KG
11365
336

05

H. C. O.
East Transit
1868 July 16
to
1868 Oct. 2.

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K G-1 365.336

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Harvard College Observatory.

Time Stars.

July 16, 1868, to Oct. 2, 1868.

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Harvard College Observatory

Long. W. $4^h\ 44^m\ 29.^s7$ Greenwich
E $0^h\ 23^m\ 41.^s5$ Washington

Lat. $42°\ 22'\ 48.''6$

nat. tan. 0.9125
log. tan. 9.96022
nat. sec. 1.353
log. sec. 0.1315

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Date 1868

Observer A. S.
Illumin'n West.

Star
Mag.
δ

Wire a
" b
" c

Wire intervals, (from mean of 5 Ursae Minoris and 3 Urs. Minoris observed August 3,)
Interval of each from mean of the five for 0° decl.

" 1 + 7ˢ.25
" 2 + 3ˢ.62
" 3 − 0ˢ.01
" 4 − 3ˢ.60
" 5 − 7ˢ.26

" d
" e
" f

These intervals very nearly agree with those from the preceding time book.

Sum
Mean

Red'n to
m
n . tan. δ
c . sec. δ

r

T

a

Δ T

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KG 11365.336

Date 1868		July 16th	July 16	July 16
Observer		Searle	K. S.	K. S.
Illumin'n		West	W.	W.
Star		Polaris & 6	α Virginis	5 Virginis
Mag.				
δ		88° 36′ 5.0	10° 28′ S.	0° 5′
Wire	a			
"	b			
"	c			
"	1		13 19 5.6	13 28 49.0
"	2		9.1	52.7
"	3	13 12 7.5	12.9	56.5
"	4	14 37.5	16.6	60.0
"	5	17 5.8	20.0	63.7
"	d			
"	e			
"	f			
Sum			64.2	281.9
Mean		13 12 8.77	13 19 12.84	13 28 56.38
Red'n to $\bar{m}$		+.83	+.83	+.83
n . tan. δ		−5.02	−.13	−.11
c . sec. δ		−.61	+.02	+.01
r				
T		13 12 3.97	13 19 13.56	13 28 57.11
a		1 11 10.16	13 18. 13.73	13 27 59.24
Δ T		53.81	57.83	57.87

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Date 1868		July 16	July 16	July 16
Observer		A. S.	A. S.	A. S.
Illumin'n		W.	W.	W
Star		η Ursae Maj.	η Boötis	α Draconis
Mag.				
δ		49° 59°	19° 4′	65° 6′
Wire	a			
"	b			
"	c			
"	1	13 43 6.3	13 49 14.5	14 1 29.0
"	2	11.9	18.3	37.5
"	3	17.7	22.1	46.0
"	4	23.2	25.8	54.1
"	5	28.9	29.7	63.1
"	d			
"	e			
"	f			
Sum		38.0	10.4	29.7
Mean		13 43 17.60	13 49 22.08	14 1 45.94
Red'n to				
$\bar{m}$		+.83	+.83	+.83
n. tan. δ		+.03	−.07	+.15
c. sec. δ		+.02	+.02	+.04
r				
T		13 43 18.48	13 49 22.86	14 1 46.96
a		13 42 20.73	13 48 25.01	14 0 48.02
Δ T		57.75	57.85	57.94

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Date 1868	July 16	July 16	July 16
Observer	Searle	A. S.	A. S.
Illumin'n	W	W.	W.
Star	α Boötis	5 Ursae Min	ε Boötis
Mag.			
δ	19° 52′	76° 17′	27° 38′
Wire a			
" b			
" c			
" 1	14 10 29.0	14 28 16.0	14 40 3.6
" 2	32.8	31.4	7.6
" 3	36.8	46.2	11.9
" 4	50.6	64.6	15.8
" 5	54.3	77.0	19.8
" d			
" e			
" f			
Sum	33 5	32.2	87
Mean	14 10 36.70	14 28 46.44	14 40 11.74
Red'n to			
$\overline{m}$	+.83	+.83	+.83
n. tan. δ	−.07	+.38	−.05
c. sec. δ	+.05	+.06	+.02
r			
T	14 10 37.45	14 28 47.71	14 40 12.54
a	14 9 39.55	14 27 49.78	14 39 14.55
Δ T	57.90	57.93	57.99

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Date 1868		July 16	July 16	July 16
Observer		A. S.	Seagle	Austin
Illumin'n		W.	W.	W
Star		α^2 Librae	β Ursae Min	μ Boötis
Mag.				
δ		15° 30′ S.	74° 42′	37° 51′
Wire	a			
"	b			
"	c			
"	1	14 44 26.4	14 51 36.3	15 20 19.8
"	2	30.2	50.2	24.1
"	3	33.9	52 4.2	28.4
"	4	37.3	17.9	33.4
"	5	41.1	31.5	37.9
"	d			
"	e			
"	f			
Sum		189	201	43.6
Mean		14 44 33.78	14 52 4.02	15 20 28.72
Red'n to				
$\overline{m}$		+.83	+.83	+.83
n. $\overline{\tan. \delta}$		−.14	+.33	−.02
c. sec. δ		+.02	+.06	+.02
τ				
T		14 44 34.49	14 52 5.24	15 20 29.55
a		14 43 36.57	14 57 7.32	15 19 31.63
Δ T		57.92	57.92	57.92

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Date 1868		July 16	July 16	July 16
Observer		Austin	C.R.A.	C.R.A.
Illumin'n		W	W.	W
Star		γ^2 Ursæ Min	d Can Ven	d Serpentis
Mag.				
δ		72° 18′	27° 10′	6° 51′
Wire a				
" b				
" c				
" 1		15 21 31.8	15 29 56.7	15 38 37.9
" 2		42.8	30 0.7	41.6
" 3		54.0	4 6	45.2
" 4		67.1	6.8	48.9
" 5		79.2	12.9	52.5
" d				
" e				
" f				
Sum		25.9	23 7	26.1
Mean		15 21 55.14	15 30 4.74	15 38 45.22
Red'n to				
$\overline{m}$		+.83	+.83	+.83
n. $\overline{\tan.\ \delta}$		+.27	−.05	−.09
c. sec. δ		+.03	+.02	+.02
τ				
T		15 21 56.29	15 30 5.54	15 38 45.98
a		15 20 58 41	15 29 7.49	15 37 47.80
Δ T		57.88	58.05	58.18

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Date 1868		July 16	July 16	July 16
Observer		E. P. R.	E. P. R.	E. P. R.
Illumin'n		W.	W.	W.
Star		ε Serpentis	ζ Ursæ Min	ε Can Ven
Mag.				
δ		4° 53′	78° 12′	27° 16′
Wire	a			
"	b			
"	c			
"	1	15 45 6.1	15 49 12.9	15 52 57.9
"	2	9.8	30.3	53 2.2
"	3	13.3	47.9	6.1
"	4	17.0	50 5.8	10.2
"	5	20.8	24.1	14.1
"	d			
"	e			
"	f			
Sum		17.0	41.0	30.5
Mean		15 45 13.40	15 49 48.20	15 53 6.10
Red'n to				
$\overline{m}$		+.83	+.83	+.83
n. $\overline{\tan. \delta}$		−.10	+.46	−.05
c. sec. δ		+.01	+.07	+.02
r				
T		15 45 14.14	15 49 49.56	15 53 6.90
a		15 44 16.10	15 48 51.38	15 52 9.12
Δ T		58.04	58.18	57.78

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Date 1868	July 16	July 16	July 16
Observer	Austin	E. P. A.	E. P. A.
Illumin'n	W	W.	W
Star	β Scorpii	Fr. 2320	ν Ophiuchi
Mag.			
δ	19° 26′ S.	68° 10′	3° 21′ S.
Wire a			
" b			
" c			
" 1	15 58 37.8	16 6 37.5	16 8 17.9
" 2	41.3	46.9	21.5
" 3	45.5	57.0	25.0
" 4	49.3	7 6.7	28.7
" 5	53.2	16.0	32.4
" d			
" e			
" f			
Sum	227.1	284.1	125.5
Mean	15 58 45.42	16 6 56.82	16 8 25.10
Red'n to			
$\overline{m}$	+.83	+.83	+.83
n. tan. δ	−.15	+.19	−.12
c. sec. δ	+.02	+.04	+.01
r			
T	15 58 46.12	16 6 57.88	16 8 25.82
a	13 57 48.19	16 5 59.85	16 7 27.82
Δ T	57.93	58.03	58.00

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Date	1868	July 16			July 16			July 16				
Observer		E.P.A.			E.P.A.			E.P.A.				
Illumin'n		W			W			W.				
Star		ζ Herculis			χ Scorpii			γ Draconis				
Mag.												
δ		46° 38′			26° 8′			61° 49′				
Wire	a											
"	b											
"	c											
"	1	16	16	34.5	16	22	11.0	16	22	56.9		
"	2			40.0			14.9		23	3.3		
"	3			45.2			18.8			11.0		
"	4			50.4			23.0			18.7		
"	5			55.8			27.1			26.6		
"	d											
"	e											
"	f											
Sum				225.9			94.8			56.5		
Mean		16	16	45.18	16	22	18.96	16	23	11.30		
Red'n to												
$\overline{m}$				+.83			+.83			+.83		
n . tan. δ				+.02			−.17			+.12		
c . sec. δ				+.02			+.02			+.03		
τ												
T		16	16	46.05	16	22	19.64	16	23	12.28		
a		16	15	47.91	16	21	21.57	16	22	14.96		
Δ T				58.14			58.07			57.32		

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Date 1868	July 16	July 16	July 16
Observer	Austin	E. P. A.	E. P. A.
Illumin'n	W	W.	W.
Star	ξ Ophiuchi	γ Herculis	α Cassiop
Mag.			
δ	10° 18' S.	39° 11'	66° 7'
Wire a			
" b			
" c			
" 1	16 30 45.6	16 39 11.9	16 41 36.7
" 2	49.5	16.7	45.7
" 3	53.0	21.4	54.4
" 4	56.5	25.9	42 3.4
" 5	31 0.1	30.6	12.2
" d			
" e			
" f			
Sum	264.7	106.5	272.4
Mean	16 30 52.94	16 39 21.30	16 41 54.48
Red'n to			
$\overline{m}$	+.83	+.83	+.83
n. tan. δ	−.13	−.01	−.38
c. sec. δ	+.02	+.02	−.04
r			
T	16 30 53.66	16 39 22.14	16 41 54.89
a	16 29 55.79	16 38 24.15	4 40 56.80
ΔT	57.87	57.99	58.09

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Date 1868	July 16	July 16	July 16
Observer	E. P. A.	E. P. A.	E. P. A.
Illumin'n	W.	W.	W
Star	k Ophiuchi	α Herculis	ε Ursae Min.
Mag.			
δ	9° 35′	33° 46′	82° 15′ 18.″3
Wire a			
" b			
" c			
" 1	16 52 17.1	16 57 34.4	16 59 43.2
" 2	20.8	39.0	17 0 7.7
" 3	24.5	43.1	35.2
" 4	28.2	47.5	1 4.2
" 5	32.0	51.8	30.0
" d			
" e			
" f			
Sum	122.6	215.8	180.3
Mean	16 52 24.52	16 57 43.16	17 0 36.06
Red'n to			
$\overline{m}$	+.83	+.83	+.83
n . tan. δ	−.09	−.03	+.77
c . sec. δ	+.02	+.02	+.11
r			
T	16 52 25.28	16 57 43.98	17 0 37.77
a	16 51 27.30	16 56 45.85	16 59 40.04
Δ T	57.98	58.13	57.73

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Date	1868	July 16			July 16			July 16		
Observer		E. P. A.			E. P. A.			E. P. A.		
Illumin'n		W.			W.			W.		
Star		α Herculis			β Ophiuchi			ζ Draconis		
Mag.										
δ		14° 33′			24° 3′ N.			52° 24′		
Wire	a									
"	b									
"	c									
"	1	17	9	29.8	17	19	10.7	17	28	14.8
"	2			33.6			14.8			20.8
"	3			37.1			18.8			26.4
"	4			40.9			22.5			32.5
"	5			44.6			26.7			38.0
"	d									
"	e									
"	f									
Sum				186.0			93.5			132.5
Mean		17	9	37.20	17	19	18.70	17	28	26.50
Red'n to $\overline{m}$				+.83			+.83			+.83
n . tan. δ				−.08			−.16			+.05
c . sec. δ				+.02			+.02			+.02
τ										
T		17	9	37.97	17	19	19.39	17	28	27.40
a		17	8	39.86	17	18	21.26	17	27	29.29
Δ T				58.11			58.13			58.21

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Date 1868		July 16	July 16	July 16
Observer		E. P. N.	E. P. N.	E. P. N.
Illumin'n		W.	W.	W.
Star		α Ophiuchi	ω Draconis	η Herculis
Mag.				
δ		12° 40′	68° 49′	27° 48′
Wire	a			
"	b			
"	c			
"	1	17 29 40.6		17 42 8.8
"	2	44.2		13.0
"	3	48.0	17 38 44.0	17.0
"	4	51.7	53.1	21.0
"	5	55.5	39 3.8	25.2
"	d			
"	e			
"	f			
Sum		240.0		85.0
Mean		17 29 48.00	17 38 43.60	17 42 17.00
Red'n to				
$\overline{m}$		+.83	+.83	+.83
n. $\overline{\tan. \delta}$		−.08	+.20	−.05
c. sec. δ		+.02	+.04	+.02
τ				
T		17 29 48.89	17 38 44.67	17 42 17.80
a		17 28 30.65	17 37 46.61	17 41 19.75
Δ T		58.24	58.06	58.15

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Date	1868	July 16	July 16	July 16
Observer		E.P.A.	E.P.A.	E.P.A.
Illumin'n		W.	W.	W.
Star		) Draconis	γ^2 Sagittæ	22 Camelop.(H)
Mag.				
δ		51° 31′	30° 25′ S.	69° 21′
Wire a				
" b				
" c				
" 1		17 54 20.8	17 58 12.0	18 4 53.7
" 2		26.0	16.0	5 4.1
" 3		32.3	20.3	14.7
" 4		38.0	24.5	24.7
" 5		43.7	28.9	35.1
" d				
" e				
" f				
Sum		160.8	101.7	72.3
Mean		17 54 32.16	17 58 20.34	18 5 4.46
Red'n to				
$\overline{m}$		+.83	+.83	+.83
n. $\overline{\tan.\ \delta}$		+.04	−.18	−.43
c. sec. δ		+.02	+.02	−.04
τ				
T		17 54 33.05	17 58 21.01	18 5 14.82
a		17 53 35.08	17 57 22.62	6 4 16.50
Δ T		57.97	58.39	58.32

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Date	1868	July 16	July 16	July 16
Observer		E. P. A.	E. P. A.	E. P. A.
Illumin'n		W.	W.	W.
Star		μ' Sagittæ	ν Ursæ Min	1 Aquilæ
Mag.				
δ		21° 5' S.	86° 36' 33."2	8° 20' S.
Wire a				
" b				
" c				
" 1		18 6 44.6		18 28 54.1
" 2		48.7	18 15 4.0	58.0
" 3		52.4	16 5.2	29 1.3
" 4		56.2	17 2.7	5.0
" 5		7 0.3	18 4.8	8.9
" d				
" e				
" f				
Sum		262.2		7.3
Mean		18 6 52.44	18 16 3.82	18 29 1.46
Red'n to $\overline{m}$		+.83	+.83	+.83
n. tan. δ		−.16	+1.91	−.16
c. sec. δ		+.02	+.25	+.02
r				
T		18 6 53.13	18 16 6.81	18 29 2.15
a		18 5 54.84	18 15 10.05	18 28 3.89
Δ T		58.29	56.76	58.26

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Date	1868	July 16	July 18	July 18
Observer		E. P. A.	A. S.	A. S.
Illumin'n		W.	W.	W.
Star		χ Lyrae	μ' Bootis	γ^2 Urs. Min.
Mag.				
δ		38° 40′	37° 51′	72° 19′
Wire	a			
"	b			
"	c			
"	1	18 33 18.7	15 20 23.2	
"	2	23.3	27.7	
"	3	28.4	32.3	15 21 59.1
"	4	32.6	36.8	22 10.3
"	5	37.0	41.6	22.7
"	d			
"	e			
"	f			
Sum		140.0	161.6	
Mean		18 33 28.00	15 20 32.32	15 21 58.79
Red'n to				
$\overline{m}$		+.83	+.83	+.83
n. tan. δ		−.01	−.02	+.27
c. sec. δ		+.02	+.02	+.05
τ				
T		18 33 28.84	15 20 33.15	15 21 59.94
a		18 32 30.63	15 19 31.60	15 20 58.28
Δ T		58.21	1 1.55	1 1.56

