KG
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astro-ph/0107424

Harvard College Observatory.
Observations with Meridian Circle in zone 50° to 55°.

Zone Stars

Observed Nov. 16 1870 to Dec 16 1870
by observers E.P.A. & A.S.

During these observations the clock used was mostly fast and its error large. In making the readings a certain number of seconds was subtracted for clock error. The number of seconds employed on each date will be found among the readings of the zero stars.

The figures within circles refer to the chronograph sheets. Those preceding the R of each star are the numbers by which the stars were indicated in the original lists. When one of these numbers is underscored there is some note about the star in the original record.

The R wires used were D, E, 1 2 3 4 otherwise called m c f g k. When C, 1 2 3 4 (or a b c d) have been used, a note is made within to that effect.

The readings have not been verified. They are mostly by H. Gannett, but many by W. Winlock, and some by E. P. Austin.

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RG 11365.424

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

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Date$_1$ = 1870 Nov. 16 Observer E P R
Recorder

Date$_2$ = Observer
Recorder

Ru

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
146	1 40 54	53 32	9.2	1 40 30.0 31.4	40 49.4	57.5	1.7	5.8	10.1				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
146 fall.	1 42 2	53 32	9.0	1 41 30.7 32.7	41 56.0	4.4	8.6	12.6	16.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
153	1 44 10	53 16	8.3	1 43 49.2 52.7	44 4.0	12.6	16.8	21.9	24.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
155	1 45 27	53 16	8.5	1 45 5.8 12.0	45 21.8	30.0	34.2	38.4	42.6				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
161	1 49 47	53 43	8.6	49 27.3 31.8	49 47.8	50.0	54.3	58.5	2.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
164	1 53 31	53 48	9.0	53 7.4 8.7	53 26.7	34.9	39.3	43.1	47.7				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
167	1 58 13	53 41	8.5	57 49.1 49.7	58 8.3	16.8	20.8	25.0	29.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
169	2 0 45	53 43	8.8	0 18.2 20.2	0 39.0	47.4	51.7	55.9	0.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
171	2 30 53 44		8.5	1 39.2 41.4			1 38.0	42.4	46.6				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
175	3 54	53 40	9.3	3 28.0 29.9	3 49.3	57.6	1.6	5.7	10.2				
	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′
		3 57.5	49.3						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 57.5	49.3						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 34.0	27.1						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 34.5	30.8						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 36.0	29.5						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 21.1	15.8						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 56.4	51.2						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 61.0	57.1						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 50.4	43.8						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 22.3	16.0						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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Date$_1$ = 1870 Nov. 16 Observer / Recorder

Date$_2$ = Observer / Recorder

Ru

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
177	2 5 16	53 19	8.7	5 2.7 3.7	5 11.0	19.3	23.3	27.5	31.7				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
184	9 15	53 53	8.9	8 52.9 55.1	9 9.9	18.3	22.8	26.8	31.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
187	10 16	53 30	8.8	10 47.2 52.2			10 22.2	26.3	30.4				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
191	12 55	53 52	8.8	12 39.1 46.2		12 58.3	2.2	6.4	10.7				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
193	14 47	53 10	9.0	15 23.1 24.7		14 50.1	54.0	58.1	2.2				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
198	17 36	53 33	8.8	17 15.7 18.4	17 32.0	40.4	44.6	48.6	53.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
201	19 23	53 49	9.0	19 8.7 12.8	19 18.3	26.5	30.8	35.0	39.2				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
204 fall.	22 2	53 16	9.3	21 36.5 39.6	21 55.9	4.2	8.2	12.4	16.6				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
207	23 20	53 41	9.4	22 58.3 5.9	23 16.3	24.5	28.7	32.9	37.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
211	26 39	53 7	9.0	26 9.7 14.9	26 32.5	40.8	14.8	49.0	53.1				
	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 46.3	40.6						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 25.3	21.0						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 43.9	42.0						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 54.0	50.0						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 64.3	61.5						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 46.1	40.8						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 14.9	6.9						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 17.9	10.6						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 43.0	39.8						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 9.2	5.0						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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Date$_1$ = 1870 Nov. 16 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
213	2 29 49	53 52	9.0	29 32.8 36.8	29 45.9	54.2	58.6	2.7	7.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
214	31 26	53 44	8.8	31 4.3 5.6	31 22.2	30.3	34.6	38.7	43.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
218	33 22	53 38	8.6	33 2.0 6.3	33 15.3	23.8	28.0	32.0	36.2				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
219	37 33	53 32	8.0	37 0.1 5.5	37 [illegible] 27.0	35.4	39.6	43.7	47.9				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
221	38 40	53 34	8.2	39 8.5 10.9	38 35.8	44.3	48.5	52.5	56.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
226	43 18	53 30	9.0	42 40.3 51.5	43 13.0	21.4	25.6	29.6	33.9				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
228	44 34	53 16	7.8	44 15.8 20.1	44 28.0	36.2	40.4	44.3	48.7				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
231	48 17	53 50	8.2	48 10.5 11.8	48 19.4	23.7	27.7	32.0					
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
235	49 57	53 52	8.6	49 37.8 42.5	49 49.9	58.4	2.6	6.6	11.0				
	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′
		3 18.8	14.8						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 38.0	34.0						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 52.5	44.9						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 32.6	27.6						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 57.0	54.6						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 48.8	44.2						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 53.0	51.1						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 36.2	31.7						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 17.5	13.1						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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Date$_1$ = 1870 Nov. 17 Observer E P A Recorder A S

Date$_2$ = Observer Recorder

Ru

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
146	1 40 54	53 32	9.4	40 27.4 30.4		40 57.8	1.8	5.7	10.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
150	42 39	53 35	9.7	42 11.5 20.7	42 34.2	42.8	46.9	50.9	55.2				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
155	45 27	53 16	9.2	44 54.9 57.7	45 22.0	30.2	34.3	38.3	42.6				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
157	46 21	53 16	8.8	47 35.9 37.5	46 15.7	24.2	28.2	32.1	36.2				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
164	53 31	53 48	8.9	52 59.3 1.4	53 26.8	35.0	39.2	43.5	47.6				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
1/22.167	1 57 43	53 36	9.0	57 17.0 19.8	57 35.4	43.8	48.0	52.1	56.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
169	2 0 45	53 43	8.8	0 8.9 10.1	0 39.3	47.5	51.8	56.9	0.1				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
171	1 30	53 44	8.9	1 56.9 58.3	1 25.6	33.9	38.0	42.4	46.6				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
175	3 54	53 40	9.5	3 27.3 31.5	3 49.0	57.7	1.7	6.0	10.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
178	5 16	53 19	8.9	4 52.9 55.8	5 19.3	23.4	27.7	31.8					
	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′
		3 59.7	59.1						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 55.6	54.7						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 49.0	48.0						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 49.0	48.0						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 27.3	26.3						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 56.0	55.3						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 10.2	8.3						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 37.6	35.0						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 22.2	20.8						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 52.8	49.9						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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(3)

Date$_1$ = 1870 Nov. 17 Observer Recorder

Date$_2$ = Observer Recorder

Ru

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
184	2 9 15	53 53	8.4	8 44.6 48.1	9 10.1	48.5	22.4	26.8	31.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
187	10 16	53 30	8.5	10 45.4 47.8	10 9.7	18.1	22.0	26.5	30.6				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
188	11 46	53 36	9.4	12 9.3 12.0	11 38.1	46.5	50.5	54.7	58.9				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
191	12 55	53 52	9.4	13 23.0 26.5	12 50.0	58.3	2.1	6.6	10.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
193	14 47	53 10	9.2	14 19.0 21.6	14 41.9	50.0	54.0	58.2	2.4				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
196	15 37	53 12	8.7	16 7.9 13.0	15 31.3	39.7	43.8	47.9	52.2				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
201	19 23	53 49	9.0	18 47.6 50.3	19 18.1	26.6	30.6	35.0	39.1				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
203	20 29	53 18	8.8	20 56.9 0.3		20 29.4	33.4	37.7	41.4				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
210	24 1	54 0	8.2	24 36.5 39.0	23 56.0	4.3	8.6	12.6	16.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
211	26 39	53 7	9.0	26 6.6 8.0	26 32.8	40.6	45.1	49.2	53.1				
	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′
		3 31.8	31.4						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 50.6	49.9						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 56.3	56.0						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 25.8	25.5						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 53.4	52.0						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 27.3	27.8						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 30.6	29.7						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 4.0	4.6						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 21.2	19.0						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 15.5	15.1						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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(3) (5)

Date$_1$ = 1870 Nov. 17, 25 Observer EPA Recorder AS Date$_2$ = Observer Recorder Ru

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
213	2 27 42	53 52	9.2	28 6.4 10.8	27 38.5	46.7	50.8	55.1	59.4				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	c_1												
213	29 49	53 52	9.0	28 54.4 0.4	29 46.0	54.5	58.7	2.4	6.9				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	c_2												
214	31 26	53 44	9.0	30 58.8 3.0	31 22.2	30.4	34.8	38.7	42.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
218	33 22	53 38	8.7	32 50.3 53.6	33 15.7	23.7	27.9	32.0	36.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
1870 Nov. 25 (5)	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
552	23 52 34	54 0	8.3	51 57.4 59.1	52 29.5	37.9	42.1	46.2	50.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
556	53 58	53 35	8.5	53 31.3 35.6	53.9	2.6	6.6	10.6	14.9				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
558	55 53	53 26	9.2	55 24.5 28.5	49.6	58.0	2.1	6.3	10.5				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
561	28 57 48	53 34	8.2	57 13.0 15.2	43.6	51.7	56.0	0.2	4.5				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
565	0 0 12	53 47	8.4	0 38.6 39.4	7.7	16.0	19.9	24.1	28.6				
	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′
		3 46.7	46.8						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 46.7	46.8						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 40.3	41.3						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 0.7	1.1						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 49.5	43.6						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 14.4	10.0						50 perh 1540		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 16.6	30.6						50		
		one microscope must be wrong.									
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 59.8	55.2						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 32.6	28.3						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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(5)

Date$_1$ = 1870 Nov. 25 — Observer / Recorder — Date$_2$ = — Observer / Recorder — Ru

