D) $\frac{\kappa'}{100}$			9.9									− 2
	a_1			8.1								27	33.28
													− 2.81
												27	30.47
			8.5	27	30.1	33.4	36.7	39.9	43.2	18 33	36.66	27	36.66
				6.7						−3.36			− 3.59
	κ			8.6									+ 33
	((δ) — D) $\frac{\kappa'}{100}$			10.3									− 8
	a_2			8.5									− 2
												27	33.30
													− 2.79
												27	30.51
0	29 55	49 59	9.2	29	32.2	35.7	38.8	62.0	65.1	31 02	62.04	30	2.04
	29 3.0	49 54	9.0	34.0						−4.23			− 4.42
	κ			36.2									+ 27
	((δ) — D) $\frac{\kappa'}{100}$			37.2									− 2
	a_1			34.9								29	57.81
													− 2.84
												29	54.97
			8.8	29	24.3	54.8	58.0	61.2	64.4	67.6	30 60	61.20	30 1.20
					26.0						−3.37		− 3.59
	κ				29.0								+ 32
	((δ) — D) $\frac{\kappa'}{100}$				26.4								− 8
	a_2												− 2
												29	57.83
													− 2.81
												29	55.02

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+24.4	1 59.5	46.2	31	5285	50	55.50		30	+ 0.46	
	1.38739					50 51	57.52			50 51 36.90	
d	9.80012						− 20.62			− 16	+9.34
86	1.31420n									− 21	
((δ) − D) $\frac{d'}{100}$										+ 917	
										+ 54	
										−26.55	
+12.81 δ_1		18 35.20		52 40.0						51 2005	
+1 19.96										− 0.33	
	+22.9	1 59.5	46.7	31	5310	50	55.25		30	51 38.96	
	1.35984	1 59.5	46.7	31	53.10	50 51	58.31		30	− 14	+9.20
d	9.80012						− 19.35			− 21	
	1.28665n									+ 901	
((δ) − D) $\frac{d'}{100}$										+ 54	
										−26.85	
+12.81 δ_2		18 35.24		52 40.8						51 20.88	
+1 19.96											
	+35.7	4 10.7	57.2	29	395	53	44.40		25	51 54 16.94	
	1.55267					57 54	46.42			− 33	+10.12
88 d	9.79015						− 29.48			− 45	
	1.46951n									+1031	
((δ) − D) $\frac{d'}{100}$										+ 59	
										−26.55	
+12.97 δ_1		23 0.66		55 20.7						54 0.87	
+1 19.80											
	+27.1	4 16.1	4.0	29	10.05	53	38.30		25	54 18.98	
	1.43297					57 54	41.36			− 19	+10.06
d	9.79015						− 22.38			− 46	
	1.34981n									+1012	
((δ) − D) $\frac{d'}{100}$										+ 59	
										−26.85	
+12.97 δ_2		23 0.68		55 21.6						54 1.76	
+1 19.80											
	+27.6	4 48.8	34.0	59	41.40	23	6.95		55	60 23 45.42	
	1.44091					50 24	8.97			− 21	+8.42
86 d	9.80443						−23.55			− 52	
	1.37203n									+866	
((δ) − D) $\frac{d'}{100}$										+ 49	
										−26.25	
+13.01 δ_1		25 44.11		24 47.7						23 27.95	
+1 19.72											
	+32.6	4 42.1	29.4	59	35.45	23	12.60		55	23 47.84	
	1.51322					50 24	15.66			− 29	+8.20
d	9.80443						− 27.82			− 51	
	1.44434n									+861	
((δ) − D) $\frac{d'}{100}$										+ 49	
										−26.50	
+13.01 δ_2		25 44.15		24 48.8						23 29.11	
+1 19.72											
	+29.4	3 54.7	39.8	38	47.25	44	1.10		35	50 44 38.22	
84 d	1.46835					50 45	3.12			− 23	+8.92
	9.80120						− 24.90			− 42	
	1.39624n									+905	
((δ) − D) $\frac{d'}{100}$										+ 52	
										−26.20	
+13.08 δ_1		27 43.55		45 40.9						44 21.30	
+1 19.64											
	+28.2	3 54.0	41.1	38	47.53	44	0.80		35	44 39.97	
	1.45025					50 45	3.86			− 22	+8.77
d	9.80120						− 23.89			− 42	
	1.37814n									+889	
((δ) − D) $\frac{d'}{100}$										+ 52	
										−26.45	
+13.08 δ_2		27 43.59		45 41.5						44 21.86	
+1 19.64											
	+27.8	4 19.2	5.0	24	12.10	58	36.25		20	49 59 14.95	
	1.43297					49 59	38.27			− 20	+7.99
84 d	9.80807						− 23.32			− 46	
	1.36773n									+820	
((δ) − D) $\frac{d'}{100}$										+ 45	
										−26.00	
+13.12 δ_1		30 8.09		0 16.8						58 57.30	
+1 19.52											
	+34.8	4 12.6	−0.2	24	6.20	58	42.15		20	59 15.26	
	1.54158					49 59	45.21			− 32	+7.74
d	9.80807						− 29.95			− 45	
	1.47634n									+806	
((δ) − D) $\frac{d'}{100}$										+ 45	
										−26.30	
+13.12 δ_2		30 8.14		0 15.8						58 56.27	
+1 19.52											

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Date$_1$ = 1871, Nov - 23. Observer W.A.R. Recorder W.A.R. Date$_2$ = 1871, Nov - 25. Observer W.A.R. Recorder W.A.R. 62

	Star.	α	δ	Mag.	T_a	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
0		31 57 / 31 58	50 19 / 50 13.9	8.1 / 8.3	31 26.4 / 28.0 / 30.3 / 28.2	58.6	1.8	4.9	8.2	11.4	32 49 / −4.22	64.98	32 4.98 − 4.42 + 22 − 2	
	κ												32 0.76 − 2.87	
	((δ) − D) $\frac{\kappa'}{100}$												31 57.89	+13.1
	c_1													+1 1
				7.8	25.6 / 27.5 / 29.7 / 27.6	57.6	0.9	4.2	7.3	10.5	32 05 / −3.37	64.10	32 4.10 − 3.59 + 32 − 8 − 2	
	κ												32 0.73 − 2.83	+13.
	((δ) − D) $\frac{\kappa'}{100}$												31 57.90	+1 1
	c_2													
0		33 44 / 32 52.9	50 17 / 50 11.3	8.5 / 8.4	21.5 / 23.8 / 25.8 / 23.7	44.9	48.1	51.2	54.5	57.8	25 65 / −4.22	51.30	33 51.30 − 4.42 + 22 − 2	
	κ												33 47.08 − 2.89	
	((δ) − D) $\frac{\kappa'}{100}$												33 44.19	+13.2
	α_1													+1 19
				8.8	20.1 / 22.1 / 24.4 / 22.2	44.0	47.3	50.4	53.6	56.9	25 22 / −3.37	50.44	33 50.44 − 3.59 + 32 − 8 − 2	
	κ												33 47.07 − 2.85	+13.
	((δ) − D) $\frac{\kappa'}{100}$												33 44.22	+1 1
	α_2													
0		35 51 / 34 45.6	57 44 / 51 38.2	8.5 / 8.5	10.3 / 12.0 / 14.0 / 12.1	38.8	42.2	45.4	48.6	52.0	22 70 / −4.21	45.40	35 45.40 − 4.42 + 23 − 2	
	κ												35 41.19 − 2.985	
	((δ) − D) $\frac{\kappa'}{100}$												35 38.24	+13.
	α_1													+1 19
				8.5	18.0 / 19.7 / 22.0 / 19.9	38.0	41.3	44.6	47.9	51.3	22 31 / −3.35	44.62	35 44.62 − 3.59 + 34 − 8 − 2	
	κ												35 41.27 − 2.92	+13.
	((δ) − D) $\frac{\kappa'}{100}$												35 38.35	+1 19
	α_2													
0		39 01 / 38 8.0	50 87 / 50 45.8	9.2 / 9.0	39.8 / 41.7 / 44.3 / 41.9	39 2.0	5.2	8.5	11.7	14.9	4 23 / −4.22	6.46	39 8.46 − 4.42 + 22 − 2	
	κ												39 4.24 − 2.96	
	((δ) − D) $\frac{\kappa'}{100}$												39 ~~3.26~~ 1.28	+13
	α_1													+1 19
				9.2	30.3 / 32.4 / 34.8 / 32.5	39 1.1	4.3	7.6	10.8	14.1	3 79 / −3.36	7.58	39 7.58 − 3.59 + 33 − 8 − 2	
	κ		40 45										39 4.22 − 2.93	+13.
	((δ) − D) $\frac{\kappa'}{100}$												39 ~~0.29~~ 1.29	+1 1
	α_2													
0		42 46 / 41 ~~57.3~~ 50.1	50 34 / 50 ~~25.7~~ 25.0	9.0 / 8.9	16.6 / 18.9 / 20.9 / 18.8	45.1	48.4	51.6	54.9	58.1	25 81 / −4.22	51.62	42 51.62 − 4.42 + 22 − 2	
	κ												42 48.40 − 3.50	
	((δ) − D) $\frac{\kappa'}{100}$												42 ~~50.40~~ 44.40	+13.5
	α_1													+1 18
				8.7	27.7 / 29.4 / 31.6 / 29.5	44.3	47.6	50.8	54.0	57.3	25 40 / −3.36	50.80	42 50.80 − 3.59 + 33 − 8 − 2	
	κ												42 47.44 − 2.97	+13.5
	((δ) − D) $\frac{\kappa'}{100}$												42 44.47	+1 18
	α_2													

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+36.8	4 3.8	49.6	3′	56.70	18	51.65		0	50 19 22.22	
	1,56585					50 19	53.67			− 36	+8.26
d	9.80504						− 31.45			− 43	
88	1.49758 m									+ 857	
((δ) − D) $\frac{d'}{100}$										+ 48	
										− 26.00	
+13.19 δ1		32 11.08		20 24.3						19 4.84	
+1 19.44										− 4[illegible]3	
	+36.5	4 3.2	49.1	3	56.15	18	52.20		0	19 24.07	
	1,56229					50 19	55.26			− 36	+8.11
d	9.80504						− 31.19			− 43	
	1.49402 m									+ 842	
((δ) − D) $\frac{d'}{100}$										+ 48	
										− 26.25	
+13.19 δ2		32 11.09		20 24.9						19 5.50	
+1 19.44											
	+27.6	1 37.3	22.5	6	29.90	16	18.45		5	50 16 56.86	
	1,44091					50 17	20.47			− 21	+8.64
d	9.80550						− 23.61			− 16	
86	1.37310 m									+ 853	
((δ) − D) $\frac{d'}{100}$										+ 48	
										− 25.90	
+13.24 δ1		38 57.43		17 59.3						16 39.96	
+1 19.32											
	+28.2	1 34.7	22.2	6	28.45	16	19.90		5	16 ~~52.89~~	
	1,45025					50 17	22.96			58.84	+8.49
d	9.80550						− ~~30.37~~			− 22	
	1.38244 m						24.12			− 16	
((δ) − D) $\frac{d'}{100}$										+ 839	
										+ 48	
										− 26.20	
+13.24 δ2		38 57.46		18 0.0						16 40.70	
+1 19.32											
	+33.3	4 47.0	32.4	39	39.70	43	865		35	51 43 43.06	
	1,622444					51 44.	10.67			− 30	+9.91
d	9.79192						− 27.61			− 51	
98	1.44105 m									+ 1013	
((δ) − D) $\frac{d'}{100}$										+ 57	
										− 26.00	
+13.34 δ1		35 51.58		44 46.6						43 27.33	
+1 19.24											
	+24.7	4 52.1	8 9.8	39	45.95	43	2.40		35	43 44.98	
	1,392470					51 44	5.46			− 16	+9.85
d	9.79192						− 20.48			− 52	
	1.31131 m									+ 994	
((δ) − D) $\frac{d'}{100}$										+ 57	
										− 26.30	
+13.34 δ2		35 51.69		44 47.3						43 28.10	
+1 19.24											
	+26.6	3 6.1	51.3	32	58.70	49	49.65		30	50 50 ~~23.37~~	
	1,42488					50 50	51.67			29.17	+9.15
d	9.80027						− ~~28.80~~			− 19	
88	1.35184 m						− 22.48			− 33	
((δ) − D) $\frac{d'}{100}$										+ 914	
										+ 53	
+13.40 δ1		39 14.68		51 32.0						− 25.75	
+1 19.04										50 12.95	
	+35.1	2 56.5	43.3	32	49.90	49	58.45		30	50 31.84	
	1,541531					50 51	1.51			− 33	+8.88
d	9.80027						− 29.67			− 31	
	1.47227 m									+ 899	
((δ) − D) $\frac{d'}{100}$										+ 53	
										− 26.05	
+13.40 δ2		39 14.69		51 33.3						50 14.24	
+1 19.04											
	+32.8	2 31.8	18.2	52	2.580	30	23.35		50	50 30 57.45	
	1,515847					50 31	25.37			− 29	+8.74
d	9.80336						− 27.92			− 26	
82	1.44592 m									+ 879	
((δ) − D) $\frac{d'}{100}$										+ 50	
										− 25.55	
+13.50 δ1		42 57.90		31 59.8						30 41.00	
+1 18.80											
	+21.3	2 41.2	27.7	52	34.45	30	13.90		50	30 58.83	
	1.32838					50 31	16.96			− 13	+8.72
d	9.80336						− 18.13			− 28	
	1.25843 m									+ 863	
((δ) − D) $\frac{d'}{100}$										+ 50	
										− 25.85	
+13.50 δ2		42 57.97		32 0.1						30 41.27	
+1 18.80											

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Date$_1$ = 1871 Nov 22. Observer W.A.K. Recorder W.A.R. Date$_2$ = 1871 Nov 25. Observer W.A.K. Recorder W.A.R. 64

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
	m s	° ′		m	s	s	s	s	s				
O	44 37	50 04	7.8	44	8.4	35.2	38.3	41.5	44.8	48.1	20 79	41.58	44 41.58
	42.5	44	9.5		10.4						−4.23		− 4.42
	κ				12.2								+ 21
	40.9	49 59.2			10,3								− 2
	((δ) − D) $\frac{\kappa'}{100}$												44 37.35
	c_1												− 3.00
													44 34.35
			7.2	44	7.2	34.3	37.5	40.7	44.0	47.1	20 36	40.72	44 40.72
					9.0						−3.37		− 3.59
	κ				10.7								+ 32
					8,9								− 8
	((δ) − D) $\frac{\kappa'}{100}$												− 2
	c_2												44 37.35
													− 2.97
													44 34.38
O	46 54	50 07	9.3	46	27.2	54.8	57.9	61.1	64.4	67.5	30 57	61.14	47 1.14
	45 57.7	50 2.2	8.9		29.3						−4.23		−4.42
	κ				30.5								+ 21
					29,1								− 2
	((δ) − D) $\frac{\kappa'}{100}$												46 56.91
	a_1												− 3.03
													46 ~~57.16~~ 53.88
			9.2	46	38.8	53.8	57.2	60.2	63.4	66.6	30 12	60.124	47 0.24
					40.9						−3.37		−3.59
	κ				42.7								+ 32
					40.8								− 8
	((δ) − D) $\frac{\kappa'}{100}$												− 2
	a_2												46 56.87
													− 3.00
													46 53.87
O	49 33	50 42	8.7	49	2.3	34.3	37.6	40.8	43.9	47.3	20 39	40.78	49 40.78
	48 38.2	50 36.7	8.8		3.7						−4.22		−4.42
	κ				6.2								+ 22
					4,0								− 2
	((δ) − D) $\frac{\kappa'}{100}$												49 36.56
	a_1												− 3.08
													49 33.48
			8.6	49	8.7	33.4	36.6	40.0	43.1	46.4	19 95	39.90	49 39.90
					10.5						−3.36		− 3.59
	κ				12.9								+ 33
					10.7								− 8
	((δ) − D) $\frac{\kappa'}{100}$												− 2
	a_2												49 36.54
													− 3.05
													49 33.49
O	5 2	50 55	8.4	52	26.3	54.5	57.9	61.1	64.3	67.6	30 54	61.08	52 1.08
	51 57.7	50 49.3	8.4		28.2						−4.22		−4.42
	κ				30.5								+ 22
					28.8								− 2
	((δ) − D) $\frac{\kappa'}{100}$												52 56.86
	a_1												− 3.12
													52 53.74
			8.5	52	24.5	53.7	57.0	60.3	63.5	66.8	30 13	60.26	53 0.26
					26.3						−3.36		−3.59
	κ				28.7								+ 33
					26.5								− 8
	((δ) − D) $\frac{\kappa'}{100}$												− 2
	a_2												52 56.90
													− 3.09
													52 53.81
O	5 5 11	50 20	9.1	54	29.3	11.9	15.1	18.4	21.5	24.9	9 16	18.36	55 18.36
	54 15.5	50 11.4	9.1		30.8						−4.22		−4.42
	κ				30.1								+ 22
						54 50.0	53.2	56.3	59.5	62.6	28 16	56.32	− 2
	((δ) − D) $\frac{\kappa'}{100}$										−4.22		54 56.32
	53 54.2												− 3.12
	a_1												− 4.42
													+ 22
													− 2
													54 52.10
													− 3.10
	54 15.5		9.2	55	36.0	11.0	14.3	17.5	20.6	23.9	8 73	17.46	55 17.46
					37.8						−3.14		−3.59
	κ				40.0								+ 33
					39.9	54 48.9	52.0	55.4	58.5	61.8	28 66	55.32	− 8
	((δ) − D) $\frac{\kappa'}{100}$										−3.36		− 2
	53 54.2												54 51.96
	a_2												− 3.10
													54 48.86

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1871phaeproj.1578

Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	9	3 54.0	39.1	18	46.55	4	1.80		15	50 4 42.46	3.93
	+31.3					50 5	3.82			− 27	+8.08
d	1.49554						−~~21.30~~			− 42	
	9.80731						26.89			+ 831	
((δ) − D) $\frac{d'}{100}$	1.29754 m									+ 46	
										−25.40	
+13.53 δ_1		44 47.88		5 38.6						4 ~~25.50~~	19.47
+1 18.60										− 043	
	+31.8	3 50.5	37.6	18	44.05	4	4.30		15	4 40.04	
	1.50243					50 5	7.36			− 27	+7.94
d	9.80731						− 27.32			− 42	
	1.43643 m									+ 817	
((δ) − D) $\frac{d'}{100}$										+ 46	
										−25.70	
+13.53 δ_2		44 47.91		5 40.4						4 21.85	
+1 18.60											
	+32.0	0 37.0	22.9	15	2995	7	18.40		15	50 7 52.96	
	1.50515					50 8	20.42			− 28	+8.50
d	9.80686						− 27.46			− 5	
	1.43870 m									+ 837	
((δ) − D) $\frac{d'}{100}$										+ 46	
										−25.30	
+13.59 δ_1		47 7.47		8 55.0						7 36.52	
+1 18.52											
	+19.4	0 44.8	32.2	13	38.50	~~8~~ 7	9.85		15	~~8~~ 7 56.26	
	1.28780					50 ~~8~~	12.91			− 10	+8.51
d	9.80701						− 16.65			− 7	
	1.22150 m									+ 822	
((δ) − D) $\frac{d'}{100}$										+ 46	
										−25.60	
+13.59 δ_2		47 7.46		8 57.3						7 38.74	
+1 18.52											
	+36.8	1 6.2	57.9	40	59.05	41	49.30		40	50 42 20.13	
	1.56585					50 42	51.32			− 36	+9.04
d	9.80151						− 31.19			− 11	
	1.49405 m									+ 899	
((δ) − D) $\frac{d'}{100}$										+ 52	
										−25.25	
+13.69 δ_1		49 47.17		43 22.6						42 4.28	
+1 18.32											
	+29.2	1 10.6	57.4	41	49.0	41	44.35		40	42 22.66	
	1.46538					50 42	47.41			− 23	+9.00
d	9.80151						− 24.75			− 12	
	1.39358 m									+ 883	
((δ) − D) $\frac{d'}{100}$										+ 52	
										−25.33	
+13.69 δ_2		49 47.18		43 24.0						42 5.68	
+1 18.32											
	+32.8	3 31.6	18.0	28	24.80	54	23.55		25	50 54 57.89	
	1.51587					50 55	29.57			− 28	+9.12
d	9.79965						− 27.68			− 37	
	1.44221 m									+ 923	
((δ) − D) $\frac{d'}{100}$										+ 54	
				3						−25.10	
+13.80 δ_1		53 7.54		56 0.4						54 42.27	
+1 18.08											
	+33.8	3 30.2	17.6	28	23.90	54	24.45		25	54 58.98	
	1.52862					50 55	27.51			− 30	+8.93
d	9.79965						− 28.53			− 37	
	1.45526 m									+ 906	
((δ) − D) $\frac{d'}{100}$										+ 54	
										−25.40	
+13.80 δ_2		53 7.61		56 0.2						54 42.08	
+1 18.08											
3	−11.6	4 15.0	0.3	4	9.65	18	40.70		0	50 19 52.63	
+13.83	1.06446 m					50 19	42.72			− 4	+8.58
+1 17.88 d	9.80504						+ 9.91			− 45	
+1 90	0.99619									+ 859	
((δ) − D) $\frac{d'}{100}$										+ 48	
										−24.90	
+13.83 δ_1		55 24.85		20 54.6						19 36.67	
+1 17.88		2.80		5							
	−20.4	4 21.6	8.3	4	14.95	18	33.40		0	19 53.89	
+13.83	1.30963 m					50 19	36.46			− 11	+8.35
+1 17.88 d	9.80504						+ 17.43			− 46	
+1 1.00	1.24136									+ 844	
((δ) − D) $\frac{d'}{100}$										+ 48	
										−25.20	
+13.82 δ_2		55 24.83		20 54.5						19 36.61	
+1 17.88		2.68									

+0.82 1.023 +05 −05 = +82

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Date$_1$ = 1871, Nov 23. Observer W.A.R. Recorder W.A.R.