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Date	1868	July 18	July 18	July 18
Observer		N. S.	N. S.	N. S.
Illumin'n		W.	W.	W.
Star		α Coronae Bor.	α Serpentis	ε Serpentis
Mag.				
δ		27° 10′	6° 51′	4° 53′
Wire	a			
"	b			
"	c			
"	1	15 30 0.1	15 38 41.4	15 45 9.9
"	2	4.2	45.0	13.3
"	3	8.2	48.8	17.0
"	4	12.3	52.4	20.5
"	5	16.5	56.0	24.1
"	d			
"	e			
"	f			
Sum		41.3	243.6	84.8
Mean		15 30 8.26	15 38 48.72	15 45 16.96
Red'n to				
$\overline{m}$		+.83	+.83	+.83
n . tan. δ		−.05	−.09	−.10
c . sec. δ		+.02	+.02	+.01
r				
T		15 30 9.06	15 38 49.48	15 45 17.70
a		15 29 7.46	15 37 47.78	15 44 16.08
Δ T		1 1.80	1 1.70	1 1.62

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Date 1868	July 18	July 18	July 18
Observer	A. S.	A. S.	A. S.
Illumin'n	W.	W.	W.
Star	ζ Ophiuchi	ε Coronae Bor.	β¹ Scorpii
Mag.			
δ	78° 12′	27° 16′	19° 26′ S.
Wire a			
" b			
" c			
" 1	15 49 15.0	15 53 1.6	15 58 41.6
" 2	33.0	5.9	45.2
" 3	50.7	9.8	49.1
" 4	50 8.7	13.9	52.8
" 5	25.18	18.0	56.6
" d			
" e			
" f			
Sum	253.2	49.2	245.3
Mean	15 49 50.62	15 53 9.84	15 58 49.06
Red'n to			
$\overline{m}$	+.83	+.83	+.83
n . tan. δ	+.46	−.105	−.15
c . sec. δ	+.07	+.02	+.02
r			
T	15 49 51.98	15 53 10.64	15 58 49.76
a	15 48 52.08	15 52 9.09	15 57 48.06
Δ T	59.90	1 1.55	1 1.70

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Date	1868	August 3			August 3			August 3			
Observer		A. S. W.			A. S. W.			A. S. W.			
Illumin'n											
Star		Polaris			α Bootis			5 Ursae Minoris			
Mag.											
δ		88° 36′ 8.″0			19° 52′			76° 17′			
Wire	a										
"	b										
"	c										
"	1	13	8	10.0	14	11	2.8	14	28	47.9	
"	2		10	37.6			6.5		29	3.3	
"	3		13	3.2			10.4			18.6	
"	4						14.2			33.5	
"	5		18	1.0			18.1			49.2	
"	d										
"	e										
"	f										
Sum							52.0			92.5	
Mean		13	13	4.99	14	11	10.40	14	29	18.50	
Red'n to $\overline{m}$			+	.92			+ .92			+ .92	
n . tan. δ			−	8.36			− .11			+ .64	
c . sec. δ			−	.61			+ .02			+ .06	
τ											
T		13	12	56.94	14	11	11.23	14	29	20.12	
a		1	11	25.00	14	9	39.28	14	27	48.23	
Δ T			1	31.94		1	31.95		1	31.89	

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1868phae.proj..337A

Date 1868	August 3	August 3	August 3
Observer	A. S.	A. S.	A. S.
Illumin'n	W.	W.	W.
Star	ε Bootis	β Ursae Minoris	β Bootis
Mag.			
δ	27° 38′	74° 42′	40° 55′
Wire a			
" b			
" c			
" 1	14 40 37.2	14 52 8.9	14 58 20.7
" 2	41.2	22.5	25.4
" 3	45.4	36.3	30.3
" 4	49.4	50.1	34.9
" 5	53.5	53 3.8	39.9
" d			
" e			
" f			
Sum	226.7	181.6	151.2
Mean	14 40 45.34	14 52 36.32	14 58 30.24
Red'n to			
$\overline{m}$	+ .92	+.92	+.92
n . tan. δ	− .08	+.55	−.01
c . sec. δ	+ .02	+.05	+.02
r			
T	14 40 46.20	14 52 37.84	14 58 31.17
a	14 39 14.27	14 51 5.93	14 56 59.21
Δ T	1 31.93	1 31.91	1 31.96

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1868phae.proj..337A

Date 1868		August 3	August 9	August 9
Observer		E.P.A.	E.P.A.	E.P.A.
Illumin'n		W.	W.	W.
Star		η Draconis	κ Ophiuchi	α Herculis
Mag.				
δ		61° 49′	9° 35′	33° 46′
Wire	a			
"	b			
"	c			
"	1	16 23 29.4	16 53 2.7	16 58 19.7
"	2	37.6	6.5	23.8
"	3		10.0	28.5
"	4	52.2	13.6	32.8
"	5	24 0.0	17.5	37.3
"	d			
"	e			
"	f			
Sum			50.3	142.1
Mean		16 23 44.80	16 53 10.06	16 58 28.42
Red'n to				
$\overline{m}$		+.92	+.91	+.91
n. tan. δ		+.19	−.19	−.06
c. sec. δ		+.03	+.02	+.02
r				
T		16 23 45.94	16 53 10.80	16 58 29.29
a		16 22 14.31	16 51 27.06	16 56 45.49
Δ T		1 31.63	1 43.74	1 43.80

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1868phae.proj..337A

Date 1868		August 9			August 9			August 9			
Observer		E. P. A.			E. P. A.			E. P. A.			
Illumin'n		W.			W.			W.			
Star		ε Ursæ Minoris			α' Herculis			b Ophiuchi			
Mag.											
δ		82° 15' 22."3			14° 33'			24° 3' S.			
Wire	a										
"	b										
"	c										
"	1				17	10	14.8	17	19	56.0	
"	2						18.7		20	0.0	
"	3						22.3			4.0	
"	4						26.0			8.0	
"	5	17	2	12.0			29.8			12.0	
"	d										
"	e										
"	f										
Sum							111.6			20.0	
Mean		17	1	18.13	17	10	22.32	17	20	4.00	
Red'n to											
$\overline{m}$				+.91			+.91			+.91	
n . tan. δ				+1.61			−.16			−.34	
c . sec. δ				+.11			+.02			+.02	
r											
T		17	1	20.76	17	10	23.09	17	20	4.59	
a		16	59	36.66	17	8	39.63	17	18	21.08	
Δ T			1	44.10		1	43.46		1	43.41	

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1868phae.proj..337A

Date 1868		August 9	August 9	August 9
Observer		E.P.A.	E.P.A.	E.P.A.
Illumin'n		W.	W.	W.
Star		Groombridge 966	β Draconis	α Ophiuchi
Mag.				
δ		74° 57′	52° 24′	12° 40′
Wire	a			
"	b			
"	c			
"	1	17 23 22.0	17 28 59.5	17 30 25.9
"	2	35.8	29 5.7	29.6
"	3	49.6	11.4	33.4
"	4	24 3.9	17.3	36.9
"	5	17.6	23.2	40.8
"	d			
"	e			
"	f			
Sum		248.9	57.1	166.6
Mean		17 23 49.78	17 29 11.42	17 30 33.32
Red'n to				
$\overline{m}$		+.91	+.91	+.91
n . tan. δ		−1.16	+.10	−.17
c . sec. δ		−.06	+.02	+.02
r				
T		17 23 49.47	17 29 12.55	17 30 34.08
a		5 22 6.61	17 27 28.76	17 28 50.45
Δ T		1 42.86	1 43.79	1 43.63

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1868phae.proj..337A

Date	1868	August 9	August 9	August 9
Observer		E.P.A.	E.P.A.	E.P.A.
Illumin'n		W.	W.	W.
Star		ω Draconis	μ Herculis	ψ¹ Draconis (pr.)
Mag.				
δ		68° 49′	27° 48′	72° 13′
Wire a				
" b				
" c				
" 1			17 42 54.0	
" 2			58.1	
" 3		17 39 27.8	43 2.4	
" 4		37.6	6.2	17 46 13.1
" 5		48.0	10.5	25.7
" d				
" e				
" f				
Sum			11.2	
Mean		17 39 27.77	17 43 2.24	17 46 1.65
Red'n to				
$\overline{m}$		+.91	+.91	+.91
n . tan. δ		+.42	−.10	+.55
c . sec. δ		+.04	+.02	+.05
r				
T		17 39 29.14	17 43 3.07	17 46 3.16
a		17 37 45.61	17 41 19.55	17 44 19.67
Δ T		1 43.53	1 43.52	1 43.49

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1868phae.proj..337A

Date 1868		August 9			August 9			August 9			
Observer		E.P.A.			E.P.A.			E.P.A.			
Illumin'n		W.			W.			W.			
Star		γ Draconis			γ² Sagittarii			22 Camelop.			
Mag.											
δ		51° 31′			30° 25′ S.			69° 21′			
Wire	a										
"	b										
"	c										
"	1	17	55	5.5	17	58	57.2	18	5	40.7	
"	2			11.3		59	4.8			51.0	
"	3			17.1			5.6		6	1.4	
"	4			22.8			9.7			11.2	
"	5			28.7			13.9			21.7	
"	d										
"	e										
"	f										
Sum				85.4			27.1			6.0	
Mean		17	55	17.08	17	59	5.54	18	6	1.20	
Red'n to											
$\overline{m}$				+.91			+.91			+.91	
n . tan. δ				+.09			−.37			−.89	
c . sec. δ				+.02			+.06			−.04	
r											
T		17	55	18.10	17	59	6.10	18	6	1.18	
a		17	53	34.64	17	57	22.50	6	4	17.81	
Δ T			1	43.46		1	43.60		1	43.37	

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1868phae.proj..337A

Date 1868		August 9	August 9	August 9
Observer		E.P.A.	E.P.A.	E.P.A.
Illumin'n		W.	W.	W.
Star		μ¹ Sagittarii	δ Ursae Minoris	1 Aquilae
Mag.				
δ		21° 5′ S.	86° 36′ 39″.0	8° 20′ S.
Wire	a			
"	b			
"	c			
"	1	18 7 30.0		
"	2	33.8	18 15 41.0	
"	3	37.7		18 29 47.0
"	4	41.6	17 43.5	50.5
"	5	45.4	18 45.5	54.1
"	d			
"	e			
"	f			
Sum		188.5		
Mean		18 7 37.70	18 16 42.64	18 29 46.87
Red'n to				
m		+.91	+.91	+.91
n . tan. δ		−.33	+3.98	−.26
c . sec. δ		+.02	+.25	+.02
r				
T		18 7 38.30	18 16 47.78	18 29 47.54
a		18 5 54.74	18 15 3.90	18 28 3.83
Δ T		1 43.56	1 43.88	1 43.71

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1868phae.proj..337A

Date 1868	August 9	August 9	August 9
Observer	E.P.A.	E.P.A.	E.P.A.
Illumin'n	W.	W.	W.
Star	α Lyrae	51 Cephei	β Lyrae
Mag.			
δ	38° 40′	87° 14′	33° 13′
Wire a			
" b			
" c			
" 1	18 34 3.8	18 36 51.1	18 46 48.9
" 2	8.5	38 6.5	53.1
" 3	13.0	39 19.0	57.5
" 4	18.0	40 35.9	47 1.9
" 5	22.6	41 48.8	6.6
" d			
" e			
" f			
Sum	65.9	101.3	287.4
Mean	18 34 13.18	18 39 20.26	18 46 57.48
Red'n to			
m	+.91	+.91	+.91
n. tan. δ	−.03	−5.43	−.06
c. sec. δ	+.02	− .31	+.02
r			
T	18 34 14.08	18 39 15.43	18 46 58.35
a	18 32 30.43	6 37 31.28	18 45 14.71
Δ T	1 43.65	1 44.15	1 43.64

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1868phae.proj..337A

Date 1868	August 9	August 9	August 10
Observer	E.P.A.	E.P.A.	E.P.A.
Illumin'n	W.	W.	W.
Star	σ Sagittarii	50 Draconis	d Ophiuchi
Mag.			
δ	26° 27′ S.	75° 17′	3° 21′ S.
Wire a			
" b			
" c			
" 1	18 48 42.6		16 9 5.0
" 2	46.7	18 52 8.8	8.6
" 3	50.7	22.5	12.3
" 4	54.8	37.3	15.8
" 5	59.0	51.8	19.6
" d			
" e			
" f			
Sum	253.8		61.3
Mean	18 48 50.76	18 52 22.98	16 9 12.26
Red'n to m	+.91	+.91	+.91
n . tan. δ	−.35	+.72	−.21
c . sec. δ	+.02	+.06	+.01
r			
T	18 48 51.34	18 52 24.67	16 9 12.97
a	18 47 7.56	18 50 40.82	16 7 27.53
Δ T	1 43.78	1 43.45	1 45.44

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1868phae.proj..337A

Date 1868		August 10	August 10	August 10
Observer		E. P. A.	E. P. A.	E. P. A.
Illumin'n		W.	W.	W.
Star		α Scorpii	ζ Ophiuchi	η Herculis
Mag.				
δ		26° 8′ S.	10° 18′ S.	39° 11′
Wire	a			
"	b			
"	c			
"	1	16 22 58.0	16 31 32.7	16 39 58.8
"	2	23 2.0	36.6	40 3.4
"	3	6.1	40.3	7.9
"	4	10.1	43.8	12.8
"	5	14.0	47.6	17.5
"	d			
"	e			
"	f			
Sum		30.2	201.0	40.4
Mean		16 23 6.04	16 31 40.20	16 40 8.08
Red'n to				
$\overline{m}$		+.91	+.91	+.91
n . tan. δ		−.31	−.24	−.02
c . sec. δ		+.02	+.02	+.02
r				
T		16 23 6.66	16 31 40.89	16 40 8.99
a		16 21 21.27	16 29 55.52	16 38 23.71
Δ T		1 45.39	1 45.37	1 45.28

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1868phae.proj..337A

Date	1868	August 10	August 10	August 10
Observer		E.P.A.	E.P.A.	E.P.A.
Illumin'n		W.	W.	W.
Star		ζ Camelopardalis	κ Ophiuchi	α Herculis
Mag.				
δ		66° 7′	9° 35′	33° 46′
Wire a				
" b				
" c				
" 1		16 42 25.7	16 53 4.6	16 58 21.5
" 2		34.4	8.0	25.8
" 3		43.6	11.8	
" 4		52.2	15.4	
" 5		43 1.3	19.1	38.7
" d				
" e				
" f				
Sum		217.1	58.9	
Mean		16 42 43.42	16 53 11.78	16 58 30.11
Red'n to				
m		+.91	+.91	+.91
n. tan. δ		−.70	−.16	−.05
c. sec. δ		−.04	+.02	+.02
r				
T		16 42 43.59	16 53 12.55	16 58 30.99
a		4 40 58.29	16 51 27.04	16 56 45.47
Δ T		1 45.30	1 45.51	1 45.52

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1868phae.proj..337A

Date	1868	August 10			August 10			August 10			
Observer		E.P.A.			E.P.A.			E.P.A.			
Illumin'n		W.			W.			W.			
Star		ε Ursae Minoris			ζ Herculis			b Ophiuchi			
Mag.											
δ		82° 15' 22".4			14° 33'			24° 31' S.			
Wire	a										
"	b										
"	c										
"	1	17	0	25.8	17	10	16.7	17	19	58.2	
"	2			53.2			20.4		20	2.0	
"	3		1	19.8			24.1			6.0	
"	4			46.8			27.9			9.9	
"	5		2	13.4			31.8			13.9	
"	d										
"	e										
"	f										
Sum				99.0			120.9			30.0	
Mean		17	1	19.80	17	10	24.18	17	20	6.00	
Red'n to											
m				+.91			+.91			+.91	
n. tan. δ				+1.42			−.14			−.30	
c. sec. δ				+ .11			+.02			+.02	
r											
T		17	1	22.24	17	10	24.97	17	20	6.63	
a		16	59	36.50	17	8	39.61	17	18	21.07	
Δ T			1	45.74		1	45.36		1	45.56	

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1868phae.proj..337A

Date	1868	August 10	August 10	August 10
Observer		E.P.A.	E.P.A.	E.P.A.
Illumin'n		W.	W.	W.
Star		β Draconis	α Ophiuchi	ω Draconis
Mag.				
δ		52° 24′	12° 40′	68° 49′
Wire a				
" b				
" c				
" 1			17 30 27.8	17 39 10.0
" 2		17 29 7.5		19.5
" 3		13.1		29.8
" 4		19.0	39.0	39.6
" 5		25.0	42.5	49.7
" d				
" e				
" f				
Sum				148.6
Mean		17 29 13.17	17 30 35.19	17 39 29.72
Red'n to				
m		+.91	+.91	+.91
n.tan.δ		+.09	−.15	+.37
c.sec.δ		+.02	+.02	+.04
r				
T		17 29 14.19	17 30 35.97	17 39 31.04
a		17 27 28.74	17 28 50.44	17 37 45.56
Δ T		1 45.45	1 45.53	1 45.48