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
1	0 1 46	53 59	8.5	1 11.7	40.8	49.3	53.4	57.7	2.0				
	κ			14.3									
	$((\delta) - D)\frac{\kappa'}{100}$												
	a_1												
3	2 55	53 38	9.0	3 18.2	2 50.0	58.5	2.3	6.6	11.0				
	κ			21.6									
	$((\delta) - D)\frac{\kappa'}{100}$												
	a_2												
4	5 1	53 37	7.2	4 27.3	4 56.2	4.9	9.0	13.0	17.2				
	κ			29.0									
	$((\delta) - D)\frac{\kappa'}{100}$												
	a_1												
6	6 23	53 45	9.2	5 58.6	6 15.6	27.0	31.2	35.3	39.4				
	κ			6 3.8									
	$((\delta) - D)\frac{\kappa'}{100}$												
	a_2												
7	7 3	53 44	8.5	7 32.36	58.6	7 7.6	—	15.6	19.7				
	κ			33.6									
	$((\delta) - D)\frac{\kappa'}{100}$												
	a_1												
10	9 41	53 13	8.8	9 57.0	35.9	44.0	48.1	52.2	—				
	κ			59.7									
	$((\delta) - D)\frac{\kappa'}{100}$												
	a_2												
13	13 25	53 29	8.2	12 42.5	13 ~~1.4~~								
	κ			48.2	13 22.9	30.9	35.2	39.2	43.5				
	$((\delta) - D)\frac{\kappa'}{100}$												
	a_1												
14	15 42	53 34	8.5	13 23.4	37.9	46.6	15.7	54.6	58.9				
	κ			28.0									
	$((\delta) - D)\frac{\kappa'}{100}$												
	a_2												
17	16 7	53 34	7.8	15 14.3	16 2.0	10.4	14.5	—	—				
	κ			17.0									
	$((\delta) - D)\frac{\kappa'}{100}$												
	a_1												
26	19 34	53 47	8.5	18 55.5	19 31.2	39.9	44.0	47.9	52.2				
	κ			59.1									
	$((\delta) - D)\frac{\kappa'}{100}$												
	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 21.2	17.2						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 38.4	32.0						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 17.6	14.2						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 25.8	19.8						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 48.1	43.1						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 58.7	54.0						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 24.6	20.0						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 64.8	60.6						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 64.8	60.6						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 30.8	25.7						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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(2) (6)

Date$_1$ = 1870 Nov. 25 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
27	0 20 31	53 21	8.7	20 54.7 59.0	27.3	35.3	39.5	43.8	47.9				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	c_1												
28	24 43	53 15	6.0	24 6.0 11.1	39.1	47.2	51.6	55.5	59.5				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	c_2												
33	25 45	53 25	7.2	26 2.8 4.8	25 40.0	48.3	52.4	56.6	0.8				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
35	27 10	53 22	7.2	27 17.3 19.4	4.7	13.1	—	21.3	25.6				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												
37	29 4	53 28	5.8	28 36.0 39.2	58.1	6.4	10.5	14.6	18.8				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
40	30 11	53 28	9.3	29 35.0 38.9	30 6.0	14.5	18.4	22.6	27.0				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												
41	31 37	53 51	9.0	31 12.3 16.1	32.6	41.0	45.2	49.3	53.6				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
(6) 50	38 38	53 48	8.8	38 7.2 10.5	33.0	41.5	45.4	49.8	54.0				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												
56	42 6	53 19	9.4	41 35.0 37.0	42 0.8	9.0	13.2	17.2	21.6				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
57	46 5	53 47	8.9	45 31.6 33.8	46 0.4	8.5	12.8	17.0	21.2				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	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′
		3 18.7	14.1						50		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 28.5	23.9						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 14.4	8.4						50		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 36.0	31.6						50		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 50.7	47.4						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 50.7	47.4						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 37.3	34.4						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 62.3	58.9						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 7.0	1.8						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 22.2	17.6						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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Date$_1$ = 1870 Nov. 25 — 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
78	0 51 34	53 57	9.2	50 59.0 2.5	51 28.5	36.7	40.9	45.1	—				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	c_1												
81	0 58 2	53 26	9.1	57 46.3 48.8	57 57.4	5.6	9.9	13.8	17.9				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	c_2												
86	1 0 46	53 33	7.3	0 17.9 25.1	40.5	48.8	52.9	57.1	1.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
90	2 59	53 48	8.7	2 26.6 28.3	53.1	3 1.7	5.8	10.0	14.2				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
93	5 23	53 44	8.5	4 42.25 43.7	18.5	26.8	31.1	35.2	—				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
94	6 51	53 20	9.5	6 18.5 24.2	46.6	54.9	59.2	3.0	7.2				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
95	8 22	53 45	8.9	7 54.4 57.1	—	8 25.8	29.9	—	—				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
101	12 23	53 10	9.2	11 43.0 46.1	12 18.0	26.0	—	34.2	—				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
103	14 6	53 59	9.0	13 40.2 48.1	—	—	—	—	14 22.2				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
104	15 19	53 54	8.7	14 54.1 57.6	15 14.5	23.2	27.6	31.6	35.7				
	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′
		3 45.3	41.8						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 54.4	48.3						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 49.5	42.9						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 33.5	29.7						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 26.2	22.3						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 46.5	41.0						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 32.6	27.4						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 24.6	19.5						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 45.6	40.3						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 11.8	9.6						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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Date$_1$ = 1870 Nov. 25 Observer / Recorder — Date$_2$ = Observer / Recorder — Runs

Star.	α	δ	Mag.	T_a	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T	
106	1 16 13	53 42	8.5	16 40.0 41.7	—		15.5	19.9	23.8	28.0				((δ) — D) $\frac{\kappa'}{100}$ c_1
110	20 32	53 30	9.8	19 57.5 59.5	26.2		35.0	39.0	43.1	47.5				((δ) — D) $\frac{\kappa'}{100}$ c_2
119	23 14	53 29	8.7	22 43.4 46.2	23 7.6		15.9	20.0	24.2	28.5				((δ) — D) $\frac{\kappa'}{100}$ a_1
123	24 26	53 49	9.0	25 5.7 8.8	—		—	24 33.8	37.8	42.0				((δ) — D) $\frac{\kappa'}{100}$ a_2
127	27 31	54 4	8.9	26 57.0 59.9	27 25.0		—	37.9	42.1	46.2				((δ) — D) $\frac{\kappa'}{100}$ a_1
128	28 23	54 3	7.2	28 55.7 59.1	28 17.6		26.1	30.3	34.4	38.6				((δ) — D) $\frac{\kappa'}{100}$ a_2
134	31 21	53 29	8.7	30 54.9 57.9	31 15.8		—	—	—	36.6				((δ) — D) $\frac{\kappa'}{100}$ a_1
140	34 15	54 3	9.5	33 36.4 39.1	34 10.7		18.1	23.2	27.3	31.8				((δ) — D) $\frac{\kappa'}{100}$ a_2
143	39 30	53 22	7.3	39 52.8 53.9	39 23.9		32.0	36.0	40.3	44.5				((δ) — D) $\frac{\kappa'}{100}$ a_1
145	40 37	53 9	9.0	41 4.5 6.8	—		40 39.2	43.3	47.4	51.7				((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′
		3 32.7	29.8						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 20.5	14.5						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 52.4	48.2						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 27.8	22.4						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 59.2	54.0						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 28.4	24.9						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 39.8	33.3						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 59.3	56.9						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 12.2	8.1						50		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 37.4	33.6						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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Date$_1$ = 1870 Nov. 25, 26 Observer E P A Recorder A J Date$_2$ = Observer Recorder Run

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
1	1 42 15	53 6	8.5	42 34.0 38.6	42 9.0	17.3	21.4	25.8	29.7				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
Nov. 26 (9)	a_2												
9	0 8 18	53 21	8.5	8 0.0 0.9	13.5	21.9	25.9	30.0	34.1				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
12	11 16	53 6	9.3	10 ~~52.1~~ 53.4	11 12.3	20.4	24.6	28.5	32.7				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
13	13 25	53 29	9.0	12 53.0 54.8	13 23.0	31.0	35.3	39.3	43.7				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
14	15 42	53 34	8.0	~~14 59.7~~ ~~15 1.1~~ 15 10.7 13.2	38.3	46.7	51.0	55.0	59.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
17	16 7	53 34	8.2	14 59.7 15 1.1	16 2.3	10.7	14.7	18.9	23.1				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
23	17 21	53 6	7.5	17 53.0 55.3	—	—	17 29.0	33.0	37.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
26	19 34	53 47	8.8	19 13.0 14.6	31.6	40.0	44.6	48.2	52.4				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
27	20 31	53 21	9.0	20 56.4 58.7	20 27.2	35.4	39.7	43.9	48.2				
	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′
		3 43.5	40.3						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 26.8	22.9						50		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 30.2	25.9						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 14.1	9.2						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 10.9	5.9						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 10.9	5.9						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 58.5	54.0						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 15.3	10.6						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 13.7	9.8						50		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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D

Date$_1$ = 1870 Nov. 26 Observer / Recorder — Date$_2$ = Observer / Recorder — Run

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
32	0 24 43	53 15	8.2	24 11.0 14.0	39.3	47.4	51.6	55.8	0.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
33	25 45	53 25	7.0	25 31.7 34.3	40.0	48.6	52.5	56.7	1.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
35	27 10	53 22	7.3	26 46.0 48.5	27 5.1	13.5	17.5	21.6	25.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
36	28 25	53 30	6.5	28 7.6 11.3	19.1	27.5	31.6	35.9	40.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
37	29 4	53 28	5.5	29 21.3 23.7	28 58.2	6.6	10.8	14.8	19.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
41	31 37	53 51	9.2	31 [illegible] 41.7	32.7	41.1	45.3	49.6	53.7				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
43	34 43	53 21	9.0	34 12.7 14.6	37.6	45.8	50.0	54.1	58.2				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
47	36 46	53 54	8.7	36 10.5 11.9	40.2	48.9	53.0	57.0	1.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
50	38 38	53 48	8.9	38 7.2 9.1	33.1	41.5	45.9	49.8	54.1				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
53	39 35	53 55	8.0	39 19.8 21.7	30.1	38.6	42.7	46.9	51.1				
	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′
		0 20.9	16.0						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 31.4	26.3						50		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 52.2	49.8						50		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 32.9	28.5						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 13.8	8.8						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 34.6	32.9						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 59.8	55.8						50		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 48.8	45.4						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 58.0	55.3						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 24.4	19.8						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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Date$_1$ = 1870 Nov. 26 Observer / Recorder — Date$_2$ = Observer / Recorder — Run