Date$_2$ = 1871, Nov 25. Observer W.A.R. Recorder W.A.R.

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
h	57 14	50 19	6.5	56	46.3	57 15.7	19.0	22.1	25.2	28.2	11 08	22.00	22.02
	56 16.7	50 12.8	6.8		48.0						-4.22		- 4.42
	κ				50.3								+ 22
	((δ) — D) $\frac{\kappa'}{100}$				48.2								- 2
	a_1												57 17.80
													- 3.14
													57 14.66
			6.8	56	46.3	57 14.9	18.2	21.4	24.6	27.9	10 70	21.40	57 21.47
		59 26			48.5						-3.37		- 3.59
	κ				50.4								+ 32
	((δ) — D) $\frac{\kappa'}{100}$				48.4								- 8
	a_2												- 2
													57 18.03 11
													- 3.12
													57 14.99
1	55 55	50 53	—	1	25.8	56.9	60.1	63.3	66.6	69.9	31 68	63.36	2 3.36
	0 59.5	50 48.2	8.5		27.0						-4.22		- 4.42
	κ				28.9								+ 22
	((δ) — D) $\frac{\kappa'}{100}$				27.2								- 2
	a_1												1 59.14
													- 3.22
													1 55.92
			8.4	1	24.6	56.0	59.3	62.5	65.7	69.0	31 23	62.50	2 2.80
	κ				26.2						-3.36		- 3.59
	((δ) — D) $\frac{\kappa'}{100}$				27.9								+ 33
	a_2				26.2								- 8
	Nov. 25.												- 2
													1 59.14
													- 3.19
													1 55.95
0	1 00	52 04	8.0	0	26.6	0 56.2	59.6	62.8	66.1	69.5	31 42	62.84	1 2.84
	0 8.3	51 58.2	7.6		28.0						-3.35		- 3.59
	κ				29.7								+ 34
	((δ) — D) $\frac{\kappa'}{100}$				28.1								- 8
	a_1												- 2
	Nov. 25												0 59.49
													- 2.48
													0 57.01
0	40 45	50 05	10.2	40	41.4	45.1	48.8	52.1	55.3	58.5	25 98	51.96	40 57.96
	39 54.5	50 0.2	9.5		42.8						-3.37		- 3.59
	κ				44.0								+ 32
	((δ) — D) $\frac{\kappa'}{100}$				42.7								- 8
	a_2												- 2
	Nov. 25												40 48.59
													- 2.93
													40 45.66
0	59 26	49 55	8.6	58	58.1	59 25.6	28.8	32.1	35.3	38.5	16 03	32.06	59 32.06
	58 30.9	50 9.9	9.3		60.2						-3.37		- 3.59
	κ			59.	62.3								+ 32
	((δ) — D) $\frac{\kappa'}{100}$				0.2								- 8
	a_1												- 2
													59 28.69
													- 3.13
													59 25.56
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	♂	4 ~~48.2~~	~~57.5~~	4	~~48.5~~ 2	18	48.50		0	50 19 +8.64	1900
	+33.8					50 19	47.~~62~~ 88			− 31	+8.29
d	1.528892						− 28.88			− 45	
	9.805504									+857	
82 ((δ) − D) $\frac{d'}{100}$	1.460652									+ 48	
										−24.80	19 249
+13.88 δ_1		5728.66		20 20.2						~~18 54.49~~	~~19 2.49~~
+1 17.72										~~19 − 2.46~~ 6.43	
	+33.0	4 11.3	57.7	4	~~47.0~~ 8[illegible]	18	43.85		0	19 ~~18.71~~	✓ 18.25
	1.518851					50 19	46.791			− 30	+8.15
d	9.805504						− 28.20			− 45	
	1.450244									+842	
((δ) − D) $\frac{d'}{100}$										+ 48	
										−25.10	
+13.88 δ_2		5728.87		20 19.0						19 1.33	
+1 17.72										+ 0.36	
	+36.2	4 54.5	40.6	29	47.53	53	0.80		25	50 53 32.26	
	1.558771					50 54	2.82			− 36	+8.86
86 d	9.799781						− 30.56			− 53	
	1.485212									+ 921	
((δ) − D) $\frac{d'}{100}$										+ 54	
										−24.65 80	
+14.05 δ_1		2 9.97		54 34.0	45.77 43					53 16.88	
+1 17.28				29						− 0.43	
	+36.3	4 53.1	39.3	29	4620	23	2.15		25	53 34.56	Ex Stroke
	1.559991					50 24	5.21			− 36	
d	9.799781						− 30.65			− 53	+8.11
	1.486422									+ 857	
((δ) − D) $\frac{d'}{100}$										+ 49	
										−25.10	
+14.05 δ_2		2 10.00		54 34.8						~~53 17.57~~	
+1 17.28										− 0.43	
	+34.7	4 52.2	41.3	19	4675	3	1.60		15	52 3 36.10	
	1.540033					52 4	4.66			− 32	+10.05
d	9.788769						− 28.56			− 53	
	1.455711									+1030	
88 ((δ) − D) $\frac{d'}{100}$										+ 60	
										−22.50	
+12.32 δ_1		1 9.33		4 38.4						3 18.22	
+1 20.20										− 0.43	
	+9.3	3 1.1	47.8	17	54.45	4	53.90		15	50 5 49.31	
	0.966848					50 5	56.96			− 2	+8.31
d	9.788537						− 7.65			− 32	
	0.883354									+819	
90 ((δ) − D) $\frac{d'}{100}$										+ 46	
										−25.90	
+13.42 δ_2		40 59.08		6 50.2						5 31.29	
+1 18.92										− 0.43	
	+31.9	4 29.7	16.3	29	2350	53	25.35		25	49 54 0.90	
	1.503794					49 54	28.41			− 28	+7.65
d	9.808917						− 27.51			− 48	
	1.439452									+797	
((δ) − D) $\frac{d'}{100}$										+ 44	
+13.92										−24.95	
~~+1 18.92~~ δ_1		59 39.48		55 0.7						53 43.17	
+1 17.52											
d											
((δ) − D) $\frac{d'}{100}$											
δ_2											
d											
((δ) − D) $\frac{d'}{100}$											
δ_1											
d											
((δ) − D) $\frac{d'}{100}$											
δ_2											

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1871phae.proj.1578R

Date$_1$ = 1871 Dec. 1, n = +1.38 — Observer A. M. — Recorder A. M.

Date$_2$ = 1871 Dec. 2, n = +37 — Observer A. M. — Recorder A. M.

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
	7 4.8	50 48.9	8.1	35.6	50.4	53.7	57.0	60.1	63.5	28 47 56.44	56.44	7	56.94
				37.2						−0.28			− 0.7367
				35.7						22+03			+ 47
													− 2
												7	56.66
													− 2.44
													54.28 31
			8.0	28.6	49.6	52.9	56.1	59.5	62.7	28 08 56.16		7	56.16
				30.1						+0.58			+ 0.140
				31.9						54+03			+ 46
				30.2									− 2
												7	56.74
													− 2.42
													54.28 31
0	9 11.1	55 38.5	9.3	31.7	49.6	52.8	56.1	59.3	62.6	28 04 56.08		10	56.11
				33.1						−0.27 20			− 0.7366
	10 3.2	50 38.1		31.8						−0.27 +03			+ 48.46
													− 2
												10	55.85 45
													− 2.49
												10	53.36 53.40
													37
0		12	8.	22.5	48.8	52.2	55.2	58.7	61.8	27 67 55.34		10	55.34
				23.7						+0.59 55			+ 0.140
				25.1						+0.53 +03			+ 47.45
				23.7									− 2
												10	55.23 87
													− 2.496
												10	53.40 53.41
													41 45
0	14 41.3	51 24.9	8.8	11.7	28.4	31.8	35.2	38.5	41.9	17 58 35.16		15	35.16
				13.4						−0.26 20+03			− 0.7366
				11.8									+ 48.48
													− 2
												15	34.90
													− 2.55
												15	33.01 32.44
			8.5	11.8	27.8	31.0	34.5	37.8	41.2	17 23 34.46		15	34.46
				13.1						+0.59 55+03			+ 0.140
				14.8									+ 47
				13.2									− 2
												15	33.87 35.05
													− 2.53
												15	32.48 51
0	22 18.6	51 42.5	8.6	53.1	23 6.9	10.0	13.1	16.3	19.7	6 50 13.00		23	13.00
				55.0						−0.25 20+04			− 0.7466
				53.3									+ 48
													− 2
												23	12.75
													− 2.65
												23	10.15.19
			9.2	41.8	23 6.5	9.0	12.2	15.7	19.0	6 14 12.28		23	12.28
				43.2						+0.59 56+03			+ 0.141
				45.8									+ 47
				43.6									− 2
												23	12.84
													− 2.63
												23	10.21
0	25 3.6	51 34	8.8	34.0	52.1	55.3	58.6	61.7	65.1	29 28 58.56		25	58.56
				36.1						−0.26 21+03			− 0.7466
				34.3									+ 47
													− 2
												25	58.30
													− 2.67
												25	55.68 71
			8.9	28.0	51.2	54.6	58.1	61.0	64.4	28 93 57.86		25	57.86
				29.7						+0.58 55+03			+ 0.141
				31.2									+ 46
				29.6									− 2
												25	57.28
													58.44
													− 2.65
												25	55.79

((δ) − D) $\frac{\kappa'}{100}$ — a_1 — a_2

Also: 13 41 — 17 58 — 19 36

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Dec. 1 +1′ 4.″28 −.″10
" 2 +1 4.41 −.10

Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+27.2	4	5.′	29		53	27.50		25	50 54 13.89	
	1.32634					50 54	36.78			− 12	+9.19
d	9.79965						− 17.89			− 47	
	1.25268									+ 9.24	
78 ((δ) − D) $\frac{d'}{100}$										+ 54	
										−27.75	
+12.52 δ_1		8 6.83		55 20.5						54 5.33	
+1 20.16							3			0	
	+26.0	4 18.7	0.8	29	9.75	53	48.60		25	54 31.07	
	1.41497					50 54	53.01			− 18	+9.24
d	9.79965						− 21.94			− 46	
	1.34131									+9 34	
((δ) − D) $\frac{d'}{100}$										+ 54	
										−27.85	
+12.52 δ_2		8 6.83		55 22.6						54 2.46	
+1 20.16							34.55				
	+2.43	0 20.13	4.2	40	1.580	42	37.05		40	43 21.18	50 43 18.24
1.38561	1.38561					57 43	38.63			− 16	+10.57 − 16 +9.36
9.80136	9.79192					50	− 26.16			− 2	− 2
74 1.31364	1.30422						− 20.59			+10.16	+ 9.02
((δ) − D) $\frac{d'}{100}$										+ 59	+ 52
										−27.85	50° −27.66
+1260										43 .190	42 5994
-3.40 +1 20.12 δ_1		11 6.00		44 20.1							
	+31.6	0 17.4	59.8	40	8.60	42	39.75		40	43 17.86	50° 43 17.38
1.49969	1.49969					57 43	44.16			− 26	+10.55 − 26 +9.35
9.80136	9.79195					50	− 26.20			− 1	− 1
1.42774	1.41830						26.78			+1023	+9.10
((δ) − D) $\frac{d'}{100}$										+ 59	+ .52
										−27.75	−2776
5344 +1.260 δ_2 +1 20.72		11 6.04		44 19.1						43 0156	50° 42 5897
	+23.4	3 11.3	52.9	53	2.10	29	46.25		50	51 30 31.04	
	1.36922					51 30	50.53			− 14	+10.06
d	9.79399						− 19.49			− 33	
	1.28990									+ 9.95	
70 ((δ) − D) $\frac{d'}{100}$										+ 58	
										−27.70	
+12.75 δ_1 +1 20.04		15 45.19		31 33.4						30 13.40	
	+21.3	3 14.2	57.6	53	5.90	29	42.45		50	30 29.12	
	1.32838					51 30	46.86			− 12	+10.11
d	9.79399						− 17.74			− 34	
	1.24906									+9 99	
((δ) − D) $\frac{d'}{100}$										+ 58	
										−27.80	
+12.75 δ_2 +1 20.04		15 45.26		31 31.5						30 11.43	
	+19.7	0 16.3	57.9	35	7.10	47	41.25		35	51 48 29.23	
	1.29447					51 48	45.53			− 11	+10.73
d	9.79111						− 16.30			− 1	
	1.21227									+1026	
72 ((δ) − D) $\frac{d'}{100}$										+ 59	
										−27.50	
+12.98 δ_1 +1 19.80		23 23.17		49 32.3						48 12.46	
	+28.7	0 11.3	57.7 3	35	2.50	47	45.85		35	48 26.51	
	1.45788					51 48	50.26			− 22	+10.70
d	9.79111						− 23.75			− 0	
	1.37568									+1033	
((δ) − D) $\frac{d'}{100}$										+ 59	
										−27.66	
+12.98 δ_2 +1 19.80		23 23.22		49 29.4						48 9.41	
	+24.3	4 54.3	36.4	14	45.35	8	3.00		10	51 8 46.87	
	1.38561					51 9	7.28			− 16	+9.42
d	9.79746						− 20.41			− 52	
	1.30976									+9 54	
70 ((δ) − D) $\frac{d'}{100}$										+ 56	
										−27.30	
+13.04 δ_1 +1 19.68		26 8.75		9 48.7						8 28.99	
	28.3	4 57.8	31.9	14	4.185	8	6.50		10	8 47.15	
	1.45179					51 9	10.91			− 21	+9.43
d	9.79746						− 23.76			− 52	
	1.37594									+ 960	
((δ) − D) $\frac{d'}{100}$										+ 56	
										−27.45	
+13.04 δ_2 +1 19.68		26 8.83		9 48.8						8 29.13	

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Date$_2$ = 1871, Dec 2. Observer A. M. Recorder A. M.

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Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
0	27 32	50 59	9.5	27m 36.4	49.3	52.4	55.7	59.0	62.4	27 58 55.76		27	55.76
	27 0.4	50 54.1	9.5	37.9						−0.26 21+04			−0.7166
	κ			39.5									+ 47
				37.9									− 2
	((δ) − D) $\frac{\kappa'}{100}$											27	55.50
	a_1												− 2.70
												27	52.859
	κ		9.6	27 41.5	48.3	51.7	55.1	58.3	61.8	27 51 55.02		27	5502
				43.3						+0.59 55+02			+ 0.151
				46.8									+ 46
	((δ) − D) $\frac{\kappa'}{100}$			43.8									− 2
												27	55.01
	a_2												− 2.68
												27	52.89 91
0	30 53	50 31	9.2	30 30.6	49.8	53.0	56.2	59.4	62.7	28 11 56.22		30	5622
	30 4.5	50 26.2	9.0	32.0						−0.26 22+03			− 0.7066
	κ			34.7									+ 46
				32.4									− 2
	((δ) − D) $\frac{\kappa'}{100}$											30	55.96
32 47	a_1												− 2.72
												30	53.28 31
	κ		9.1	30 27.4	49.0	52.2	55.4	58.7	61.6	27 69 55.38		30	5538
				28.3						+0.58 54+03			+ 0.151
				29.6									+ 45
	((δ) − D) $\frac{\kappa'}{100}$			28.4									− 2
												30	55.96
	a_2												− 2.60
												30	53.385
0	37 10	50 14	9.5	36 51.7	37 8.0	11.2	14.4	17.8	20.8	7 22 14.44		37	14.44
	36 17.0	50 8.7	9.4	53.0						−0.26 23+04			− 0686
	κ			54.2									+ 45
				52.9									− 2
	((δ) − D) $\frac{\kappa'}{100}$											37	14.18
	a_1												− 2.79
												37	11.4946
	κ		9.5	36 56.0	37 7.0	10.4	13.8	16.8	20.4	6 54 13.68		37	13.68
				57.0						+0.57 53+03			+ 0.151
				58.5									+ 44
	((δ) − D) $\frac{\kappa'}{100}$			57.1									− 2
												37	14.25
	a_2												− 2.677
												37	11.574
0	39 26	50 59	9.0	39 1.2	21.7	25.1	28.3	31.6	34.7	14 14 28.28		39	2828 −01
	38 22.7	50 54.0	8.8	2.7						−0.24 21+04			− 0.696
	κ			4.9									+ 47
				2.9									− 2
	((δ) − D) $\frac{\kappa'}{100}$											39	28.04
	a_1												− 2.84
												39	25.286
	κ		9.2	39 8.7	20.6	24.0	27.5	31.0	34.1	13 7 27.44		39	2744
				10.0						+0.59 55+03			+ 0.151
				11.8									+ 46
	((δ) − D) $\frac{\kappa'}{100}$			10.1									− 2
												39	28.03
	a_2												− 2.82
												39	24.07 25.19 20
0	41 23	50 16	6.0	41 12.1	28.7	31.9	35.1	38.4	41.6	17 57 35.14		41	3514
	40 29.5	50 10.5 6	5.2	13.7						−0.26 22+04			− 0695
	κ			16.2									+ 45
				14.0									− 2
	((δ) − D) $\frac{\kappa'}{100}$											41	34.88
	a_1												− 2.85
												41	32.03 11
	κ		6.0	41 10.6	27.9	31.1	34.4	37.7	41.0	17 21 34.42		41	3442
				11.8						+0.57 53+03			+ 0.151
				13.6									+ 44
	((δ) − D) $\frac{\kappa'}{100}$			12.0									− 2
												41	34.99
	a_2												− 2.83
												41	32.185

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	8	40.0	40.2	23	56,10	58	58,25		20	50 59 47.45	
	+17.9					51 20	2,53			− 9	+9.41
d	1.252855						− 15,08			− 42	
	9.799887									+ 937	
74	1.177841									+ 55	
((δ) − D) $\frac{d'}{100}$										−27.25	
+13.09 δ₁		28 5.98		59 49.2						59 29.61	
+1 19.60											
	+11.2	4 7.1	46.8	28	56,95	58	51,40		20	59 46.37	
	1.049222					50 59	55,81			− 3	+9.54
d	9.799887						− 9.44			− 43	
	0.974478									+ 945	
										+ 55	
((δ) − D) $\frac{d'}{100}$										−27.35	
+13.09 δ₂		28 6.00		0 48.2						59 28.56	
+1 19.60											
	+23.8	2 8.2	48.0	51	58,10	30	50,25		50	50 31 34.28	
	1.376558					50 31	54,53			− 15	+8.99
d	9.803220						− 20,25			− 22	
	1.306647									+ 936	
84										+ 50	
((δ) − D) $\frac{d'}{100}$										−27.05	
+13.16 δ₁		31 6.47		32 35.7						31 16.22	
+1 19.48											
	+27.0	2 4.0	43.0	51	53,50	30	54,85		50	31 36.27	
	1.431136					50 31	59.26			− 20	+9.02
d	9.803220						− 22,97			− 21	
	1.361256									+ 893	
										+ 50	
((δ) − D) $\frac{d'}{100}$										−27.20	
+13.16 δ₂		31 6.51		32 37.6						31 18.09	
+1 19.48											
	+21.5	4 55.9	86.0	9	45,95	13	240		5	50 13 48.27	
	1.332444					50 14	6,68			− 13	+8.33
d	9.805795						− 18,41			− 52	
	1.265084									+ 857	
76										+ 55 47	
((δ) − D) $\frac{d'}{100}$										− 26.80	
+13.33 δ₁		37 24.79		14 49.0						13 29.80	
+1 19.16											
	+16.6	4 60.7	41.9	9	57,30	12	5705		5	13 47.24	
	1.220111					50 14	1.46			− 8	+8.46
d	9.805795						− 14,22			− 53	
	1.152754									+ 860	
										+ 47	
((δ) − D) $\frac{d'}{100}$										− 27.00	
+13.33 δ₂		37 24.90		14 47.9						13 28.70	
+1 19.16											
	+25.4	4 20.0	0.9	24	10,45	58	37,90		20	50 59 20.78	
	1.404483					50 59	42,18			− 17	+8.27
d	9.799887						− 21,40			− 46	
	1.330394									+ 835	
84										+ 55	
((δ) − D) $\frac{d'}{100}$										−2785	
+13.42 δ₁		39 38.68		0 21.2						59 2.20	
+1 19.00											
	+17.3	4 25.3	7.0	24	16,15	58	32,20		20	59 22.03	
	1.238055					50 59	36,61			− 8	+9.43
d	9.799887						− 14,58			− 47	
	1.163614									+ 943	
										+ 55	
((δ) − D) $\frac{d'}{100}$										−26.95	
+13.42 δ₂		39 38.62		0 23.5						59 4.51	
+1 19.00											
	+21.1	2 34.5	15.0	7	24,75	15	23,60		5	50 16 9.82	
	1.324428					50 16	27,88			− 12	+8.65
d	9.805765						− 18,06			− 26	
	1.256622									+ 863	
72										+ 48	
((δ) − D) $\frac{d'}{100}$										−2665	
+13.45 δ₁		41 45.56		17 10.7						15 51.82	
+1 18.88											
	+22.4	2 33.7	13.9	7	23,80	15	24,55		5	16 9.79	
	1.350225					50 16	28,96			− 13	+8.73
d	9.805765						− 19,17			− 26	
	1.282599									+ 864	
										+ 48	
((δ) − D) $\frac{d'}{100}$										−26.75	
+13.45 δ₂		41 45.60		17 10.6						15 51.77	
+1 1888											

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Date$_2$ = 1871 Dec 2. Observer A. M. Recorder A. M.