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1868phae.proj..337A

Date	1868	August 10			August 10			August 10			
Observer		E.P.A.			E.P.A.			E.P.A.			
Illumin'n		W.			W.			W.			
Star		μ Herculis			γ Draconis			γ^2 Sagittarii			
Mag.											
δ		27° 48′			51° 31′			30° 25′ S.			
Wire	a										
"	b										
"	c										
"	1	17	42	55.9	17	55	7.4	17	58	59.2	
"	2		43	0.1			13.0		59	3.5	
"	3			4.1			19.0			7.5	
"	4			8.1			24.8			11.6	
"	5			12.0			30.5			15.8	
"	d										
"	e										
"	f										
Sum				20.2			94.7			37.6	
Mean		17	43	4.04	17	55	18.94	17	59	7.52	
Red'n to $\overline{m}$				+.91			+.91			+.91	
n. tan. δ				−.08			+.08			−.33	
c. sec. δ				+.02			+.02			+.02	
r											
T		17	43	4.89	17	55	19.95	17	59	8.12	
a		17	41	19.53	17	53	34.61	17	57	22.49	
Δ T			1	45.36		1	45.34		1	45.63	

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1868phae.proj..337A

Date 1868	August 10	August 10	August 10
Observer	E. P. A.	E. P. A.	E. P. A.
Illumin'n	W.	W.	W.
Star	μ' Sagittarii	δ Ursae Minoris	1 Aquilae
Mag.			
δ	21° 5′ $\mathcal{S}$.	86° 36′ 39″.3	8° 20′ $\mathcal{S}$.
Wire a			
" b			
" c			
" 1	18 7 32.0	18 14 42.3	18 29 41.6
" 2	35.9	15 42.2	45.1
" 3	39.8	16 43.2	48.7
" 4	43.7	17 45.2	52.5
" 5	47.6	18 47.7	56.0
" d			
" e			
" f			
Sum	199.0	220.6	243.9
Mean	18 7 39.80	18 16 44.12	18 29 48.78
Red'n to $\overline{m}$	+.91	+.91	+.91
n. tan. δ	−.29	+3.50	−.23
c. sec. δ	+.02	+.28	+.02
r			
T	18 7 40.44	18 16 48.78	18 29 49.48
a	18 6 54.73	18 15 3.59	18 28 3.83
Δ T	1 45.71	1 45.19	1 45.65

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1868phae.proj..337A

Date 1868		August 10	August 10	August 10
Observer		E.P.A.	E.P.A.	E.P.A.
Illumin'n		W.	W.	W.
Star		α Lyrae	61 Cephei	50 Draconis
Mag.				
δ		38° 40′	87° 14′	75° 17′
Wire	a			
"	b			
"	c			
"	1	18 34 5.8	18 36 51.2	
"	2	10.4	38 5.8	18 52 10.4
"	3	15.0	Observation interfered	24.7
"	4	19.6	with by clouds and	38.6
"	5	24.3	considered doubtful.	53.7
"	d			
"	e			
"	f			
Sum		75.1		
Mean		18 34 15.02	18 39 21.66	18 52 24.73
Red'n to				
m		+.91	+.91	+.91
n . tan. δ		−.02	−4.78	+.64
c . sec. δ		+.02	−.31	+.06
r				
T		18 34 15.93	18 39 17.48	18 52 26.34
a		18 32 30.41	6 37 31.65	18 50 40.77
Δ T		1 45.52	1 45.83	1 45.57

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1868phae.proj..337A

Date 1868		August 10			August 13			August 13			
Observer		E.P.A.			A.S.			A.S.			
Illumin'n		W.			W.			W.			
Star		ζ Aquilae			Polaris			α Bootis			
Mag.											
δ		13° 40′			88° 36′	10″.1		14° 10′			
Wire	a										
"	b										
"	c										
"	1	19	1	0.5	13	8	36.0	14	11	21.5	
"	2			4.0						25.4	
"	3			7.7		13	30.1			29.1	
"	4			11.6		16	1.7			32.9	
"	5			15.2		18	29.3			36.9	
"	d										
"	e										
"	f										
Sum				39.0						145.8	
Mean		19	1	7.80	13	13	32.47	14	11	29.16	
Red'n to											
m				+.91			+.91			+.91	
n . tan. δ				−.15			−9.20			−.13	
c . sec. δ				+.02			−.61			+.02	
r											
T		19	1	8.58	13	13	23.54	14	11	29.96	
a		18	59	22.94	1	11	32.69	14	9	39.13	
Δ T			1	45.64		1	50.85		1	50.83	

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1868phae.proj..337A

Date 1868	August 13	August 13	August 13
Observer	E. P. A.	E. P. A.	E. P. A.
Illumin'n	W.	W.	W.
Star	22 Camelop.	μ^1 Sagittarii	S Ursae Min.
Mag.			
δ	69° 21′	21° 5′ S.	86° 36′ 40″.0
Wire a			
" b			
" c			
" 1	18 5 48.7		18 14 47.7
" 2	59.5		15 46.7
" 3	6 9.1		
" 4	19.5	18 7 49.4	
" 5	29.7	53.0	
" d			
" e			
" f			
Sum	46.5		
Mean	18 6 9.30	18 7 45.39	18 16 48.83
Red'n to $\overline{m}$	+.91	+.91	+.91
n. tan. δ	−.79	−.29	+3.50
c. sec. δ	−.04	+.02	+.25
τ			
T	18 6 9.38	18 7 46.03	18 16 53.49
a	6 4 18.08	18 5 54.70	18 15 2.53
Δ T	1 51.38	1 51.33	1 50.96

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1868phae.proj..337A

Date	1868	August 14			August 14			August 14			
Observer		E.P.A.			E.P.A.			E.P.A.			
Illumin'n		W.			W.			W.			
Star		η Herculis			κ Ophiuchi			d Herculis			
Mag.											
δ		39° 11′			9° 35′			33° 46′			
Wire	a										
"	b										
"	c										
"	1	16	40	6.2	16	53	11.9	16	58	29.0	
"	2			10.9			15.6			33.4	
"	3			15.7			19.2			37.5	
"	4			20.3			22.8			41.9	
"	5			25.0			26.6			46.3	
"	d										
"	e										
"	f										
Sum				78.1			96.1			188.1	
Mean		16	40	15.62	16	53	19.32	16	58	37.62	
Red'n to											
$\overline{m}$				+.88			+.88			+.88	
n . tan. δ				−.02			−.18			−.06	
c . sec. δ				+.02			+.02			+.02	
r											
T		16	40	16.50	16	53	20.04	16	58	38.46	
a		16	38	23.61	16	51	26.99	16	56	45.40	
Δ T			1	52.89		1	53.05		1	53.06	

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1868phae.proj..337A

Date 1868	August 14	August 14	August 14
Observer	E.P.A.	E.P.A.	E.P.A.
Illumin'n	W.	W.	W.
Star	ε Ursæ Min.	χ' Herculis	Groombridge 966
Mag.			
δ	82° 15' 22".8	14° 33'	74° 57'
Wire a			
" b			
" c			
" 1	17 0 32.5	17 10 24.3	17 23 31.5
" 2	59.7	28.0	46.0
" 3	1 25.9	31.7	59.8
" 4	52.5	35.5	24 13.7
" 5	2 19.5	39.3	27.7
" d			
" e			
" f			
Sum	130.1	158.6	298.7
Mean	17 1 26.02	17 10 31.76	17 23 59.74
Red'n to			
m	+.88	+.88	+.88
n. tan. δ	+1.61	−.04	−1.16
c. sec. δ	+.11	+.02	−.06
τ			
T	17 1 28.62	17 10 32.62	17 23 59.40
a	16 59 35.80	17 8 39.55	5 22 7.16
Δ T	1 52.82	1 53.07	1 52.36

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1868phae.proj..337A

Date 1868	Aug. 14	Aug. 14	Aug. 14
Observer	E. P. A.	E. P. A.	E. P. A.
Illumin'n	W.	W.	W.
Star	β Draconis	χ Ophiuchi	ω Draconis
Mag.			
δ	52° 24′	12° 40′	68° 49′
Wire a			
" b			
" c			
" 1	17 29 9.0	17 30 35.1	
" 2	14.6	39.0	
" 3	20.6	42.7	17 39 37.1
" 4	26.5	46.3	46.8
" 5	32.4	50.0	57.0
" d			
" e			
" f			
Sum	103.1	213.1	
Mean	17 29 20.62	17 30 42.62	17 39 36.90
Red'n to			
$\overline{m}$	+ .88	+ .88	+ .88
n . tan. δ	+ .10	− .17	+ .42
c . sec. δ	+ .02	+ .02	+ .04
r			
T	17 29 21.62	17 30 43.35	17 39 38.24
a	17 27 28.63	17 28 50.38	17 37 45.35
Δ T	1 52.99	1 52.97	1 52.89

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1868phae.proj..337A

Date 1868		Aug. 14	Aug. 14	Aug. 14
Observer		E. P. A.	E. P. A.	E. P. A.
Illumin'n		W.	W.	W.
Star		μ Herculis	γ Draconis	γ^2 Sagittarii
Mag.				
δ		27° 48′	51° 31′	30° 25′ S.
Wire	a			
"	b			
"	c			
"	1	17 43 3.5	17 55 14.7	17 59 6.7
"	2	7.5	20.6	10.7
"	3	11.6	26.2	14.9
"	4	15.7	32.0	19.3
"	5	19.8	38.0	23.4
"	d			
"	e			
"	f			
Sum		58.1	131.5	75.0
Mean		17 43 11.62	17 55 26.30	17 59 15.00
Red'n to				
$\overline{m}$		+.88	+.88	+.88
n. tan. δ		−.09	+.09	−.37
c. sec. δ		+.02	+.02	+.02
τ				
T		17 43 12.43	17 55 27.29	17 59 15.53
a		17 41 19.47	17 53 34.51	17 57 22.44
Δ T		1 52.96	1 52.78	1 53.09

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1868phae.proj..337A

Date 1868		Aug. 14	Aug. 14	Aug. 14
Observer		E. P. A.	E. P. A.	E. P. A.
Illumin'n		W.	W.	W.
Star		22 Camelop.	μ' Sagittarii	δ Ursæ Min.
Mag.				
δ		69° 21'	21° 5' S.	86° 36' 40".2
Wire	a			
"	b			
"	c			
"	1	18 5 50.7	18 7 39.5	
"	2	6 1.5	43.4	18 15 49.1
"	3	11.5	47.3	16 49.9
"	4	21.7	51.1	17 51.8
"	5	31.6	55.0	18 52.2
"	d			
"	e			
"	f			
Sum		57.0	236.3	
Mean		18 6 11.40	18 7 47.26	18 16 50.19
Red'n to				
$\overline{m}$		+.88	+.88	+.88
n. tan. δ		−.89	−.33	+3.98
c. sec. δ		−.04	+.02	+.25
τ				
T		18 6 11.35	18 7 47.83	18 16 55.30
a		6 4 18.20	18 5 54.69	18 15 2.15
Δ T		1 53.15	1 53.14	1 53.15

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1868phae.proj..337A

Date 1868		Aug. 14	Aug. 14	Aug. 14
Observer		E.P.A.	E.P.A.	E.P.A.
Illumin'n		W.	W.	W.
Star		1 Aquilae	α Lyrae	51 Cephei H
Mag.				
δ		8° 20' S.	38° 40'	87° 14'
Wire	a			
"	b			
"	c			
"	1	18 29 49.0	18 34 13.0	
"	2	52.7	17.7	18 38 17.9
"	3	56.4	22.2	39 30.4
"	4	59.8	26.8	40 46.13
"	5	30 3.6	31.7	42 0.4
"	d			
"	e			
"	f			
Sum		281.5	111.4	
Mean		18 29 56.30	18 34 22.28	18 39 31.00
Red'n to m		+.88	+.88	+.88
n. tan. δ		−.26	−.03	−5.43
c. sec. δ		+.02	+.02	−.31
r				
T		18 29 56.94	18 34 23.15	18 39 26.14
a		18 28 3.78	18 32 30.35	6 37 33.62
Δ T		1 53.16	1 52.80	1 52.52

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1868phae.proj..337A

Date	1868	Aug. 14			Aug. 14			Aug. 14			
Observer		E.P.A.			E.P.A.			E.P.A.			
Illumin'n		W.			W.			W.			
Star		β Lyrae			σ Sagittarii			ξ Aquilae			
Mag.											
δ		33° 13′			26° 27′ S.			13° 40′			
Wire a											
" b											
" c											
" 1					18	48	52.1	19	1	7.8	
" 2		18	47	2.5			55.9			11.7	
" 3				6.7		49	0.0			15.3	
" 4				11.0			4.1			19.0	
" 5				15.4			8.2			22.8	
" d											
" e											
" f											
Sum							0.3			76.6	
Mean		18	47	6.72	18	49	0.06	19	1	15.32	
Red'n to $\overline{m}$				+.88			+.88			+.88	
n. tan. δ				−.06			−.35			−.17	
c. sec. δ				+.02			+.02			+.02	
r											
T		18	47	7.56	18	49	0.61	19	1	16.05	
a		18	45	14.65	18	47	7.53	18	59	22.91	
Δ T			1	52.91		1	53.08		1	53.14	

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1868phae.proj..337A

Date 1868		Aug. 14	Aug. 14	Aug. 14
Observer		E. P. A.	E. P. A.	E. P. A.
Illumin'n		W.	W.	W.
Star		d Sagittarii	δ Draconis	δ Aquilae
Mag.				
δ		19° 11′ S.	67° 26′	2° 52′
Wire	a			
"	b			
"	c			
"	1	19 11 42.1		19 20 38.1
"	2	46.0		42.9
"	3	49.9	19 14 26.0	45.5
"	4	52.8	35.2	49.0
"	5	57.5	44.9	52.8
"	d			
"	e			
"	f			
Sum		248.3		228.3
Mean		19 11 49.66	19 14 25.91	19 20 45.66
Red'n to m		+ .88	+ .88	+ .88
n. tan. δ		− .32	+ .37	− .22
c. sec. δ		+ .02	+ .04	+ .02
r				
T		19 11 50.24	19 14 27.20	19 20 46.34
a		19 9 57.34	19 12 34.29	19 18 53.00
Δ T		1 52.90	1 52.91	1 53.34

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1868phae.proj..337A

Date 1868	Aug. 14	Aug. 14	Aug. 14
Observer	E. P. A.	E. P. A.	E. P. A.
Illumin'n	W.	W.	W.
Star	κ Aquilae	γ Aquilae	α Aquilae
Mag.			
δ	7° 19' S.	10° 18'	8° 32'
Wire a			
" b			
" c			
" 1	19 31 35.3	19 41 46.6	19 46 8.3
" 2	38.8	50.2	12.0
" 3	42.4	54.0	15.5
" 4	46.1	57.7	19.1
" 5	49.8	42 1.4	22.9
" d			
" e			
" f			
Sum	212.4	269.9	77.8
Mean	19 31 42.48	19 41 53.98	19 46 15.56
Red'n to $\overline{m}$	+.88	+.88	+.88
n. tan. δ	−.26	−.18	−.19
c. sec. δ	+.02	+.02	+.02
r			
T	19 31 43.12	19 41 54.70	19 46 16.27
a	19 29 49.89	19 40 1.54	19 44 23.08
Δ T	1 53.23	1 53.16	1 53.19

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1868phae.proj..337A

Date	1868	Aug. 14 (astr.)			Aug. 14 (astr.)			Aug. 17			
Observer		E.P.A.			E.P.A.			E.P.A.			
Illumin'n		W.			W.			W.			
Star		α Can. Min.			β Geminorum			α' Herculis			
Mag.											
δ		5° 34′			28° 20′			14° 33′			
Wire	a										
"	b										
"	c										
"	1	7	34	9.8	7	38	59.0	17	10	29.7	
"	2			13.3		39	3.1			33.7	
"	3			17.0			7.4			37.2	
"	4			20.6			11.7			41.0	
"	5			24.0			15.6			44.8	
"	d										
"	e										
"	f										
Sum				84.7			36.8			186.4	
Mean		7	34	16.94	7	39	7.36	17	10	37.28	
Red'n to											
m				+.88			+.88			+.88	
n. tan. δ				−.20			−.09			−.16	
c. sec. δ				+.02			+.02			+.02	
r											
T		7	34	17.64	7	39	8.17	17	10	38.02	
a		7	32	23.77	7	37	14.36	17	8	39.51	
Δ T			1	53.87		1	53.81		1	58.51	