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
55	0 41 57	53 19	9.3	41 4.0 6.4	51.0	59.2	3.3	7.3	11.6				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
56	42 6	53 19	9.1	41 26.2 28.8	42 1.0	9.2	13.3	17.3	21.5				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
57	46 5	53 47	9.0	45 32.9 35.5	46 0.5	8.7	13.0	17.1	21.4				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
60	46 59	53 50	9.0	46 44.2 46.2	54.8	3.1	7.4	11.5	15.7				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
61	48 11	53 41	8.7	47 56.7 58.6	48 6.0	13.1	17.3	21.3	25.9				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
65	50 8	53 42	8.3	49 42.3 45.3	50 3.5	11.8	16.1	20.0	24.4				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
67 and 68	51 34 / 51 34	53 54 / 53 57	9.0	51 51.0 54.8	51 28.5	37.0	41.1	45.3	49.6				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
72	53 39	53 54	8.2	53 10.7 13.1	33.5	42.0	46.1	50.4	54.5				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
75	54 59	53 34	8.7	54 31.6 34.9	53.6	2.0	6.0	10.2	14.4				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
77	56 44	53 46	8.5	56 14.0 16.4	38.7	47.0	51.3	55.4	59.5				
	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′
		1 66.9	62.2						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 66.9	62.2						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 17.3	13.4						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 28.0	23.5						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 44.4	40.8						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 20.5	16.0						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 58.8	56.4						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 40.4	38.0						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 39.3	36.2						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 22.4	19.6						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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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
81	0 58 2	53 26	8.8	57 32.8 35.0	57.5	5.5	9.7	14.0	18.0				
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_1													
85	0 59 4	53 41	8.2	59 19.6 23.4	58 59.0	59 ~~9.8~~ 59 7.3	~~14.0~~ 11.5	~~14.0~~ 15.7	— —				
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_2													
86	1 0 46	53 33	7.7	0 22.2 23.8	40.4	49.0	53.0	57.1	1.3				
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_1													
90	2 59	53 48	8.8	2 30.1 32.2	53.3	1.7	6.0	10.1	14.3				
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_2													
93	5 23	53 44	8.2	4 54.0 56.1	5 18.5	27.0	31.1	35.3	39.5				
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_1													
94	6 51	53 20	9.5	7 10.0 12.2	6 47.0	53.0	57.0	3.0	7.3				
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_2													
95	8 22	53 45	8.8	8 4.8 8.0	17.4	26.0	30.0	34.1	38.4				
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_1													
98	10 16	53 15	7.8	9 43.3 45.8	10 12.7	18.8	23.0	27.0	31.4				
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_2													
101	12 23	53 10	9.2	11 55.1 58.1	12 18.0	26.3	30.5	34.6	38.8				
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_1													
102	13 14	53 58	8.0	13 28.1 29.2	13 9.0	17.3	21.6	25.8	29.9				
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 56.0	53.1						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 61.6	59.0						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 41.6	38.3						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 27.0	22.4						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 12.8	9.0						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 66.6	62.2						50		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 19.8	15.6						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 9.1	4.8						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 12.1	6.8						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 40.9	38.0						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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D

Date$_1$ = 1870 Nov. 26 Observer / Recorder — Date$_2$ = Observer / Recorder — Run

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
103	1 14 6	53 59	9.0	13 48.1 50.9	14 1.8	10.2	14.4	18.4	22.6				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	c_1												
104	15 19	53 54	8.9	15 40.0 42.7	15 14.7	23.2	27.5	31.6	35.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
106	16 13	53 42	8.2	16 59.7 3.1	—	—	16 20.0	24.0	28.1				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
110	20 32	53 30	9.7	20 5.9 8.1	26.7	34.9	39.0	43.3	47.6				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
113	21 27	53 34	8.8	21 16.8 17.8	21.9	30.1	34.4	38.6	42.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
118	22 24	53 29	8.2	22 47.4 49.8	22 20.3	28.6	32.6	37.0	41.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
119	23 14	53 29	8.8	23 58.1 59.9	23 7.7	16.0	20.1	24.3	28.5				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
123	24 26	53 49	8.7	24 52.5 54.4	—	24 29.3	33.9	38.0	42.2				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
127	27 31	54 4	8.7	26 55.6 57.4	27 25.0	33.7	37.9	42.1	46.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
700	27 59	54 7	8.7	~~27~~ ~~54.2~~ 17.4 19.1	27 54.2	28 2.6	6.9	11.1	15.4				
	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′
d		1 33.4	29.7						15		
$((\delta) - D)\frac{d'}{100}$											
δ_1											
d		1 34.9	30.4						20		
$((\delta) - D)\frac{d'}{100}$											
δ_2											
d		3 12.2	8.2						30		
$((\delta) - D)\frac{d'}{100}$											
δ_1											
d		1 7.3	2.7						45		
$((\delta) - D)\frac{d'}{100}$											
δ_2											
d		1 48.7	44.0						40		
$((\delta) - D)\frac{d'}{100}$											
δ_1											
d		0 53.0	48.7						45		
$((\delta) - D)\frac{d'}{100}$											
δ_2											
d		0 53.0	48.7						45		
$((\delta) - D)\frac{d'}{100}$											
δ_1											
d		0 34.2	28.0						25		
$((\delta) - D)\frac{d'}{100}$											
δ_2											
d		not recorded							10		
$((\delta) - D)\frac{d'}{100}$											
δ_1											
d		3 17.0	13.7						5		
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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D (8)

Date$_1$ = 1870 Nov. 26, 28 Observer EPA Recorder AG Date$_2$ = Observer Recorder Ru

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
1149	1 42 15	53 6	8.2	41 51.2 52.1	42 9.3	17.3	21.5	25.6	29.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
Nov. 28 (8)	a_2												
10	0 9 41	53 13	8.5	9 18.0 19.6	~~9 15.0~~ 39.0	~~17.6~~ 44.2	48.5	52.4	56.5				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
16	16 0	53 37	8.8	15 13.3 15.2	55.2	3.7	7.7	12.0	16.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
19	16 26	53 36	9.0	16 20.0 21.1	—	28.7	32.9	36.8	41.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
596	19 56	54 8	9.2	20 20.0 25.7	—	—	20 4.8	9.0	13.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
42	31 50	54 1	8.8	31 19.0 21.0	45.0	53.8	57.6	1.8	5.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
628	33 39	54 17	8.0	33 11.0 13.0	34.5	43.0	47.2	51.5	55.6				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
43	34 43	53 21	9.0	35 0.2 0.9	34 37.7	45.9	50.1	54.0	58.2				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
47	36 46	53 54	8.5	36 9.1 12.2	40.2	48.7	53.0	57.0	1.2				
	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 12.5	8.2						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 29.8	24.0						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 39.2	34.8						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 39.2	34.8						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 14.0	9.8						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 16.8	11.0						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 25.1	20.7						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 27.2	23.2						50		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 51.5	46.4						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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(8)

Date$_1$ = 1870 Nov. 28 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
51	0 38 38	53 57	7.8	38 9.0 12.7	32.5	40.8	45.0	49.0	53.3				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
53	39 35	53 55	7.5	39 54.3 55.1	39 30.2	38.4	42.7	46.9	51.2				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												
54	41 20	53 28	8.2	40 48.5 52.3	41 14.9	23.0	27.0	31.3	35.3				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
58	46 12	53 56	9.0	45 41.0 42.1	46 6.8	15.3	19.4	23.6	27.7				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												
60	46 59	53 50	9.0	47 18.8 20.1	46 54.6	47 3.3	7.3	11.4	15.9				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
61	48 11	53 41	8.6	48 24.7 26.6	—	48 13.2	17.5	21.4	—				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												
65	50 8	53 42	8.7	49 48.3 50.4	50 3.4	11.8	16.0	20.4	24.4				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
67	51 34	53 54	9.0	51 51.8 52.5	—	51 38.0	42.3	46.3	50.8				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												
72	53 39	53 54	7.5	53 15.0 16.2	53 33.3	42.0	46.0	50.4	54.5				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
75	54 59	53 34	8.6	54 31.0 35.7	53.6	2.0	6.0	10.3	14.4				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	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′
		3 31.7	28.1						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 64.2	59.6						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 52.4	48.2						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 37.8	34.6						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 66.4	61.3						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 26.0	22.8						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 19.4	14.4						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 8.3	4.5						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 43.3	38.5						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 44.1	39.9						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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1870phae.proj.:425A

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Date$_1$ = 1870 Nov. 28 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
76	0 55 43	53 14	9.0	56 11.7 15.5	—	53 49.5	53.9	58.0	—				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
α_1													
80	57 18	53 55	9.0	57 38.1 41.3	57 13.6	22.0	26.4	30.4	34.7				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
α_2													
82	58 18	53 55	9.0	58 37.7 40.9	58 12.3	20.5	24.9	28.0	33.2				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
α_1													
669	0 59 43	54 18	5.5	0 26.4 26.7	—	59 50.9	55.0	59.4	3.4				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
α_2													
87	1 1 29	53 28	8.7	1 9.0 9.8	23.5	32.0	36.0	40.3	44.6				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
α_1													
89	2 12	54 4	6.5	2 47.1 48.7	—	—	2 20.1	24.1	28.4				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
α_2													
92	3 38	53 28	9.5	3 57.2 58.7	—	3 42.0	46.0	50.0	54.4				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
α_1													
96	8 52	54 4	8.8	8 9.5 11.3	47.4	55.8	0.0	4.2	8.4				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
α_2													
98	10 16	53 15	8.2	9 48.8 49.5	10 10.5	17.0	23.0	27.0	31.9				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
α_1													
99	11 10	53 6	8.7	10 58.1 58.5	11 5.7	13.7	18.0	22.0	26.3				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
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′
		1 27.3	22.1						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 42.2	38.6						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 29.7	25.8						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 20.6	16.3						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 42.7	37.7						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 37.8	34.1						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 56.8	52.0						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 23.5	19.2						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 8.5	5.0						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 30.4	26.2						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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Date$_1$ = 1870 Nov. 28 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
102	1 13 14	53 58	7.7	14 7.5 13.4	13 9.0	17.3	21.6	25.8	30.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
103	14 6	53 59	9.3	12 51.5? 53.8! 54.4? 59.8!	—	—	~~14 18.6~~ 14 18.6		22.7				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
105	15 56	53 35	9.0	15 26.3 30.1	57.7	0.0	4.0	8.3	12.6				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
108	17 12	53 44	9.0	16 53.8 57.5	17 7.2	15.7	20.0	24.0	—				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
111	20 41	53 21	9.0	20 7.0 9.1	35.0	43.3	47.2	51.7	55.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
119	23 14	53 29	8.8	22 44.8 48.1	23 7.7	16.0	20.1	24.1	28.7				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
124	25 32	53 12	8.8	25 47.6 49.4	25 26.2	34.8	38.7	42.6	46.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
700	27 59	54 7	8.4	27 ~~54.0~~ 22.3 23.9	27 54.0	28 2.4	6.5	11.1	15.2				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
129	29 17	54 5	9.0	29 31.1 32.5	29 11.7	20.1	24.2	28.6	—				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
132	30 24	53 24	8.5	30 43.0 45.3	—	30 25.8	29.8	34.0	38.4				
	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′
		2 13.8	9.7						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 13.8	9.7						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 18.6	13.5						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 10.1	5.4						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 23.4	19.2						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 51.1	45.9						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 56.6	51.3						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 17.0	13.2						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 65.2	60.0						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 7.8	3.4						50		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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(8) (9)