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Ru

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
h	m s	° ′ ″		s	s	s	s	s	s	m s	s	m	m s
	48 36	50 48	6.5	43	31.9	35.1	38.3	41.7	45.1	19 21	38.42	43	38.42
	42 41.7	50 43.1	6.7	11.2						−0.25 21 +03			− 0.685
	κ			12.9									+ 46
	((δ) — D) $\frac{\kappa'}{100}$			15.1									− 2
				13.0								43	38.17
47	13 α_1												− 2.88
												43	35.386
			6.5	43	31.4	34.4	37.7	40.9	44.1	18 85	37.70	43	37.770
				16.2						+0.58 54 +02			+ 0.151
	κ			18.3									+ 45
	((δ) — D) $\frac{\kappa'}{100}$			20.0									− 2
L	α_2			18.1								43	38.28
													− 2.87
												43	35.37 9
0	49 52	50 41	9.2	49	30.1	33.4	36.6	39.9	43.1	16 31	36.62	49	36.62
	48 ~~57.7~~	50 36.7	9.5	8.7						−0.25 22 +04			− 0.685
	κ 38.2	.7		10.1									+ 45
	((δ) — D) $\frac{\kappa'}{100}$			12.1									− 2
	α_1			10.3								49	36.37
													− 2.95
												49	33.45 9
			9.5	49	29.4	32.6	35.8	39.2	42.4	17 94	35.88	49	35.88
				12.8						+0.58 54 +03			+ 0.151
	κ			14.2									+ 45
	((δ) — D) $\frac{\kappa'}{100}$			16.1									− 2
	α_2			14.3								49	36.46
													− 2.94
												49	33.~~48~~ 51
0	51 58	50 24	8.6	51	55.1	58.3	61.5	64.8	67.9	30 766	1.52	52	1.52
	51 ~~3.8~~	50 18.9	8.4	36.6						−0.24 21 +03			− 0.685
	κ			38.0									+ 46
	((δ) — D) $\frac{\kappa'}{100}$			39.8									− 2
	α_1			38.1								52	1.28
													− 2.97
												51	58.31 7
			8.8	51	54.2	57.6	60.7	63.9	67.2	30 366	0.72	52	0.72
				28.6						+0.58 54 +03			+ 0.151
	κ			30.0									+ 45
	((δ) — D) $\frac{\kappa'}{100}$			31.6									− 2
	α_2			30.0								52	1.30
													− 2.96
												51	~~54.22~~ 58.30 3
0	53 51	49 58	9.3	53	~~50.0~~	53.2	56.2	59.5	62.7	28 16	56.32	53	56.32
	52 56.8	50-7.9	9.0	39.2						−0.25 22 +04			− 0.685
	κ			40.8									+ 45
	((δ) — D) $\frac{\kappa'}{100}$			43.3									− 2
	α_1			41.1								53	56.07
													− 2.99
												53	53.1 ~~x~~ 5
			9.5	54	53 49.4	52.5	55.7	58.9	62.1	27 86	55.72	53	55.72
				9.1						+0.57 53 +03			+ 0.151
	κ			10.2									+ 44
	((δ) — D) $\frac{\kappa'}{100}$			9.6									− 2
	α_2											53	56.29
													− 2.97
												53	~~52.22~~ ~~53.38~~ 31
0	56 09	50 28	9.5	55	56 6.0	9.1	12.4	15.7	19.1	6 23	12.46	56	12.46
	55 13.9	50 22.4	9.2	50.7						−0.23 21 +03			− 0.685
	κ			52.2									+ 46
	((δ) — D) $\frac{\kappa'}{100}$			54.0									− 2
	α_1			52.3								56	12.23
													− 3.03
												56	9.2 ~~2~~ 5
			9.3	55	56 5.4	8.6	11.7	15.~~8~~	18.3	5 91	11.82	56	11.82
				45.9						+0.58 54 +03			+ 0.151
	κ			47.3									+ 45
	((δ) — D) $\frac{\kappa'}{100}$			49.0									− 2
	α_2			47.4								56	12.40
													− 3.01
												56	9.35 8

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ'
d	+25.4	0 5.0	45.7	34	53,35	47	53.00		35	50 48 35.80	
	1.40483					50 48	57.28			− 17	+9.53
	9.80058						− 21.48			+ 41	
72 ((δ) − D) $\frac{d'}{100}$	1.33210n									+ 9.16	
										+ 53	
+13.53 δ_1										− 26.65	
+1 18.76		43 48.89		49 37.4						48 18.68	
d	+19.6	0 9.3	50.5	36	0,05	47	48.30		35	48 36.13	
	1.29226					50 48	52.71			− 11	+9.67
	9.80058						− 14.58			− 6	
((δ) − D) $\frac{d'}{100}$	1.21953n									+ 925	
										+ 53	
+13.53 δ_2										− 26.80	
+1 18.76		43 48.92		49 37.8						48 19.00	
d	+26.3	1 17.1	57.8	41	7,45	41	40.90		40	50 42 22.89	
	1.41996					50 42	45.18			− 19	+9.24
74	9.80151						− 22.29			− 12	
((δ) − D) $\frac{d'}{100}$	1.34816n									+ 903	
										+ 52	
+12.69 δ_1										− 26.40	
+1 18.32		49 47.18		43 24.0						42 5.73	
d	+21.6	1 19.3	0.9	41	10.10	41	38.25		40	42 24.35	
	1.33445					50 42	42.66			− 13	+9.38
	9.80151						− 18.31			− 13	
((δ) − D) $\frac{d'}{100}$	1.26265n									+ 912	
										+ 52	
+13.69 δ_2				5						− 26.50	
+1 18.32		49 47.20		43 25.6						42 7.23	
d	~~+36.6~~ +23.4	8 8.49	15.3	58	25,10	24	23.25		55	50 25 7.57	
	1.36922					50 25	27.53			− 14	+8.69
80	9.80428						− 19.96			− 37	
((δ) − D) $\frac{d'}{100}$	1.30019n									+871	
										+ 49	
+13.74 δ_1										− 26.25	
+1 18.16		52 12.11		26 8.2						24 50.01	
d	~~+24.3~~ +20.7	3 28.7	9.4	58	19,05	24	29.30		55	25 7.52	
	1.48714					50 25	33.71			− 25	+8.68
	9.80428						− 26.19			− 36	
((δ) − D) $\frac{d'}{100}$	1.41811n									+880	
										+ 49	
+13.74 δ_2										− 26.35	
+1 18.16		52 12.07		26 8.0						24 49.85	
d	+15.2	1 37.2	16.8	26	27,00	8 56	21.35		25	49 57 12.54	
	1.18184					47 57	25.63			− 6	+8.43
60	9.80852						− 13.09			− 16	
((δ) − D) $\frac{d'}{100}$	1.11705n									+820	
										+ 45	
+13.78 δ_1										− 26.10	
+1 18.00		54 6.93		58 12.9						56 54.87	
d	~~+46.7~~ −13.5	1 58.3	39.2	26	48,75	55	59.60		25	57 15.98	
	1.14301n					49 57	4.01			− 5	+8.49
	9.80852						~~+18.98~~			− 20	
((δ) − D) $\frac{d'}{100}$	1.07822						+ 11.97			+829	
										+ 45	
+13.78 δ_2										− 26.20	
+1 18.00		54 7.09		58 16.3						56 58.27	
d	+20.2	0 54.2	34.2	53	44,20	27	4.15		65	50 27 51.22	
	1.30535					50 28	8.43			− 11	+9.09
64	9.80382						− 17.21			− 8	
((δ) − D) $\frac{d'}{100}$	1.23586n									+ 878	
										+ 50	
+13.86 δ_1										− 26.05	
+1 17.80		56 23.11		28 52.1						27 34.26	
d	+24.4	0 49.7	31.0	58	40,35	27	6.80		55	27 51.62	
	1.38739					50 28	12.41			− 16	+9.13
	9.80382						− 20.79			− 8	
((δ) − D) $\frac{d'}{100}$	1.31790n									+ 887	
										+ 50	
+13.86 δ_2				3						− 26.20	
+1 17.80		56 23.24		28 52.1						27 34.55	

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Date$_1$ = 1871 Dec. 1. Observer A. M. Recorder A. M.

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Date$_2$ = 1871, Dec. 2. Observer A. M. Recorder A. M.

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Rv

Star.	α	δ	Mag.	T_δ	T_m	T_a	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
	h m s	° ′ ″		m	s	s	s	s	s	m s	s	m	s
	0 59 24.1	51 52.0	8.5	59	57.2 59.3 61.7 59.4	0 16.9	20.2	23.4	26.7	30.0	11 42 23.44 −0.20	+04 18	0	23.44 − 0.685 + 49 − 2
	κ												0	23.24 − 3.12
	((δ) — D) $\frac{\kappa'}{100}$												0	20.128
	a_1													+14, +1
			8.8	59	57.0 55.6 60.2 58.6	0 16.1	19.5	22.8	26.2	29.4	11 40 22.80 +0.60	56 +02	0	2280 + 0,151 + 47 − 2
	κ												0	23.40 − 3.11
	((δ) — D) $\frac{\kappa'}{100}$												0	20.257
	a_2 Dec. 1													+14 +1
0	13 41 12 48.2	51 24 51 18.8	9.0	13	27.7 28.5 29.8 28.6	34.8	37.9	41.1	44.5	47.9	2062 41.24 −0.26	20 +03	13	41.24 − 0.7266 + 48 − 2
	κ												13	40.98 − 2.53
	((δ) — D) $\frac{\kappa'}{100}$												13	38.574
	a_1 Dec. 1													+12 +1
0	17 58 17 7.1	51 02 50 56.5	9.5 9.5	18	0.4 1.8 3.1 1.7	24.3	24.6	27.9	31.3	34.5	13 96 27.92 −0.27	21 +04	18	27.92 − 0 7266 + 47 − 2
	κ												18	2.765 − 2.58
	((δ) — D) $\frac{\kappa'}{100}$												18	25.137
	a_2 Dec. 1													
0	32 47 31 54.7	50 03 50 −1.9	8.8 8.9	32	25.1 26.3 28.1 26.5	48.7	46.9	50.1	53.1	56.5	25 03 50.06 −0.27	23 +03	32	50.06 − 0 7066 + 45 − 2
	κ												32	49.79 − 2.74
	((δ) — D) $\frac{\kappa'}{100}$												32	47.09 12
	a_1 Dec. 1													+13, +11
0	47 13 46 18.9	51 03 50 57.4	10.0 9.4	46	57.2 52.5 54.3 52.6	47 11.6	13.9	17.1	21.4	23.5	8 65 17.30 −0.23	20 +04	47	17.30 − 0.685 + 47 − 2
	κ												47	17.07 − 2.93
	((δ) — D) $\frac{\kappa'}{100}$												47	14.1421
	a_2 Dec. 2													+136 +11
0	12 8 H 17.7 12 8.4	49 59 ~~50 06~~ 49 53.4 49 56.6	8.10	12	35.4 37.0 38.7 37.0	54.0	56.7	59.9	63.3	66.6	30 05 60.10 +0.56	52 +03	13	0.10 + 0.140 + 44 − 2
	κ												13	0.66 − 2.47
	((δ) — D) $\frac{\kappa'}{100}$												12	58.158
	a_1 Dec. 2													+12, +12
0	19 36 18 42.4	51 44 51 38.3	9.0	19	5.6 6.8 8.9 7.1	29.8	33.0	36.6	40.0	43.3	18 2736.54 +0.54	56 +03	19	36.54 + 0.141 + 47 − 2
	κ												19	37.13 − 2.58
	((δ) — D) $\frac{\kappa'}{100}$												19	34.525
	a_2													+12.4 +11
	κ													
	((δ) — D) $\frac{\kappa'}{100}$													
	a_1													
	κ													
	((δ) — D) $\frac{\kappa'}{100}$													
	a_2													

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	S	1 17.5	58.3	26	7.90	56	4045		28	51 57 24.73	
	+24.0					57 57	44.73			− 15	+10.77
d	1.38021						− 19.80			− 12	
	9.78967									+1044	
$((\delta) - D)\frac{d'}{100}$	1.29657n									+ 60	
										−26.10	
+14.07 δ_1		0 34.25		58 27.0						57 9.60	
+1 17.44											
	+24.2	1 16.3	58.0	26	7.15	56	4120		25	57 ~~29.75~~	
	1.38382					57 57	45.61			25.65	+10.84
d	9.78967						− ~~15.80~~			− 16	
	1.30018n						19.96			− 12	
$((\delta) - D)\frac{d'}{100}$										+1052	
										+ 60	
+14.07 δ_2		0 34.34		58 27.7						−26.25	
+1 17.44										57 10.24	
	+12.6	4 32.8	9.0	59	20.90	23	2745		55	51 24 21.21	
	1.10037					57 24	31.73			− 5	+9.85
d	9.79484						− 10.52			− 47	
	1.82200n									+980	
$((\delta) - D)\frac{d'}{100}$				2						+ 57	
+1269										−27.70	
δ_1 +1 20.08		13 51.23		25 53.4						24 3.36	
	+26.2	4 19.8	1.2	19	10.25	3	38.10		35	51 4 20.35	
	1.41830					57 4	42.38			− 18	+9.34
d	9.79809						− 22.03			− 46	
	1.34308n									+943	
$((\delta) - D)\frac{d'}{100}$										+ 55	
										−27.55	
δ_2										4 2.14	
	+23.6	0 −0.8	−19.3	19	50.20	2	58.15		20	50 3 42.58	
	1.37291					50 4	2.43			− 15	+8.62
d	9.79809						− 19.85			+ 1	
	1.29769n									+8.31	
$((\delta) - D)\frac{d'}{100}$		33 0.32								+ 45	
+1320		~~47 22.32~~		4 43.6						−26.95	
δ_1 +1 19.40										3 24.25	
	+24.7	0 46.4	28.3	20	37.35	2	11.00		20	51 2 54.49	
	1.39240					57 3	15.28			− 16	+9.73
d	9.79840						− 20.79			− 7	
	1.31779n									+ 941	
$((\delta) - D)\frac{d'}{100}$										+ 55	
										−26.55	
+1364 δ_2		47 27.85		3 56.2						2 37.67	
+1 18.48											
	+23.81	1 20.6	2.7	21	11.65	1	36.70		20	50 2 21.67	
	1.36361					50 2	41.11			− 14	+8.55
d	9.79840						− 19.44			− 13	
	1.28870n									+837	
$((\delta) - D)\frac{d'}{100}$										+ 45	
+1265										−27.60	
δ_1 +1 20.12		13 10.83		3 22.7						2 2.62	
	+29.4	4 24.8	6.0	39	15.40	43	32.95		35	51 44 12.99	
	1.46835					57 44	37.36			− 23	+10.15
d	9.79176						− 24.37			− 46	
	1.38680n									+1025	
$((\delta) - D)\frac{d'}{100}$										+ 57	
+12.87										−27.70	
δ_2 +1 19.92		19 47.42		45 15.4						43 55.44	
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

$\Delta\sqrt{T} = +.75 (\pm .027)$ $+7.8 - .03 = 7.75$ [.75]

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Date$_1$ = 1871 Dec. 9. Observer W.A.R. Date$_2$ = 1871 Dec. 12. Observer W.A.R.
u = +.37 Recorder W.A.R. u = +.38 Recorder W.A.R.

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
	m s	° ′		m s	s	s	s	s	s		s	m	s
	36 14	51 04	8.4	36	8.5	10.1	13.5	16.8	20.1	23.2	6 37 16.74		36	16.74
	35 26.2	50 57.2	8.4		9.5						+5.00			+ 4.564
	κ				11.8						4.98+.03	Add +.035		+ 46
					9.0							to (M+m)		− 2
	((δ) − D) $\frac{\kappa'}{100}$											for Dec 9.		21.74
												It has been added 36		− 12.65
	a_1											to sum of constants	36	29.04
												and found R.A.		19.10
	30 59		8.4	38	40.1	36 8.1	11.3	14.7	17.7	21.2	7 30 14.60		36	14.60
	33 9				41.6						+7.15			+ 6.70
	κ				43.0									+ 47
					41.5									− 2
	((δ) − D) $\frac{\kappa'}{100}$												36	7.45
														21.75
	a_2												36	− 2.58
														19.17
0	40 19	50 24	8.2	39	27.7	57.6	2.0	6.2	9.5	12.6	33 0 46.16		40	6.18
	39 15.9	50 18.5	8.2		29.3						+4.99 .97 +.04			+ 4.564
	κ				31.5									+ 45
					32.8									− 2
	((δ) − D) $\frac{\kappa'}{100}$				31.5								40	11.17
					32.8									− 2.68
	a_1				30.8								40	8.49 51
			8.2	39	23.0	57.5	0.9	4.1	7.2	10.4	32 0 64.22		40	4.02
					24.8						+7.14			+ 6.70
	κ				26.5									+ 46
					24.7									− 2
	((δ) − D) $\frac{\kappa'}{100}$												40	11.16
														− 2.62
	a_2												40	8.54
0	40 14	50 24	8.4	39	34.5	40 4.9	8.0	11.2	14.5	17.7	5 63 11.26		40	11.26
	39 20.7	50 18.7	8.3		32.7						+4.99 .97 +.03			+ 4.564
	κ				45.4									+ 45
					47.4									− 2
	((δ) − D) $\frac{\kappa'}{100}$				49.2								40	16.25
					47.3									− 2.69
	a_1												40	13.547
			8.4	39	38.7	40 2.6	8.7	9.1	12.3	15.6	4 55 9.10		40	9.10
					40.3						+7.14			+ 6.70
	κ				42.5									+ 46
					40.5									− 2
	((δ) − D) $\frac{\kappa'}{100}$												40	16.24
														− 2.62
	a_2												40	13.62
0	42 44	50 20	8.8	42	22.0	35.6	38.8	42.1	45.4	48.7	21 0 6 42.12		42	42.12
	41 50.1	50 25.0	8.9		24.1						+4.99 .97 +.04			+ 4.564
	κ				26.3									+ 45
					24.1									− 2
	((δ) − D) $\frac{\kappa'}{100}$												42	47.11
44 53														− 2.72
	a_1												42	44.39 41
			8.7	42	12.5	33.6	36.8	40.0	42.2	46.5	19 0 1 40.02		42	40.02
					14.7						+7.14 49			+ 6.70
	κ				17.2									+ 46
					14.8									− 2
	((δ) − D) $\frac{\kappa'}{100}$												42	47.16
														− 2.66
	a_2												42	44.50
0	47 13	51 03	10.0	47	12.0	5.3	8.4	11.6	14.6	18.3	5 8 24 11.64		47	11.64
	46 18.9	50 57.4	9.4								+5.00 4.98+.03			+ 4.564
	κ													+ 46
														− 2
	((δ) − D) $\frac{\kappa'}{100}$												47	16.644
														− 2.789
	a_1												47	13.856
			4.5	46	46.6	41 2.9	6.2	9.7	12.7	16.0	4 7 5 4.50		47	9.50
					48.5						+7.15			+ 6.70
	κ				50.3									+ 47
					48.4									− 2
	((δ) − D) $\frac{\kappa'}{100}$												47	16.65
														− 2.73
	a_2												47	13.92