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1868phae.proj..337A

Date	1868	Aug. 17			Aug. 17			Aug. 17			
Observer		E.P.A.			E.P.A.			E.P.A.			
Illumin'n		W.			W.			W.			
Star		b Ophiuchi			β Draconis			α Ophiuchi			
Mag.											
δ		24° 3' S.			52° 24'			12° 40'			
Wire	a										
"	b										
"	c										
"	1	17	20	11.0	17	29	14.2	17	30	40.8	
"	2			14.9			20.0			44.3	
"	3			18.9			26.0			48.1	
"	4			22.7			31.8			51.8	
"	5			26.7			37.7			55.7	
"	d										
"	e										
"	f										
Sum				94.2			129.7			240.7	
Mean		17	20	18.84	17	29	25.94	17	30	48.14	
Red'n to											
$\overline{m}$				+.88			+.88			+.88	
n. tan. δ				−.34			+.10			−.17	
c. sec. δ				+.02			+.02			+.02	
r											
T		17	20	19.40	17	29	26.94	17	30	48.87	
a		17	18	20.96	17	27	28.54	17	28	50.33	
Δ T			1	58.44		1	58.40		1	58.54	

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1868phae.proj...337A

Date		Aug. 17			Aug. 17			Aug. 17			
Observer		E.P.A.			E.P.A.			E.P.A.			
Illumin'n		W.			W.			W.			
Star		ω Draconis			μ Herculis			γ¹ Draconis (pr.)			
Mag.											
δ		68° 49′			27° 48′			72° 13′			
Wire	a										
"	b										
"	c										
"	1				17	43	9.0				
"	2						13.0				
"	3	17	39	42.0			17.1	17	46	15.8	
"	4			51.8			21.1			27.9	
"	5		40	2.0			25.3			39.7	
"	d										
"	e										
"	f										
Sum							85.5				
Mean		17	39	41.90	17	43	17.10	17	46	15.99	
Red'n to $\overline{m}$				+.88			+.88			+.88	
n. tan. δ				+.42			−.10			+.53	
c. sec. δ				+.04			+.02			+.05	
r											
T		17	39	43.24	17	43	17.90	17	46	17.27	
a		17	37	45.19	17	41	19.42	17	44	19.16	
Δ T			1	58.05		1	58.48		1	58.11	

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1868phae.proj..337A

Date	1868	Aug. 17			Aug. 17			Aug. 17			
Observer		E.P.A.,			E.P.A.,			E.P.A.,			
Illumin'n		W.			W.			W.			
Star		γ^2 Sagittarii			22 Camelop.			μ' Sagittarii			
Mag.											
δ		30° 25' S.			69° 21'			21° 5' S.			
Wire	a										
"	b										
"	c										
"	1	17	59	12.0	18	5	57.0	18	7	45.1	
"	2			16.1		6	6.8			49.0	
"	3			20.6			17.6			52.7	
"	4			24.8			27.7			56.5	
"	5			28.9			37.8		8	0.5	
"	d										
"	e										
"	f										
Sum				102.4			86.9			263.8	
Mean		17	59	20.48	18	6	17.38	18	7	52.76	
Red'n to $\bar{m}$				+.88			+.88			+.88	
n. tan. δ				−.38			−.89			−.33	
c. sec. δ				+.02			−.04			+.02	
τ											
T		17	59	21.00	18	6	17.33	18	7	53.24	
a		17	57	22.39	6.	4	18.34	18	5	54.65	
Δ T			1	58.61		1	58.99		1	58.59	

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1868phae.proj..337A

Date	1868	Aug. 17			Aug. 17			Aug. 17			
Observer		E.P.A.			E.P.A.			E.P.A.			
Illumin'n		W.			W.			W.			
Star		δ Urs. Min.			1 Aquilae			α Lyrae			
Mag.											
δ		86°	36′	40.″6	8°	20′	N.	38°	40′		
Wire	a										
"	b										
"	c										
"	1				18	29	54.6	18	34	18.7	
"	2	18	15	52.3			58.1			23.2	
"	3		16	52.5		30	1.9			28.0	
"	4		17	55.6			5.6			32.5	
"	5						9.0			37.4	
"	d										
"	e										
"	f										
Sum							9.2			139.8	
Mean		18	16	53.52	18	30	1.84	18	34	27.96	
Red'n to											
m				+.88			+.88			+.88	
n. tan. δ				+3.98			−.26			−.03	
c. sec. δ				+.25			+.02			+.02	
r											
T		18	16	58.63	18	30	2.02	18	34	28.83	
a		18	15	1.08	18	28	3.75	18	32	30.30	
Δ T			1	57.55		1	58.77		1	58.53	

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1868phae.proj..337A

Date 1868		Aug. 17	Aug. 17	Aug. 17
Observer		E.P.A.	E.P.A.	E.P.A.
Illumin'n		W.	W.	W.
Star		51 Cephei (A)	β Lyrae	σ Sagittarii
Mag.				
δ		87° 14′	33° 13′	26° 27′ S.
Wire	a			
"	b			
"	c			
"	1	18 37 11.5		18 48 57.6
"	2	38 25.9	18 47 7.8	49 1.8
"	3	39 39.5	12.3	5.8
"	4	41 1.9	16.7	9.7
"	5	42 12.8	21.0	13.7
"	d			
"	e			
"	f			
Sum		211.6		28.6
Mean		18 39 42.32	18 47 12.28	18 49 5.72
Red'n to				
m		+.88	+.88	+.88
n. tan. δ		−5.43	−.06	−.35
c. sec. δ		−.31	+.02	+.02
r				
T		18 39 37.46	18 47 13.12	18 49 6.27
a		6 37 34.45	18 45 14.60	18 47 7.50
Δ T		1 53.01	1 58.52	1 58.77

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1868phae.proj..337A

Date 1868	Aug. 17			Aug. 17			Aug. 17		
Observer	E. P. A.			E. P. A.			E. P. A.		
Illumin'n	W.			W.			W.		
Star	ζ Aquilae			α Sagittarii			Piazzi VII 67		
Mag.									
δ	13° 40′			19° 11′ S.			68° 44′		
Wire a									
" b									
" c									
" 1	19	1	13.6	19	11	48.0			
" 2			17.2			51.8			
" 3			20.9			55.4	19	19	5.5
" 4			24.6			59.3			15.3
" 5			28.4		12	3.1			25.0
" d									
" e									
" f									
Sum			104.6			277.6			
Mean	19	1	20.92	19	11	55.52	19	19	5.28
Red'n to m			+.88			+.88			+.88
n. tan. δ			−.17			−.32			−.87
c. sec. δ			+.02			+.02			−.04
r									
T	19	1	21.65	19	11	56.10	19	19	5.25
a	18	59	22.88	19	9	57.32	7	17	6.72
Δ T		1	58.77		1	58.78		1	58.53

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1868phae.proj..337A

Date	1868	Aug. 17			Aug. 17			Aug. 17				
Observer		E. P. A.			E. P. A.			E. P. A.				
Illumin'n		W.			W.			W.				
Star		ε Draconis			κ Aquilae			γ Aquilae				
Mag.												
δ		73° 7′			7° 19′ S.			10° 18′				
Wire	a											
"	b											
"	c											
"	1				19	31	40.7	19	41	52.3		
"	2						44.6			55.9		
"	3	19	20	5.0			48.0			59.6		
"	4			17.5			51.8		42	3.1		
"	5			29.7			55.3			7.0		
"	d											
"	e											
"	f											
Sum							24 0.4			297.9		
Mean		19	20	4.94	19	31	48.08	19	41	59.58		
Red'n to												
m				+.88			+.88			+.88		
n. tan. δ				+.59			−.26			−.18		
c. sec. δ				+.04			+.02			+.02		
r												
T		19	20	6.45	19	31	48.72	19	42	0.30		
a		19	18	8.20	19	29	49.87	19	40	1.52		
Δ T			1	58.25		1	58.85		1	58.78		

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1868phae.proj..337A

Date	1868	Aug. 19	Aug. 21	Aug. 21
Observer		E. P. A.	E. P. A.	E. P. A.
Illumin'n		W.	W.	W.
Star		η Serpentis	γ Draconis	γ² Sagittarii
Mag.				
δ		2° 56′ S.	51° 31′	30° 25′ S.
Wire a				
" b				
" c				
" 1		18 16 25.6	17 55 27.7	17 59 19.6
" 2		29.0	33.4	23.7
" 3		32.8	39.2	27.9
" 4		36.2	45.1	32.1
" 5		40.0	51.0	36.4
" d				
" e				
" f				
Sum		163.6	196.4	139.7
Mean		18 16 32.72	17 55 39.28	17 59 27.94
Red'n to $\overline{m}$		+.88	+.88	+.88
n . tan. δ		−.24	+.07	−.30
c . sec. δ		+.01	+.02	+.02
r				
T		18 16 33.37	17 55 40.25	17 59 28.54
a		18 14 30.97	17 53 34.32	17 57 22.34
Δ T		2 2.40	2 5.93	2 6.20

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1868phae.proj..337A

Date	1868	Aug. 21			Aug. 21			Aug. 21			
Observer		E. P. A.			E. P. A.			E. P. A.			
Illumin'n		W.			W.			W.			
Star		22 Camelop.			μ Sagittarii			1 Aquilae			
Mag.											
δ		69° 21'			21° 5' S.			8° 20' S.			
Wire	a										
"	b										
"	c										
"	1	18	6	4.2	18	7	52.4	18	30	1.7	
"	2			14.5			56.2			5.5	
"	3			24.7		8	0.0			9.1	
"	4			34.9			3.8			12.9	
"	5			45.1			7.7			16.5	
"	d										
"	e										
"	f										
Sum				123.4			0.1			45.7	
Mean		18	6	24.68	18	8	0.02	18	30	9.14	
Red'n to											
$\overline{m}$				+.88			+.88			+.88	
n. tan. δ				−.71			−.26			−.21	
c. sec. δ				−.04			+.02			+.02	
r											
T		18	6	24.81	18	8	0.66	18	30	9.83	
a		6	4	18.60	18	5	54.60	18	28	3.71	
Δ T			2	6.21		2	6.06		2	6.12	

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1868phae.proj..337A

Date 1868		Aug. 21	Aug. 21	Aug. 21
Observer		E.P.A.	E.P.A.	E.P.A.
Illumin'n		W.	W.	W.
Star		α Lyrae	51 Cephei	β Lyrae
Mag.				
δ		38° 40′	87° 14′	33° 13′
Wire	a			
"	b			
"	c			
"	1	18 34 26.2		18 47 11.1
"	2	30.8	18 38 33.8	15.2
"	3	35.4	39 46.6	19.6
"	4	39.9	41 4.2	23.8
"	5	44.7		28.1
"	d			
"	e			
"	f			
Sum		177.0		97.8
Mean		18 34 35.40	18 39 48.14	18 47 19.59
Red'n to $\overline{m}$		+.88	+.88	+.88
n. tan. δ		−.02	−4.34	−.05
c. sec. δ		+.02	−.31	+.02
r				
T		18 34 36.28	18 39 44.37	18 47 20.44
a		18 32 30.23	6 37 36.62	18 46 14.54
Δ T		2 6.05	2 7.75	2 5.90

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1868phae.proj..337A

Date	1868	Aug. 21			Aug. 21			Aug. 21			
Observer		E. P. A.			E. P. A.			E. P. A.			
Illumin'n		W.			W.			W.			
Star		σ Sagittarii			ζ Aquilae			τ Draconis			
Mag.											
δ		26° 27′ ♁.			13° 40′			73° 7′			
Wire	a										
"	b										
"	c										
"	1	18	49	4.8	19	1	20.7				
"	2			9.0			24.5				
"	3			13.0			28.4	19	20	12.1	
"	4			17.0			32.0			25.2	
"	5			21.0			35.7			37.5	
"	d										
"	e										
"	f										
Sum				64.8			141.3				
Mean		18	49	12.96	19	1	28.26	19	20	12.44	
Red'n to											
$\overline{m}$				+.88			+.88			+.88	
n. tan. δ				−.28			−.13			+.48	
c. sec. δ				+.02			+.02			+.04	
r											
T		18	49	13.58	19	1	29.03	19	20	13.84	
a		18	47	7.46	18	59	22.84	19	18	7.94	
Δ T			2	6.12		2	6.19		2	5.90	

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1868phae.proj..337A

Date	1868	Aug. 21			Aug. 21			Aug. 21			
Observer		E.P.A.			E.P.A.			E.P.A.			
Illumin'n		W.			W.			W.			
Star		κ Aquilae			γ Aquilae			α Aquilae			
Mag.											
δ		7° 19′ S.			10° 18′			8° 32′			
Wire	a										
"	b										
"	c										
"	1	19	31	48.0	19	41	59.7	19	46	21.0	
"	2			51.7		42	3.0			24.8	
"	3			55.4			6.7			28.6	
"	4			59.0			10.5			32.1	
"	5		32	2.6			14.3			35.8	
"	d										
"	e										
"	f										
Sum				276.7			34.2			142.3	
Mean		19	31	55.34	19	42	6.84	19	46	28.46	
Red'n to m				+.88			+.88			+.88	
n. tan. δ				−.21			−.15			−.15	
c. sec. δ				+.02			+.02			+.02	
r											
T		19	31	56.03	19	42	7.59	19	46	29.21	
a		19	29	49.85	19	40	1.49	19	44	23.04	
Δ T			2	6.18		2	6.10		2	6.17	

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1868phae.proj..337A

Date 1868	Aug. 21	Aug. 21	Aug. 21
Observer	E. P. A.	E. P. A.	E. P. A.
Illumin'n	W.	W.	W.
Star	β Aquilae	λ Urs. Min.	τ Aquilae
Mag.			
δ	6° 5′	88° 55′ 5″.2	6° 33′
Wire a			
" b			
" c			
" 1	19 50 50.4		
" 2	53.9	19 55 45.7	19 59 45.7
" 3	57.7	58 55.0	49.6
" 4	51 1.2	20 1 58.2	53.0
" 5	4.8	5 16.2	56.7
" d			
" e			
" f			
Sum	288.0		
Mean	19 50 57.60	19 58 54.37	19 59 49.42
Red'n to			
m	+.88	+.88	+.88
n. tan. δ	−.16	+10.23	−.16
c. sec. δ	+.02	+.78	+.02
r			
T	19 50 58.34	19 59 6.26	19 59 50.16
a	19 48 52.23	19 56 59.73	19 57 44.07
Δ T	2 6.11	2 6.53	2 6.09

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1868phae.proj..337A

Date	1868	Aug. 21			Aug. 21			Aug. 22			
Observer		E. P. A.			E. P. A.			A. S.			
Illumin'n		W.			W.			W.			
Star		γ^2 Capricorni			π Capricorni			Polaris			
Mag.											
δ		12° 57′ S.			18° 38′ S.			88° 36′ 12″.5			
Wire	a										
"	b										
"	c										
"	1	20	12	44.7	20	21	46.5	13	8	53.8	
"	2			48.6			50.2		11	24.1	
"	3			52.3			54.1		13	51.4	
"	4			55.8			57.7		16	23.5	
"	5			59.8		22	1.4		18	48.6	
"	d										
"	e										
"	f										
Sum				261.2			270.3			261.4	
Mean		20	12	52.24	20	21	54.06	13	13	52.28	
Red'n to $\overline{m}$				+.88			+.88			+.88	
n. tan. δ				−.23			−.25			−8.37	
c. sec. δ				+.02			+.02			−.64	
τ											
T		20.	12	52.91	20	21	54.71	13	13	44.18	
a		20	10	46.38	20	19	48.53	1	11	38.42	
Δ T			2	6.53		2	6.18		2	5.76	

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1868phae.proj..337A

Date	1868	Aug. 22			Aug. 22			Aug. 22			
Observer		E. P. A.			E. P. A.			E. P. A.			
Illumin'n		W.			W.			W.			
Star		μ Herculis			γ Draconis			γ² Sagittarii			
Mag.											
δ		27° 48′			51° 31′			30° 25′ p.			
Wire	a										
"	b										
"	c										
"	1	17	43	18.2	17	55	29.5	17	59	21.4	
"	2			22.0			35.3			25.5	
"	3			26.2			41.3			29.8	
"	4			30.4			46.9			34.0	
"	5			34.4			52.7			38.0	
"	d										
"	e										
"	f										
Sum				131.2			205.7			148.7	
Mean		17	43	26.24	17	55	41.14	17	59	29.74	
Red'n to											
$\overline{m}$				+.88			+.88			+.88	
n. tan. δ				−.08			+.07			−.30	
c. sec. δ				+.02			+.02			+.02	
r											
T		17	43	27.06	17	55	42.11	17	59	30.34	
a		17	41	19.33	17	53	34.29	17	57	22.32	
Δ T			2	7.73		2	7.82		2	8.02	