Date$_1$ = 1870 Nov. 28, 30 Observer E P A Recorder A J

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	Runs
1141	1 35 41	53 19	8.5	35 9.4 13.1	35.5	43.7	48.0	52.0	56.2					
	κ													
	((δ) — D) $\frac{\kappa'}{100}$													((δ))
	c_1													
1142	37 52	53 49	8.7	37 15.9 20.8	45.9	54.2	58.5	2.5	6.7					
	κ													
	((δ) — D) $\frac{\kappa'}{100}$													((δ))
	a_2													
1143	39 30	53 22	7.8	38 56.5 59.7	39 23.7	32.0	36.4	40.4	44.5					
	κ													
	((δ) — D) $\frac{\kappa'}{100}$													((δ))
	a_1													
1145	1 40 37	53 9	9.2	40 56.3 58.1	—	—	40 43.7	47.4	51.4					
	κ													
	((δ) — D) $\frac{\kappa'}{100}$													((δ))
	a_2													
1														
	κ													
	((δ) — D) $\frac{\kappa'}{100}$													((δ))
Nov. 30 (9)	a_1													
1569	0 1 12	54 52	8.2	0 29.5 31.2	1 5.4	14.0	18.2	22.4	26.7					
	κ													
	((δ) — D) $\frac{\kappa'}{100}$													((δ))
	a_2													
1578	8 14	55 0	8.8	8 41.2 45.2	8 9.6	18.5	22.7	27.2	31.4					
	κ													
	((δ) — D) $\frac{\kappa'}{100}$													((δ))
	a_1													
1054	9 26	55 9	8.8	9 45.0 46.8	9 15.2	27.0	31.4	35.4	40.0					
	κ													
	((δ) — D) $\frac{\kappa'}{100}$													((δ))
	a_2													
1055	11 25	55 10	8.8	11 43.0 46.0	11 18.1	26.8	31.4	35.6	40.0					
	κ													
	((δ) — D) $\frac{\kappa'}{100}$													((δ))
	a_1													
1584	12 46	54 56	8.5	13 10.8 12.7	12 40.0	48.8	52.7	57.6	2.1					
	κ													
	((δ) — D) $\frac{\kappa'}{100}$													((δ))
	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′
		2 31.3	27.2						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 12.0	8.1						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 54.1	51.3						50		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 41.0	37.1						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 56.6	53.2						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 21.1	18.1						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 36.9	35.4						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 40.2	38.0						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 5.6	1.2						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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Date$_1$ = 1870 Nov. 30 Observer / Recorder — Date$_2$ = Observer / Recorder — Runs

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
587	0 16 4	54 24	9.0	15 27.0 29.7	56.1	16 4.7	8.9	13.1	17.4				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
592	17 28	54 53	8.6	16 49.0 51.0	17 24.1	29.6	34.0	38.0	42.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
594	19 4	55 1	8.8	18 19.0 25.9	57.8	6.6	10.6	15.0	19.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
597	21 8	54 33	7.8	20 26.0 28.2	21 0.1	8.9	13.0	17.4	21.6				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
602	22 24	55 2	8.7	21 54.1 56.1	22 17.0	25.9	30.1	34.2	38.5				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
606	23 31	54 54	9.0	23 15.9 19.1	23.2	31.3	35.5	39.8	44.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
611	24 1	55 0	6.6	24 15.5 19.2	~~25 24.2~~ —	~~32.8~~ 24 2.5	~~37.0~~ 6.8	~~41.2~~ 11.1	~~45.5~~ —				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
613	25 31	54 31	7.3	26 4.2 6.9	25 24.2	32.8	37.0	41.2	45.5				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
616	26 58	54 14	7.8	26 38.0 41.9	49.2	57.5	1.9	6.0	10.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
619	28 42	55 1	7.5	28 9.0 11.9	33.8	42.7	46.8	51.0	55.6				
	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′
		1 15.0	11.8						50		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 28.7	27.3						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 31.4	27.4						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 32.5	29.1						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 41.0	38.4						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 25.7	23.3						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		5 13.7	9.7						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 23.2	19.8						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 61.8	58.6						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 34.2	30.8						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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9

Date$_1$ = 1870 Nov. 30 Observer / Recorder — Date$_2$ = Observer / Recorder — Run

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
623	0 29 56	54 32	8.0	29 19.6 22.6	47.3	55.6	0.0	4.1	8.6				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	c_1												
626	30 46	54 36	8.8	30 58.7 59.5	30 47.8 1st wire gone	52.0	56.3	1.4					
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	c_2												
627	33 7	55 3	9.0	32 33.8 37.4	33 2.3	10.8	15.1	19.4	23.9				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
630	34 30	54 59	8.2	33 55.0 57.1	34 23.1	32.0	36.3	40.7	44.7				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
632	35 54	54 36	8.8	35 29.7 34.1	48.7	57.1	1.6	5.8	10.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
635	38 1	54 32	6.0	37 21.4 25.4	37 54.7	3.3	7.6	11.8	16.2				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
641	39 47	54 57	8.8	39 10.8 13.3	40.8	49.3	53.8	58.0	2.4				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
1059	41 17	55 6	7.5	40 50.5 53.0	41 12.6	21.2	25.5	29.7	34.2				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
647	44 56	54 56	8.9	44 32.5 34.1	50.1	58.4	2.8	7.0	11.4				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
649	45 54	55 5	8.8	45 32.4 34.2	47.3	56.0	0.5	4.8	9.0				
	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 58.6	54.0						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 23.2	20.6						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 13.8	11.9						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 53.2	52.8						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 56.6	52.7						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 32.6	30.6						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 21.8	14.3						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 38.5	36.4						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 47.2	45.2						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 8.3	4.0						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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9

Date$_1$ = 1870 Nov. 30 Observer Recorder

Date$_2$ = Observer Recorder

Run:

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
652	0 46 43	55 3	8.5	46 28.7 33.0	36.6	45.0	49.3	53.8	57.9				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	c_1												
654	48 41	54 41	8.8	48 49.3 50.3	48 34.9	43.7	48.0	52.4	56.6				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
1061	50 12	55 10	9.0	50 31.1 32.9	50 6.2	14.8	19.0	23.2	27.6				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
659	52 14	54 54	8.8	51 47.1 49.1	52 7.5	16.1	20.3	24.6	29.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
1063	54 4	55 13	9.0	53 35.4 38.1	57.9	6 5	10.9	15.2	19.5				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
1064	56 35	55 10	7.8	56 0.7 4.3	28.5	37.1	41.4	45.8	50.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
667	57 12	55 6	8.3	57 38.7 41.9	—	57 13.8	18.1	22.3	26.7				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
668	0 58 48	54 34	8.9	58 35.2 36.1	41.0	49.5	53.9	58.1	2.4				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
670	1 0 33	54 29	7.8	0 4.3 7.8	26.0	34.2	38.6	42.8	47.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
671	3 20	54 28	5.5	2 54.1 57.4	3 13.6	22.1	26.3	30.6	34.8				
	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′
		2 21.2	18.2						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 32.5	30.3						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		5 12.3	9.2						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 45.3	43.4						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 28.4	24.6						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 62.3	60.2						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 33.7	30.3						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 28.1	23.6						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 18.8	15.6						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 31.9	27.6						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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Date$_1$ = 1870 Nov. 30 Observer / Recorder — Date$_2$ = Observer / Recorder — Run

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
665	1 5 5	55 16	9.1	4 38.3 39.7	58.8	7.4	11.8	16.0	20.5				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	c_1												
673	6 34	54 56	9.0	6 14.9 16.3	28.1	36.7	41.1	45.2	49.4				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
675	8 31	54 53	8.7	8 3.3 7.1	24.8	33.3	37.6	41.8	46.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
1066	9 30	55 15	7.8	9 41.0 42.8	9 22.8	31.1	35.5	39.9	44.2				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
679	11 5	54 53	8.8	10 39.9 43.0	59.0	7.4	12.0	16.1	20.5				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
680	12 34	54 24	9.3	12 10.6 12.5	27.8	36.0	40.5	44.7	49.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
683	15 19	54 56	8.7	14 55.7 56.6	15 12.7	21.2	25.5	30.0	34.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
685	16 50	54 18	9.1	16 19.8 20.8	42.8	51.0	53.2	59.7	4.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
687	17 37	54 18	8.8	17 16.3 17 17.8	30.3	38.7	43.0	47.1	51.4				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
1067	19 18	55 7	9.1	18 46.7 48.4	19 12.0	20.8	25.0	29.1	33.8				
	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′
		5 8.8	6.8						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 56.6	54.1						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 16.8	14.8						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 39.3	36.2						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 40.9	38.0						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 61.2	58.2						50		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 46.7	45.0						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 14.9	11.7						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 14.4	11.6						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 43.6	42.2						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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Date$_1$ = 1870 Nov. 30 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
691	1 21 9	54 58	9.1	20 31.0	21 1.9	10.5	14.8	19.0	23.2				
	κ			34.4									
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
693	21 59	54 21	8.7	22 18.0	21 50.7	59.2	3.4	7.4	12.0				
	κ			20.0									
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
1068	25 13	55 10	7.6	24 44.1	25 7.8	16.4	20.7	25.0	29.2				
	κ			45.3									
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
698	26 26	54 16	9.3	26 6.0	19.0	27.2	31.6	35.7	40.0				
	κ			8.4									
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
700	27 59	54 1	8.8	27 36.3	52.0	6.4	4.5	8.7	13.1				
	κ			38.8									
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
703	29 22	54 32	9.3	28 46.3	14.9	23.3	27.7	32.0	36.3				
	κ			47.4									
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
704	29 28	54 32	8.8	29 4.1	21.9	30.2	34.5	38.6	43.0				
	κ			8.2									
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
1069	31 29	55 8	8.0	31 3.2	22.6	31.2	35.5	39.8	44.2				
	κ			4.7									
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
710	32 24	54 31	8.9	32 39.5	32 18.0	26.5	30.7	35.0	—				
	κ			42.7									
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
1070	35 29	55 14	7.2	35 3.5	23.3	31.7	36.2	40.6	44.8				
	κ			4.8									
	((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′
		2 31.2	28.8						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 23.6	20.4						50		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 9.7	7.5						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 34.1	30.4						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 48.0	46.1						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 43.1	39.0						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 43.1	39.0						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 39.3	38.8						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 10.9	7.8						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 43.6	40.8						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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(9) (10)