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Dec. 9 +1′ 2.″59 −.″10
" 12 +1 2.81 −.10

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+9.7	4 12.6	52.1	19	2.35	3	46.00		15′	51 4 42.11	
	0.188649					57 4	48.59			− 2	+9.68
d	9.779809						− 6.48			− 44	
2.14	0.811127n									+9.54	
((δ) − D) $\frac{d'}{100}$										+ 60	
										−27.75	
+13.34 δ_1		36 32.44		5 43.2						4 24.04	
+1 19.20											
	+33.1	3 48.9	30.5	18	39.70	4	8.65		15	4 43.62	
	1.519883					57 5	11.46			− 29	+9.28
d	9.779809						− 27.84			− 40	
	1.444961n									+9.42	
((δ) − D) $\frac{d'}{100}$										+ 55	
										−27.95	
+13.34 δ_2		36 32.51		5 44.2						4 24.95	
+1 19.20											
	+35.9	4 41.1	21.2	59	3115	23	17.20		55	50 23 49.16	
	1.555509					50 24	19.79			− 35	+8.48
d	9.804443						− 30.63			− 49	
.14	1.486221n									+8.78	
((δ) − D) $\frac{d'}{100}$										+ 54	
										−27.55	
+13.42 δ_1		40 21.93		24 49.0						23 30.09	
+1 18.96											
	+39.3	4 36.8	18.8	59	2780	23	20.55		55	23 49.82	
	1.594439					50 24	23.36			− 42	+8.25
d	9.804443						− 33.54			− 49	
	1.525551n									+8.67	
((δ) − D) $\frac{d'}{100}$										+ 49	
+13.42										−27.75	
δ_2		40 21.96		24 49.3						23 30.32	
+1 18.96											
	+24.0	4 41.1	21.2	59	31.15	23	17.20		55	50 23 59.31	
	1.380021					50 24	19.79			− 15	+8.67
d	9.804443						− 20.48			− 50	
.16	1.311133n									+8.78	
((δ) − D) $\frac{d'}{100}$										+ 54	
										−27.55	
+13.42 δ_1		40 26.99		24 59.4						23 40.43	
+1 18.96											
	+28.6	4 36.8	18.8	59	2780	23	20.55		55	23 58.96	
	1.456377					50 24	23.36			− 22	+8.45
d	9.804443						− 24.40			− 49	
	1.387491n									+8.67	
((δ) − D) $\frac{d'}{100}$										+ 49	
+13.42										−27.75	
δ_2		40 27.04		24 58.6						23 39.66	
+1 18.96											
	+18.0	2 44.6	25.0	52	34.80	30	13.55		50	50 31 0.82	
	1.255274					50 31	16.14			− 9	+9.11
10 d	9.803316						− 15.32			− 28	
	1.185324n									+8.93	
((δ) − D) $\frac{d'}{100}$										+ 55	
										−27.50	
+13.49 δ_1		42 57.90		32 1.2						30 42.43	
+1 18.80											
	+25.2	2 38.1	19.5	52	2895	30	19.40		50	31 0.76	
	1.401401					50 31	22.21			− 17	+8.86
d	9.803316						− 21.45			− 27	
	1.331445									+8.86	
((δ) − D) $\frac{d'}{100}$										+ 50	
										−27.70	
+13.49 δ_2		42 57.99		32 0.7						30 41.92	
+1 18.80											
	.6	1 2.9	48.2	20	5805	1	50.30		20	51 2 53.86	
	−0.4					57 2	52.89			− 0	+10.01
d	0.060211n						~~+1.67~~			− 11	
14	9.779840						+ 0.97			+9.52	
((δ) − D) $\frac{d'}{100}$	9.839530									+ 60	
										−27.45	
+13.64 δ_1		47 27.50		3 54.9						2 36.42	
+1 18.48											
	+21.1	0 47.4	29.4	20	38.40	2	6.95		20	2 55.00	
	1.324228					51 3	12.76			− 12	+9.75
d	9.779840						− 17.76			− 7	
	1.249371n									+9.39	
((δ) − D) $\frac{d'}{100}$										+ 55	
										−27.70	
+13.64 δ_2		47 27.56		3 55.5						2 37.05	
+1 18.48											

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Date$_1$ = 1871 Dec. 9. Observer W.A.R. Recorder W.A.R.

Date$_2$ = 1871 Dec. 12. Observer W.A.R. Recorder W.A.R.

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
ah	m s 50 00 49 54 48 38.2	° ′ 50 43 50 37.9 50 36.7	9.0 8.5	m 49	s 2.7 4.7 7.1 4.8	s 24.9	s 28.1	s 31.4	s 34.6	s 37.9	h m s 15 6 9 +5.00	s 31.38 4.98+.04	m s 49 31.38
κ													49 + 4.575 + 45 − 2
((δ) − D) $\frac{\kappa'}{100}$													49 36.38 − 2.81
α_1													49 33.55 9
	49 5.4	50 37.9	8.7	49	35.6 37.2 39.4 37.4	49.2	52.5	55.8	58.8	62.1	27 8 4 +7.14	55.68	49 55.68
κ													1 + 6.70 + 46 − 2
((δ) − D) $\frac{\kappa'}{100}$													50 2.82 − 2.76
α_2													50 0.06
0	53 28 52 33.7	50 11 50 5.9	8.0 7.6			lost							
κ						Ch. failed.							
((δ) − D) $\frac{\kappa'}{100}$													
α_1													
			8.0	52	47.6 49.3 51.6 49.5	53 17.4	20.7	23.9	27.1	30.3	11 9 4 +7.13	23.88	53 23.88
κ													+ 6.71 + 44 − 2
((δ) − D) $\frac{\kappa'}{100}$													53 31.01 − 2.80
α_2													53 19 55 28.21
0	55 11 54 15.5	50 20 50 14.4	7.2 9.1										
κ						Ch. failed							
((δ) − D) $\frac{\kappa'}{100}$													
α_1													
	53 54.2	50 15.7	7.1	54	33.3 35.3 37.1 35.2	38.1	41.4	44.6	(47.5)	51.1	+7.14		54 44.62
κ													+ 6.71 + 45 − 2
((δ) − D) $\frac{\kappa'}{100}$													54 51.76 − 2.82
α_2													54 48.94
0	57 36 56 40.6	50 14 50 8.8	8.5 8.8										
κ						Ch. failed							
((δ) − D) $\frac{\kappa'}{100}$													
α_1													
			8.7	56	53.1 55.1 57.5 55.2	57 25.5	28.8	32.0	35.2	38.5	16 0 0 +7.13	32.00	57 32.00
κ													+ 6.71 + 44 − 2
((δ) − D) $\frac{\kappa'}{100}$													57 39.13 − 2.86 4
α_2													57 36.29
1	1 40 0 41.6	57 55 57 49.8	8.7 8.6										
κ						Ch. failed.							
((δ) − D) $\frac{\kappa'}{100}$													
α_1													
		:35	8.9 45	0	57.1 58.7 61.1 58.9	1 26.8	29.6	33.0	36.4	39.7	16 5 0 +7.18	33.00	1 33.00
κ													+ 6.71 + 49 − 2
((δ) − D) $\frac{\kappa'}{100}$													1 40.18 − 2.90 4
α_2													1 37.24

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	δ	1′ 14.1	56.4	45	5,10	41	43.25		40	50 42 23.29	✓
1	+26.6					50 42	45.84			− 19	+9.39
d	1.422488						− 22.55			− 12	
	9.801571									+ 913	
((δ) − D) $\frac{d'}{100}$	1.35308m									+ 57	diff #s ?
+13.69										−27.30	
+1 18.32 δ_1		49 47.28		43 23.7						42 5.38	
	+18.3	0 9.8	50.8	40	0,30	42	48.05		40	43 35.35	✓
d	1.262245					50 43	50.86			− 9	+9.48
	9.801136						− 15,51			− 0	
((δ) − D) $\frac{d'}{100}$	1.190506m									+ 905	
										+ 52	
+13.71 δ_2										−27.50	
+1 18.32		50 13.77		44 35.6						43 17.33	
		2 26.0	7.1						10		
d											
((δ) − D) $\frac{d'}{100}$											
δ_1											
	+34.4	2 12.4	53.6	12	3,00	10	45.35		10	50 11 18.68	
d	1.536556					50 11	48.16			− 32	+8.36
	9.806257						− 29.48			− 23	
((δ) − D) $\frac{d'}{100}$	1.469506m									+844	
				17.5						+ 47	
+13.77 δ_2				12 18.1						−27.30	
+1 18.04		53 41.98								10 59.74	
		3 15.1	56.4						0		
d											
((δ) − D) $\frac{d'}{100}$											
δ_1											
	+9.4	3 8.3	48.7	2	5,50	19	49.85		0	50 20 44.63	
d	0.997313					50 20	52.66			− 2	+8.76
	9.804897						− 8,03			− 33	
((δ) − D) $\frac{d'}{100}$	0.904710m									+ 863	
										+ 48	
+13.82 δ_2										−27.25	
+1 17.88		55 2.76		21 44.0						20 26.14	
		4 10.6	52.5						5		
d											
((δ) − D) $\frac{d'}{100}$											
δ_1											
	+36.8	4 8.3	49.0	8	5,65	13	49.70		5	50 14 21.01	
d	1.565585					50 14	52.51			− 36	+8.17
	9.805880						− 31,50			− 44	
((δ) − D) $\frac{d'}{100}$	1.498346m									+ 850	
										+ 47	
+13.89 δ_2										−27.15	
+1 17.68		57 50.18		15 19.7						14 2.03	
		3 28.4	10.9						25		
d											
((δ) − D) $\frac{d'}{100}$											
δ_1											
	+34.1	3 22.3	4.1	28	13,20	54	35.15		25	51 55 9.82	
d	1.532745					57 55	37.96			− 31	+10.27
	9.788999						− 28.14			− 35	
((δ) − D) $\frac{d'}{100}$	1.449336m									+1034	
+14.10										+ 57	
+1 17.32 δ_2		1 51.34		56 10.1						−27.35	
										54 52.74	

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Date$_1$ = 1871 Dec. 9. Observer W.A.R. Recorder W.A.R. Date$_2$ = 1871 Dec. 12. Observer W.A.R. Recorder W.A.R. 80

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
	3m 38s 10s	51° 23′	8.4	37m 43.5s	59.3	2.6	6.0	9.2	12.6	32 9 7	65.94	38	5.94 −01
	37 7.7	51 17.5	8.3	44.8						+5.04	+.04		+4.595
	κ			47.9									+ 47
	((δ) — D) $\frac{\kappa'}{100}$			45.4									− 2
	α_1											38	10.98
													− 3.43
												38	7.584
			8.4	37 30.6	57.2	0.5	3.8	7.0	10.4	31 8 9	63.76	38	3.78
	κ			32.7						+7.19			+ 6.72
	((δ) — D) $\frac{\kappa'}{100}$			34.5									+ 49
				32.6									− 2
	α_2											38	10.97
													− 3.38
												38	7.59
1	39 50	51 15	8.15	39 16.2	39.1	42.4	45.7	49.0	52.3	22 8 5	45.70	39	45.70
	38 47.8	51 9.7	8.8	17.7						+5.03	+.04		+ 4.595
	κ			19.4									+ 46
	((δ) — D) $\frac{\kappa'}{100}$			17.7									− 2
	α_1											39	50.73
													− 3.44
												39	53.25 47.29
			—	39 20.8	37.1	40.4	43.6	46.8	50.1	21 8 0	43.60	39	43.60
	κ			22.5						+7.17			+ 6.72
	((δ) — D) $\frac{\kappa'}{100}$			25.2									+ 47
				22.8									− 2
	α_2											39	50.77
													− 3.40
												39	53.34
													47.37
1	42 15	51 20	8.9	41 53.7	42 5.3	8.6	11.9	15.1	18.7	5 9 6	11.92	42	11.92
	41 12.9	51 14.5	9.0	56.9						+5.04	+.03		+ 4.596
	κ			58.7									+ 47
	((δ) — D) $\frac{\kappa'}{100}$			57.1									− 2
43 58	α_1											42	16.96
													− 3.47
												42	13.49
			9.1	47 46.0	42 3.1	6.3	9.6	13.0	16.4	4 8 4	9.68	42	9.68
	κ			47.3						+7.18			+ 6.72
	((δ) — D) $\frac{\kappa'}{100}$			49.4									+ 48
				47.7									− 2
	α_2											42	16.86
													− 3.43
												42	13.43
1	46 02	52 01	8.4	45 40.8	52.3	55.5	58.9	62.4	65.7	29 4 8 5 8 9 6		45	58.96
	44.1 57.4	51 56.2	8.3	42.1						+5.04	+.01 +.04		+ 4.596
	κ			45.0									+ 47
	((δ) — D) $\frac{\kappa'}{100}$			42.5									− 2
	α_1											46	4.00
													− 3.55
												46	0.486
			8.3	45 27.0	50.1	53.5	56.7	60.2	63.3	28 3 8 5 6.7 6		45	56.76
	κ			28.6						+7.19			+ 6.72
	((δ) — D) $\frac{\kappa'}{100}$			30.7									+ 49
				28.7									− 2
	α_2											46	3.95
													− 3.50
												46	0.45
1	49 01	50 13.3	8.7	48 46.5	45.2	48.3	51.5	54.8	58.1	25 8 2	51.64	48	51.64
	47 52.7	50 4.1	9.2	49.0						+5.01	+.03		+ 4.596
	κ			50.8									+ 44
	((δ) — D) $\frac{\kappa'}{100}$			48.7									− 2
	α_1											48	56.65
													− 3.50
												48	53.15
	48 0.0	50 13.3	9.2	48 21.1	51.8	54.3	57.7	6 0.9	6 4.1	28 8 3 5 7.66		48	57.66
	κ			22.8						+7.15			+ 6.72
	((δ) — D) $\frac{\kappa'}{100}$			25.3									+ 45
				23.0									− 2
	α_2											49	4.81
													− 3.47
												49	1.34

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+20.8	1 ′ 6.0	46.7	0 ′	56,45	21	51.90		0′	51 22 37.36	
	1.31175					51 22	54.49			− 11	+10.28
d	9.79526						− 17,13			− 10	
	1.23370n									+989	
((δ) − D) $\frac{d'}{100}$										+ 60	
										−25.10	
+15.06 δ_1		38 22,60		23 35.5						22 22.54	
+1 12.96											
	+31.2	0 56.7	36.5	0	46,60	22	1,75		0	22 38.49	
	1.49415					51 23	4.56			− 26	+9.97
d	9.79526						− 26.07			− 9	
	1.41610n									+9.75	
((δ) − D) $\frac{d'}{100}$										+ 57	
										−25.55	
+15.06 δ_2		38 22.65		23 35.9						22 22.91	
+1 12.96											
	+28.0	3 50.3	31.0	8	40,65	14	7,70		5	51 14 46.83	
	1.44716					51 15	10.29			− 21	+9.73
d	9.79652						− 23,46			− 40	
	1.37037n									+974	
((δ) − D) $\frac{d'}{100}$										+ 60	
										−25.00	
+15.10 δ_1		40 2.39		15 44.3						14 31.56	
+1 12.72											
	+20.8	3 56.7	37.1	8	47,20	14	1,15		5	14 46.53	
	1.31806					51 15	3.96			− 11	+9.64
d	9.79652						− 14,43			− 42	
	1.24127n									+961	
((δ) − D) $\frac{d'}{100}$										+ 56	
										−25.40	
+15.10 δ_2		40 2.47		15 43.5						14 30.77	
+1 12.72											
	+14.8	4 8.2	48.9	3	58,55	18	49,80		0	51 19 40.01	
	1.17026					51 19	52,39			− 6	+9.93
d	9.79573						− 12,38			− 44	
	1.09268n									+983	
((δ) − D) $\frac{d'}{100}$										+ 60	
										−24.85	
+15.18 δ_1		42 28.67		20 37.4						19 25.09	
+1 12.32											
	+22.0	4 16	42.5	3	52,05	18	56,30		0	19 40.71	
	1.34242					51 19	59.11			− 13	+9.72
d	9.79573						− 18,40			− 43	
	1.26484n									+971	
((δ) − D) $\frac{d'}{100}$										+ 57	
										−25.30	
+15.18 δ_2		42 28.61		20 37.4						19 25.13	
+1 12.32											
	+16.5	2 26.2	7.2	22	16,70	0	31,65		20	52 1 20.65	
	1.21748					52 1	34,24			− 8	10.87
d	9.78902						− 13,59			− 25	
	1.13319n									+1060	
((δ) − D) $\frac{d'}{100}$										+ 60	
										−24.75	
+15.35 δ_1		46 15.81		2 18.5						1 6.77	
+1 11.76											
	+28.1	2 16.2	58.2	22	7,20	0	41.15		20	1 20.82	
	1.44871					52 1	43.96			− 21	+10,62
d	9.78902						− 23,14			− 23	
	1.36442n									+1046	
((δ) − D) $\frac{d'}{100}$										+ 60	
										−25.15	
+15.35 δ_2		46 15.80		2 18.0						1 6.29	
+1 11.76											
	+2.9	4 53.0	34.3	14	43,65	8	4.70		10	50 9 4.80	✓
	0.46240					50 9	7.29			− 0	+8.52
d	9.80671						− 2,49			− 52	
	0.39580n									+852	diff #s
((δ) − D) $\frac{d'}{100}$										+ 52	
										−24,30	
+15.23 δ_1		49 8.38		10 0.3	−,20					8 49.02	
+1 11.28											
	+34.7	0 27.2	7.1	5	17,15	17	31,20		5	18 4.35	✓
	1.54033					50 18	34.01			− 32	+8.70
d	9.80519						− 29.66			− 3	
	1.47221n									+857	
((δ) − D) $\frac{d'}{100}$										+ 48	
										−24,75	
+15.24 δ_2		49 16.58		18 59.8						17 48.50	✓
+1 11.28											

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144

Date$_1$ = 1871, Dec. 9. Observer W.A.R. Recorder W.A.R.

145

Date$_2$ = 1871, Dec. 12. Observer W.A.R. Recorder W.A.R.