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1868phae.proj..337A

Date		Aug. 22			Aug. 22			Aug. 22			
Observer		E. P. A.			E. P. A.			E. P. A.			
Illumin'n		W.			W.			W.			
Star		22 Camelop.			μ' Sagittarii			S Urs. Min.			
Mag.											
δ		69° 21′			21° 5′ S.			86° 36′ 41″.5			
Wire	a										
"	b										
"	c										
"	1	18	6	5.9	18	7	54.1				
"	2			16.0			58.0	18	16	3.6	
"	3			26.2		8	1.9		17	3.0	
"	4			37.0			6.0		18	3.3	
"	5			47.6			9.7				
"	d										
"	e										
"	f										
Sum				132.7			9.7				
Mean		18	6	26.54	18	8	1.94	18	17	3.35	
Red'n to											
m				+.88			+.88			+.88	
n. tan. δ				−.71			−.26			+3.19	
c. sec. δ				−.04			+.02			+.25	
r											
T		18	6	26.67	18	8	2.58	18	17	7.67	
a		6	4	18.69	18	5	52.59	18	14	59.44	
Δ T			2	7.98		2	7.99		2	8.23	

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1868phae.proj..337A

Date	1868	Aug. 27		
Observer		N. S.		
Illumin'n		W.		
Star		α Bootis		
Mag.				
δ		+19° 52′		
Wire	a			
"	b			
"	c			
"	1	14	11	47.6
"	2			51.4
"	3			55.2
"	4			59.0
"	5		12	2.8
"	d			
"	e			
"	f			
Sum				276.0
Mean		14	11	55.20
Red'n to				
m				+ .88
n . tan. δ				− .13
c . sec. δ				+ .02
τ				
T		14	11	55.97
a		14	9	38.92
Δ T			2	17.05

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1868phae.proj..337A

Date		Aug 28th.						
Observer		E. P. A.						
Illumin'n		W.						
Star		22 Camelop.		μ^1 Sagittarii		5 Urs. Min.		
Mag.								
δ		69° 21'		S. 21° 5'		86° 3'	4''	5'
Wire	a							
"	b							
"	c							
"	1	18h 6m	17-8	18-8	5,7			
"	2		28-3		9,4	18	16	10,4
"	3		38-5		13,2		17	12,2
"	4		48-9		17,2		18	10,7
"	5		59-0		21,1			
"	d							
"	e							
"	f							
Sum			192,5		66,6			33,3
Mean		18 6	38,5	18 8	13,33	18	17	11,10
		18 6	38,50			18	17	11,16
Red'n to Mean		18 6	38,50	18,8	13,33			+0,39
m								
n . tan. δ								
c . sec. δ								
τ								
T								
a		6h 4m	19,9s	18h 5m	5,45s	18	14	57,10
Δ T								

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1868phae.proj..337A

Date		Aug. 28						
Observer		E. S. C.						
Illumin'n		West						
Star		1 Aquilae			α Lyrae		51 Cephei	
Mag.								
δ		8	20	S.	38	40	87	11
Wire	a							
"	b							
"	c							
"	1	18 30	14,8		18 34	38,9		
"	2		18,5			43,7	18 38	54,8
"	3		22,3			48,2		59,6
"	4		25,9			52,9	41	23,0
"	5		29,7			57,9		
"	d							
"	e							
"	f							
Sum			111,2			241,6		
Mean		18 30	22,24		18 34	48,32	18 40	7,73
Red'n to								
m								
n . tan.	δ							
c . sec.	δ							
r								
T								
a		16 28	3,62		18 32	30,09	6 37	3,72
Δ T								

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1868phae.proj..337A

Date		Aug. 28						
Observer		E. P. A.						
Illumin'n		West						
Star		β Lyrae.			σ Sagittarii		ζ Aquilae	
Mag.								
δ		33	13		26	27	13	41
Wire	a							
"	b							
"	c							
"	1	18 47	24,1		18 49	18,6	19 1	33,9
"	2		28,5			22,9		37,6
"	3		32,8			26,0		41.1
"	4		37,1			30,1		45.0
"	5		41.5			34,1		48.7
"	d							
"	e							
"	f							
Sum			164.0			130,2		206,3
Mean		18 47	32,80		18 49	26,04	19 1	41,26
Red'n to								
m								
n . tan. δ								
c . sec. δ								
r								
T								
a		18 45	14,42		18 47	7,37	18 49	22,71
Δ T								

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1868phae.proj..337A

Date		Aug 28						
Observer		E. P. A.						
Illumin'n		West.						
Star		α Sagittarii			δ Draconis		δ Aquilae	
Mag.								
δ		19 11 S.			67 2.6		2 52	
Wire	a							
"	b							
"	c							
"	1	19 12	8.0	19	14 32.6	19	21 4.1	
"	2		12.0		41.9		7.9	
"	3		16.0		51.4		11.6	
"	4		19.8	15	00.7		15.1	
"	5		23.6		10.6		18.8	
"	d							
"	e							
"	f							
Sum			79.4		256.6		57.5	
Mean		19 12	15.88	19	14 51.32	19	21 11.50	
Red'n to								
m								
n . tan. δ								
c . sec. δ								
τ								
T								
a		19 9	57.44	19	12 33.72	19	18 52.87	
Δ T								

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1868phae.proj..337A

Date		Aug 28						
Observer		E.P.A.						
Illumin'n		West						
Star		κ Aquilae.		γ Aquilae.		λ Aquilae		
Mag.		7		10		18		
δ		19	8	10	18	18	32	
Wire	a							
"	b							
"	c							
"	1	19 32	1,0	19 42	12,6	19 46	34,2	
"	2		4,7		16,2		38,0	
"	3		8,5		20,0		41,6	
"	4		12,0		23,6		45,2	
"	5		15,8		27,3		49,0	
"	d							
"	e							
"	f							
Sum			42,0		99,7		208,0	
Mean		19 32.	8,80	19 42.	19,94	19 46.	41,60	
Red'n to								
m								
n . tan. δ								
c . sec. δ								
r								
T								
a		19 29	49,79	19 40	1,43	19 44	22,98	
Δ T								

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1868phae.proj..337A

Date		Aug 28		
Observer		E. P. A.		
Illumin'n		West		
Star		β Aquilae	λ Urs. Min.	τ Aquilae
Mag.		6 5	5 5 7,3	6 5 5
δ				
Wire	a			
"	b			
"	c			
"	1	19.51 3.5		
"	2	7.1		
"	3	10.9	19.58 5 54	19 59 55,3
"	4	14.3	20.01 5 54	59.0
"	5	18.1	5 17,7	20 00 2,7
				6,2
				9,9
"	d			
"	e			
"	f			
Sum		53.9		60 0 13.1
Mean		19 51 10,78	19 58 55.10	20 0 2,62
Red'n to				
m				
n . tan. δ				
c . sec. δ				
r				
T				
a		19 45 54,17	19 56 43,83	19 57 44,03
Δ T				

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1868phae.proj..337A

Date		Aug. 28		
Observer		E. S. A.		
Illumin'n		West		
Star		θ Aquilae	20 Vulpeculae	δ Aquilae
Mag.				
δ				
Wire	a			
"	b			
"	c			
"	1		20 8 41.4	20 10 23.8
"	2		45.5	27.5
"	3	20 6 50.8	49.5	31.2
"	4	54.5	53.6	35.0
"	5	58.0	57.8	38.7
"	d			
"	e			
"	f			
Sum		163.3	247.8	156.2
Mean		20 6 . 54.43	20 8 49.54	20 10 31.24
Red'n to				
m				
n . tan. δ				
c . sec. δ				
r				
T				
a				
Δ T				

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1868phae.proj..337A

Date		Aug 28							Aug 29				
Observer		E. S. A.											
Illumin'n		West.											
Star		α^2 Capricorni				κ Cephei.			22_1 Camelop.				
Mag.													
δ		12	57			77	19		69	21			
Wire	a												
"	b												
"	c												
"	1	20	12	57.9		20	15	6.3	18	6	19.4		
"	2		13	1.5				22.7			30.1		
"	3		13	5.3				39.0			40.8		
"	4		13	8.9				55.3			50.8		
"	5			12.5			16	12.0		7	00.8		
"	d												
"	e												
"	f												
Sum		101	5	26.1		101	15	15.3	90	33	21.9		
Mean		20	13	5.22		20	15	39.06	18	6	40.38		
Red'n to m													
n. tan. δ													
c. sec. δ													
r													
T													
a		20	16	46.35		20	13	24.13	6	4	19.74		
Δ T													

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1868phae.proj..337A

Date		Aug 24		
Observer		E. S. F.		
Illumin'n		Wedge		
Star		γ Serpentis	δ Ursæ Min.	B.A.C. 6255
Mag.		3 5 6	4 5 6	
δ		2 56	86 36 42,60	
Wire	a			
"	b			
"	c			
"	1	18 16 44,2	18 15 10,0	18 20 20,9
"	2	47,7		26,4
"	3	51,4		31,9
"	4	55,0	18 14,7	37,3
"	5	58,7	19 14,4	42,9
"	d			
"	e			
"	f			
Sum		257,0		159,4
Mean		18 16 51,40	18 17 29,70	18 20 31,88
			18 17 9,41	
Réd'n to m				
n . tan. δ				
c . sec. δ				
r				
T				
a		18 14 30,87	18 14 56,70	
Δ T				

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1868phae.proj..337A

Date		Aug. 29		
Observer		E. S. H.		
Illumin'n		West		
Star		Draconis	B.A.C. 6300	B.A.C. 6318
Mag.				
δ				
Wire	a			
"	b			
"	c			
"	1	18 24 6.9	18 26 21.7	18 28 00.4
"	2	13.8	25.7	7.9
"	3	20.8	29.6	15.0
"	4	27.5	33.5	21.9
"	5	34.7	37.7	29.0
"	d			
"	e			
"	f			
Sum		103.7	148.2	74.2
Mean		18 24 20.74	18 26 29.64	18 28 14.84
Red'n to				
m				
n . tan. δ				
c . sec. δ				
r				
T				
a				
Δ T				

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1868phae.proj..337A

Date		Aug. 29		
Observer		E. S. A.		
Illumin'n		West		
Star		1 Aquilæ.	α Draconis.	ζ Lyræ.
Mag.		5		3 5
δ		8 20		40
Wire	a			
"	b			
"	c			
"	1	18 30 16,9	18 32 24,6	18 34 41,0
"	2	20,6	31,1	45,8
"	3	24,2	37,6	50,4
"	4	27,8	44,0	55,0
"	5	31,5	51,0	59,7
"	d			
"	e			
"	f			
Sum		121,0	183,3	251,9
Mean		18 30 24,20	18 32 37,66	18 34 50,38
Red'n to				
m				
n . tan. δ				
c . sec. δ				
r				
T				
a		18 27 63,63		18 30 30,07
Δ T				

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1868phae.proj..337A

Date		Aug 29		
Observer		E. S. A.		
Illumin'n		West		
Star		× 2 Aquilae	51 Cephei	β Lyrae
Mag.			87 14	
δ				
Wire	a			
"	b			
"	c			
"	1	18 37 18.2		18 47 25.9
"	2	21.9		30.2
"	3	25.5	18 40 8.8	34.4
"	4	29.4	41 23.8	38.9
"	5	33.0	42 36.5	43.3
"	d			
"	e			
"	f			
Sum		128.0	69.1	172.7
Mean		18 37 25.60	18 41 23.03	18 47 34.54
			18 40 7.59	
Red'n to m				
n . tan. δ				
c . sec. δ				
r				
T				
a			6 37 39.44	
Δ T				

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1868phae.proj..337A

Date		Aug. 29		
Observer		E. S. A.		
Illumin'n		West.		
Star		σ Sagittarii	ζ Lyrae	ζ Aquilae.
Mag.				
δ		26 27		13 41
Wire	a			
"	b			
"	c			
"	1	18 49. 16.8		18 1 35.7
"	2	24.0		39.6
"	3	28.0		43.2
"	4	31.9		46.9
"	5	36.2		50.7
"	d			
"	e			
"	f			
Sum		136.9		216.1
Mean		18 49 27.38		18 1 43.22
Red'n to m				
n . tan. δ				
c . sec. δ				
r				
T				
a		18 47 7.38		18 49 22.76
Δ T				

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1868phae.proj..337A

Date		Aug 29									
Observer		E. S. A.									
Illumin'n		West.									
Star		d Sagittarii				δ Draconis			δ Aquilæ		
Mag.											
δ		19	11	8		67	26		2	52	8
Wire	a										
"	b										
"	c										
"	1	18	12	10,0							
"	2			14,0		18	14	44,1	18	21	6,1
"	3			17,9				53,5			9,8
"	4			21,7			15	3,3			13,4
"	5			25,8				12,5			17,0
											20,8
"	d										
"	e										
"	f										
Sum				89,2				233,4			87,1
Mean		18	12	17,84		18	14	58,35	18	21	13,42
						18	14	53,62			
Red'n to											
m											
n . tan. δ											
c . sec. δ											
r											
T											
a		19	9	47,21		19	12	33,67	19	18	52,86
Δ T											

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1868phae.proj..337A

Date		Aug 29								
Observer		C. P. A.								
Illumin'n		Micr.								
Star		κ Aquilae			γ Aquilae			α Aquilae		
Mag.		7			19			8		
δ		10	18		8	32				
Wire	a	18	32	3,2	18	42	14,5	18	46	36,3
"	b			6,8			18,2			40,0
"	c			10,5			21,9			43,6
"	1			14,1			25,7			47,1
"	2			17,8			29,4			51,0
"	3									
"	4									
"	5									
"	d									
"	e									
"	f									
Sum				52,4			109,7			218,0
Mean		18	32	10,48	18	42	21,94	18	46	43,60
Red'n to m										
n . tan. δ										
c . sec. δ										
r										
T										
a		19	29	49,78	19	39	6,42	19	44	22,97
Δ T										

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1868phae.proj..337A

Date	Aug 29			
Observer	C. P. J.			
Illumin'n	West			
Star	β Aquilae	τ Aquilae	λ Urs. Min.	
Mag.	6	5.5	6	
δ			86 36	42,60
Wire a				
" b				
" c				
" 1	18 51 5,6	18 59 57,2		
" 2	9,1	19 00 1,0		
" 3	12,8	4,5	18 58	55,4
" 4	16,3	8,0	19 2	2,3
" 5	20,0	11,8	19 5	22,8
" d				
" e				
" f				
Sum	63,8	32,5		146,6
Mean	18 51 12,76	19 00 4,50	19 2	6,84
			18 58	58,12
Red'n to				
m				
n . tan. δ				
c . sec. δ				
r				
T				
a	19 45 47,16	19 57 44,02	18 14	56,70
Δ T				

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1868phae.proj..337A

Date		Aug 29		
Observer		E.P.C.H.		
Illumin'n		Weird		
Star		λ^2 Capricorni	κ Cephei	π Capricorni
Mag.				
δ		12 57	77 19	15 35
Wire	a			
"	b			
"	c			
"	1	19 12. 59	20 15 8.9	20 22 1.6
"	2	13 3.2	24.6	5.4
"	3	7.1	41.7	9.1
"	4	13 16.9	57.1	13.0
"	5	14.6	16 14.2	17.0
"	d			
"	e			
"	f			
Sum		3 57.7	2 06.5	46.1
Mean		19 13 7.10	20 15 41.30	20 22 9.24
Red'n to m				
n . tan. δ				
c . sec. δ				
τ				
T				
a		20 10 46.34	20 13 22.12	20 19 48.48
Δ T				

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1868phae.proj..337A

Date	Aug 29	Aug. 31	
Observer	E. P. A.	E. P. A.	
Illumin'n	West		
Star	ε Delphini	δ Urs. Min.	1 c Aquilae
Mag.			
δ	10 52	86 36 47,56	18 20
Wire a			
" b			
" c			
" 1	20 29 10,1	18 15 16,1	18 30 20,6
" 2	13,9	16 15,2	24,4
" 3	17,5	17 15,6	28,0
" 4	21,1	18 16,6	31,6
" 5	24,9		35,1
" d			
" e			
" f			
Sum	875	1835	1397
Mean	20 29 17,50	18 16 45,87 18 17 16,47	18 30 27,94
Red'n to			
m			
n . tan. δ			
c . sec. δ			
r			
T			
a	20 26 58,91	18 14 55,91	18 27 63,58
Δ T			

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1868phae.proj..337A

Date		Aug 31		
Observer		E. S. F.		
Illumin'n		West.		
Star		α Lyrae.	β Lyrae	σ Sagittarii
Mag.				
δ		38 40	32 13	26 27
Wire	a			
"	b			
"	c			
"	1	18 34 44,8	18 47 29,6	18 49 23,5
"	2	47,4	33,9	27,7
"	3	54,0	38,4	31,8
"	4	58,8	42,7	35,7
"	5	35 3,6	47,0	39,9
"	d			
"	e			
"	f			
Sum		267,6	191,6	158,6
Mean		18 34 53,52	18 47 38,32	18 49 31,72
Red'n to m				
n . tan. δ				
c . sec. δ				
r				
T				
a		18 32 39,02	18 45 14,38	18 47 7,34
Δ T				

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1868phae.proj..337A

Date	1868	Aug. 31			Sept. 5			Sept. 5			
Observer		E. P. A.			A. S.			E. P. A.			
Illumin'n		West.			W.			W.			
Star		ζ Aquilae			Polaris			χ Cygni			
Mag.		3	4								
δ		13	41					38°	40'		
Wire a											
" b											
" c											
" 1		19	1	44.6	13	9	27.3	18	34	54.3	
" 2				44.1		11	59.6			59.0	
" 3				48.0		14	30.5		35	3.7	
" 4				51.7		16	58.5			8.0	
" 5				55.2		19	26.0			12.9	
" d											
" e											
" f											
				2346							
Sum				2396			140.4			17.9	
Mean		19	1	47.92	13	14	28.04	18	35	3.58	
		19	1	46.92							
Red'n to m										+ 1.00	
n . tan. δ										− .02	
c . sec. δ											
r											
T										4.56	
a		18	49	22.73				18	32	29.91	
Δ T										2 34.65	

n = 4.25

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1868phae.proj..337A

Date	1868	Sept. 5	Sept. 5	Sept. 5.
Observer		E. P. A.	E. P. A.	E. P. A.
Illumin'n		W.	W.	W.
Star		61 Cephei	β Lyrae	σ Sagittarii
Mag.				
δ			33° 13′	
Wire a				
" b				
" c				
" 1			18 47 39.5	18 49 33.4
" 2			43.7	37.6
" 3		18 40 21,3	48.0	41,5
" 4		41 37,0	52.4	45,7
" 5		42 52,6	56.7	49,7
" d				
" e				
" f				
Sum			240.3	207,9
Mean			18 47 48.06	18 49 41,58
Red'n to $\overline{m}$			+ 1.00	
n . tan. δ			− .06	
c . sec. δ				
r				
T			29,00	
a			18 40 1426	
Δ T			2 34,71	

n = +.323 from all the stars on this evening

c = −.100 from the stars

n = +.334 } most probable values
c = −.121 }

Illumination West (?)