Date$_1$ = 1870 Nov. 30 Observer Recorder Date$_2$ = Observer Recorder Run

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
717	1 36 45	54 31	8.8	37 5.3 7.1	—	36 46.0	50.1	54.4	58.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
719	37 47	54 42	8.5	38 13.4 16.2	—	—	37 50.6	55.0	59.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
723	39 8	55 3	8.7	38 48.7 49.0	39 0.3	9.0	13.3	17.6	22.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
724	40 7	55 4	8.5	39 46.0 49.3	59.2	8.0	12.3	16.5	20.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
729	42 12	54 34	8.3	41 42.8 45.5	42 3.0	11.4	15.7	19.9	24.4				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
734	43 38	54 31	7.0	43 3.0 6.9	30.6	38.4	42.8	47.0	51.2				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
(10)													
742	49 24	54 45	9.2	49 0.0 1.9	17.0	25.6	29.8	34.1	38.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
1072	50 59	55 10	8.8	50 33.7 37.8	~~37.8~~ 53.6	~~53~~ 2.2	6.4	10.7	15.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
746	53 56	55 0	8.8	53 25.5 28.1	49.0	57.5	2.0	6.1	10.5				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
1074	55 12	55 9	8.9	54 43.4 44.0	55 6.0	14.5	18.8	23.2	27.6				
	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′
		4 18.9	15.9						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 40.0	36.6						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 12.1	10.2						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 35.1	32.3						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 49.6	45.2						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 57.8	55.2						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 59.5	57.2						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 56.4	52.7						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 24.8	22.3						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 36.0	34.2						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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Date$_1$ = 1870 Nov. 30 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
751	1 56 27	55 1	7.3	56 1.5 2.4	16.4	28.3	32.2	36.8	41.3				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
α_1													
753	1 59 46	54 38	9.4	59 8.4 11.5	39.1	47.6	51.9	56.4	0.4				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
α_2													
754	2 1 17	54 53	8.7	1 1.6	10.1	18.7	23.0	27.1	31.6				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
α_1													
756	2 45	54 20	8.9	2 28.9 31.4	37.7	46.0	50.3	54.6	59.0				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
α_2													
758	4 19	54 31	8.9	4 54.7 58.3	4 12.1	20.6	25.0	29.3	—				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
α_1													
759	4 33	54 31	9.2	3 44.8 46.7	—	4 33.7	37.8	42.7	47.1				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
α_2													
1076	6 12	55 9	8.8	5 58.3 59.8	6 5.9	14.5	18.7	23.1	27.6				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
α_1													
1078	8 46	55 10	8.7	8 32.7 34.7	39.6	48.3	52.4	56.8	1.0				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
α_2													
761	9 42	54 57	8.7	10 0.9 3.1	9 34.6	43.1	47.4	51.9	56.1				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
α_1													
1079	11 58	55 14	8.3	11 30.0 32.9	52.5	1.0	5.5	9.8	14.0				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
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′
		5 10.0	6.3						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 16.6	14.6						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 47.4	45.4						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 56.0	51.0						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 24.4	22.1						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 24.4	22.1						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 37.7	36.2						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 43.3	40.6						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 15.4	13.4						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 31.8	30.0						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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Date$_1$ = 1870 Dec. 3 Observer E P A Recorder A G Date$_2$ = Observer Recorder Run

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
569	0 1 12	54 52	8.5	0 30.9 34.7	1 7.3	16.0	20.3	24.4	28.9				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
1051	2 20	55 10	8.5	3 4.5 6.1	2 17.1	27.0	30.1	34.6	39.0				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												
1052	4 57	56 15	8.0	4 16.8 18.6	53.0	1.7	6.0	10.4	14.6				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
1053	6 18	55 9	7.8	5 50.1 52.4	6 13.0	21.8	26.0	30.3	34.8				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												
575	7 30	54 34	7.5	7 7.0 9.2	25.8	34.4	38.6	43.0	47.2				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
578	8 14	55 0	8.8	8 34.6 36.9	8 11.8	20.4	24.5	28.7	33.0				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												
1054	9 26	55 9	8.5	9 58.0 0.7	—	9 29.0	33.4	37.8	42.0				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
1055	11 25	55 10	9.0	10 51.2 53.8	11 20.4	29.0	33.5	37.7	42.1				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												
584	12 46	54 56	8.7	12 16.1 20.7	42.3	51.0	55.3	59.6	3.9				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
587	16 4	54 24	9.0	15 ~~14.5~~ 41.5 50.1	58.2	6.7	11.0	15.1	19.5				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	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′
		3 54.7	53.0						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 62.6	59.1						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 50.0	45.4						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 49.2	45.2						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 18.0	14.0						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 28.0	23.8						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 29.8	25.9						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 16.7	11.5						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 44.6	40.6						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 61.8	57.5						50		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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Date$_1$ = 1870 Dec 3 Observer Recorder Date$_2$ = Observer Recorder Run

Star.	α	δ	Mag.	T_s	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
592	0 17 28	54 53	8.6	17 6.7 8.4	23.2	32.0	36.2	40.5	44.6				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
594	19 4	55 1	8.8	18 33.7 35.9	19 0.0	8.4	12.9	17.0	21.2				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												
597	21 8	54 33	7.8	20 35.9 39.5	21 2.4	10.9	15.1	19.4	23.6				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
602	22 24	55 2	8.7	22 ~~17.1~~ 28 37.3 39.8	19.1	28.0	32.2	36.3	41.0				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												
606	23 31	54 54	8.7	23 55.5 57.6	—	23 33.4	37.5	41.9	46.2				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
613	25 31	54 31	8.6	25 7.4	25 ~~27.7~~ 26.3	34.8	34.0	43.1	47.5				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												
616	26 58	54 14	7.5	26 21.7 23.7	51.0	59.8	4.0	7.9	12.2				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
619	28 42	55 1	8.0	28 4.9 9.2	36.1	44.8	48.9	53.1	57.8				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												
623	29 56	54 32	7.8	29 25.5 29.6	49.3	57.8	2.0	6.2	10.6				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
625	30 25	54 32	7.7	30 43.8 47.2	—	30 26.5	31.0	35.2	39.5				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	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′
		3 20.2	15.4						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 24.5	18.9						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 25.6	21.1						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 10.3	6.8						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 57.4	52.3						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 69.0	63.2						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 18.3	13.2						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 38.8	33.7						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 52.7	48.9						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 49.3	44.8						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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(11)

Date$_1$ = 1870 Dec 3 Observer Recorder

Date$_2$ = Observer Recorder

Run

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
627	0 33 7	55 3	8.8	32 39.9 41.5	33 4.4	13.0	17.5	21.5	26.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
630	34 30	54 59	8.7	33 59.7 34 2.6	34 25.3	33.8	38.3	42.5	47.9				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
632	35 54	54 36	8.6	35 30.0 33.1	50.9	59.0	3.7	7.9	12.1				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
633	36 42	54 55	8.2	37 2.8 4.8	36 37.3	46.0	50.2	54.6	58.7				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
635	38 1	54 32	6.5	38 23.0 25.4	37 56.9	38 5.3	9.4	13.9	18.1				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
641	39 47	54 57	8.8	39 15.8 18.0	42.9	51.2	55.8	59.8	41				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
1059	41 17	55 6	8.3	40 46.4 48.9	41 14.5	23.1	27.4	32.0	36.1				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
645	42 10	54 52	9.2	42 24.8 26.7	42 7.0	15.8	20.3	24.3	28.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
646	43 15	54 48	8.6	43 34.0 35.9	43 11.0	19.5	23.7	27.8	32.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
647	44 56	54 56	8.9	44 32.0 34.4	52.0	0.4	5.0	8.1	13.5				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												

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1870phaec.proj. 425A

Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
		3 14.4	9.7						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 54.0	49.1						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 57.2	52.4						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 57.3	53.0						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 49.8	45.8						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 15.9	11.4						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 41.8	37.5						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 10.1	5.1						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 15.4	10.6						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 49.6	45.7						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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Date$_1$ = 1870 Dec 3 Observer Recorder Date$_2$ = Observer Recorder Runs

Star.	α	δ	Mag.	T_a	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
650	0 45 58	54 56	8.3	45 17.5 20.1	45 53.4	1.8	6.1	10.6	14.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
654	48 41	54 41	8.6	48 0.4 2.8	15.6	20.0	24.3	28.7	37.2				
							C		D				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
655	48 43	54 40	9.2	48 53.8 55.9	—	48 46.6	50.8	—	59.1				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
1061	50 12	55 10	8.9	49 47.8 49.7	50 8.0	16.8	21.0	25.5	29.5				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
659	52 14	54 54	9.0	51 37.9 42.0	52 9.6	18.2	22.4	26.9	34.1				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
1063	54 4	55 13	8.8	53 35.3 37.9	54 0.0	6.7	13.0	17.2	21.6				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
1064	56 35	55 10	8.4	56 5.5 7.9	30.7	39.1	43.4	47.9	52.1				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
667	57 12	55 6	8.2	57 40.4 43.6	57 7.1	16.0	20.0	24.5	28.7				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
668	0 58 48	54 34	8.7	59 7.8 10.1	58 43.1	51.7	56.1	0.2	4.4				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
670	1 0 33	54 29	8.2	59 47.1 48.4	0 27.9	36.3	40.8	44.7	49.2				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												

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1970phaec.proj.425A

Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
		4 6.7	2.7						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		5 8.6	3.6						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		5 8.6	3.6						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 41.5	36.5						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 51.3	46.6						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 27.0	22.0						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 62.0	57.9						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 31.0	29.8						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 64.1	58.9						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 33.3	28.3						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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1870phae.proj..425A

Date$_1$ = 1870 Dec. 3 Observer / Recorder

Date$_2$ = Observer / Recorder

Runs

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
6671	1 3 20	54 28	5.5	2 56.4	3 15.6	24.2	28.6	32.7	36.9				
	κ			58.1									
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
6 1065	5 5 55	16	8.8	4 36.2	5 0.9	9.6	14.0	18.2	22.4				
	κ			39.5									
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
6673	6 34	54 56	9.3	6 3.7	30.2	38.7	43.6	47.4	51.8				
	κ			7.5									
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
1.675	8 31	54 53	8.3	7 58.3	8 27.0	35.3	40.0	44.1	48.4				
	κ			0.1									
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
1066	9 30	55 15	8.2	9 15.3	24.7	33.3	37.5	41.8	46.1				
	κ			17.7									
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
679	11 5	54 53	8.8	10 45.1	11 1.1	9.7	13.8	18.1	22.5				
	κ			47.4									
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
680	12 34	54 24	9.6	12 53.2	12 26.8	38.1	42.5	46.8	50.9				
	κ			55.3									
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
6683	15 19	54 56	8.9	15 1.0	23.2	27.7	31.8	36.2	—				
	κ			4.9									
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
6685	16 50	54 18	9.1	17 17.4	16 44.7	53.3	57.7	1.7	5.9				
	κ			20.2									
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
6687	17 37	54 18	8.6	18 11.0	18 32.4	40.8	45.0	49.2	53.6				
	κ			17.2									
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												

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1970phacc.proj..125A

Runs

	$T_m - T$	A	C	Sum	Mean	Red. to m. wire	Red. to h. wire	Red. runs	Stroke	z	δ′
		2 31.2	26.1						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		5 13.3	8.1						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 66.4	61.7						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 23.1	18.5						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 59.1	53.3						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 40.3	34.0						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 31.8	25.6						50		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 41.9	38.3						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 34.2	29.1						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 34.2	29.1						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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1876phae.proj..425A

(11)