82

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
1	67 08	47 59	9.0	60m 55.0	51m 12.4	15.8	19.0	22.0	25.3	9 45	18.90	51	18.90
	50 7.0	52-65	9.0	57.0						+5.01	4.98+.04		+ 4.596
	κ 18.9	49 53.7		56.0									+ 44
													− 2
	((δ) − D) $\frac{\kappa'}{100}$											51	23.91
													− 3.52
	a_1											51	20.~~39~~40
			9.1	51 3.9	10.2	13.5	16.7	19.9	23.1	6 34	16.68	51	16.68
				4.5						+7.15			+ 6.72
	κ			5.3									+ 45
				6.2									− 2
	((δ) − D) $\frac{\kappa'}{100}$			4.9								51	23.83
													− 3.48
	a_2											51	~~13.01~~ 20.35
1	53 38	50 40	9.0	53 19.0	31.0	34.2	37.5	40.7	43.9	18 73	37.46	53	37.46
	52 36.8	50 35.0	9.0	21.0						+5.02	4.99+.03		+ 4.596
	κ			22.2									+ 45
				20.7									− 2
	((δ) − D) $\frac{\kappa'}{100}$											53	42.48
													− 3.58
	a_1											53	38.~~87~~90
			9.4	53 3.0	28.8	32.0	35.2	38.6	41.7	17 63	35.26	53	35.26
				4.9						+7.16			+ 6.72
	κ			5.7									+ 46
				4.6									− 2
	((δ) − D) $\frac{\kappa'}{100}$											53	42.42
													− 3.54
	a_2											53	38.88
1	55 56	51 04	8.3	54 53.7	57.1 55 0.5	3.7	7.0	10.2		31 65	63.70	55	3.70
	54 ~~54.5~~	50 ~~57.6~~	8.4	57.1						+5.03	00+.04		+ 4.596
	κ 3.7	57.2		57.0									+ 46
													− 2
	((δ) − D) $\frac{\kappa'}{100}$			57.2								55	8.73
													− 3.61
	a_1											55	~~5.~~ ~~4.09~~ 5.13
	54 54.5	50 59.6	—	55 11.6	46.1	49.6	52.8	56.0	59.2	26 37	5 274	55	5 274
		58	23	13.3						+7.14			+ 6.72
	κ			15.3									+ 47
				13.4									− 2
	((δ) − D) $\frac{\kappa'}{100}$											55	59.91
													− 3.58
	a_2		*1									55	56.33
2	1 13	50 27	7.5	0 33.2	+ 5.3	8.5	11.7	14.9	18.3	5 87	11.74	2	11.74
	1 10.5	50 22.0	7.2	34.7						+5.03	4.99+.03		+ 4.~~00~~ 56
	κ			36.8									+ 45
				34.9									− 2
	((δ) − D) $\frac{\kappa'}{100}$											2X	16.~~77~~
													− 3.65
	a_1											2X	13.08.11
1	59 40.5	50 23.1	8.7	0 20.1	32.9	36.1	39.5	42.7	45.8	19 70	39.40	D	39.40
		3 11		21.2						+7.16			+ 6.72
	κ			22.7									+ 46
				21.3									− 2
	((δ) − D) $\frac{\kappa'}{100}$											0	46.56
													− 3.61
	a_2											0	42.95
2	5 47	49 56	8.9	4 26.3	40.0	43.0	46.1	49.3	52.4	23 05	46.16	5	46.16
	4 45.1	50 -9.3	8.7	28.6						+5.02	4.98+.04		+ 4.~~00~~ 56
	κ			30.8									+ 44
				28.5									− 2
	((δ) − D) $\frac{\kappa'}{100}$											5	51.18
													− 3.67 51
	a_1											5	47.~~87~~47
			8.8	5 12.6	37.6	40.9	44.0	47.1	50.3	21 99	43.98	5	43.98
				14.8						+7.15			+ 6.72
	κ			15.0									+ 45
				15.1									− 2
	((δ) − D) $\frac{\kappa'}{100}$											5	51.13
													− 3.64
	a_2											5	47.49

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+22.9	4 1.6	42.0	234	57,80	58	56.55		20	49 57 39.43	✓
1.22 d	1,359844	3				49 58	59.14			− 14	+8.28
	9.88807						− 19.71			− 42	
((δ) − D) $\frac{d'}{100}$	1.29460m									+ 834	
										+ 50	
+15.27 δ_1		51 35.67		59 34.5						−24.10	
+1 10.92										58 23.61	
	+11.8	0 13.8	53.1	25	3.45	57	44.90		25	58 37.55	
d	1,071188					49 58	47.71			− 4	
	9.80807						− 10.16			− 0	+8.63
((δ) − D) $\frac{d'}{100}$	1.00644m									+ 822	
										+ 45	
+15.27 δ_2		51 35.62		59 32.6						−24.55	
+1 10.92										58 21.63	
	+16.8	3 40.2	20.3	43	30,25	39	18,10		40	50 40 6.44	
.20 d	1,22531					50 40	20.69			− 8	+9.19
	9.80197						− 14.25			− 38	
((δ) − D) $\frac{d'}{100}$	1.15397m									+ 908	
										+ 57	
+15.40 δ_1		53 54.30		41 2.0						−24.10	
+1 10.52										39 51.53	
	+30.8	3 28.0	8.3	43	18,15	39	3020		40	40 6.88	
d	1,488555					50 40	33.01			− 25	+8.88
	9.80197						− 26.13			− 36	
((δ) − D) $\frac{d'}{100}$	1.41721m									+ 897	
										+ 52	
+15.40 δ_2		53 54.28		41 1.8						−24.50	
+1 10.52										39 51.26	
	+6.5	1 57.9	38.8	21	48,35	1	0000		20	51 1 57.12	✓
d	0.81291					51 2	2.59			− 1	+9.89
	9.79806						− 5.47			− 20	
((δ) − D) $\frac{d'}{100}$	0.73816m									+ 977 50	
		55 2061								+ 60	
+15.48 δ_1		56 10.61		2 53.2						−24.05	
+1 10.28		3								1 42.96	
	+39.3	4 599	36.0	198	47,95	34	040		15	3 30.15	✓
d	1,594439					57 45	3.21			4 − 41	+9.02
	9.79825						− 33.06			− 53	
((δ) − D) $\frac{d'}{100}$	1.51933m									+ 991	
										+ 55	
+15.50 δ_2		56 11.83		5 24.9						−24.45	
+1 10.12										34 14.72	
	+36.8	1 39.2	19.4	56	29,30	26	19,05		55	50 26 50.27	✓
d	1,56585					50 27	21.64			− 36	+8.87
	9.80397						− 31.37			− 16	
((δ) − D) $\frac{d'}{100}$	1.49651m									+ 885	
										+ 54	
+15.56 δ_1		2 28.67		27 44.7						−23.50	
+1 9.04										26 35.64	
	+18.1	0 57.3	37.2	55	47,25	27	1,10		55	27 48.49	✓
d	1,25768					50 28	3.91			− 9	+9.07
	9.80382						− 15.42			− 9	
((δ) − D) $\frac{d'}{100}$	1.18819m									+ 875	
										+ 50	
+15.55 δ_2		0 58.50		28 42.6						−23.95	
+1 9.04										27 33.61	
	+17.7	3 19.4	59.0	28	9,20	54	39.15		25	49 55 26.49	
18 d	1,24797					49 55	41.74			− 9	+8.33
	9.80867						− 15.25			− 34	
((δ) − D) $\frac{d'}{100}$	1,18333m									+ 826	
										+ 50 60	
+15.61 δ_1		6 3.12		56 19.6	+50					−23.95	
+1 8.40										55 11.22	
	+28.9	3 10.6	50.0	28	0,30	54	48.05		25	55 25.46	
d	1,46090					49 55	50.36			− 22	+8.04
	9.80867						− 24.90			− 33	
((δ) − D) $\frac{d'}{100}$	1.39626m									+ 815	
										+ 44 2400.	
+15.61 δ_2		6 3.10		56 17.9						−23.60	
+1 8.40										55 9.50	

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144

Date$_1$ = 1871, Dec. 9. Observer W.A.R. Recorder W.A.R.

145

Date$_2$ = 1871, Dec. 12. Observer W.A.R. Recorder W.A.R.

84

Star.	α	δ	Mag.	T_s	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
2	m s 7 55 6 53.1	° ′ ″ 50 54 50 47.7	9.5 9.3	m 7	s 27.5 29.4 32.0 29.6	s 48.6	s 57.9	s 55.3	s 58.4	s 1.8	s 27 60 55.20 +5.04 00 +03	m s 7 55.20 + 4.56 + 46 − 2 8 0.24 − 3.74 78 56.46	
			9.5	7	16.0 18.0 21.0 18.3	46.7	48.8	53.1	56.3	57.6	26 53 53.06 +7.17	7 53.06 + 6.72 + 47 − 2 8 0.23 − 3.71 78 56.52	
0	26 7 25 16.3	50 58 50 52.4	8.8 8.8	25	45.1 46.7 48.0 46.9	58.4	1.8	5.2	8.4	11.6	32 59 65.08 +5.00 498+04	26 5.08 + 4.56 + 46 − 2 26 10.08 − 2.51 26 7.57	
0	28 44 27 52.4	50 57 50 51.5	9.2 9.3	28	12.7 14.6 16.4 14.5	38.6	38.9	42.3	45.2	48.7	21 07 42.14 +5.00 498+03	28 42.14 + 4.56 + 46 − 2 28 47.14 − 2.57 28 44.57	
10	30 59 30 7.5	50 45 50 39.7	9.0 9.0	30	32.6 34.6 36.8 34.6	60.8	53.6	56.8	60.1	63.3	28 41 56.82 +5.00 498+04	30 56.82 + 4.56 + 46 − 2 31 1.82 − 2.55 30 59.26	+01
0	33 07 32 16.4	50 07 50 2.0	9.0 9.2	32	40.5 42.0 44.2 42.2	58.8	2.0	5.3	8.4	11.7	32 62 65.24 +4.98 496+03	33 5.24 + 4.56 + 44 − 2 33 10.20 − 2.59 33 7.61	4
10	44 53 43 59.0	50 41 50 (36.1) (1.4)	9.6 9.5	44	52.6 55.8 58.6 55.6	45 18.5 22.0 25	22.0	25.1	28.4	31.8	2 58 2 56.16 +4.99 497+04	45 25.16 + 4.56 + 45 − 2 45 30.15 − 2.76 45 27.39	41
1	43 58 42 ~~57.7~~ 21.5	50 09 50 4.7 51 5.0	8.3 6.1	43	36.1 37.7 40.2 38.0	—	43 16.4	19.8	23.1	26.4	+ 5.01 496+03	43 19.11 + 4.56 + 44 − 2 43 24.82 − 3.49 43 21.33	34
1	35 45 34 ~~44.7~~ 36.0	49 58 50 ~~7.1~~ 49 ~~52.9~~ 57.6	4.9 7.8	35	0.0 1.7 4.8 2.0	25.0	28.4	31.4	34.7	37.9	3 74 31.48 +7.15	35 31.48 + 6.72 + 45 − 2 35 38.63 − 3.30 35 35.33	
1	58 23 57 21.7	51 00 50 55.3	9.7 9.0	57	30.3 67.6 53.5 51.8	58 13.3	16.7	19.8	23.4	26.3	9 95 19.90 +7.17	58 19.90 + 6.72 + 47 − 2 58 27.07 − 3.61 58 23.46	
2	3 11 2 8.7	50 02 50 −2.3	8.8 8.9	2	24.1 36.0 35.2	3 1.2	4.3	7.7	10.7	13.9	3 78 7.56 +7.15	2 7.56 + 6.72 + 45 − 2 3 11.73 − 2.85 3 11.10	

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ'
	δ	4 12.3	52.8	29	2.35	53	45.80		25	50 54 26.78	
	+25.6					50 54	48.39			− 18	+9.32
d	1.40824						− 21.61			− 44	
	9.79965									+ 935	
((δ) − D) $\frac{d'}{100}$	1.33458n									+ 59	
										−23.15	
+15.78 δ_1		8 12.27		55 21.0						54 12.95	
+1 8.00											
	+34.8	4 5.2	45.0	28	55.0	53	53.25		25	54 26.69	
	1.54158					50 54	56.06			− 32	+9.02
d	9.79965						− 29.37			− 43	
	1.46792n									+ 923	
((δ) − D) $\frac{d'}{100}$										+ 54	
										−23.60	
+15.78 δ_2		8 12.30		55 20.1						54 12.11	
+1 8.00											
	+18.2	1 3.8	46.0	25	54.90	58	53.45		25	50 57 40.69	
	1.26007					50 57	56.04			− 9	+9.78
d	9.79934						− 15.35			− 10	
	1.18610n									+ 938	
((δ) − D) $\frac{d'}{100}$										+ 59	
										−28.00	
+13.04 δ_1		26 20.63		58 42.1						54 22.47	
+1 19.68											
	+27.6	1 37.3	19.0	26	28.15	56	20.20		25	50 56 59.51	
	1.44091					50 57	22.79			− 20	+9.60
d	9.79934						− 23.28			− 16	
	1.36694n									+ 937	
((δ) − D) $\frac{d'}{100}$										+ 59	
										−27.85	
+13.12 δ_2		28 57.70		58 0.8						56 41.26	
+1 19.56											
	+22.2	3 29.4	11.9	38	20.65	44	27.70		35	50 45 11.49	
	1.34635					50 45	38.29			− 13	+9.22
d	9.80120						− 18.80			− 36	
	1.27424n									+ 914	
((δ) − D) $\frac{d'}{100}$	#									+ 57	
										−27.95	
+13.17 δ_1	#	31 12.47		46 12.2						44 52.76	
+1 19.48											
	+23.0	1 21.7	2.2	16	11.95	6	36.40		15	50 7 19.25	
	1.36173					50 7	38.79			− 14	+8.69
d	9.80686						− 19.74			− 13	
	1.29528n									+ 845	
((δ) − D) $\frac{d'}{100}$										+ 51	
										−27.63	
+18.21 δ_2		33 20.85		8 19.6						7 0.29	
+1 19.36											
	+29.6	3 55.6	36.9	43	46.25	39	2.10		40	50 39 39.57	
	1.47129					50 40	4.69			− 24	+8.96
d	9.80197						− 25.12			− 42	
	1.39995n									+ 906	
((δ) − D) $\frac{d'}{100}$		45 40.9		40 39.8						+ 56	
		46 46.09			+1"					−27.45	
+13.58 δ_1										39 21.08	
+1 18.68										4967	
	−+18.2	4 25.7	5.4	14	15.53	8	32.80		10	50 9 5.00	9.67
	1.26007n					50 9	34.39			51 − 9	+8.50
d	9.80655 9.79731					51	+ 15.61			− 46	
	1.18407						28			+854 9.66	
((δ) − D) $\frac{d'}{100}$										+ 576	
										−24.65	
+15.19 δ_3		43 36.53		10 46.8						9 33.85 34.69	
+1 12.16											
	+29.5	1 3.9	43.0	20	58.45	1	54.90		20	50 2 32.35	
	1.46982					50 2	57.71			− 23	+8.40
d	9.80762						− 25.36			− 10	
	1.40413n									+ 840	
((δ) − D) $\frac{d'}{100}$										+ 8 38	
										+ 45	
+14.87 δ_1		35 50.20		3 28.6						−25.40	
+1 13.28										2 15.35	
	+28.1	3 9.1	50.2	22	59.65	59	48.70		20	51 0 27.84	50 2 26.57
	1.44871					57 0	51.51		0 27.84	− 21	− 27 +8.35
d	9.79872						− 23.67		+9.35	− 33	+ 11
	1.37412n									+ 934	+ 828
((δ) − D) $\frac{d'}{100}$										+ 55	+ 45
										−24.80 30	−23.75
+15.55 δ_2		58 39.01		1 22.6						0 12.89	2 11.77
+1 9.72											
	+31.5	1 7.3	47.7	20	57.50	1	50.85		20		
	1.49831	3 26.78				50 2	53.66				
+15.56	9.80777			3 30	−217 (+018)	+03	− 27.09			(213)	
+1 8.84											

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Date$_1$ = Sept 8 1871. $n = -.44$ Observer A. M. Recorder A. M. Date$_2$ = Observer Recorder

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Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
17h	47m 47	31′ 8.5	51° 43 51 42.1	8.9 8.0	47m	28.7 30.1 31.6 30.1	47.9	51.3	54.6	57.8	1.2	272 8 −21.91	54.56	47 54.56 −21.26 −.55 −.08 −.02 47 32.65 −1.40 47 31.25
18	49 49	34 11.6	51 25 51 23.5	9.2 8.9	49	36.3 37.6 38.7 37.5	51.3	54.6	57.9	1.2	4.4	289 4 −21.91	57.88	49 57.88 −21.26 −.55 −.08 −.02 49 35.97 −1.42 49 34.55
18	51 51	46 23.1	51 18 51 17.2	8.7 7.9			lost							
18	54 55	00 37.0	51 33 51 31.5	8.8 7.3	53	56.9 58.3 0.5 58.5	54 16.4	19.7	22.9	26.2	29.5	1147 −21.91	22.94	54 22.94 −21.26 −.55 −.08 −.02 54 1.03 −1.45 53 59.58
18	57 56	1 38.2	51 24 51 22.6	9.3 9.0	56	55.2 56.8 58.3 56.7	57 18.4	21.5	25.0	28.2	31.6	1247 −21.91	24.94	57 24.94 −21.26 −.55 −.08 −.02 57 3.03 −1.48 57 1.55
18	59 59	50 27.6	51 24 51 22.8	9.4 8.2	59	47.1 49.2 50.6 48.9	0 8.0	11.2	14.5	17.6	21.0	723 −21.91	14.46	0 0 14.46 −21.26 −.55 −.08 −.02 59 52.55 −1.50 59 51.05
19	2 2	26 2.4	52 20 52 18.4	9.5 9.3	2	15.8 17.4 18.9 17.3	42.1	45.7	49.1	52.6	56.8	2453 −21.93	49.06	2 49.06 −21.26 −.57 −.08 −.02 2 27.13 −1.52 2 25.61
19	4 3	12 46.2	51 51 51 49.3	9.0 8.9	4	11.0 13.0 14.6 12.8	26.0	29.3	32.7	36.1	39.3	1634 −21.92	32.68	4 32.68 −21.26 −.56 −.08 −.02 4 10.76 −1.54 4 9.22
19	6 6	40 16.4	50 48 50 46.7	9.2 9.0	6	35.7 37.0 38.5 37.0	55.7	2.0	5.0	8.5	11.6	3258 −21.89	65.16	6 5.16 −21.26 −.53 −.08 −.02 6 43.27 −1.56 6 41.71
19	8 8	46 22.7	52 25 52 23.4	8.6 8.2	8	44.9 46.9 49.1 46.9	9 2.5	5.6	9.1	12.5	15.7	454 −21.93	9.08	9 9.08 −21.26 −.57 −.08 −.02 8 47.15 −1.57 8 45.58

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Sept. 8 +0' 49.08 +.16

Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ'
	+24.5	0 3.4	1.2	40	2,30	42	46.05		40	51 43 14.82	
	1.38917					51 43	35.13			− 16	+9.87
d	9.79192						− 20.31			0	
	1.30778n									+ 9.64	
((δ) − D) $\frac{d'}{100}$										+ 39	
										−18.45	
+566 δ_1		47 36.91		43 22.8						43 6.24	
+0 16.52											
	+20.4	3 15.3	13.4	58	14,35	24	34.00		55	51 25 6.05	
	1.30963					51 25	23.08			− 11	+10.10
d	9.79494						− 17.03			+ ~~35~~ 51	
	1.23126n									+ 9.33	
((δ) − D) $\frac{d'}{100}$										+ 37	
										−18.40	
+5.74 δ_2		49 40.29		25 15.0						24 57.75	
+0 17.20											
		~~4 42.8~~	41.0	14	4150	8	7.35		10		
d											
((δ) − D) $\frac{d'}{100}$											
δ_1						32					
										33	
	+24.4	0 13.8	10.7	~~50~~	12,25	~~14~~	36.10		5	51 18 4.71	
	1.38739					51 ~~14~~	25.18			− 16	+9.46
d	9.79605					33	− 20.47			+ ~~2~~ 3	
	1.31113n									+921	
((δ) − D) $\frac{d'}{100}$										+ 37	
										−18.40	
+5.74 δ_2		54 5.32		33 14.5						32 ~~47~~ 55.76	
+0 18.72											
	+28.2	4 39.7	38.2	59	38,95	23	9.40		55	51 23 34.93	
	1.45025					51 23	58.48			− 21	+10.21
d	9.79510						− 23.55			+ ~~57~~ 74	
	1.37204n									+ 931	
((δ) − D) $\frac{d'}{100}$										+ 37	
										−18.46	
+580 δ_1		57 7.35		23 46.5						23 26.84	
+0 19.80											
	+25.6	4 14.8	12.1	59	13,45	23	34.90		55	51 24 2.60	
	1.40824					51 24	23.98			− 17	+10.18
d	9.79510						− 21.38			+ ~~46~~ 67	
	1.33003n									+931	
((δ) − D) $\frac{d'}{100}$										+ 37	
										−18.46	
+582 δ_2		59 56.87		24 15.1						23 54.38	
+0 20.72											
	~~+21.8~~ +31.8	3 18.9	16.0	3	17,45	19	30.90		0	52 19 53.97	
	1.50243					52 20	19.98			− 26	+10.96
d	9.78609						− 26.01			+ ~~36~~ 53	
	1.41621n									+1029	
((δ) − D) $\frac{d'}{100}$										+ 40	
										−18.50	
+562 δ_1		2 31.23		20 8.0						19 46.43	
+0 21.60											
	+19.9	2 49.4	46.2	32	47,80	50	0.55		30	51 50 33.17	
	1.29885					51 50	49.63			− 11	+10.52
d	9.79079						− 16.46			+ ~~31~~ 45	
	1.21633n									+979	
((δ) − D) $\frac{d'}{100}$										+ 36	
										−1845	
+5.74 δ_2		4 14.96		50 47.5 4						50 25.24	
+0 22.20											
	+28.2	4 44.8	42.5	34	43,65	48	4.70		30	50 48 29.93	
	1.45025					50 48	53.78			− 21	+9.56
d	9.80058						− 23.85			+ ~~52~~ 75	
	1.37752n									+868	
((δ) − D) $\frac{d'}{100}$										+ 34	
										−1840	
+6.00 δ_1		6 47.71		48 44.1						48 21.09	
+0 23.00											
	+22.2	3 0.3	59.2	59	59,70	24	48.60		55	52 25 19.56	
	1.34635					52 25	37.68			− 13	+11.13
d	9.78510						− 18.12			+ ~~33~~ 48	
	1.25814n									+1038	
((δ) − D) $\frac{d'}{100}$										+ 40	
										−18.50	
+565 δ_2		8 51.23		25 35.9						25 12.19	
+0 23.72											

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Date$_1$ = 1871 Sept. 8. Observer A. M. Recorder A. M. Date$_2$ = Observer Recorder