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1868phae.proj..337A

Date	1868		Sept. 5			Sept. 5			Sept. 5		
Observer			E.P.A. W.			E.P.A. W.			E.P.A. W.		
Illumin'n											
Star			50 Draconis			ζ Aquilae			d Sagittarii		
Mag.											
δ											
Wire	a										
"	b										
"	c										
"	1	18	52	43,7	19	1	49,1	19	12	23,7	
"	2			57,8			52,7			27,5	
"	3		53	11,9			56,7			31,3	
"	4			26,0		2	00,3			35,1	
"	5			40,5			4,6			39,0	
"	d										
"	e										
"	f										
Sum				59,9			262,8			156,6	
Mean		18	53	11,98	19	1	56,56	19	12	31,32	
Red'n to											
m											
n . tan. δ											
c . sec. δ											
r											
T											
a											
Δ T											

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1868phae.proj..337A

Date 1868	Sept. 5	Sept. 5	Sept. 5
Observer	E. P. A.	E. P. A.	E. P. A.
Illumin'n	W.	W.	W.
Star	δ Draconis	Pr. VII 67	τ Draconis
Mag.			
δ			
Wire a	~~19 14 47,9~~		
" b	~~57,0~~		
" c	~~15 6,9~~		
	~~15,8~~		
" 1	19 14 ~~47,9~~	19 19 22,1	
" 2	57,0	32,1	
" 3	15 6,9	42,0	20 20 40,2
" 4	15,8	52,0	52,7
" 5	25,7	20 2,2	21, 5,6
" d			
" e			
" f			
Sum	333	210,4	
Mean	19 15 6,66	19 19 42,08	
Red'n to			
$\overline{m}$			
n . tan. δ			
c . sec. δ			
r			
T			
a			
Δ T			

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1868phae.proj..337A

Date	1868	Sept. 5	Sept. 5	Sept. 5
Observer		E. P. A.	E. P. A.	E. P. A.
Illumin'n		West	East.	E.
Star		κ Aquilae	γ Aquilae	χ Aquilae
Mag.				
δ				
Wire a				
" b				
" c				
" 1		19 32 16.5		19 44 49.4
" 2		20.2		53.1
" 3		24.0	19 42 35.2	56.8
" 4		27.5	39.0	45 00.2
" 5		31.2	42.5	3.9
" d				
" e				
" f				
Sum		119.7		289.4
Mean		19 32 23.94		19 44 56.88
Red'n to				
m				
n . tan. δ				
c . sec. δ				
r				
T				
a				
Δ T				

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1868phae.proj..337A

Date	1868	Sept. 5			Sept. 5			Sept. 5			
Observer		E. P. A.			E. P. A.			E. P. A.			
Illumin'n		E.			E.			E.			
Star		β Aquilae			λ Ves. Min.			τ Aquilae			
Mag.											
δ											
Wire a											
" b											
" c											
" 1		19	54	18.8	19	52	29.9	20	00	10,4	
" 2				22,3		55	48,2			14,2	
" 3				26.0		58	54,7			17.9	
" 4				29,7	20	2	4.5			21,6	
" 5				33,2		5	21,2			25,2	
" d											
" e											
" f											
Sum				130,0			279,5			89,3	
Mean		19	51	26,0	19	58	55,90	20	00	17,86	
Red'n to											
m											
n . tan. δ											
c . sec. δ											
r											
T											
a											
Δ T											

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1868phae.proj..337A

Date	1868		Sept. 5			Sept. 5			Sept. 5					
Observer			E.P.A.			E.P.A.			E.P.A.					
Illumin'n			E.			E.			E.					
Star			α^2 Capricorni			κ Cephei			π Capricorni					
Mag.														
δ														
Wire	a													
"	b													
"	c													
"	1	20	13	13.0	20	15	20,1	20	22	15.2				
"	2			17.6			36.9			18,9				
"	3			20.4			53,5			22.7				
"	4			24.2		16	10,3			26,4				
"	5			28.0			27.4			30,3				
"	d													
"	e													
"	f													
Sum				102,6			268,2			113,5				
Mean		20	13	20,52	20	15	53,64	20	22	22,70				
Red'n to														
m														
n. tan. δ														
c. sec. δ														
τ														
T														
a														
Δ T														

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1868phae.proj..337A

Date	1868	Sept. 5	Sept. 5	Sept. 5
Observer		E. P. A.	E. P. A.	E. P. A.
Illumin'n		E.	E.	E.
Star		ε Delphini	Groombridge 3241	χ Cygni
Mag.				
δ		10° 52′		44° 49′
Wire	a			
"	b			
"	c			
"	1	20 29 23.3		20 39 22.0
"	2	27.2		27.2
"	3	30.7		32.6
"	4	34.6		37.7
"	5	38.2		42.9
"	d			
"	e			
"	f			
Sum		154.0		162.4
Mean		20 29 30.80		20 39 32.48
Red'n to				
m		+ 1.00		+ 1.00
n . tan. δ		− .18		+ .02
c . sec. δ				
r				
T		31.62		33.50
a		20 26 56.86		20 36 58.71
Δ T		2 34.76		2 34.79

$n = +.23$

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1868phae.proj..337A

Date	1868 Sept 7									
Observer	E P. A.									
Illumin'n	East									
Star	σ Sagittarii			δ Sagittarii			ν Draconis			
Mag.										
δ										
Wire a										
" b										
" c										
" 1	18	48	37.7	19	12	27,3	19	14	54.7	
" 2			41.4			31,2	19	15	00,6	
" 3			45.3			35.1			10,1	
" 4			49.5			39 1			13,4	
" 5			53.7			42.9			29,1	
" d										
" e										
" f										
Sum			227,1			175,6			50,9	
Mean	18	48	45,42	19	12	35,12	19	15	10,18	
Red'n to m										
n . tan. δ										
c . sec. δ										
r										
T										
a										
Δ T										

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1868phae.proj..337A

Date	1868 Sept 7			
Observer	E. P. A.			
Illumin'n	East			
Star	ν Aquilae	κ Aquilae	γ Aquilae	
Mag.				
δ				
Wire a				
" b				
" c				
" 1	19 21 23.7	19 32 20.7	19 42 31.7	
" 2	27.3	24.2	35.5	
" 3	31.0	27.9	39.2	
" 4	34.5	31.6	42.9	
" 5	38.0	35.2	46.8	
" d				
" e				
" f				
Sum	154.5	139.6	196.1	
Mean	19 21 30.90	19 32 27.92	19 42 39.22	
Red'n to				
m				
n . tan. δ				
c . sec. δ				
r				
T				
a				
Δ T				

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1868phae.proj..337A

Date	1868	Sept. 7					Sept 8	1868		
Observer		C. P. A								
Illumin'n		East								
Star		α Aquilae			τ Aquilae		λ Mrs. Mun			
Mag.										
δ										
Wire	a									
"	b									
"	c									
"	1	19	46	53,6	20	00	14.6	~~19~~	~~59~~	~~58,3~~
"	2			57,2			18,2			
"	3		47	00,8			22.0	19	59	58,3
"	4			4.6			25.8	20	2	17,8
"	5			8.0			29,2		5	16,1
"	d									
"	e									
"	f									
Sum				42,			1098			
Mean		19	47	0984	20	00	21,96			
Red'n to										
m										
n . tan. δ										
c . sec. δ										
τ										
T										
a										
Δ T										

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1868phae.proj..337A

Date	1868 Sept 8			
Observer	R. P. C. A.			
Illumin'n	East.			
Star	τ Aquilae		α² Capricorni	κ Cephei
Mag.				
δ				
Wire a				
" b				
" c				
" 1	20 00 16,6		20 13 19,2	20 15 26,5
" 2	20,4		~~22~~ 22,9	43,7
" 3	23,7		26,3	59,8
" 4	27,6		29,9	16 15,9
" 5	31,6		33,7	31,8
" d				
" e				
" f				
Sum	119,3		132,0	268,0
Mean	20 00 23,86		20 13 26,40	20 15 53,60
Red'n to m				
n . tan. δ				
c . sec. δ				
r				
T				
a				
Δ T				

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1868phae.proj..337A

Date	1868 Sept 8									
Observer	C.P.; C.A.									
Illumin'n	East									
Star	π Capricorni			ε Delphini			Gr. 3241			
Mag.										
δ										
Wire a										
" b										
" c										
" 1	20	22	20,9	20	29	39.7	20	32	52.7	
" 2			24,8			33.3		33	4,8	
" 3			28.8			36,9		~~36~~	16,4	
" 4			32.7			40,8			28.3	
" 5			36,1			~~44~~,3			36,9	
" d										
" e										
" f										
Sum			1433			1850			2591	
Mean	20	22	28,66	20	29	37,00	20	33	51,82	
Red'n to m										
n . tan. δ										
c . sec. δ										
r										
T										
a										
Δ T										

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1868phae.proj..337A

Date	1868 Sept. 8									
Observer	E. S. A.									
Illumin'n	East.									
Star	α Cygni			μ Aquarii			ν Cygni			
Mag.										
δ										
Wire a										
" b										
" c										
" 1	20- 38m	28,10		20	48	7,1	20	54	48,2	
" 2		33,00				10,9			53,1	
" 3		38,20				14,7			57,8	
" 4		43,5				18,7		55	2,6	
" 5		48,5				22,1			7,3	
" d										
" e										
" f										
Sum		1913				738			2890	
Mean	20 39	38,26		20	48	14,76	20	54	57,80	
Red'n to m										
n. tan. δ										
c. sec. δ										
r										
T										
a										
Δ T										

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1868phae.proj..337A

Date	1868 Sept 8									
Observer	E. P. A									
Illumin'n	East									
Star	T.Y.C. 1879			5² Mrs. Maj.			61 Cygni			
Mag.										
δ										
Wire a										
" b										
" c										
" 1	~~20 45 57.2~~			21 - 1	5.9		21 3	32.8		
" 2	20 55 53.2				15.4			37.4		
" 3	56 13.8				24.4			41.8		
" 4	35.4				34.3			46.6		
" 5	55.1				44.0			51.6		
" d										
" e										
" f										
Sum					1240			2696		
Mean				21 1	24.80		21 3	41.92		
Red'n to										
m										
n . tan. δ										
c . sec. δ										
r										
T										
a										
Δ T										

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1868phae.proj..337A

Date	1868 Sept 8										
Observer											
Illumin'n											
Star				3 Cygni			α Cephei			24 Urs. Maj.	
Mag.											
δ											
Wire a											
" b											
" c											
" 1	21	9	53.6	21	17	53.6	21	24	37		
" 2			57.8		18	1,2			14.4		
" 3		10	1,9			8,7			25,3		
" 4			6.1			16.6			36 0		
" 5			10,2			24,4			47,1		
" d											
" e											
" f											
Sum			~~00~~ 9,6			~~2,64~~ 4,45 h			126,2		
Mean	21	10	1,92	21	18	8,90	21	25	25,24		
Red'n to m											
n . tan. δ											
c . sec. δ											
r											
T											
a											
Δ T											

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1868phae.proj..337A

Date	1868	Sept 8							
Observer		C. P. A.							
Illumin'n		East							
Star		b Aquarii			b Leporis			ξ Aquarii	
Mag.									
δ									
Wire a									
" b									
" c									
" 1	21	27	12,5	21	29	19,7	21	33	19,1
" 2			15,9			30,0			22,8
" 3			19,2			40,5			26,6
" 4			22,9			51,2			30,1
" 5			26,8		30	1,6			33,8
" d									
" e									
" f									
Sum			97,3			203,0			132,4
Mean	21	27	19,46	21	29	40,60	21	33	26,48
Red'n to									
m									
n . tan. δ									
c . sec. δ									
r									
T									
a									
Δ T									

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1868phae.proj..337A

Date	1868	Sept 8.						
Observer		E. P. A.						
Illumin'n		East						
Star		ε Pegasi			μ Capricorni			
Mag.								
δ								
Wire	a							
"	b							
"	c							
"	1	21	40	17,9	21	48	41,6	
"	2			21,6			45,1	
"	3			25,2			48,9	
"	4			29,6			52,7	
"	5			32,6			56,4	
"	d							
"	e							
"	f							
Sum				126,3			244,7	
Mean		21	40	25,26	21	48	48,94	
Red'n to								
m								
n. tan. δ								
c. sec. δ								
r								
T								
a								
Δ T								

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1868phae.proj..337A

Date	1868	Sept. 15		
Observer		E. S. A.		
Illumin'n		East.		
Star		d Sagittarii	ν Draconis	δ Aquilae
Mag.				
δ				
Wire	a			
"	b			
"	c			
"	1	19 12 43.7		19 21 36.1
"	2	47.1		43.6
"	3	50.9		46.5
"	4	54.8	19 15 34.9	50.1
"	5	58.7	44.3	53.6
"	d			
"	e			
"	f			
Sum		254.7		229.5
Mean		19 12 50.94		19 21 45.90
Red'n to				
m				
n . tan. δ				
c . sec. δ				
r				
T				
a				
Δ T				

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1868phae.proj..337A

Date	1868	Sept. 15		
Observer		E. S. A		
Illumin'n		East		
Star		k Aquilae	γ Aquilae	ζ Aquilae
Mag.				
δ				
Wire	a			
"	b			
"	c			
"	1	19 32 36.1	19 42 47.7	19 47 9.4
"	2	39.9	51.3	13.6
"	3	43.6	55.0	16.7
"	4	47.1	58.9	20.3
"	5	50.8	43 2.4	23.9
"	d			
"	e			
"	f			
Sum		217.5	275.0	83.9
Mean		19 32 43.50	19 42 55.00	19 17 16.66
Red'n to				
m				
n . tan. δ				
c . sec. δ				
r				
T				
a				
Δ T				

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1868phae.proj..337A

Date	1868	Sept. 15	Sept 16	
Observer		C. S. A.		
Illumin'n		East		
Star		β Aquilae	γ Aquilae	ζ Aquilae
Mag.				
δ				
Wire a				
" b				
" c				
" 1		19 51 38,7	19 42 46,8	19 47 11 4
" 2		53,3	53,5	15.1
" 3		45,9	57,2	18,8
" 4		49 5	43 00,8	22.3
" 5		53.0	4,4	25.9
" d				
" e				
" f				
Sum		230.4	282,7	93,5
Mean		19 51 46,08	19 42 56,54	19 47 18,70
Red'n to				
m				
n . tan. δ				
c . sec. δ				
r				
T				
a				
Δ T				

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1868phae.proj..337A

Date	1868	Sept 16		
Observer		E. P. A.		
Illumin'n		East		
Star		β Aquilae	λ Mrs. Mon.	τ Aquilae
Mag.				
δ				
Wire	a			
"	b			
"	c			
"	1	19 54 40,7	~~19 55 52,0~~	20 0 32,4
"	2	44,3	19 55 52,0	36,2
"	3	48,0	19 59 7,1	39,7
"	4	51,7	20 02 19,4	43,4
"	5	55,2	5 27,8	47,0
"	d			
"	e			
"	f			
Sum		2 399		198,7
Mean		19 54 47,98		20 0 39,74
Red'n to				
m				
n . tan. δ				
c . sec. δ				
r				
T				
a				
Δ T				