Date$_1$ = 1870 Dec. 3 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
1067	1 19 18	55 7	9.0	19 37.2 39.9	19 ~~37.2~~ 14.1	22.8	27.2	31.6	35.7				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_1													
1071.691	21 2	54 58	9.2	20 34.9 36.9	21 57.4	6.0	10.5	14.7	18.9				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_2													
691	21 9	54 58	9.0	20 45.8 49.1	24.0	12.9	16.8	21.0	25.3				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_1													
1068	25 13	53 10	estimate rejected by R. P. H.	24 48.1 50.1	25 10.0	18.4	23.0	27.1	31.6				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_2			-1										
698	26 26	54 16	9.2	26 49.5 54.1	26 21.0	29.5	33.6	37.6	42.0				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_1													
699	27 58	54 19	8.8	27 32.6 34.1	53.5	1.9	6.1	10.5	14.7				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_2													
703	29 22	54 32	9.5	29 36.0 37.8	29 16.9	~~25.3~~	29.9	34.0	38.4				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_1													
704	29 28	54 32	8.8	29 54.6 57.7	29 23.8	32.3	—	40.7	44.8				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_2													
1069	31 29	53 8	7.8	30 57.2 59.5	31 24.8	33.4	37.7	42.0	46.2				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_1													
710	32 24	54 31	8.9	32 43.4 46.9	32 20.1	28.4	32.9	37.0	41.1				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
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′
		3 9.0	4.2						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 22.8	18.4						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 22.8	18.4						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 8.9	5.0						3		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 63.4	57.9						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 43.1	38.9						53		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 6.8	2.0						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 6.8	2.0						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_3											
		2 45.3	41.4						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 9.6	3.4						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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(11) (12)

Date$_1$ = 1870 Dec. 3 Observer / Recorder — Date$_2$ = Observer / Recorder — Run

Star.	α	δ	Mag.	T_s	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
1070	1 35 29	55 14	7.5	35 ~~25.5~~ 42.7 45.3	25.5	34.0	38.3	—	47.0				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	a_1												
717	36 45	54 31	8.2	37 13.1 18.9	36 39.6	47.9	52.0	56.4	0.8				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	a_2												
723	39 8	55 3	8.5	40 5.0 8.7	39 2.6	11.0	15.4	19.8	24.0				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	a_1												
724	40 7	55 4	8.8	38 42.9 47.9	—	—	40 14.0	18.7	23.0				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	a_2												
(12) 1071	47 23	55 12	8.5	47 1.8 5.8	19.3	28.1	32.3	36.7	41.1				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	a_1												
742	49 24	54 45	9.0	48 57.0 59.6	49 16.1	27.8	32.1	36.3	40.4				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	a_2												
1072	50 59	55 10	8.3	50 ~~42.0~~ ~~42.1~~ 45.0 47.9	56.0	4.6	8.7	13.0	17.3				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	a_1												
746	53 56	55 0	8.7	53 27.4 30.2	51.5	59.8	3.9	8.7	12.8				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	a_2												
1074	55 12	55 9	8.8	55 35.9 38.4	55 8.3	16.9	21.0	25.1	29.8				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	a_1												
751	56 27	55 1	7.2	56 49.0 50.7	21.7	30.2	34.7	39.0	43.2				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	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 18.0	13.1						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 12.6	8.0						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 17.0	12.8						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 17.0	12.8						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 41.1	38.1						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 63.8	58.5						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 51.0	46.0						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 24.8	20.1						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 61.4	57.4						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 35.1	32.8						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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(12) (13)

Date$_1$ = 1870 Dec. 3, 9 Observer E P A Recorder A S Date$_2$ = Observer Recorder Run

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
753	1 59 46	54 38	9.2	59 7.8 10.5	41.3	49.6	54.0	58.3	2.7				
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_1													
754	2 1 17	54 53	8.8	0 50.2 54.7	1 12.4	20.8	25.0	29.3	33.8				
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_2													
756	2 2 45	54 20	8.8	3 5.5 8.4	2 39.6	48.2	52.7	56.8	1.0				
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_1													
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_2													
Dec. 9 (13)													
688	0 51 34	53 57	8.8	50 58.7 58.3	51 28.6	37.0	40.9	45.5	49.6				
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_1													
660	52 38	54 36	8.3	52 47.1 48.1	52 32.4	41.0	45.1	49.8	53.8				
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_2													
663	54 1	54 31	8.7	53 34.5 36.1	57.7	6.2	10.6	14.7	19.0				
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_1													
74	54 50	53 50	9.0	55 16.6 19.1	—	54 54.0	58.0	2.1	6.3				
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_2													
664	55 58	54 21	8.7	56 15.8 17.7	—	56 2.9	7.4	11.5	—				
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_1													
82	58 18	53 55	8.7	58 36.5 39.7	58 12.2	20.7	25.0	29.0	33.1				
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′
		3 18.9	13.8						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 53.3	48.4						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 29.0	23.9						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 52.2	47.8						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 18.4	15.3						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 21.5	16.8						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 41.6	38.2						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 41.4	36.2						50		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 35.2	20.3						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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(13)

Date$_1$ = 1870 Dec. 9 Observer Recorder

Date$_2$ = Observer Recorder

Ru

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
84	0 58 57	53 56	9.0	58 15.6 16.9	58 52.8	0.8	5.0	9.2	13.5				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
88	1 2 5	53 57	8.5	1 26.7 29.0	2 0.9	9.3	13.6	17.7	21.9				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
91	3 1	53 38	9.0	3 19.4 21.9	2 56.3	4.7	9.0	13.0	17.1				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
96	8 52	54 4	8.8	8 31.3 33.1	8 47.2	55.9	0.0	4.0	8.6				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
676	9 49	54 17	8.7	10 23.0 27.0	—	9 53.0	57.3	1.7	5.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
678	10 48	54 32	8.9	11 16.2 18.8	—	—	10 56.6	1.1	5.5				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
681	12 47	54 18	7.0	no δ obs.	12 42.5	51.0	55.2	59.5	3.9				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
689	20 37	54 31	8.9	20 17.3 19.3	32.7	41.1	45.6	49.7	54.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
692	21 51	54 11	8.2	21 27.3 28.1	45.8	54.6	58.6	2.8	7.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
120	23 32	53 35	9.2	22 52.6 55.9	23 27.5	35.9	40.0	44.0	48.1				
	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′
d		4	7.0	1.7					15		
$((\delta) - D)\frac{d'}{100}$											
δ_1											
d		4	7.5	2.9					15		
$((\delta) - D)\frac{d'}{100}$											
δ_2											
d		2	26.8	21.9					35		
$((\delta) - D)\frac{d'}{100}$											
δ_1											
d		1	13.4	8.4					10		
$((\delta) - D)\frac{d'}{100}$											
δ_2											
d		2	5.3	0.2					55		
$((\delta) - D)\frac{d'}{100}$											
δ_1											
d		2	52.2	46.8					40		
$((\delta) - D)\frac{d'}{100}$											
δ_2											
d		3	13.6	8.2					55		
$((\delta) - D)\frac{d'}{100}$											
δ_1											
d		4	48.0	43.3					40		
$((\delta) - D)\frac{d'}{100}$											
δ_2											
d		4	28.2	24.3					0		
$((\delta) - D)\frac{d'}{100}$											
δ_1											
d		0	57.9	52.9					40		
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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(13)

Date$_1$ = 1870 Dec. 9 Observer Recorder

Date$_2$ = Observer Recorder

Run

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
124b	24 36	54 5	9.3	25 13.2 16.3	24 31.2	40.0	43.7	48.1	52.5				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_1													
124c	24 36	54 5	9.3	24 54.7 55.9	32.0	40.4	44.5	48.8	53.0				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_2													
699	27 58	54 19	9.0	27 25.0 27.0	53.7	2.3	6.4	10.5	14.8				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_1													
701	28 56	54 14	8.5	29 16.4 17.8	28 52.8	1.3	5.5	9.7	14.0				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_2													
131	30 7	53 56	8.0	30 27.1 29.7	30 2.1	10.5	15.0	19.0	23.2				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_1													
133	31 11	53 57	7.8	31 31.2 33.3	5.1	13.2	17.5	21.7	25.0				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_2													
135	31 59	53 55	9.3	32 28.7 32.2	—	32 2.3	6.2	10 6	15.0				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_1													
140	34 15	54 3	9.5	33 35.0 37.2	34 11.0	19.3	23.3	27.8	32.0				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_2													
713	35 19	54 34	8.5	35 36.9 37.9	35 13.5	22.0	26.0	30.6	34.8				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_1													
718	36 46	54 12	8.2	37 12.8 15.3	—	36 49.2	53.3	57.7	2.0				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
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 58.8	53.2						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 58.8	53.2						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 54.8	49.8						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 47.2	41.6						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 62.9	57.8						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 13.2	8.8						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 33.0	27.1						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 68.0	61.5						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 36.0	30.2						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 28.8	24.4						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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(3)

Date$_1$ = 1870 Dec. 9 Observer / Recorder — Date$_2$ = Observer / Recorder — Run

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
725	1 40 39	54 18	8.3	40 59 δ 2.0	40 32.7	41.0	45.1	49.3	53.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
728	41 41	54 14	9.0	42 7.3 9.8	—	41 44.3	48 δ	52.8	57.1				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
156	45 29	53 37	8.8	45 0.9 2.4	24.0	32.1	36.3	40.4	44 δ				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
158	46 33	53 45	9.2	46 40.2 47.9	28.1	47 36.5	40.8	45.0	49.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
162	49 49	53 59	8.8	49 10.3 12.8	49 42.9	51 δ	55.7	59.9	4.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
744	51 8	54 12	8.5	50 35.1 38.5	51 2.3	10.7	15.0	19.0	23 δ				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
745	53 28	54 11	8.4	52 51.9 54.7	53 22 δ	31.0	35.4	39.4	43.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
166	54 57	54 5	8.0	54 18.7 20.9	50.7	59.0	3.0	7.5	12.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
750	56 10	54 9	8.5	55 41.7 44.4	56 3.1	11.6	15.7	19.9	24.1				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
pr.167	57 43	53 36	9.2	57 4.5 6.7	13.9	18.3	22.4	26.7	35.0				
	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′
		1 38.1	31.8						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 65.7	59.5						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 59.5	46.1						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 38.0	32.8						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 54.9	50.0						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 52.6	48.6						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 24.7	19.2						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 18.3	12.6						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 18.0	14.1						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 66.3	62.0						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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(3)

Date$_1$ = 1870 Dec. 9 Observer / Recorder — Date$_2$ = Observer / Recorder — Run

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
167	1 58 13	53 41	8.5	58 39.6 42.8	58 8.0	16.6	20.7	24.8	28.9				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
168	1 59 46	53 59	8.9	0 9.0 10.8	59 41.0	49.2	53.5	57.8	2.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
170	2 0 58	54 1	9.2	1 25.8 27.9	—	1 5.5	8.7	14.0	18.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
174	3 9	53 57	8.6	2 33.8 36.2	3 3.8	12.0	16.2	20.4	24.4				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
178	4 19	54 31	8.8	4 1.7 3.1	14.5	23.1	27.4	31.7	35.9				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
181	5 44	54 18	8.7	5 53.1 55.5	5 39.2	47.9	51.9	56.2	0.7				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
186	8 16	54 17	8.4	7 51.3 52.1	8 21.4	29.8	34.0	38.4	42.7				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
186	9 43	53 41	8.2	9 18.3 20.4	38.0	46.2	50.4	54.5	58.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
188	11 46	53 36	9.1	11 7.2 9.1	16.9	21.3	25.6	29.7	37.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
190	12 27	53 56	6.5	12 6.0 8.0	22.0	30.5	34.8	39.0	43.2				
	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′
		3 21.1	16.0						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 32.8	27.8						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 26.8	22.1						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 61.3	57.4						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 71.6	63.9						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 30.3	24.9						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 52.8	47.7						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 33.9	28.7						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 43.7	38.7						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 22.8	17.8						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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(13) (15)