Star.	α	δ	Mag.	T_δ	T_m	T_o	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
19	11 12	51 11	8.9	10	11 11.0	14.3	17.6	20.8	24.1	875	17.56	11	17 56
	10 29.7	51 9.0	8.8	50.8						−21.90			− 21.26
	κ			52.7									− 54
				54.3									− 8
	((δ) — D) $\frac{\kappa'}{100}$			52.6									− 2
												10	55.66
	α_1												− 1.59
												10	54.07
19	13 46	52.0	9.0	13	42.0	14 4.2	7.5	10.6	14.1	17.5	539	10.78	14 10.78
	13 22.9	51 58.5	8.8		43.4						−21.92		−21.26
	κ				44.8								− 56
					43.4								− 8
	((δ) — D) $\frac{\kappa'}{100}$												− 2
												13	48.86
	α_2												− 1.61
												13	47.25
19	15 34	52.1	8.2	15	30.6	50.7	53.4	57.1	0.4	4.0	286	57.22	15 57.22
	15 10.1	51 59.1	8.0		31.7						−21.92		−21.26
	κ				30.7								− 56
													− 8
	((δ) — D) $\frac{\kappa'}{100}$												− 2
												15	35.30
	α_1												− 1.63
												15	33.67
19	17 53	52 42	9.1	17	43.4	18 9.7	12.4	16.3	19.7	23.3	819	16.38	18 16.38
	17 27.6	52 40.2	9.0		44.4						−21.93		−21.26
	κ				46.6								− 57
					44.9								− 8
	((δ) — D) $\frac{\kappa'}{100}$												− 2
												17	54.45
	α_2												− 1.65
												17	52.80
19	20 10	52 19	8.0	20	8.7	27.9	31.1	34.4	38.0	41.1	1725	34.50	20 34.50
	19 47.7	52 17.0	7.8		10.1						−21.93		−21.24
	κ				11.6								− 57
					10.1								− 8
	((δ) — D) $\frac{\kappa'}{100}$												− 2
												20	12.57
	α_1												− 1.66
												20	10.91
19	23 23	51 10	9.0	23	19.6	42.2	45.3	48.6	51.8	55.2	2431	48.62	23 48.62
	22 59.6	51 8.0	9.0		20.8						−21.90		−21.26
	κ				22.2								− 54
					20.8								− 8
	((δ) — D) $\frac{\kappa'}{100}$												− 2
												23	26.72
	α_2												− 1.68
												23	25.04
19	51 14	52 1	—	51	10.6	30.0	33.3	36.5	39.8	43.1	1827	36.54	51 36.54
	50 42.3	51 58.8	8.9		12.0						−21.93		−21.26
	κ				13.1								− 56
					11.9								− 8
	((δ) — D) $\frac{\kappa'}{100}$												− 2
												51	14.61
	α_1												− 1.90
												51	12.71
19	54 60	51.5	8.9	54	46.7	55 8.5	11.7	15.1	18.3	21.5	751	15.02	55 15.02
	54 24.7	51 2.8	9.0		48.6						21.91		−21.27
	κ				49.3								− 54
					48.0								− 8
	((δ) — D) $\frac{\kappa'}{100}$												− 2
												54	53.11
	α_2												− 1.92
												54	51.19
19	57 10	51 35	9.0	57	6.8	27.7	30.9	34.2	37.5	40.8	1711	34.22	57 34.22
	56 44.4	51 33.0	9.0		9.0						−21.92		−21.27
	κ				10.5								− 55
					8.7								− 8
	((δ) — D) $\frac{\kappa'}{100}$												− 2
												57	12.30
	α_1												− 1.94
												57	10.36
19	59 55	51 22	8.0	59	49.5	0 13.7	17.0	20.4	23.4	26.8	1013	20.26	0 20.26
	57 29.7	51 17.9	8.0		51.0						−21.92		−21.27
	κ				52.4								− 55
					51.9								− 8
	((δ) — D) $\frac{\kappa'}{100}$												− 2
												59	58.34
	α_2												− 1.96
												59	56.38

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
		2′ 55.1	52.8	12′	53.95	9	5440		10′	51 10 22.50	
	+25.0					51 10	43.48			− 17	+9.72
d	1.39794						− 20.98			+ 37 46	
	9.79713									+907	
((δ) − D) $\frac{d'}{100}$	1.32178m									+ 36	
										−1840	
+5.96 δ₁		11 0.03		10 38.3						10 13.82	
+0 24.44											
	+27.4	2 57.7	54.9	22	56.30	59	52.05		20	52 0 18.55	
	1.43775					52 0	41.13			− 20	+10.60
d	9.78934						− 22.68			+ 37 46	
	1.35378m									+994	
((δ) − D) $\frac{d'}{100}$										+ 40	
										−1845	
+5.79 δ₂		13 53.04		0 36.1						0 10.70	
+0 25.40											
	+26.5	2 32.2	30.1	22	3.15	0	1720		20	52 0 44.45	5
	1.42325					52 1	6.28			− 19	+10.85
d	9.78918						− 21.80			+ 85 40	
	1.33912m									+994	
((δ) − D) $\frac{d'}{100}$										+ 40	
										−1845	55
+5.81 δ₁		15 39.48		1 2.55 6						0 36.26	✓
+0 26.00											
	+31.5	1 14.3	11.3	41	12.80	41	35.55		40	52 41 59.08	
	1.49831					52 42	24.63			− 26	+11.01
d	9.78246						− 25.55			+ 19	
	1.40746m									+1068	
((δ) − D) $\frac{d'}{100}$										+ 40	
										−1850	
+5.67 δ₂		17 58.47		42 18.4	✓					42 57.59	
+0 26.76											
	+24.4	4 8.0	5.4 ~~4.4~~	4	~~4.70~~ 6.70	18	36.65		0	52 19 5.76	
	1.38739					52 19	25.73			− 16	+11.19
d	9.78625						− 19.97			+ 46 67	
	1.30033m									+1028	
((δ) − D) $\frac{d'}{100}$										+ 40	
										−1845	
+5.78 δ₁		20 16.69		19 38.0						~~15 58.57~~ 15 3.50	
+0 27.48											
	+27.8	3 31.5	30.9	13	3.20	9	17.15		10	51 9 42.89	
	1.44404					51 10	6.23			− 20	+9.80
d	9.79731						− 23.34			+ 39 56	
	1.36804m									+908	
((δ) − D) $\frac{d'}{100}$										+ 36	
										−1835	
+6.08 δ₂		23 31.12		10 2.9						9 34.14	✓
+0 28.60											
	+24.6	1 46.2	44.0	21	4.50	1	325		20	52 1 32.07	
	1.39094					52 1	52.33			− 16	+10.49
d	9.78902						− 20.26			+ 19 27	
	1.30665m									+998	
((δ) − D) $\frac{d'}{100}$										+ 40	
										−1810	
+6.23 δ₁		51 18.94		2 1.9						1 24.46	
+0 37.44											
	+27.0	3 4.6	2.8	18	3.70	4	4465		15	51 5 11.03	
	1.43136					51 5	33.73			− 19	+10.66
d	9.79793						− 22.70			+ 34 50	
	1.35598m									+1000	
((δ) − D) $\frac{d'}{100}$										+ 35	
										−1800	
+6.48 δ₂		54 57.67		5 42.2						5 3.69	
+0 38.56											
	+25.5	2 29.3	27.7	47	28.50	35	19.85		45	51 35 47.73	
	1.40654					51 36	8.73			− 17	+10.15
d	9.79319						− 21.20			+ 37 46	
	1.32642m									+954	
((δ) − D) $\frac{d'}{100}$										+ 38	
										−1800	
+6.40 δ₁		57 16.76		36 19.2						35 39.88	
+0 38.28											
	+29.4	0 37.1	34.8	0	35.95	22	1240		0	51 22 36.92	
	1.46835					51 23	1.48			− 23	+9.56
d	9.79526						− 24.56			+ 7 10	
	1.39030m									+932	
((δ) − D) $\frac{d'}{100}$										+ 37	
										−1795	
+6.49 δ₂		0 2.87		23 9.0 86						22 28.43	✓
+0 40.12											

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Date$_1$ = 1871, Sept. 8. Observer A. M. Recorder A. M. Date$_2$ = Observer Recorder

117 90

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
20	m s 4 37 4 16.6 κ	° ′ ″ 51 21 57 18.1	8.8 8.6	m s 4 31.8 33.2 35.1 33.3	s 54.0	s 57.6	s 0.6	s 3.9	s 7.3	3034 −21.92	60.68	m s 4 0.68 −21.27 5 3 8 2 4 38.76 − 1.99 4 36.77	+6.5 +0 41
20	6 59 6 32.5 κ	51 25 57 22.8	9.3 9.2	6 53.2 54.6 56.5 54.7	7 17.5	20.8	24.0	26.3	30.6	1192 −21.92	23.84	7 23.84 −21.27 5 3 8 2 7 1.92 − 2.01 6 59.91	+6.5 +0 4
20	9 25 8 ~~57.1~~ κ 19.2	51 52 57 ~~47.0~~ 51.1	8.8 8.9	8 46.1 47.5 48.7 47.4	9 4.2	7.5	10.9	14.1	17.6	5431 −21.93	10.86	9 10.86 −21.27 5 6 8 2 8 48.93 − 2.02 8 46.91	+6.5 +0 4
20	~~15~~ 16 14 ~~47.2~~ 46.3 κ 14 46.3	51 49 57 45.1 51 45.1	9.1 9.1 9.1	15 5.3 7.3 8.5 ~~40~~ 7.0 ~~38.7~~ 33.6 ~~37.1~~ ~~40.2~~	31.1 33.6	34.3 37.1	37.7 40.2	41.1 43.4	44.3 46.9	1885 −21.92 2012 −21.92	37.70 40.24	15 37.70 −21.27 5 5 8 2 15 40.24 −21.27 5 5 8 2 18 4.30 −21.27 5 6 8 2 17 42.37 − 2.09 17 40.28	15 15.78 − 2.07 13.71 15 1832 − 2.07 1625 +6.6 +0 4
20	17 40 17 13.1 κ	52 00 51 56.7	7.8 7.5	17 38.0 39.0 40.6 39.2	57.7	0.9	4.3	7.6	11.0	3215 −21.93	64.30	20 41.32 −21.27 5 4 8 2 20 19.41 − 2.09 20 17.32	+6.6 +0 4
20	20 11 19 ~~44.3~~ κ 51.0	~~51 2.5~~ 52 3.9	8.1 8.7	20 10.3 11.6 12.4 11.6	34.7	38.0	41.4	44.6	47.9	2066 −21.91	41.32	20 41.32 −21.27 5 4 8 2 20 19.41 − 2.09 20 17.32	+6.8 +0 4
20	24 39 24 12.2 κ	51 15 57 12.3	8.8 8.8	24 37.9 39.1 40.5 39.1	57.4	0.5	3.8	7.1	10.5	3193 −21.91	63.86	25 3.86 −21.27 5 4 8 2 24 41.95 − 2.12 24 39.83	+6.9 +0 4
20	27 19 26 52.0 κ	51 32 57 28.9	8.7 8.5	27 16.9 18.2 20.0 18.3	36.7	40.1	43.5	46.6	50.1	2170 −21.92	43.40	27 43.40 −21.27 5 5 8 2 27 21.48 − 2.15 27 19.33	+6. +0 4
20	30 04 29 ~~86.5~~ κ	51 08 57 4.9	9.2 8.9	30 0.0 1.5 2.9 1.4	21.7	24.8	28.1	31.2	34.6	1404 −21.91	28.08	30 28.08 −21.27 5 4 8 2 30 6.14 − 2.16 30 4.01	+7.02 +0 48
20	33 48 33 20.1 κ	51 08 57 4.7	8.8 8.5	33 41.9 42.8 44.3 43.0	34 6.3	9.3	12.4	15.7	19.0	6257 −21.91	12.54	34 12.54 −21.27 5 4 8 2 33 50.63 − 2.19 33 48.44	+7.0 +0 49

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+27.4	1′ 44.1	42.0	1′	43.05	21	5.30		0′	51 22 31.49	
d	1.43775					51 22	54.38			− 20	+9.76
	9.77526					1	− 22.89			+ 19	
	1.35970 m									27	
((δ) − D) $\frac{d'}{100}$										+932	
										+ 37	
										−17.90	
+6.56 δ_1		4.43.33		22 4.9						22 23.35	
+0 41.52											
	+29.1	2 17.4	19.6	54	18.50	25	29.85		55	51 25 54.65	
d	1.46389					51 26	18.93			− 22	+9.89
	9.77478						− 24.28			+ 25	
	1.38536 m									37	
((δ) − D) $\frac{d'}{100}$										+937	
										+ 37	
										−17.85	
+6.58 δ_2		7 6.49		26 28.9						25 46.69	
+0 42.20											
	+23.5	4 21.8	19.8	29	29.80	53	27.55		25	51 53 57.22	
d	1.37107					51 54	16.63			− 14	+10.80
	9.79031						− 19.41			+ 47	
	1.28807 m									67	
((δ) − D) $\frac{d'}{100}$										+986	
										+ 39	
										−17.80	
+6.52 δ_1		8 53.43		54 33.2						53 50.22	
+0 42.96											
	+30.7	0 3.7	1.2	35	2.45	47	45.90		35	51 48 9.58	
d	1.48714					51 48	34.98			− 25	+9.89
	9.79111						− 25.40			− 0	
	1.40494 m									+975	
((δ) − D) $\frac{d'}{100}$										+ 39	
										−17.70	
+6.64 δ_2		15 20.35		48 46.4						48 1.77	
+0 44.68		22.89									
	25.1	3 10.0	8.1	23	9.05	59	39.30		20	52 0 7.69	
d	1.39967					52 0	28.38			− 17	+10.69
	9.78934						− 20.69			+ 24	
	1.31570 m									50	
((δ) − D) $\frac{d'}{100}$										+996	
										+ 40	
										−17.65	
+6.64 δ_1		17 46.92		0 46.1						0 0.73	
+0 45.36											
	+29.7	1 15.9	14.1	16	~~15.30~~ 13.5	6	33.35		15	51 6 57.47	
d	1.47276					51 7	22.43			− 23	+9.39
	9.79778						− 24.96			+ 14	
	1.39723 m									21	
((δ) − D) $\frac{d'}{100}$										+905	
										+ 36	
										−17.53	
+6.86 δ_2		20 24.18		7 36.8						6 ~~47.31~~ 30.72	
+0 46.08											
	+24.8	2 34.7	33.4	7	3.05	15	14.30		5	51 15 42.61	
d	1.39445					51 16	3.38			− 17	+9.81
	9.79636						− 20.77			+ 28	
	1.31750 m									42	
((δ) − D) $\frac{d'}{100}$										+920	
										+ 36	
										−17.45	
+6.90 δ_1		24 46.73		16 22.3						15 34.97	
+0 47.36											
	+25.1	1 10.9	9.3	57	10.10	31	38.25		50	51 32 6.90	
d	1.39967					51 32	27.33			− 17	+9.88
	9.79383						− 20.43			+ 23	
	1.31019 m									19	
((δ) − D) $\frac{d'}{100}$										+948	
										+ 38	
										−17.40	
+6.90 $\delta_{1,x}$		29 26.23		32 47.5						31 58.38	
+0 48.12											
	+26.7	1 4.9	3.9	15	4.40	7	43.95		15	51 8 10.61	
d	1.42651					51 8	33.03			− 19	+9.25
	9.79746						− 22.42			+ 12	
	1.35066 m									+906	
((δ) − D) $\frac{d'}{100}$										+ 36	
										−17.35	
+7.02 δ_1		30 11.03		8 51.4						8 2.51	
+0 48.88											
	+29.5	0 15.0	12.7	15	1.85	7	34.50		15	51 7 58.80	
d	1.46982					51 8	23.58			− 23	+9.24
	9.79762						− 24.78			+ 8	
	1.39513 m									+906	
((δ) − D) $\frac{d'}{100}$										+ 36	
										−17.25	
+7.09 δ_2		33 55.53		8 40.7						7 50.79	
+0 49.92											

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Date$_1$ = 1871, Sept. 8. Observer A. M. Recorder A. M. Date$_2$ = Observer Recorder

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
20	m s 38 57 38 22.7 κ	° ′ 50 34 50 30.3 7.9	8.6	38m s 48.7 50.0 53.0 53.5	39m 9.8s	13.1s	16.2s	19.3s	22.7s	8 11 −21.90	16.22	39m 16.22 − 21.27 − 53 − 8 − 2 38 54.32 − 2.21 38 52.11	+7.2 +0 5
20	41 14 40 46.1 κ	50 44 50 40.5 9.0	9.4	41 10.6 11.7 13.0 11.7	33.1	36.4	39.7	42.7	46.0	19 79 −21.90	39.58	41 39.58 − 21.27 − 53 − 8 − 2 41 17.68 − 2.22 41 15.46	+7. +0 5
20	43 39 43 10.9 κ	50 17 50 13.3 8.2	8.6	43 42.6 44.0 45.2 43.9	58.1	1.3	4.6	8.0	11.0	32 30 −21.90	64.60	44 4.60 − 21.27 − 53 − 8 − 2 43 42.70 − 2.23 43 40.47	+7.4 +0 5
20	45 31 45 2.7 κ	50 18 50 14.4 7.3	7.8	45 39.6 41.8 43.3 41.5	50.5	53.8	57.0	0.4	3.5	28 52 −21.90	57.04	45 57.04 − 21.27 − 53 − 8 − 2 45 29.14 − 2.24 45 32.90	+7.4 +0
20	48 02 47 32.7 κ	50 48 50 44.7 9.4	9.5	48 6.1 7.6 9.0 7.5	20.8	23.8	27.2	30.1	33.5	13 54 −21.90	27.08	48 27.08 − 21.27 − 53 − 8 − 2 48 5.18 − 2.27 48 ~~2.67~~ 2.91 ~~2.41~~	+7.4 +0 5
20	50 30 50 0.5 κ	51 01 50 57.5 9.0	9.3	50 28.2 30.7 33.0 30.6	49.5	52.6	56.0	59.3	2.5	27 99 −21.91	55.98	50 55.98 − 21.27 − 54 − 8 − 2 50 34.07 − 2.29 50 31.78	+7.4 +0 5
20	53 19 52 49.8 κ	50 34 50 30.4 9.3	9.3	53 19.9 21.3 20.6	38.6	42.0	45.2	48.3	51.6	22 57 −21.90	45.14	53 45.14 − 21.27 − 53 − 8 − 2 53 23.24 − 2.30 53 20.94	+7.5 +0 5
20	56 54 56 26.2 κ	50 51 50 47.7 8.7	8.8	56 54.9 56.6 58.1 56.5	57 14.6	17.8	20.9	24.4	27.6	10 53 −21.90	21.06	57 21.06 − 21.27 − 53 − 8 − 2 56 59.16 − 2.32 56 56.84	+7.5 +0 5
20	59 09 58 40.1 κ	50 18 50 13.8 7.7	8.2	59 18.8 20.0 19.4	28.4	31.6	34.8	38.3	41.3	17 44 −21.90	34.88	59 34.88 − 21.27 − 53 − 8 − 2 59 12.98 − 2.32 59 10.66	+7.7 +0 5
21	2 32 2 1.5 κ	50 54 50 50.4 7.4	8.5	2 37.5 38.7 40.0 38.7	50.4	53.7	57.0	0.2	3.6	28 49 −21.90	56.98	2 56.98 − 21.27 − 53 − 8 − 2 2 35.08 − 2.36 2 32.72	+7.6 +0 5