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1868phae.proj..337A

Date	1868	Sept 16										
Observer		E. P. C. A.										
Illumin'n		East										
Star		ε Delphini		Gr. 3241								
Mag.												
δ												
Wire	a											
"	b											
"	c											
"	1	20	29	45.4	20	33	8.2	20	39	~~48.7~~		
"	2			49.1			20.2			~~54.9~~		
"	3			~~53.8~~			31.4			59.3		
"	4			~~58.5~~			43.4					
"	5		30	60.2			55.0					
"	d											
"	e											
"	f											
Sum				264.0			1482					
Mean		20	29	52.80	20	33	29.64					
Red'n to												
m												
n . tan. δ												
c . sec. δ												
r												
T												
a												
Δ T												

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1868phae.proj..337A

Date	1868 Sept 16			
Observer	C. P. A.			
Illumin'n	East			
Star		2 Cygni	M Aquarii	V Cygni
Mag.				
δ				
Wire a				
" b				
" c				
" 1		20 39 43.7	20 48 23.3	20 55 4.6
" 2		44.3	27.6	9.2
" 3		44.0	30.7	13.6
" 4		44.3	34.3	15.4
" 5		30 4.5	38.0	23.3
" d				
" e				
" f				
Sum		2708	1513.3	685.3
Mean		20 39 54.16	20 48 30.66	20 55 13.66
Red'n to				
m				
n . tan. δ				
c . sec. δ				
r				
T				
a				
Δ T				

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1868phae.proj..337A

Date 1868	Sept 6									
Observer	O. P. A.									
Illumin'n	East									
Star	TYC 1879	σ^2 Mrs. Maj.				61 Cygni				
Mag.										
δ										
Wire a										
" b										
" c										
" 1		21	1	22,2	21	3	48.4			
" 2	20 56 7.7			31,4			53.0			
" 3	28.6			41.2			57.7			
" 4	50.0			54.6		4	2.1			
" 5	57 10.8		2	04.6			6.8			
" d										
" e										
" f										
Sum				2060			288.0			
Mean		21	1	41,20	21	3	57.60			
Red'n to										
m										
n . tan. δ										
c . sec. δ										
τ										
T										
a										
Δ T										

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1868phae.proj..337A

Date 1868		Sept 16		
Observer		E. P. A.		
Illumin'n		East		
Star		ζ Cephei	1 Draconis	24 Ursæ Maj.
Mag.				
δ				
Wire	a			
"	b			
"	c			
"	1	21 18 9.2		21 25 20.8
"	2	16.8		31.0
"	3	24.7		41.4
"	4	32.6	21 21 21.3	52.6
"	5	40.1	46.9	26 3.6
"	d			
"	e			
"	f			
Sum		123.4		209.4
Mean		21 18 24.68		21 25 41.88
Red'n to				
m				
n . tan. δ				
c . sec. δ				
r				
T				
a				
Δ T				

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1868phae.proj..337A

Date	1868	Sept 16		
Observer		E. S. A.		
Illumin'n		East		
Star		β Aquarii	β Cephei	ξ Aquarii
Mag.				
δ				
Wire	a			
"	b			
"	c			
"	1	21 27 28,0	21 29 35,1	21 33 34,9
"	2	31,8	45,7	38,8
"	3	33,3	56,4	42,4
"	4	39,1	30 7,1	48,0
"	5	42,8	17,4	49,7
"	d			
"	e			
"	f			
Sum		175,0	281,7	231,8
Mean		21 27 35,00	21 29 56,34	21 33 46,36
Red'n to				
m				
n . tan. δ				
c . sec. δ				
r				
T				
a				
Δ T				

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1868phae.proj..337A

Date 1868	Sept 16			
Observer	E. P. H.			
Illumin'n	East			
Star	E Pegasi	μ Capricorni	79 Draconis.	
Mag.				
δ				
Wire a				
" b				
" c				
" 1	21 40 33.6	21 48 57.1		
" 2	37.4	49 1.3	28 54 3.6	
" 3	41.0	5.0	14 3	
" 4	44.7	8.6	26.1	
" 5	45.4	12.4	38.7	
" d				
" e				
" f				
Sum	205.1	24.8		
Mean	21 40 41.0	21 49 4.96		
Red'n to				
m				
n . tan. δ				
c . sec. δ				
r				
T				
a				
Δ T				

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1868phae.proj..337A

Date 1868	Sept 16	1868 Sept 17		
Observer	E. P. J.			
Illumin'n	East			
Star	ζ Aquarii	γ Aquilae	ζ Aquilae	
Mag.				
δ				
Wire a				
" b				
" c				
" 1	22 1 52,0	19 42 52,0	19 47 13 4	
" 2	54.7	55 5	17.1	
" 3	59.3	59.3	20.7	
" 4	2 2.7	43 2,8	24.3	
" 5	6.4	6.7	27.8	
" d				
" e				
" f				
Sum	296.1	296.3	103.3	
Mean	22 1 59,22	19 42 59,26	19 47 24,66	
Red'n to				
m				
n . tan. δ				
c . sec. δ				
τ				
T				
a				
Δ T				

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1868phae.proj..337A

Date	1868	Sept 17		
Observer		E P A.		
Illumin'n		East		
Star		β Aquilae	λ Nov. Mon.	t Aquilae
Mag.				
δ				
Wire	a			
"	b			
"	c			
"	1	19 51 42,9		20 00 34,5
"	2	46,1		38,1
"	3	49,9	1.8 54 8,7	41,7
"	4	53,4	2.0 2 25,7	45,3
"	5	56,9	5 37,0	46,1
"	d			
"	e			
"	f			
Sum		249,2		208,7
Mean		19 51 49,84		20 00 41,74
Red'n to				
m				
n . tan. δ				
c . sec. δ				
r				
T				
a				
Δ T				

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1868phae.proj..337A

Date 1868	Sept 17			
Observer	E. P. A.			
Illumin'n	East			
Star	~~ε Draconis~~	π Capricorni	ε Delphini	
Mag.	22 Capricorni			
δ				
Wire a				
" b				
" c				
" 1	20 13 37,3	20 22 39,1	20 29 47,6	
" 2	41,0	42,8	51,3	
" 3	44,6	46,6	54,9	
" 4	48,5	50,4	58,6	
" 5	52,1	54,3	30 2,2	
" d				
" e				
" f				
Sum	223,5	193,2	274,6	
Mean	20 13 44,70	20 22 38,64	20 29 54,92	
Red'n to				
m				
n . tan. δ				
c . sec. δ				
r				
T				
a				
Δ T				

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1868phae.proj..337A

Date 1868	Sept 17			
Observer	E. P. A.			
Illumin'n	East			
Star	α Cygni	μ Aquarii	ν Cygni.	
Mag.				
δ				
Wire a				
" b				
" c				
" 1	20 39 46,1	20 48 25,6	20 55 6,0	
" 2	51,4	29,4	11,0	
" 3	56,2	33,1	16,0	
" 4	40 1,4	36,8	20,9	
" 5	6,4	40,3	25,4	
" d				
" e				
" f				
Sum	281,5	165,2	79,3	
Mean	20 39 56,30	20 48 33,04	20 55 15,86	
Red'n to m				
n . tan. δ				
c . sec. δ				
r				
T				
a				
Δ T				

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Date	1868 Sept 17		
Observer	E. P. A.		
Illumin'n	East		
Star	TYC 1879	61[1] Cygni	ζ Cygni.
Mag.			
δ			
Wire a			
" b			
" c			
" 1		21 3 50.6	21 10 11.6
" 2	20 56 11.2	55.5	15.7
" 3	31.9	59.9	19.9
" 4	51.5	4 4.5	23.8
" 5	57 13.4	9.0	28.2
" d			
" e			
" f			
Sum		299.5	99.2
Mean		21 3 59.90	21 10 19.84
Red'n to			
m			
n . tan. δ			
c . sec. δ			
τ			
T			
a			
Δ T			

1868phae.proj..337A

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1868phae.proj..337A

Date	1868 Sept 17			
Observer	E. P. A.			
Illumin'n	East			
Star	2 Cephei	1 Pegasi.	24 Ursæ Maj.	
Mag.				
δ				
Wire a				
" b				
" c	20 18 11,7	~~20 19 17,4~~	20 25 22,7	
" 1	19,2	20 19 17,4	33,0	
" 2	27,0	21,2	43,7	
" 3	34,8	24,9	54,5	
" 4	42,2	28,6	26 5,6	
" 5				
" d				
" e				
" f				
Sum	1349		219,5	
Mean	20 18 26,98		20 25 43,90	
Red'n to				
m				
n. tan. δ				
c. sec. δ				
r				
T				
a				
Δ T				

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1868phae.proj..337A

Date 1868	Sept 17			
Observer	C. S. A.			
Illumin'n	East			
Star	β Aquarii	β Leporis	ζ Aquarii	
Mag.				
δ				
Wire a				
" b				
" c				
" 1	20 25 39,1	20 29 37,2	20 33 37,3	
" 2	33,8	47,7	40,1	
" 3	37,0	58,3	44,7	
" 4	41,1	30 9 3	48,2	
" 5	44,4	19,8	52,0	
" d				
" e				
" f				
Sum	186,4	292,3	222,3	
Mean	20 25 37,24		20 33 44,46	
Red'n to m				
n . tan. δ				
c . sec. δ				
r				
T				
a				
Δ T				

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1868phae.proj..337A

Date	1868	Sept 17.								
Observer		E P A.								
Illumin'n		East								
Star		ε Pegasi			11 Cephei			μ Capric.		
Mag.										
δ										
Wire	a									
"	b									
"	c									
"	1	20	40	35.7	20	42	39.1	26	48	59.4
"	2			39.4			49.8		49	3.1
"	3			43.2		43	00.5			6.8
"	4			46.8			12.0			10.7
"	5			50.4			22.8			14.4
"	d									
"	e									
"	f									
Sum				215.5			4.2			34.4
Mean		20	40	43.10	20	43	00.84	26	49	6.88
Red'n to										
m										
n . tan. δ										
c . sec. δ										
r										
T										
a										
Δ T										

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1868phae.proj..337A

Date	1868	Sept 17			Sept 18						
Observer		E. P. A.									
Illumin'n		East									
Star		79 Draconis			d Sagittarii			τ Draconis			
Mag.											
δ					19° 11′ S.			73° 7′			
Wire	a										
"	b										
"	c										
"	1	21	53	54.1	19	12	46.3				
"	2		54	38			53.2	19	20	52.5	
"	3			16.9			57.2		21	4.7	
"	4			28.7		13	00.9			17.9	
"	5			41.1			4.6			29.3	
"	d										
"	e										
"	f										
Sum				810							
Mean		21	54	16.20							
Red'n to											
m											
n . tan. δ											
c . sec. δ											
r											
T											
a		1c			19	9	56.85	19	18	6.11	
Δ T											

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1868phae.proj..337A

Date	1868 Sept 18			
Observer	E. P. A.			
Illumin'n	East.			
Star	K Aquilae	γ Aquilae	α Aquilae	
Mag.				
δ	7° 19' S.	10° 18'	8° 32'	
Wire a				
" b				
" c				
" 1	19 32 42.2	19 42 53.7	19 47 15.4	
" 2	45.8	57.1	18.8	
" 3	49.4	43 00.9	22.6	
" 4	53.1	4.7	26.3	
" 5	56.7	8.3	30.1	
" d				
" e				
" f				
Sum				
Mean				
Red'n to				
m				
n. tan. δ				
c. sec. δ				
r				
T				
a	19 29 49.30	19 40 1.14	19 44 22.70	
Δ T				

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1868phae.proj..337A

Date	1868	Sept 18							
Observer		E. S. A.							
Illumin'n		East							
Star		ε Draconis		22 Capricorni			π Capricorni		
Mag.									
δ		69° 56′		12° 57′ S.			18° 38′ S.		
Wire	a								
"	b								
"	c								
"	1	19 51	17.4	20	13	38.8	20	22	40.8
"	2		27.6			42.7			44.8
"	3		37.8			46.2			48.4
"	4		47.6			49.9			52.4
"	5		58.8			53.6			56.2
"	d								
"	e								
"	f								
Sum									
Mean									
Red'n to									
m									
n . tan. δ									
c . sec. δ									
r									
T									
a		19	18	38.68	20	10	46.12	20	19	48.29
Δ T									

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1868phae.proj..337A

Date 1868	Sept. 18		
Observer	E. P. A.		
Illumin'n	East.		
Star	ε Delphini	Gr. 3421	λ Cygni
Mag.			
δ	10° 32′	72° 6′	44° 49′
Wire a	20 29 49,4	20 32 [illegible]8.0	20 39 48,0
" b	53,2	6.9	53,6
" c	58	10,6	58,0
" 1			
" 2	30 00,3	14,0	40 2,9
" 3	4,0	17,8	8,2
" 4			
" 5			
" d			
" e			
" f			
Sum			290.1
Mean			20 39 58.02
Red'n to			
m			$\bar{m}$ = +.77
n . tan. δ			+.03
c . sec. δ			+.17
r			
T			20 39 58.99
a	20 26 56,71	20 30 36.60	20 36 58.47
Δ T			3 0.52

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1868phae.proj..337A

Date	1868 Sept. 18			
Observer	E.S.A.			
Illumin'n	East			
Star	μ Aquarii	ν Cygni	TYC 1879	
Mag.				
δ	9° 28' S.	40° 40'	80° 4'	
Wire a				
" b				
" c				
" 1	20 48 27.2	20 55 8.0		
" 2	31.0	13.0	20 56 11.4	
" 3	34.4	17.8	33.0	
" 4	38.2	22.3	42.8	
" 5	41.8	lost		
" d				
" e				
" f				
Sum				
Mean				
Red'n to				
m				
n. tan. δ				
c. sec. δ				
r				
T				
a	20 45 34.41	20 52 17.77	20 53 34.87	
Δ T				

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1868phae.proj..337A

Date	1868	Sept 18								
Observer		E. P. A.								
Illumin'n		East.								
Star		61 Cygni			3 Cygni			α Cephei		
Mag.										
δ		38°	7′		29°	42′		62°	2′	
Wire a										
" b										
" c										
" 1	21	3	5.21	21	10	13.4	21	18	13.0	
" 2			5.72			17.6			21.0	
" 3		4	1.6			21.8			28.8	
" 4			6.2			26.0			35.8	
" 5			11.0			30.0			43.4	
" d										
" e										
" f										
Sum			8.1			108.8				
Mean	21	4	1.62	21	10	21.76				
Red'n to										
m			+ .77			+ .77				
n. tan. δ			− .64			− .44				
c. sec. δ			+ .16			+ .15				
r										
T	21	4	2.51	21	10	22.57				
a	21	1	1.80	21	7	21.75	21	15	29.16	
Δ T		3	0.71		3	0.82				

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1868phae.proj..337A

Date 1868	Sept 18			
Observer	E. S. A.			
Illumin'n	East			
Star	1 Pegasi	24 Ursæ Maj.	β Aquarii	
Mag.				
δ	19° 15′.	70° 24′	6° 9′ N.	
Wire a				
" b				
" c				
" 1	21 18 15,8	21 25 24,4	21 27 32,1	
" 2	19,6	34,6	35,8	
" 3	23,6	46,0	39,4	
" 4	26,7	56,5	43,1	
" 5	30,4	26 7,7	46,7	
" d				
" e				
" f				
Sum				
Mean				
Red'n to				
m				
n . tan. δ				
c . sec. δ				
r				
T				
a	21 16 1.60	9 22 44.25	21 24 39.12	
Δ T				

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1868phae.proj..337A

Date 1868			Sept 18			Sept 14					
Observer			O. P. A.								
Illumin'n			East								
Star			ζ Aquarii			γ Aquilae			ε Draconis		
Mag.											
δ			8° 26' N.			10° 18'			69° 56'		
Wire	a										
"	b										
"	c										
"	1		21	33	39.0	19	42	53.7	19	51	15.6
"	2				42.8			59.4			29.1
"	3				46.4		43	3.0			40.1
"	4				50.0			6.7			50.4
"	5				53.7			10.5		52	0.7
"	d										
"	e										
"	f										
Sum								15.3			198.9
Mean						19	43	3.06	19	51	39.78
Red'n to m						$\bar{m}$		+ .77			+ .77
n . tan. δ								− .22			+ .55
c . sec. δ								+ .12			+ .35
r											
T						19	43	3.73	19	51	41.45
a			21	30	46.01	19	40	1.13	19	48	38.62
Δ T							3	2.60		3	2.83