Date$_1$ = 1870 Dec 9, 14 Observer E P A Recorder A J

Date$_2$ = Observer Recorder

Run

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_r	T_g	T_h	Sum	Mean	Red. to T_m	T
171	2 13 50	54 30	9.2	13 22.2 23.9	45.5	53.9	58.2	2.4	6.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
194	15 23	53 38	8.9	4 55.1 56.7	5 15.0	23.3	27.4	31.4	36.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
195	2 15 29	53 38	8.0	5 39.5 40.8	15 22.5	30.7	35.0	38.3	42.7				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
Dec. 14 (15)													
160	1 47 26	53 42	9.0	47 6.3 7.5	47 19.8	28.1	32.1	36.4	40.5				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
162	49 49	53 59	8.8	49 33.0 34.5	49 42.1	50.8	54.8	59.0	3.2				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
750	56 10	54 9	8.3	56 21.3 22.4	56 2.4	10.8	15.0	19.1	23.2				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
752	57 18	54 19	8.1	56 57.1 59.2	57 12.3	20.9	25.1	29.2	33.6				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
168	1 59 46	53 59	8.7	59 4.1 5.9	59 40.3	48.7	52.9	57.0	1.4				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
170	2 0 58	54 1	8.9	0 31.9 33.9	0 56.2	4.8	8.8	13.1	17.3				
	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 10,2	41.8						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 50,3	45,3						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 50,3	45.3						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 36.7	31.7						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 40,7	36.0						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 49,1	45,1						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 50,6	45,4						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 17,9	14,6						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 66.2	62,7						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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(15)

Date$_1$ = 1870 Dec. 14. 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
754	2 3 9	53 57	8.5	2 26.9 29.0	3 2.9	11.3	15.5	19.7	23.9				
	κ												
	((δ) − D) $\frac{\kappa'}{100}$												
	α_1												
759	4 33	54 31	9.3	4 1.8 7.2	4 27.1	35.6	39.9	44.0	48.4				
	κ												
	((δ) − D) $\frac{\kappa'}{100}$												
	α_2												
761	5 44	54 18	8.4	5 13.9 15.7	5 38.4	47.0	51.1	55.4	59.9				
	κ												
	((δ) − D) $\frac{\kappa'}{100}$												
	α_1												
782	6 24	53 41	9.5	6 59.4 0.8			6 30.1	34.1	38.3				
	κ												
	((δ) − D) $\frac{\kappa'}{100}$												
	α_2												
766	8 16	54 17	8.7	8 14.4 16.2	8 20.5	29.0	33.2	37.5	41.8				
	κ												
	((δ) − D) $\frac{\kappa'}{100}$												
	α_1												
786	9 43	53 41	7.5	9 14.0 15.1	9 27.1	45.4	49.6	53.8	58.0				
	κ												
	((δ) − D) $\frac{\kappa'}{100}$												
	α_2												
790	12 27	53 56	7.2	12 2.3 4.4	12 21.5	29.8	34.0	38.1	42.4				
	κ												
	((δ) − D) $\frac{\kappa'}{100}$												
	α_1												
771	13 50	54 30	9.3	13 22.3 24.2	13 44.1	53.1	57.5	1.7	6.0				
	κ												
	((δ) − D) $\frac{\kappa'}{100}$												
	α_2												
794	15 23	53 38	8.5	14 51.8 54.3	15 14.1	22.5	26.7	30.8					
	κ												
	((δ) − D) $\frac{\kappa'}{100}$												
	α_1												
795	15 29	53 38	8.0	15 35.3 37.0	15 21.5	29.8	33.9	37.9	42.2				
	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′
		4 5.8	3.2						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 16.6	13.3						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 58.6	55.9						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 40.6	38.6						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 34.7	31.0						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 35.7	33.0						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 24.6	21.8						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 8.6	5.5						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 51.2	48.4						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 51.2	48.4						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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(15) (16)

Date$_1$ = 1870 Dec. 14 Observer Recorder

Date$_2$ = Observer Recorder

Runs

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
1202	2 19 27	53 50	9.0	20	4.0	19	29.6	33.8	38.2	42.5			
	κ				6.0								
	((δ) — D) $\frac{\kappa'}{100}$												((δ))
	α_1												
1204	21 13	53 17	7.5	21	30.9	21 5.8	14.1	18.3	22.4	26.4			
	κ				32.8								
	((δ) — D) $\frac{\kappa'}{100}$												((δ))
	α_2												
1208	23 34	53 45	8.8	23	16.1	23 29.5	38.0	42.1	46.2	50.4			
	κ				19.2								
	((δ) — D) $\frac{\kappa'}{100}$												((δ))
	α_1												
1212	26 40	53 46	8.5	26	24.3	26 33.7	42.0	46.1	50.4	54.5			
	κ				25.5								
	((δ) — D) $\frac{\kappa'}{100}$												((δ))
	α_2												
1215	31 57	53 10	9.5	31	32.6	31 50.4	58.9	2.8	6.7	11.0			
	κ				33.3								
	((δ) — D) $\frac{\kappa'}{100}$												((δ))
	α_1												
(16) 1219	37 33	53 32	6.5	37	11.7	37 26.1	34.5	38.6	42.8	47.1			
	κ				13.6								
	((δ) — D) $\frac{\kappa'}{100}$												((δ))
	α_2												
1222a	38 41	53 39	9.8	38	53.8	38 34.3	42.8	47.2	51.3				
222 a & b were taken with one Obsk. The mean of their transits over the Reticule should therefore be taken in determining their declination	κ				56.8								
	((δ) — D) $\frac{\kappa'}{100}$												((δ))
	α_1												
1222b	38 41	53 39	9.8	38	53.8	38 36.2	44.4	48.6	52.6				
	κ				56.8								
	((δ) — D) $\frac{\kappa'}{100}$												((δ))
	α_2												
1224.	39 41	53 37	7.0	39	57.3	39 33.0	41.4	45.6	49.7	53.9			
	κ				59.4								
	((δ) — D) $\frac{\kappa'}{100}$												((δ))
	α_1												
1226	43 18	53 30	8.2	42	40.0	43 12.1	20.7	24.9	28.9	32.9			
	κ				41.3								
	((δ) — D) $\frac{\kappa'}{100}$												((δ))
	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′
		0 13.1	9.3						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 21.9	19.9						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 8.5	4.1						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 32.8	30.4						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 51.7	49.0						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 26.7	23.2						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 11.6	6.9						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 11.6	6.9						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 13.0	9.9						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 54.5	51.2						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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(16)

Date$_1$ = 1870 Dec. 14 Observer / Recorder — Date$_2$ = Observer / Recorder — Runs

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
228	2 44 34	53 16	8.3	44 10.0 13.6	44 27.1	35.2	39.5	43.6	47.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	c_1												
230	45 47	53 54	8.7	45 21.8 24.3	45 42.8	50.9	55.2	59.3	3.5				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
231	48 17	53 50	7.8	47 41.9 43.3	47 49.3	53.6	57.8	2.0	10.3				
	κ				Virus a b c d m								
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
232	48 37	53 53	8.8	48 54.3 55.9	48 34.4	42.9	47.0	51.0					
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
234	49 35	53 46	8.5	49 58.3 59.9		49 37.5	41.6	45.9	50.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
236	50 30	53 49	8.2	51 3.3 4.7		50 32.9	36.7	41.0	45.2				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
238	53 8	53 51	5.5	52 33.4 35.4	53 1.3	9.4	13.6	17.9	22.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
240	57 1	53 58	8.8	56 32.3 35.4	57 2.1	10.4	14.7	18.8	23.1				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
241	58 4	53 37	8.7	58 25.3 27.1	57 57.8	6.0	10.0	14.1	18.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
242	58 10	53 37	8.0	58 41.8 42.7	58 4.0	12.2	16.4	20.5	24.6				
	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′
		3 61.8	59.5						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 15.3	12.1						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 21.7	17.6						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 50.0	46.8						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 50.5	49.0						35 probably error for 20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 4.3	1.4						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 26.8	25.0						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 58.1	56.8						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 7.2	5.0						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 7.2	5.0						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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16

Date$_1$ = 1870 Dec. 14 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
247	3 0 36	53 42	7.8	0 3.7 4.9	0 27.5	35.7	39.1	44.0	48.3				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
248	2 20	53 49	9.5	1 44.1 45.9	2 13.9	22.2	26.3	30.3	34.7				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												
251	8 32	53 24	8.5	8 5.0 7.9	8 25.2	33.4	37.7	41.9	45.9				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
253	10 13	53 15	7.5	9 39.0 42.0	10 6.5	14.7	18.9	22.9	27.0				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												
254	11 1	53 41	9.3	11 21.0 22.7	10 55.6	3.9	8.1	12.2	16.3				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
255	11 49	53 40	8.5	12 2.2 4.0	11 44.7	50.0	54.3	58.5					
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												
257	13 17	54 3	8.0	13 34.2 34.9	13 12.3	20.8	24.9	29.0	33.2				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
258	14 20	53 48	8.4	14 36.7 39.0	14 14.7	23.0	27.0	31.1	35.4				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												
261	16 19	53 29	5.8	15 50.0 53.3	16 10.5	18.9	23.1	27.2	31.4				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_1												
foll. DM 53° 664	19 46	53 33	9.7	19 21.2 23.8	19 46.6	55.0	59.1	3.1	7.5				
	κ												
	$((\delta) - D)\frac{\kappa'}{100}$												
	α_2												

Struck out by mistake for 263 Paint also badly out with reduction

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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 15.2	13.0						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 21.4	17.4						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 25.3	22.1						50		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 5.6	2.9						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 9.1	7.8						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 38.8	37.7						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 4.8	3.6						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 8.7	7.8						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 35.9	32.2						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 26.2	24.2						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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Date$_1$ = 1870 Dec, 14 Observer / Recorder — Date$_2$ = Observer / Recorder — Run

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
266	3 21 51	53 13	9.3	22 12.0 14.6	21 44.0	52.0	56.4	0.4	4.6				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
267	22 45 54	3	8.6	23 7.8 9.0			22 50.9	55.0	59.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
272	25 58	53 29	9.5	26 15.8 17.5	25 51.0	59.3	3.8	7.5	11.7				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
273	27 29	53 21	8.2	27 45.7 47.1	27 22.3	30.5	34.8	39.0	43.1				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
276	28 56	53 27	7.8	28 27.5 29.8	28 49.6	57.9	2.0	6.1	10.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
277	31 23	53 35	8.3	30 48.1 50.1	31 16.0	24.4	28.6	32.8	37.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
278	33 39	53 42	9.1	33 9.1 11.9	33 32.9	41.3	45.5	49.4	53.9				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
280	36 24	53 31	8.0	36 2.4 3.8	36 17.4	25.9	29.9	34.0	38.1				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
281	37 45	53 33	9.3	37 26.0 27.1	37 38.4	47.0	51.1	55.4	59.5				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
283	39 2	53 35	8.6	38 32.0 33.1	38 55.9	4.0	8.3	12.3	16.4				
	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′
		2 14.0	11.2						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 60.9	57.3						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 51.8	49.2						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 16.0	13.6						50		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 54.2	51.4						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 46.2	42.8						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 10.4	8.2						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 35.1	32.8						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 24.0	18.1						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 38.1	35.2						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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(16) (17)