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+25.7	4 26.9	27.2	49	27,05	33	21,30		45	50 33 48.53	
d	1.40993					50 34	10.38			− 18	+9.33
	9.80290						− 21.85			+ 49 72	
((δ) − D) $\frac{d'}{100}$	1.33952 m									+ 846	
										+ 33	
										−17.10	
+7.28 δ_1		38 59.39		34 32.04						33 40.76	
+0 51.28											
	+27.9	3 37.4	37.1	38	37,25	44	11,10		35	50 44 36.55	
d	1.44560					50 45	0.18			− 21	+9.36
	9.80120						− 23,63			+ 70 58	
((δ) − D) $\frac{d'}{100}$	1.37349 m									+ 865	
										+ 34	
										−17.05	
+7.30 δ_2		41 22.76		45 20.8						44 28.86	
+0 54.92											
	+20.7	1 43.7	42.6	5	43,15	17	5,20		5	50 17 36.58	
d	1.31594					50 17	54.28			− 11	+8.52
	9.80534						− 17.70			+ 8 11	
((δ) − D) $\frac{d'}{100}$	1.24800 m									+ 8 38 20 36	
										+ 32	
										−17.00	
+7.42 δ_1		43 47.89		18 20.7						17 28.10	
+0 52.56											
	+15.5	0 1.0	59.9	5	0,45	17	4,90		5	50 18 23.73	
d	1.19033					50 18	36.98			− 6	+8.46
	9.80519						− 13.25			− 0	
((δ) − D) $\frac{d'}{100}$	1.12221 m									+ 840 20	
										+ 32	
										−16.95	
+7.46 δ_2		45 40.36		19 8.3						18 15.24	
+0 53.08											
	+19.6	4 50.4	50.7	34	50,55	47	57,80		30	50 48 30.30	
d	1.29226					50 48	46.88			− 11	+9.74
	9.80058						− 16,58			+ 53 77	
((δ) − D) $\frac{d'}{100}$	1.21953 m									+ 844	
										+ 34	
										−16.90	
+7.42 δ_1		48 10.33		49 16.9						48 23.14	
+0 53.72											
	+25.4	2 11.5	10.0	22	10,75	0	37,60		20	51 1 5.37	
d	1.40483					51 1	26,68			− 17	9.46
	9.79872						− 21,31			+ 34 35	
((δ) − D) $\frac{d'}{100}$	1.33024 m									+ 893	
										+ 35	
										−16.80	
+7.42 δ_2		50 39.20		1 42.4						0 58.03	
+0 54.36											
	+24.5	4 6.3	5.8	49	6,05	33	42,30		45	50 34 10.55	
d	1.38917					50 34	31.38			− 16	+9.31
	9.80274						− 20.83			+ 45 66	
((δ) − D) $\frac{d'}{100}$	1.31860 m									+ 848	
										+ 33	
										−16.75	
+7.56 δ_1		53 28.50		34 58.2						34 3.11	
+0 55.08											
	+24.6	1 [illegible]3	54.0	31	54,15	50	54,20		30	50 51 22.50	
d	1.39094					50 51	43,28			− 16	+9.26
	9.80012						− 20.78			+ 21 30	
((δ) − D) $\frac{d'}{100}$	1.31775 m									+ 878	
										+ 34	
										−16.85 70	
+7.58 δ_2		57 4.42		52 11.1						51 15.06	
+0 56.00											
	+15.5	0 49.2	49.2	5	49,20	16	59,15		5	50 17 34.98	
d	1.19033					50 17	48.23			− 6	+8.59
	9.80534						− 13.25			+ 9 13	
((δ) − D) $\frac{d'}{100}$	1.12236 m									+ 820	
										+ 32	
										−16.55	
+7.72 δ_1		59 18.38		18 23.5						17 27.02	
+0 56.52											
	+18.3	3 45.0	44.7	28	44,85	54	3,50		25	50 54 37.14	.70
d	1.26245					50 54	52,58			− 9	+9.65
	9.79965						− 15,44			+ 11 19	
((δ) − D) $\frac{d'}{100}$	1.18879 m									+ 885	
										+ 35	
										−16.45	
+7.68 δ_2		2 40.40		55 27.8						54 30.39	
+0 57.36											

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Date$_1$ = 1871, Aug. 11 10h Observer A. M. Recorder A. M. u = −.58

Date$_2$ = 1871. Aug. 17 16h Observer A. M. Recorder A. M. u = −.52

Star.	α	δ	Mag.	T_s	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
17 h	m s 50 02 49 39,55	° ' 50 17 50 18.2	9.4 8.9	50m s 29.8 31.6 30.7	12.5	15.9	19.1	22.1	25.7	953 −14.64	19.06	m s 50 19.06 −13.93 − 69 − 2 50 4.42 − 1.76 50 2.66	1.42
κ													
((δ) − D) $\frac{\kappa'}{100}$													
53 14 c_1													
56 44 59 3		17 460	—	50 8.7 10.1 9.4	14.0	17.3	20.4	23.8	26.9	1024 −16.10	20.48	50 20.48 −15.46 − 62 − 2 50 4.38 − 1.61 50 ~~28.77~~ 2.77	+5 − 3
κ													
((δ) − D) $\frac{\kappa'}{100}$													
c_2													
18 2	36 ~~2~~ 13.3	51 54 51 ~~55.0~~ ~~55.7~~ 51.6	8.7 6.7	1 47.0 48.7 50.6 48.7	57.6	1.1	4.3	7.6	10.9	32 15 −1469	64.30	2 4.30 −13.93 − 74 − 2 1 49.61 − 1.86 1 47.75	+5 +0
1 κ	26.5												
((δ) − D) $\frac{\kappa'}{100}$													
α_1													
2	13.3	51 55.9	9.0	2 34.5 35.6 35.0	45.4 ~~[illegible]~~	49.0	52.1	55.1	58.7	2603 −16.16	52.06	2 52.06 −15.47 − 67 − 2 2 35.90 − 1.71 2 34.19	+5. + 0.
κ		5 47?											
((δ) − D) $\frac{\kappa'}{100}$													
α_2													
18 8	05 7 42.9	51 42 51 42.3	7.5 7.0	7 53.1 54.7 56.8 54.8	8 13.3	16.5	19.9	23.3	26.6	996 −14.68	19.92	8 19.92 −13.93 − 73 − 2 8 5.24 − 1.89 8 3.35	34 +5. +0.
κ													
((δ) − D) $\frac{\kappa'}{100}$													
α_1													
			7.7	7 54.0 55.4 57.3 55.5	8 14.6 ~~[illegible]~~	18.0	21.2	24.6	27.8	1062 −16.14	21.24	8 21.24 −15.47 − 65 − 2 8 5.10 − 1.75 8 3.35	+5. +0.
κ													
((δ) − D) $\frac{\kappa'}{100}$													
α_2													
18 10 9	15 52.4	51 46 51 45.8	9.3 9.0	10 14.8 16.3 15.6	24.4	27.5	31.0	34.6	37.7	1552 −1468	31.04	10 31.04 −13.93 − 73 − 2 10 16.36 − 1.91 10 14.45	44 +5.5 +0 3
κ													
((δ) − D) $\frac{\kappa'}{100}$													
α_1													
			9.2	10 14.6 15.9 17.7 16.0	25.8	29.3	32.3	35.8	39.2	1624 −16.14	32.48	10 32.48 −15.47 − 65 − 2 10 16.34 − 1.76 10 14.58	+5. +0.
κ													
((δ) − D) $\frac{\kappa'}{100}$													
α_2													
18 12 12	55 32.2	50 29 50 29.3	8.0 6.8	~~12.8~~ 12 45.7 46.7 48.6 47.1	13 5.6	8.7	12.0	15.1	18.6	600 −1465	12.00	13 12.00 −13.93 − 70 − 2 12 57.35 − 1.91 12 55.44	4 +5.8 +0 4
κ													
((δ) − D) $\frac{\kappa'}{100}$													
α_1													
			8.0	12 53.7 54.9 56.3 54.9	13 7.0	10.2	13.4	16.7	19.9	672 −16.12	13.44	13 13.44 −15.47 − 63 − 2 12 57.32 − 1.77 12 55.55	+5. +0 4
κ													
((δ) − D) $\frac{\kappa'}{100}$													
α_2													

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" 17 +0 45.36 +.26

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	8	0′ 16.3	16.7	8′	16.50	17	31.85		5	50 18 26.35	
	−11.6					50 18	16.43			− 4	+8.16
d	1.064466a						+ 9.92			+ 8	
1.42	9.80534									+ 780	
((δ) − D) $\frac{d'}{100}$	0.99649									+ 32	
										−14.35	
+5.85 δ_1		50 8.51		18 16.6						−14.50	
− 3.44										18 20.01	
	+11.1	4 09.2	60.2	4	59.70	17	48.65		0	18 24.52	
	1.045 32					50 18	34.01			− 4	+9.39
d	9.80519						− 9.49			+ 130	
	0.97720m									+ 781	
((δ) − D) $\frac{d'}{100}$										+ 32	
										−15.55	
+5.85 δ_2		50 8.62		18 14.9						18 18.36	
− 3.44											
	+15.6	0 47.4	47.2	30	47.30	52	1.05		30	51 52 32.74	✓
	1.19312					51 52	45.63			− 7	+9.91
d	9.79047						− 12.89			+ 21	
	1.11028m									+ 938	
((δ) − D) $\frac{d'}{100}$										+ 39	
										−14.40	
+5.48 δ_1		1 53.23		52 28.9						52 28.25	
+0 0.64									over		
	+17.1	2 19.0	18.0	27	18.50	55	29.85		25	56 1.10	✓
	1.23300					51 56	15.21			− 8	4 +10.84
d	9.78999						− 14.11			+ 60	
	1.14968m									+ 948	
((δ) − D) $\frac{d'}{100}$										+ 39	
										−15.50	
+5.46 δ_2		2 39.65		55 57.0						55 56.04	
+ 0.92											
	+25.1	0 34.4	34.3	40	34.35	42	14.00		40	51 42 37.76	
34 d	1.39967					51 42	58.58			− 17	+9.58
	9.79208						− 20.82			+ 16	
((δ) − D) $\frac{d'}{100}$	1.31844m									+ 920	
										+ 39	
										−14.30	
+5.52 δ_1		8 8.87		42 35.9						42 33.04	
+0 2.84											
	+25.7	0 32.7	32.6	40	32.65	42	15.70		40	42 39.74	
	1.40993					51 43	1.06			− 18	+9.58
d	9.79208						− 21.32			+ 13	
	1.32870m									+ 921	
((δ) − D) $\frac{d'}{100}$										+ 42	
										−15.40	
+5.52 δ_2		8 8.87		42 36.8						42 33.92	
+0 2.84											
	+16.0	2 12.2	12.2	37	12.20	45	36.15		35	51 46 7.47	
	1.20412					51 46	20.73			− 7	+10.19
d	9.79160						− 13.26			+ 57	
44	1.12241m									+ 930	
((δ) − D) $\frac{d'}{100}$										+ 39	
										−14.25	
+5.51 δ_1		10 19.96		46 7.0						46 3.41	
+0 3.60											
	+16.5	2 13.3	12.7	37	13.00	45	35.35		35	46 7.04	
	1.21748					51 46	20.71			− 8	+10.23
d	9.79160						− 13.67			+ 57	
	1.13577m									+ 931	
((δ) − D) $\frac{d'}{100}$										+ 43	
										−15.40	
+5.51 δ_2		10 20.09		46 5.5						46 1.87	
+0 3.60											
	+24.9	3 50.7	51.1	53	50.90	28	57.45		50	50 29 20.81	
	1.39620					50 29	42.03			− 17	+10.14
d	9.80351						− 21.22			+ 99	
44	1.32670m									+ 900	
((δ) − D) $\frac{d'}{100}$										+ 32	
										−14.10	
+5.81 δ_1		13 1.25		29 21.4						29 16.85	
+0 4.56											
	+18.5	3 54.3	54.6	53	54.55	28	53.80		50	29 23.41	
	1.26717					50 29	39.16			− 10	+10.24
d	9.80351						− 15.75			+ 101	
	1.19737m									+ 901	
((δ) − D) $\frac{d'}{100}$										+ 32	
										−15.25	
+5.81 δ_2		13 1.36		29 23.0						29 18.40	
+0 4.56											

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Date$_1$ = 1871, Aug. 11. Observer A. M. Recorder A. M. Date$_2$ = 1871, Aug. 17. Observer A. M. Recorder A. M. 96

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
	m s	° ′		m	s	s	s	s	s	s	s	m	°
	16 03	51 41	8.6	16	5.6	12.5	15.8	19.2	22.6	25.9	9 60	19.20	16	19.20
	15 40.8	51 40.2	9.0		6.9						−1468			−13.93
	κ				6.2									− 73
	((δ) — D) $\frac{\kappa'}{100}$													− 2
													16	4.52
	α_1													− 1.94
													16	2.58
			9.2	16	4.8	13.9	17.1	20.4	23.9	27.2	10 25	20.50	16	20.50
					6.4						−16.14			−15.47
					8.2									− 65
	κ				6.4									− 2
	((δ) — D) $\frac{\kappa'}{100}$												16	4.36
	α_2													− 1.80
													16	2.56
1 8	19 24	50 24	9.0	19	22.3	35.6	38.8	42.2	45.3	48.4	21 03	42.06	19	42.06
	19 1.7	50 24.1	9.2		23.8						−14.65			−13.93
	κ				25.7									− 70
	((δ) — D) $\frac{\kappa'}{100}$				23.9									− 2
27	27												19	27.41
	α_1													− 1.94
													19	25.47
			9.0	19	28.0	37.0	40.1	43.3	46.6	49.8	21 68	43.36	19	43.36
		24 27			29.3						−16.12			−15.47
	κ				31.0									− 63
	((δ) — D) $\frac{\kappa'}{100}$				29.4									− 2
													19	27.24
	α_2													− 1.81
													19	25.43
18	30 54	51 38	8.9	30	32.9				42.7	46.3			30	39.52
	30 3.0	51 37.1	8.2		35.0						−1468			−13.93
	κ 0.8	43.7			37.0									− 73
	((δ) — D) $\frac{\kappa'}{100}$				34.9									− 2
													30	24.84
	α_1													− 2.03
													30	22.81
	30 31.0	51 37.1	8.8	30	46.3	31 4.3	7.6	11.0	14.1	17.5	5 45	10.90	31	10.90
		34 34?			48.3						−16.14			−15.47
	κ				50.2									− 65
	((δ) — D) $\frac{\kappa'}{100}$				48.2									− 2
													30	54.79
	α_2													− 1.90
													30	52.86
18	36 51	50 05	8.8	36	11.2	19.2	22.5	25.6	28.8	32.1	1282	25.64	36	25.64
	36 25.0	50 4.0	9.0		13.1						−1464			−13.93
	κ 25 44.8	7.5			14.7									− 69
	((δ) — D) $\frac{\kappa'}{100}$				13.0									− 2
													36	11.00
	α_1													− 2.03
													36	9.08 8.97
	36 28.0	50 4.0	9.0	36	57.6	3.1	6.7	9.5	12.9	16.0	4 82	9.64	37	9.64
					57.9						−16.12			−15.48
	κ				57.2									− 62
	((δ) — D) $\frac{\kappa'}{100}$													− 2
													36	53.52
	α_2													− 1.91
													36	51.61
18	39 24	51.17	9.5	39	53.6	40 10.0	13.1	16.3	19.6	23.0	8 20	16.40	40	16.40
	46 8.8				55.7						−1467			−13.93
	κ				57.6									− 72
	((δ) — D) $\frac{\kappa'}{100}$				55.6									− 2
													40	1.73
	α_1													− 2.08
													39	59.65
	40 8.8	51 16.4	9.5	39 40	27.0	43.5	46.5	50.0	53.4	56.6	25 00	50.00	40	50.00
					28.4						−16.14			−15.48
	κ				30.2									− 64
	((δ) — D) $\frac{\kappa'}{100}$				28.5									− 2
													40	33.86
	α_2													− 1.95
													40	31.91

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+13.0	2 5 43	53 8	4/2	54 96	39	54.30		40	51 40 25.30	
	1.11394					51 40	38.88			− 5	+10.23
1.30 d	9.79240						− 13.58			+ 75	
	1.13303 m									+ 915	
((δ) − D) $\frac{d'}{100}$										+ 38	
										−14.10	
+5.54 δ_1		16 8.12		40 27.1						40 21.43	
+0 5.64											
	+14.1	2 53.8	53.0	42	58.40	39	54.95		40	40 28.61	
	1.14922					51 40	40.31			− 5	+10.33
d	9.79240						− 11.70			+ 75	
	1.06831 m									+ 921	
((δ) − D) $\frac{d'}{100}$										+ 42	
										−15.30	
+5.54 δ_2		16 8.10		40 29.3						40 23.64	
+0 5.64											
	+18.2	2 56.2	56.7	57	56.45	24	51.90		55	50 25 20.96	
	1.26007					50 25	36.48			− 9	+8.88
30 d	9.80412						− 15.52			+ 75	
	1.19088 m									+790	
((δ) − D) $\frac{d'}{100}$										+ 32	
										−13.95	
+5.84 δ_1		19 31.31		25 22.7						25 15.89	
+0 6.80											
	+14.0	2 59.0	59.4	59	59.20	24	49.15		55	25 22.57	
	1.14613					50 25	34.51			− 5	+8.96
d	9.80412						− 11.94			+ 78	
	1.07694 m									+791	
((δ) − D) $\frac{d'}{100}$										+ 32	
										−15.15	
+5.84 δ_2		19 31.27		25 23.2						25 16.38	
+0 6.80											
	+ 4.6	4 3.4	2.8	39	3.10	43	45.25		35	51 44 26.02	✓
	0.66276					51 44	29.83			− 1	+10.71
38 d	9.79192						− 3.81			+ 107	
	0.58137 m									+ 926	
((δ) − D) $\frac{d'}{100}$										+ 39	
										−13.75	
+5.56 δ_1		30 28.37		44 33.6						44 22.98	
+0 10.64									Pause		
	+2.7	0 23.8	21.8	45	22.80	37	25.55		45	37 52.05	✓
	1.35603					51 38	10.91			− 14	+9.52
d	9.79288						− 18.86			+ 10	
	1.27560 m									+ 915	
((δ) − D) $\frac{d'}{100}$										+ 41	
										−1500	
+5.60 δ_2		30 58.46		37 57.4						37 46.57	
+0 10.80											
	+12.6	4 61.3	62.2	14	61.75	7	46.60		10	50 8 20.37	✓
	1.10037					50 8	31.18			− 5	+9.22
d	9.80671						− 10.81			+ 130	
	1.03377 m									+ 766	
((δ) − D) $\frac{d'}{100}$										+ 31	
										−13.55	
+5.96 δ_1		36 14.93		8 28.7						8 16.94	
+0 12.64											
	+18.4	2 36.8	37.0	17	36.90	5	11.45		15	5 41.01	✓
	1.26482					50 5	56.81			− 9	+8.51
d	9.80716						− 15.80			+ 68	
	1.19867 m									+762	
((δ) − D) $\frac{d'}{100}$										+ 30	
										−14.80	
+5.98 δ_2		36 57.59		5 47.6						5 34.72	
+0 12.64											
	+20.8	1 238	23.5	1	23.65	21	24.70		0	51 21 51.90	✓
	1.31806					51 22	9.28			− 12	+9.47
d	9.79642						− 17.38			+ 36	
	1.24087 m									+886	
((δ) − D) $\frac{d'}{100}$										+ 37	
										−13.50	
δ_1										21 47.87	
									Pause		
	+21.5	1 429	43.0	6	42.95	16	5.40		5	16 32.76	✓
	1.33244					51 16	50.76			− 12	+9.52
d	9.79621						− 18.00			+ 44	
	1.25534 m									+882	
((δ) − D) $\frac{d'}{100}$										+ 38	
										−14.50	
+5.72 δ_2		40 37.63		16 13.4						16 27.48	
−0 14.12											

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Date$_1$ = 1871, Aug. 11. Observer A. M. Recorder A. M.

Date$_2$ = 1871. Aug. 17 Observer A. M. Recorder A. M.