Date$_1$ = 18/0 Dec. 14, 16 Observer EPA Recorder AH Date$_2$ = Observer Recorder Run

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
735	3 41 36	53 10	8.5	41 43 6.0	41 28.7	36.9	40.9	44.9	49.1				
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_1													
281	3 43 6	53 6	7.7	42 34.3 37.3	42 54.0	7.1	11.3	15.3	19.5				
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_2													
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_1													
Dec. 16 (17)													
737	1 45 22	54 58	7.0	45 32.9 36.9	45 16.7	25.8	29.7						
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_2													
738	46 25	54 6	8.8	46 45.1 47.0	46 19.8	28.0	32.5	36.4	40.8				
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_1													
741	47 42	55 2	8.5	48 13.1 15.9	47 46.0	50.4	54.7	59.0					
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_2													
743	50 20	54 57	8.3	49 14.8 16.0	49 53.1 Wires a b c d m	57.5	2.0	6.3	14.9				
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_1													
744	51 8	54 12	8.8	50 44.6 46.9	51 1.8	10.0	14.2	18.5	22.9				
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_2													
745	53 28	54 11	8.8	52 50.7 51.6	53 21.9	30.5	34.7	38.8	43.0				
κ													
((δ) — D) $\frac{\kappa'}{100}$													
a_1													
748	55 17	54 30	8.8	54 47.0 48.5	54 49.3 Wires a b c d m	53.5	57.9	2.1	10.5				
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 27.1	24.0						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 59.0	55.8						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 19.8	17.7						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 16.0	16.3						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 24.0	23.8						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 42.2	42.1						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 42.5	41.8						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 22.8	22.4						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 32.0	29.8						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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Date$_1$ = 1870 Dec. 16 Observer / Recorder — Date$_2$ = Observer / Recorder — Run

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
749	1 55 30	54 57	9.1	55 40,0 41.2	55 24.5	33.0	37.5	41.9	46.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
752	1 57 18	54 19	8.1	57 2,1 4.4	57 12,5	21.0	25.0	29,3	33.7				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
760	2 5 10	54 15	9.0	4 34.0 35.8	4 42.9 Wires a b c d	47.1	51.4	55.6 m	4.2				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
762	5 50	54 43	8.1	5 26.8 28.9	5 44.0	52.5	57.0	1.0	5.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
765	6 59	54 15	8.5	7 11.2 12.5	6 52.5	1.0	5,1	9.3	13.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
767	9 42	54 57	8.6	9 1.0 2.0	9 36.4	45.0	49.3	53.6	58.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
768	12 2	54 44	9.1	11 25.2 27.2	11 34.8 Wires a b c d	39.1	43.4	47.7 m	56.2				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
769	12 10	54 49	7.7	12 35.0 38.0		12 13.0	17.3	21.7	26.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
197	16 40	53 6	9.0	15 57.1 3.0	16 32.5	40.8	44.8	49.0	53.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
198	17 36	53 33	8.9	17 58.8 2.0	17 31.2	39.3	43.7	47.9	52.0				
	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′
		3 38.4	36.6						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 43.6	42.9						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 55.7	53.5						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 38.0	37.0						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 45.7	44.5						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 60.2	59.5						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 33.4	30.6						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 56.8	55.7						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 59.5	57.6						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 1/4	15.6						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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Date$_1$ = 1870 Dec. 16 Observer Recorder Date$_2$ = Observer Recorder Run

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
202	2 19 27	53 50	9.0	19 49.8 52.1	19 21.7	30.0	34.0	38.4	42.7				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
204	21 13	53 17	8.2	20 50.3 51.0	21 5.9	14.1	18.2	22.4	26.4				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
206	22 3	53 23	9.3	22 22.6 23.9	21 57.0	5.2	9.5	13.7	17.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
208	23 34	53 45	8.7	23 8.7 11.9	23 29.9	38.0	42.1	46.3	50.5				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
212	26 40	53 46	8.3	26 3.7 4.7	26 33.7	42.1	46.4	50.5	54.5				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
215	31 57	53 10	9.3	32 18.5 20.7			32 2.9	7.0	11.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
222a	38 41	53 39	10.0	38 1.2 3.6	38 34.5	42.9	47.0	51.2	55.5				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
222b	38 41	53 39	9.9	38 1.2 3.6	38 36.1	44.5	48.8	53.0	57.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
224	39 41	53 37	8.0	39 59.0 1.4	39 33.2	41.5	45.7	49.9	54.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
230	45 47	53 54	8.7	45 23.3 24.7	45 42.6	51.0	55.1	59.3	3.7				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												

222 a & b were observed on one night. The mean of their results was taken over the R and should therefore be taken in determining their declinations

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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′
		0 21.0	19.7						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 51.4	51.2						55		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 25.5	23.4						50		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 11.9	10.6						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 31.7	30.7						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 16.0	14.7						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 47.5	46.4						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 47.5	46.4						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 10.0	9.8						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 13.9	13.2						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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(17) (18)

Date$_1$ = 1870 Dec. 16 Observer Recorder

Date$_2$ = Observer Recorder

Run

Star.	α	δ	Mag.	T_a	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
232	2 48 37	53 53	8.5	48 5.1 7.1	48 34.6	43.0	47.1	51.2	55.5				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
236	50 30	53 49	8.6	49 58.1 3.1	50 2.4	33.0	37.1	41.0	45.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
238	53 8	53 51	6.8	52 38.1 40.5	58 4.2	9.7	13.9	18.0	22.2				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
240	57 7	53 58	9.1	56 36.6 37.7	57 2.2	10.6	15.0	19.0	23.4				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
241	58 4	53 37	8.8	58 17.9 20.6	57 45.1 Wire c d m e f	49.2	53.8	6.0	10.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
242	2 58 10	53 37	8.2	58 34.8 36.0	58 4.1	12.3	16.5		24.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
247	3 0 36	53 42	8.7	59 58.8 0.0	0 27.5	35.9	40.0	44.1	48.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
pr. 248 (Aug. 53 6.26)	1 20	53 47	9.1	1 55.4 58.2	1 16.3	24.8	28.8	33.0	37.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_2												
248	2 20	53 49	9.3	2 47.2 50.8	2 14.0	22.1	26.4	30.8	34.9				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	a_1												
(18) 251	8 32	53 24	8.7	7 56.7 59.5	8 25.2	33.7	37.8	41.9	46.1				
	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 24.2	23.8						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 47.8	46.7						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 21.3	20.9						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 54.0	54.3						15		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 10.7	10.0						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 10.7	10.0						35		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 17.4	17.2						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 30.2	30.9						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		0 33.6	31.1						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 30.0	29.0						50		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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(18)

Date$_1$ = 1870 Dec. 16 Observer / Recorder — Date$_2$ = Observer / Recorder — Run

Star.	α	δ	Mag.	T_δ	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
253	3 10 13	53 15	8.0	9 42.0 43.3	10 6.5	14.9	19.0	23.0	27.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
254	11 1	53 41	9.3	11 13.3 14.6	10 55.8	4.0	8.3	12.2	16.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
255	11 49	53 40	8.5	12 5.9 8.1	11 43.9	50.1	54.2	58.4	2.8				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
257	13 17	54 3	8.2	12 58.7 0.5	13 12.3	20.8	25.0	29.1	33.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
258	14 20	53 48	8.5	14 35.3 37.7	14 14.5	23.0	27.1	31.5					
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
259	15 10	53 8	8.1	15 29.0 31.9	15 2.9	11.1	15.1	19.2	23.3				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
261	16 19	53 29	6.8	16 34.0 36.0	16 10.2	19.0	23.0	27.1	31.4				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
263	19 19	53 45	9.0	18 36.0 37.8	19 10.1	19.0	23.3	27.3	31.7				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_2												
264	20 49	53 51	8.3	20 14.1 16.6	20 44.1	52.5	56.8	0.8	5.0				
	κ												
	((δ) — D) $\frac{\kappa'}{100}$												
	α_1												
266	21 51	53 13	9.2	22 2.3 6.3	21 44.0	52.1	56.3	0.5					
	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′
		0 63.0	62.6						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 14.3	14.3						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 33.7	34.1						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 29.3	28.9						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 10.9	9.5						25		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		3 43.0	42.5						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 2.5	1.9						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 33.8	32.9						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 31.2	31.2						20		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		2 18.8	18.0						0		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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Date$_1$ = 1870 Dec. 16 Observer Recorder

Date$_2$ = Observer Recorder

Runs

Star.	α	δ	Mag.	T_s	T_m	T_e	T_f	T_g	T_h	Sum	Mean	Red. to T_m	T
269	3 22 45	54 3	8.5	23 11.9 12.9		22 46.9	50.9	55.0	59.1				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
c_1													
270	24 56	53 9	9.0	24 24.1 25.9	25 49.3	57.8	1.9	5.9	10.1				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
c_2													
272	25 58	53 29	9.3	26 13.3 14.9	25 51.0	59.7	3.5	7.8	11.8				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_1													
273	27 29	53 21	8.7	27 46.6 48.8	27 22.3	30.7	34.9	38.9	43.0				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_2													
276	28 56	53 27	7.8	29 9.2 10.6	28 49.3	57.9	2.0	6.1					
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_1													
277	31 23	53 35	8.8	30 43.7 47.3	31 16.1	24.4	28.4	32.8	36.9				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_2													
278	33 39	53 42	9.0	32 58.4 1.4	33 33.0	41.2	45.3	49.9	54.0				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_1													
280	36 24	53 31	7.7	35 51.2 52.9	36 17.3	25.8	30.0	34.0	38.1				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_2													
281	37 45	53 33	9.3	37 9.2 10.8	37 38.9	47.0	51.1	55.2	59.5				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
a_1													
283	39 2	53 35	8.7	38 24.4 27.3	38 55.9	4.0	8.2	12.3	16.5				
κ													
$((\delta) - D)\frac{\kappa'}{100}$													
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 54.7	53.8						10		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 53.7	54.8						5		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		1 52.2	50.6						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		4 13.1	13.4						50		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		3 20.8	20.2						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 46.1	44.6						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		4 14.7	15.2						30		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		0 40.5	41.3						45		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											
		2 31.2	31.3						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_1											
		1 37.7	37.9						40		
d											
$((\delta) - D)\frac{d'}{100}$											
δ_2											

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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												

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