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Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
17	47 16	50 35	9.5	47	19.7	28.3	31.4	34.9	38.0	41.1	173 7	34.74	47	34.74
	46 52.5	50 37.9	8.1	8	21.9						−1465			−13.93
	κ				20.8									− 70
	((δ) − D) $\frac{\kappa'}{100}$													− 2
													47	20.09
	α_1													− 2.10
													47	17.99
			9.5	47	14.7	29.3	32.6	35.8	39.1	42.4	179 2	35.84	47	35.84
					16.2						−1613			−15.48
	κ	51	9		18.0									− 63
	((δ) − D) $\frac{\kappa'}{100}$				16.8									− 2
													47	19.71
	α_2													− 1.97
													47	17.74
18	53 55	51 19	9.2	53	0.6	3.7	7.1	10.1	13.7	16.9	515	10.30	53	10.30
	53 22.1	51 18.4	7.7		1.6						−1467			−13.93
	κ				1.1									− 72
	((δ) − D) $\frac{\kappa'}{100}$													− 2
59	50												52	55.63
	α_1													− 2.15
													52	53.48
			8.8	53	48.0	54 6.7	10.2	13.3	16.7	20.8	692	13.38	54	13.38
					49.8						−16.14			−15.48
	κ				48.9									− 64
	((δ) − D) $\frac{\kappa'}{100}$													− 2
													53	57.24
	α_2													− 2.03
													53	55.21
19	2 46	51 52	9.3	3	14.3	25.4	28.6	31.8	35.1	38.4	159 1	31.82	3	31.82
	2 22.1	51 50.2	9.0		15.6						−14.70			−13.94
	κ				16.8									− 74
	((δ) − D) $\frac{\kappa'}{100}$				15.5									− 2
													3	17.16
	α_1													− 2.22
													3	14.94
			9.2	2	21.1	33.5	36.9	40.2	43.6	46.9	201	40.22	2	40.22
					22.3						−16.17			−15.48
	κ				21.7									− 67
	((δ) − D) $\frac{\kappa'}{100}$													− 2
													2	24.05
	α_2													− 2.09
													2	21.96
19	5 29	51 55	8.8	56	53.7	6 0.4	3.7	7.0	8.7	7.1	301 9	60.38	6	0.38
	5 57	51 53.9	9.2		57.0	5 53.7	57.0	10.4			−14.70			−13.94
	κ				9.8									− 74
	((δ) − D) $\frac{\kappa'}{100}$				12.0									− 2
													5	45.68
	α_1													− 2.23
													5	43.45
	4 23.9	51 52.9	8.5	56	52.0	59.4	2.8	5.9	9.3	12.5	329	65.98	6	5.98
				4	53.1						−16.18			−15.49
	κ	7	48		55.6									− 67
	((δ) − D) $\frac{\kappa'}{100}$	1 1	12		53.5									− 2
		1 3	46	4									4	49.80
	α_2													− 2.11
													4	47.69
19	15 47	51 20	9.0	15	35.7	15	19.0	22.3	25.6	28.7	111	22.22	15	22.22
	15 23.6	51 18.2	9.0		37.5	15.5					−14.69			−13.94
	κ				36.6									− 73
	((δ) − D) $\frac{\kappa'}{100}$													− 2
													15	7.53
	α_1													− 2.26
													15	5.27
			9.2	15	54.1	10 0.6	3.6	7.0	10.2	13.6	350	7.00	15	7.00
					55.6						−16.16			−15.49
	κ				57.0									− 65
	((δ) − D) $\frac{\kappa'}{100}$				55.6									− 2
													15	49.84
	α_2													− 2.16
													15	48.68

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+13.9	4 48.2	48.3	49	48.25	~~35~~ 43	010		40	50 38 32.88	✓
1.14 d	1.44301					50 ~~35~~	44.68			− 5	+9.69
	9.80213					33	− 11.80			+ 1.25	
$((\delta) - D)\frac{d'}{100}$	1.07183n									+ 816	
										+ 33	
δ_1	~~+4.81~~									−13.25	
										38 29.32	
	+19.65	6 26.2	25.8	48	26.00	34	22.35		Sure 45	34 51.13	✓
d	1.29003					50 35	7.71			− 10	+9.24
	9.80274						− 16.58			+ 88	
$((\delta) - D)\frac{d'}{100}$	1.21946n						~~+13.52~~			+ 813	
										+ 33	
+5.92 δ_2										−14.70	
+0 16.44		4 7 23.66		35 2.11						34 45.67	
	+9.2	0 4.8	5.2	0	5.00	22	43.35		0	51 23 20.24	✓
~~d~~ d	0.96379					51 23	27.93			− 2	+9.29
	9.79526						− 7.69			+ 3	
$((\delta) - D)\frac{d'}{100}$	0.88574n									+ 891	
										+ 37	
δ_1										−13.15	
										23 16.38	
	~~−35.5~~ +24.5	3 13.6	13.2	3	13.40	19	34.95		0	51 19 59.82	✓
d	1.38917					51 20	20.31			− 16	+9.91
	9.79573						− 20.49			+ 83	
$((\delta) - D)\frac{d'}{100}$	1.31159n									+ 886	
										+ 38	
+5.79 δ_2										−14.50	
+0 18.72		54 1.00		20 14.0						19 55.23	
	+16.4	4 31.3	31.9	29	31.60	53	16.75		25	51 53 47.78	✓
d	1.21484					51 54	1.33			− 7	+10.91
	9.79031						−13.55			+ 17	
$((\delta) - D)\frac{d'}{100}$	1.13184n									+ 942	
										+ 39	
δ_1										−12.80	
										53 45.89	
	~~+18.5~~	1 20.8	21.1	31	20.95	51	27.40		Sure 30	51 57.47	✓
d	1.26717					51 52	12.76			− 9	+10.08
	9.79063						− 15.29			+ 34	
$((\delta) - D)\frac{d'}{100}$	1.18449n									+ 939	
										+ 44	
δ_2										−14.30	
										51 53.25	
	−19.5	3 16.3	17.4	28	16.85	54	31.50		25	51 55 24.75	✓
d	1.02119n					~~55~~ 55	16.08			− 3	+10.66
	9.79015					51	+ 8.67			+ 86	
$((\delta) - D)\frac{d'}{100}$	0.93803									+ 944	
										+ 39	
+5.74 δ_1										−12.76	
+0 22.60		5 49.19		55 45.3						55 22.66	
	~~−47.5~~ +12.5	4 31.8	31.1	29	31.45	53	16.90		25	53 51.94	✓
d	1.09691					51 54	2.26			− 4	+11.01
	9.79031						− 10.32			+ 115	
$((\delta) - D)\frac{d'}{100}$	1.01391n									+ 944	
										+ 44	
+5.74 δ_2										−14.20	
+0 22.60		4 53.43		54 11.4						53 48.75	
	−14.4	1 21.8	21.0	56	21.40	26	26.95		55	51 26 59.52	✓
d	1.15836n					57 27	11.53			− 5	+9.64
	9.79463						− 12.01			+ 84	
$((\delta) - D)\frac{d'}{100}$	1.07968									+ 898	
										+ 37	
δ_1										−12.40	
										26 56.76	
	~~+~~11.4	3 29.9	28.3	3	29.10	19	19.25		0	19 55.07	✓
d	1.05690					51 20	4.61			− 3	+10.14
	9.79573						− 9.54			+ 91	
$((\delta) - D)\frac{d'}{100}$	0.97932n									+ 888	
										+ 38	
+5.97 δ_2										−13.90	
+0 26.08		15 54.65		20 17.4						19 51.31	

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Date$_1$ = 1871, Aug. 11. Observer A.M. Recorder A.M.

Date$_2$ = 1871, Aug. 17. Observer A.M. Recorder A.M.

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
19	h m s	° ′ ″		h m	s	s	s	s	s			h m	
	18 17	51 26	9.5	18	45.4	28.3	31.6	34.8	38.1	41.7	17 45	34.90	18 34.80
	17 53.3	51 24.9	9.3		47.5						−14.69		−13.94
	κ				46.4								− 73
	((δ) − D) $\frac{\kappa'}{100}$												− 2
													18 20.21
	α_1												− 2.28
													18 17.93
			9.5	18	16.8	29.6	32.7	36.2	39.5	42.7	18 07	36.14	18 36.14
					18.1						−16.16		−15.49
	κ	23	23		17.4								− 65
	((δ) − D) $\frac{\kappa'}{100}$												− 2
													18 19.98
	α_2												− 2.17
													18 17.81
19	25 44	51 28	9.2	25	29.2	40.6	44.1	47.2	50.8	53.8	23 65	47.30	25 47.30
	25 20.1	51 26.0	9.3		30.3						−1469		−13.94
	κ				31.5								− 73
	((δ) − D) $\frac{\kappa'}{100}$				30.4								− 2
													25 32.61
	α_1												− 2.32
													25 30.29
	26 2.9	51 25.4	4.5	26	14.4	39.1	42.4	45.7	48.9	52.2	22 83	45.66	26 45.66
	κ				16.1						−16.16		−15.49
	((δ) − D) $\frac{\kappa'}{100}$				18.6								− 65
					16.3								− 2
													26 29.50
	α_2												− 2.22
													26 27.28
19	29 57	51 28	9.0	29	14.0	30.4	33.7	36.8	40.1	43.5	18 45	36.90	29 36.90
	29 27.9	51 25.7	9.4		15.5						−1469		−13.94
	κ				14.7								− 73
	((δ) − D) $\frac{\kappa'}{100}$												− 2
													29 22.21
	α_1												− 2.33
													29 19.88
			9.3	29	46.9	30 4.6	5.0	11.2	14.5	17.8	5 61	11.22	30 11.22
	κ				48.4						−16.16		−15.49
	((δ) − D) $\frac{\kappa'}{100}$				50.8								− 65
					48.7								− 2
	α_2												29 55.06
													− 2.24
													29 52.82
19	31 49	51 03	8.0	31	10.1	15.0	18.1	21.2	24.7	28.1	18 71	21.42	31 21.42
	31 24.8	51 1.3	8.1		12.3						−14.68		−13.94
	κ				13.9								− 72
	((δ) − D) $\frac{\kappa'}{100}$				12.1								31 6.74
				31	44.2	32 0.0	3.4	6.4	9.5	13.0	32 3	6.46	32 6.46 − 2.33
	α_1				45.5						−14.68		−13.94 31 44.81
					44.8								− 2 31 52.48
			8.5	31	43.9	32 1.3	4.6	7.8	11.2	14.3	39 2	7.84	32 7.84 − 2.33
	κ	33	5.9		45.7						−16.16		−15.50 31 49.45
	((δ) − D) $\frac{\kappa'}{100}$				48.6								− 64
					46.0								− 2
	α_2												31 51.68
													− 2.24
													31 49.44
19	36 26	51 38	8.2	36	24.1	39.2	42.3	45.8	49.0	52.3	22 86	45.72	36 45.72
	36 4.2	51 42.7	9.0		25.7						−1469		−13.94
	κ				27.6								− 73
	((δ) − D) $\frac{\kappa'}{100}$				25.8								− 2
													36 31.03
	α_1												− 2.36
													36 28.67
	36 1.3	51 36.2	8.5	36	29.1	35.5	41.8	45.1	48.6	51.8	22 58	45.16	36 45.16
	κ	38	4.2		30.1						−16.17		−15.50
	((δ) − D) $\frac{\kappa'}{100}$				31.4								− 65
					30.2								− 2
	α_2												36 28.99
													− 2.25
													36 26.74

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	5	2′ 8.3	7.5	54′	7.90	25	40.45		55′	51 26 34.63	
	~~8.5~~					51 26	25.03			− 3	+9.87
d	−11.5					+	9.60			+ 53	
	1.060700n									+ 898	
((δ) − D) $\frac{d'}{100}$	9.794778									+ 37	
	0.782170									−12.25	
+5.96 δ₁		18 23.89		26 59.1						26 32.25	
+0.2688											
	+18.7	1 40.7	40.8	56	40.75	26	7.60		55	26 37.36	
	1.271840					51 26	62.96			− 9	+9.73
d	9.794630					−	15.60			+ 44	
	1.193160n									+ 899	
((δ) − D) $\frac{d'}{100}$		23.77								+ 39	
+5.96 δ₂		~~18 32.76~~		27 0.2						−13.80	
+0.2688										26 33.29	
	+16.9	4 26.3	26.6	49	25.45	33	22.90		45	51 33 53.42	✓
	1.227890					51 34	7.48			− 8	+10.52
d	9.793511					−	14.06			+ 114	
	1.148090n									+ 908	
((δ) − D) $\frac{d'}{100}$										+ 38	
										+12.05	
δ₁										33 43.89	✓
	+29.4	0 44.1	44.5	53	44.30	27	4.05		58	27 24.89	✓
	1.468350					51 27	49.41			− 23	+9.34
d	9.794470					−	24.52			+ 18	
	1.389510n									+ 899	
((δ) − D) $\frac{d'}{100}$										+ 40	
										−13.60	
+6.04 δ₂		26 33.32		27 50.2						27 20.63	
+0.2956											
	+22.2	2 20.8	21.2	52	20.75	30	27.60		50	51 30 53.69	✓
	1.346350					51 31	12.18			− 13	+9.88
d	9.793990					−	18.49			+ 60	
	1.267030n									+ 903	
((δ) − D) $\frac{d'}{100}$										+ 38	
										−11.90	
δ₁										30 51.67	
	+22.5	0 29.8	31.0	53	3.040	27	17.95		53	27 ~~56~~ 44.54	✓
	1.352180					51 28	3.31			− 13	+9.40
d	9.794470					−	18.77			+ 13	
	1.273340n									+900	
((δ) − D) $\frac{d'}{100}$										+ 40	
										−13.50	
+6.08 δ₂		29 58.90		28 11.1						27 ~~43.44~~ 40.	
+0.3064											
	+9.3	4 53.8	54.2	19	54.02	2	54.35		15	51 3 31.11	3 20.67
	0.968480					51 3	38.93			− 2	+10.18 − 13 +10.07
d	9.798250					−	7.82			+ 127	+ 127
	0.893420n					−	18.26			+ 858	+ 858
((δ) − D) $\frac{d'}{100}$	+21.7									+ 35	+ 35
	1.336460									−11.80	−11.80
+6.20 δ₁	7.798250	3								3 29.44	3 18.94
+0.3128	1.261400n	31 55.65		3 50.2							
	+21.8	4 52.0	52.3	19	52.15	2	56.20		15	3 23.22	
	1.338460					51 3	41.56			− 13	+10.09
d	9.798260					−	18.34			+ 127	
	1.263400n									+ 860	
((δ) − D) $\frac{d'}{100}$										+ 35	
										−13.40	
+6.20 δ₂		31 55.64		3 51.2						3 19.91	
+0.3128											
	+19.9	3 20.8	19.4	38	20.10	44	28.25		35	51 44 56.34	✓
	1.298850					51 45	12.83			− 11	+10.42
d	9.791760					−	16.49			+ 86	
	1.217300n									+ 928	
((δ) − D) $\frac{d'}{100}$										+ 39	
										−11.66	
+6.10 δ₁		36 34.77		45 28.0						44 55.16	
+0.3280											
	+15.0	4.557	56.6	44	56.15	37	58.20		40	38 25.10	✓
	1.176090					51 38	37.56			− 6	+10.82
d	9.792720					−	12.46			+ 127	
	1.095500n									+ 920	
((δ) − D) $\frac{d'}{100}$										+ 41	
										−13.30	
+6.12 δ₂		36 32.86		38 55.4						38 22.62	
+0.3280											

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Date$_1$ = 1871, Aug. 11. Observer A. M. Recorder A. M.

Date$_2$ = 1871, Aug. 17. Observer A. M. Recorder A. M.

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Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
19	h m s 42 33 42 7.4	° ′ ″ 51 15 51 13.0	8.8 9.0	m 42	s 28.6 30.0 31.8 30.1	s 43.2	s 46.4	s 47.8	s 53.0	s 56.1	-14.68	s	m s 42 49.70 -13.94 -.72 -.2 42 35.02 -2.38 42 32.64
κ													
((δ) — D) $\frac{\kappa'}{100}$													
α_1													
			8.8	42	28.2 29.8 32.6 30.2	44.6	47.9	51.1	54.4	57.6	2 35.36 -16.21 16	51.72	42 51.12 -15.50 -.64 -.2 42 34.96 -2.30 42 32.66
κ													
((δ) — D) $\frac{\kappa'}{100}$													
α_2													
19	44 50 44 24.0	51 48 51 45.7	8.7 9.2	44	35.3 37.6 39.6 37.5		lost.						
κ													
((δ) — D) $\frac{\kappa'}{100}$													
α_1													
			9.0	44	45.0 46.6 48.9 46.8	45 0.4	3.7	7.0	10.5	13.8	3 54 -16.16	7.08	45 4.08 -16.50 -.64 -.2 44 50.92 -2.32 44 48.60
κ													
((δ) — D) $\frac{\kappa'}{100}$													
α_2													
19	47 53 47 27.0	51 38 51 35.1	8.8 8.8 9.0				lost.						
κ													
((δ) — D) $\frac{\kappa'}{100}$													
α_1													
			9.0 8.9	47	30.6 31.6 34.2 32.1	57.5	0.8	4.1	7.8 8.3	10.6	32 03 -16.16	4.06	48 4.06 -15.50 -.64 -.2 47.90
κ				47	50.0 51.2 53.0 51.4	48 51.4	8.8	12.1	15.3	18.7	6 03 -16.16	12.06	48 12.06 -2.33 -15.50 -.64 47 45.57 -.2 48 55.90 -2.33 47 53.57
((δ) — D) $\frac{\kappa'}{100}$													
α_2													
19	51 00 50 34.9	57 31 51 28.5	8.5 9.0				lost.						
κ													
((δ) — D) $\frac{\kappa'}{100}$													
α_1													
			8.8	50	57.5 58.7 0.5 58.9	51 14.0	17.3	20.4	23.8	27.1	10 26 -16.16	20.52	51 20.52 -15.50 -.64 -.2 51 4.36 -2.34 51 02.02
κ													
((δ) — D) $\frac{\kappa'}{100}$													
α_2													
Aug. 11													
17	53 14 52 51.4	50 47 50 47.5	9.1 8.8	53	16.7 18.0 19.8 18.1	25.6	29.2	32.4	35.7	39.2	16 21 -14.65	32.42	53 32.42 -13.93 -.70 -.2 53 17.77 -1.79 53 15.98
κ													
((δ) — D) $\frac{\kappa'}{100}$													
α_1													
Aug. 11													
17	56 44 56 21.5	50 39 50 37.4	8.9 8.8	56	40.5 42.2 44.2 42.3	54.7	57.8	1.1	4.4	7.7	30 57 -14.65	61.14	57 1.14 -13.93 -.70 -.2 56 46.49 -1.81 56 44.68
κ													
((δ) — D) $\frac{\kappa'}{100}$													
α_2													

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Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
	+19.6	2 38.8	38.3	7′	38,40	15	9.96		5′	51 15 38.11	
d	1.29226					51 15	54.53			− 11	+9.71
	9.79634						−16.42			+ 68	
	1.21531m									+878	
((δ) − D) $\frac{d'}{100}$										+ 36	
										−11.40	
+6.28 δ_1		42 38.92		16 11.1						15 36.42	
+0 34.72											
	+30.9	2 36.7	37.0	7	36,85	15	11.50		5	15 39.35	
d	1.32015					51 15	56.86			− 12	+9.74
	9.79636						−17.51			+ 68	
	1.24320m									+880	
((δ) − D) $\frac{d'}{100}$										+ 38	
				10.						−13.05	
+6.28 δ_2		42 38.94		16 11.8						15 36.04	
+0 34.72											
		0 27.1	27.4	35	27,25	49	21.10		35		
d						~~51~~ ~~47~~	~~5.68~~				
((δ) − D) $\frac{d'}{100}$											
δ_1											
	+30.3	0 33.0	33.9	35	3345	47	1490		35	51 47 43.45	
d	1.30750					51 48	0.26			− 11	+9.83
	9.79128						−16.81			+ 16	
	1.22547m									+985	
((δ) − D) $\frac{d'}{100}$										+ 43	
										−13.00	
+6.19 δ_2		44 54.79		48 15.7						47 40.28	
+0 35.44											
		0 36.5	36.4	45	36.60	37	11.75		45		
d											
((δ) − D) $\frac{d'}{100}$											
δ_1											
	+32.0	0 30.8	30.2	45	30,25	37	18.10		45	51 37 36.87	37 46.26
d	1.50515					51 38	3.46			− 27	+9.46 − 12 +9.61
	9.79288						−26.59			+ 13	+ 13
	1.42472m						−17.20			+919	+919
((δ) − D) $\frac{d'}{100}$	+20.7									+ 41	+ 41
	4.31594									−12.90	−12.90
+6.26 δ_2	9.79288	47 51.83		38 12.8						37 33.43	42.97
+0 39.40	1.23554m	59.83		22.4							
		2 52.3	52.0	52	5215	29	56.20		60		
d						~~30~~	~~41.56~~				
((δ) − D) $\frac{d'}{100}$											
δ_1											
	+21.6	2 50.3	49.5	52	4990	29	58.45		50	51 30 25.40	
d	1.33445					51 30	43.81			− 13	+10.06
	9.79399						−18.41			+ 73	
	1.26513m									+906	
((δ) − D) $\frac{d'}{100}$										+ 40	
										−12.75	
+6.34 δ_2		51 8.36		31 0.1						30 22.71	
+0 37.36											
	+14.3	2 7.4	8.1	07	975	45	40.60		35	50 46 13.07	
d	1.15534					50 46	25.18			− 3	+9.11
	9.80105						−12.11			+ 55	
	1.08308m									+825	
((δ) − D) $\frac{d'}{100}$										+ 34	
										−14.30 50	
+5.74 δ_1		53 21.72		46 5.4						46 7.68	
−0 2.32						8					
	+18.8	3 52.2	53.0	43	5260	38	55.76		40	50 40 24.38	
d	1.27416					50 ~~40~~ 39	40.33			~~35~~ − 10	+9.14
	9.80182						−15.95			+ 75	
	1.20267m									+815	
((δ) − D) $\frac{d'}{100}$										+ 34	
				39						−14.20 40	
+5.77 δ_2		56 50.45		~~40~~ 18.0						~~46~~ 39 19.12	
−0 1.12											

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Date$_1$ = Observer / Recorder

Date$_2$ = Observer / Recorder

Star. α	δ	Mag.	T_δ	T_m	T_e	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												
κ												
$((\delta) - D)\frac{\kappa'}{100}$												
α_1												
κ												
$((\delta) - D)\frac{\kappa'}{100}$												
α_2												

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