Sept. 19

c′ = +.12 Ill. East

n = +.30

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1868phae.proj..337A

Date	1868 Sept 19											
Observer	E. S. A.											
Illumin'n	East											
Star	θ Aquilae			μ^2 Capricorni			π Capricorni					
Mag.												
δ	6° 55′			12° 57′ S.			18° 38′ S.					
Wire a												
" b												
" c												
" 1	20	00	38.4	20	13	41.0	20	22	47.7			
" 2			42.0			44.6			46.7			
" 3			45.6			48.2			50.4			
" 4			49.3			52.0	lost					
" 5			53.0			55.6			57.9			
" d												
" e												
" f												
Sum			228.3			241.4						
Mean	20	00	45.66	20	13	48.28	20	22	50.38			
Red'n to												
m			+ .77			+ .77			+ .77			
n . tan. δ			− .24			− .34			− .38			
c . sec. δ			+ .12			+ .12			+ .13			
τ												
T	20	00	46.31	20	13	48.83	20	22	50.90			
a	Reduced 19	57	43.68	20	10	46.11	20	19	48.27			
Δ T		3	2.63		3	2.72		3	2.63			

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1868phae.proj..337A

Date 1868		Sept. 14								
Observer		C. S. A.								
Illumin'n		East								
Star		ε Delphini			Gr. 3241			2 Cygni		
Mag.										
δ		10°	52′		72°	6′		44°	49′	
Wire	a									
"	b									
"	c									
"	1	20	29	51.3	20	33	14.2	20	39	50.0
"	2			55.0			25.6			55.0
"	3			58.7			37.8		40	00.0
"	4		30	2.3			49.2			5.1
"	5			6.0						10.6
"	d									
"	e									
"	f									
Sum				293.3						0.7
Mean		20	29	58.66	20	33	37.59	20	40	0.14
Red'n to m				+.77			+.77			+.77
n. tan. δ				−.22			+.65			+.02
c. sec. δ				+.12			+.39			+.17
r										
T		20	29	59.33	20	33	39.40	20	40	1.10
					Reduced					
a		20	26	56.69	20	30	36.75	20	36	58.45
Δ T			3	2.64		3	2.65		3	2.65

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1868phae.proj..337A

Date	1868	Sept 19						Sept 21				
Observer		E. S. J.										
Illumin'n		East										
Star		μ Aquarii			ν Cygni			γ Aquilae				
Mag.												
δ		9° 28' S.			40° 40'			10° 18'				
Wire	a											
"	b											
"	c											
"	1	20	48	29.3	20	55	10,0	19	42	59.8		
"	2			33,0			15,1		43	3.6		
"	3			36,5			19.7			7.2		
"	4			40,3			24.4			10.8		
"	5			43.9			29,2			14.6		
"	d											
"	e											
"	f											
Sum				183,0			98.4			36,0		
Mean		20	48	36.60	20	55	19.68	19	43	7.20		
Red'n to												
m				+.77			+.77			+.77		
n. tan. δ				−.32			−.01			−.25		
c. sec. δ				+.12			+.16			+.12		
r												
T		20	48	37.17	20	55	20.60	19	43	7.84		
a		20	45	34.40	20	52	17.76	19	40	1.10		
Δ T			3	2.77		3	2.84		3	6.70		

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1868phae.proj..337A

Date	1868	Sept 21									
Observer		E. S. C.									
Illumin'n		East									
Star		ε Draconis			λ Urs. Min.			τ Aquilae			
Mag.											
δ		69° 56′			88°	55′	12.″7	6°	55′		
Wire	a										
"	b										
"	c										
"	1	19	51	22.7	19	52	54.9	20	0	42.1	
"	2			33.7			56 3.9			46.0	
"	3			43.8						49.8	
"	4			54.2						53.6	
"	5		52	4.9						57.1	
"	d										
"	e										
"	f										
Sum				219.3						248.6	
Mean		19	51	43.86	19	59	12.24	20	0	49.72	
Red'n to m				+.77			+.77			+.77	
n. tan. δ				+.64			+17.91			−.28	
c. sec. δ				+.35			+6.24			+.12	
τ											
T		19	51	45.62	19	59	37.17	20	0	50.33	
					Reduced			Reduced			
a		19	48	38.50	19	56	29.66	19	57	43.66	
Δ T			3	7.12		3	7.51		3	6.67	

Sept. 21
c′ = +.12 Ill. East.
n = +.35

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1868phae.proj..337A

Date	1868	Sept 21									
Observer		E. S. A.									
Illumin'n		East									
Star		α^2 Capricorni			π Capricorni			ϵ Delphini			
Mag.											
δ		12° 57′ S.			18° 38′ S.			10° 52′			
Wire	a										
"	b										
"	c										
"	1	20	13	44.9	20	22	46.8	20	29	55.3	
"	2			48.5			50.7			59.0	
"	3			52.1			54.4		30	2.7	
"	4			56.0			58.2			6.3	
"	5			59.6		23	2.0			9.9	
"	d										
"	e										
"	f										
Sum				261.1			272.1			13.2	
Mean		20	13	52.22	20	22	54.42	20	30	2.64	
Red'n to											
m				+.77			+.77			+.77	
n. tan. δ				−.40			−.44			−.25	
c. sec. δ				+.12			+.13			+.12	
τ											
T		20	13	52.71	20	22	54.88	20	30	3.28	
a		20	10	46.07	20	19	48.24	20	26	56.67	
Δ T			3	6.64		3	6.64		3	6.61	

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1868phae.proj..337A

Date	1868	Sept 21										
Observer		E. S. A.										
Illumin'n		East										
Star		α Cygni			ν Cygni				$61'$ Cygni			
Mag.												
δ		44°	49′		40°	40′			29°	42′		
Wire	a											
"	b											
"	c											
"	1	20	39	53.8	20	55	14.0		21	3	58.2	
"	2			59.0			18.8			4	3.0	
"	3		40	4.1			23.3				7.7	
"	4			9.2			28.3				12.4	
"	5			14.3			33.6				16.8	
"	d											
"	e											
"	f											
Sum				20.4			117.4				38.1	
Mean		20	40	4.08	20	55	23.48		21	4	7.62	
Red'n to m				+.77			+.77				+.77	
n. tan. δ				+.03			−.02				−.05	
c. sec. δ				+.17			+.16				+.15	
τ												
T		20	40	5.05	20	55	24.39		21	4	8.49	
									Reduced			
a		20	36	58.41	20	52	17.72		21	1	1.76	
Δ T			3	6.64		3	6.67			3	6.73	

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1868phae.proj..337A

Date	1868	Sept 21								
Observer		E. S. A.								
Illumin'n		East								
Star		γ Cygni			24 Mrs. Maj.			β Aquarii		
Mag.										
δ		29° 42′			70° 24′			6° 9′ S.		
Wire	a									
"	b									
"	c									
"	1	21	10	19.4	21	25	30.4	21	27	38.0
"	2			23.7			40.9			41.4
"	3			27.6			52.3			45.2
"	4			31.8		26	2.7			48.9
"	5			36.0			13.6			52.3
"	d									
"	e									
"	f									
Sum				138.5			259.9			225.8
Mean		21	10	27.70	21	25	51.98	21	27	45.16
Red'n to m				+.77			+.77			+.77
n . tan. δ				−.12			−1.86			−.36
c . sec. δ				+.14			−.36			+.42
r										
T		21	10	28.49	21	25	50.53	21	27	45.69
a		21	7	21.70	9	22	44.41	21	24	39.09
Δ T			3	6.79		3	6.12		3	6.60

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1868phae.proj..337A

Date	1868	Sept 21										
Observer		E. S. A.										
Illumin'n		East										
Star		ξ Aquarii				ε Pegasi				11 Cephei		
Mag.												
δ		8° 26′ S.				9° 17′				70° 43′		
Wire	a											
"	b											
"	c											
"	1	21	33	44.8		21	40	43.4		21	42	45.9
"	2			48.4				47.0				57.2
"	3			52.0				51.0			43	8.0
"	4			55.9				54.5				19.2
"	5			59.5				58.1				30.5
"	d											
"	e											
"	f											
Sum				260.6				254.0				40.8
Mean		21	33	52.12		21	40	50.80		21	43	8.16
Red'n to m				+ .77				+ .77				+ .77
n . tan. δ				− .37				− .26				+ .68
c . sec. δ				+ .12				+ .12				+ .36
τ												
T		21	33	52.64		21	40	51.43		21	43	9.97
a		21	30	45.99		21	37	44.81		21	40	3.42
Δ T			3	6.65			3	6.62			3	6.55

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1868phae.proj..337A

Date	1868	Sept 21									
Observer		E. P. A.									
Illumin'n		East									
Star		μ Capricorni			79 Draconis			α Aquarii			
Mag.											
δ		14° 10′ S.			73° 5′			0° 57′ S.			
Wire	a										
"	b										
"	c										
"	1	21	49	7.1	21	53	58.8	22	2	1.6	
"	2			11.0		54	11.3			5.5	
"	3			14.8			23.4			8.9	
"	4			18.5			35.8			12.5	
"	5			22.0			48.7			16.1	
"	d										
"	e										
"	f										
Sum				73.4			118.0			44.6	
Mean		21	49	14.68	21	54	23.60	22	2	8.92	
Red'n to m				+.77			+.77			+.77	
n. tan. δ				−.40			+.83			−.33	
c. sec. δ				+.12			+.41			+.12	
r											
T		21	49	15.17	21	54	25.61	22	2	9.46	
		Reduced									
a		21	46	8.49	21	51	18.82	21	59	2.87	
Δ T			3	6.68		3	6.79		3	6.61	

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1868phae.proj..337A

Date 1868		Sept 22.									
Observer		E. S. C.									
Illumin'n		East									
Star		ε Delphini			α Cygni			μ Aquarii			
Mag.											
δ		10°	53′		44°	49′		9°	28′	S.	
Wire	a										
"	b										
"	c										
"	1	20	29	57.3	20	39	56.2	20	48	35.2	
"	2		30	1.1		40	1.1			39.0	
"	3			4.9			6.2			42.5	
"	4			8.5			11.3			46.3	
"	5			12.1			16.3			50.0	
"	d										
"	e										
"	f										
Sum				23.9			31.1			213.0	
Mean		20	30	4.78	20	40	6.22	20	48	42.60	
Red'n to m				+.77			+.77			+.77	
n. tan. δ				−.25			+.03			−.38	
c. sec. δ				+.12			+.17			+.12	
r											
T		20	30	5.42	20	40	7.19	20	48	43.11	
a		20	26	56.65	20	36	58.39	20	45	34.36	
Δ T			3	8.77		3	8.80		3	8.75	

Sept. 22
c′ = +.12 Ill. East
n = +.35

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1868phae.proj..337A

Date 1868		Sept 22.						Sept. 28			
Observer		E. S. A.						E. S. A.			
Illumin'n		East						E.			
Star		ν Cygni			61 Cygni			γ Aquilae			
Mag.											
δ		40°	40′		38°	7′		10°	18″		
Wire	a										
"	b										
"	c										
"	1	20	55	16.00	21	4	00.3	19	43	13.6	
"	2			20.8			5.0			17.5	
"	3			25.8			9.7			21.0	
"	4			30.2			13.9			24.7	
"	5			35.3			18.9			28.4	
"	d										
"	e										
"	f										
Sum				128.1			47.8			105.2	
Mean		20	55	25.62	21	4	9.56	19	43	21.04	
Red'n to m				+.77			+.77			+.80	
n. tan. δ				−.02			−.03			−.12	
c. sec. δ				+.16			+.15			+.13	
r											
T		20	55	26.53	21	4	10.43	19	43	21.85	
					Reduced.						
a		20	52	17.70	21	1	1.77	19	40	0.97	
Δ T			3	8.83		3	8.66		3	20.88	

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1868phae.proj..337A

Date 1868		Sept. 28			Sept. 28			Sept. 28		
Observer		E. P. A.,			E. P. A.,			E. P. A.,		
Illumin'n		E.			E.			E.		
Star		α Aquilae			ε Draconis			κ Cephei		
Mag.										
δ		8° 32′			69° 56′			77° 19′		
Wire	a									
"	b									
"	c									
"	1	19	47	35.2	19	51	36.0	20	16	5.5
"	2			38.4						22.0
"	3			42.5			57.7			38.5
"	4			46.3		52	8.0			55.3
"	5			50.0			18.1		17	11.8
"	d									
"	e									
"	f									
Sum				212.9						193.1
Mean		19	47	42.58	19	51	57.32	20	16	38.62
Red'n to										
m				+ .80			+ .80			+ .80
n. tan. δ				− .12			+ .29			+ .56
c. sec. δ				+ .13			+ .37			+ .57
r										
T		19	47	43.39	19	51	58.78	20	16	40.55
a		19	44	22.53	19	48	36.07	20	13	19.56
Δ T			3	20.86		3	22.71		3	20.99

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1868phae.proj..337A

Date 1868		Sept. 28			Sept. 28		
Observer		E.P.A.			E.P.A.		
Illumin'n		E.			E.		
Star		π Capricorni			α Cygni		
Mag.							
δ		18° 38′ S.			44° 49′		
Wire	a						
"	b						
"	c						
"	1	20	23	0.8	20	40	7.7
"	2			4.6			12.8
"	3			8.4			17.8
"	4			12.2			23.0
"	5			16.0			27.9
"	d						
"	e						
"	f						
Sum				42.0			89.2
Mean		20	23	8.40	20	40	17.84
Red'n to m				+ .80			+ .80
n. tan. δ				− .20			+ .01
c. sec. δ				+ .13			+ .18
r							
T		20	23	9.13	20	40	18.83
a		20	19	48.13	20	36	58.25
Δ T			3	21.00		3	20.58

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1868phae.proj..337A

Date 1868		Sept. 29								
Observer		E S A.								
Illumin'n		East.								
Star		α^2 Capricorni			π Capricorni			ϵ Delphini		
Mag.										
δ		12° 57′ S.			18° 38′ S.			10° 52′		
Wire	a									
"	b									
"	c									
"	1	19	14	00.6	20	3	2.7	20	30	11.1
"	2			4.3			6.4			14.9
"	3			8.0			10.3			18.5
"	4			11.8			14.0			22.1
"	5			15.6			17.8			25.8
"	d									
"	e									
"	f									
Sum										
Mean										
Red'n to										
m										
n . tan. δ										
c . sec. δ										
τ										
T										
a		20	10	45.96	20	19	48.12	20	26	56.55
Δ T										

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Date 1868		Sept. 29		
Observer		C. S. A.		
Illumin'n		East		
Star		Lal. 3241	α Cygni	μ Aquarii
Mag.				
δ		72° 6′	44° 49′	9° 28′ S.
Wire	a			
"	b			
"	c			
"	1	20 33 33.4	20 40 9.7	20 48 49.1
"	2	45.6	14.9	52.8
"	3	57.1	19.8	56.4
"	4	34 8.9	25.3	49 0.2
"	5	20.3	30.2	3.8
"	d			
"	e			
"	f			
Sum				
Mean				
Red'n to				
m				
n . tan. δ				
c . sec. δ				
r				
T				
a		Reduced 20 30 36.12	20 36 58.22	20 45 34.26
Δ T				

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Date 1868	Sept. 29										
Observer	W							E. S. A.			
Illumin'n	East										
Star	ν Cygni			61 Cygni				3 Cygni			
Mag.											
δ	40°	40′		38°	7′			29°	42′		
Wire a											
" b											
" c											
" 1	20	54	29.4	21	4	14.0		21	10	35.1	
" 2			34.1			18.8				39.2	
" 3			39.0			23.2				43.4	
" 4			43.8			28.0				47.6	
" 5			48.6			32.2				51.9	
" d											
" e											
" f											
Sum											
Mean											
Red'n to											
m											
n. tan. δ											
c. sec. δ											
r											
T											
a	20	52	17.55	Reduced 21	1	1.64		21	7	21.38	
Δ T											

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Date 1868	Sept 29			
Observer	E.S.A.			
Illumin'n	East			
Star	1 Draconis	24 Urs. Maj.	β Aquarii	
Mag.				
δ	81° 54′	70° 24′	6° 9′ S.	
Wire a				
" b				
" c				
" 1	21 20 32.3	21 25 46.9	21 27 53.8	
" 2	57.6	57.3	57.5	
" 3	21 22.9	26 7.9	28 1.1	
" 4	49.0	19.6	4.8	
" 5	22 14.9	29.9	8.4	
" d				
" e				
" f				
Sum				
Mean				
Red'n to				
m				
n . tan. δ				
c . sec. δ				
r				
T				
a	9 17 58.46	9 22 44.85	21 24 39.01	
Δ T				

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1868phae.proj..337A

Date 1868	Sept. 24		Oct. 2	
Observer	C. S. A.		G. L. A.	
Illumin'n	East		East	
Star	ζ Aquarii	ε Pegasi.	Polaris	
Mag.				
δ	8° 26′ S.	9° 17′	88° 36′	
Wire a				
" b				
" c				
" 1	21 34 00.8	21 40 59.5	13 11 54.8	
" 2	4 5	41 3.0	14 7.7	
" 3	8.1	6.6	16 37.6	
" 4	11.8	10.4	19 7.9	
" 5	15.5	14.0	21 38.7	
" d				
" e				
" f				
Sum				
Mean				
Red'n to				
m				
n . tan. δ				
c . sec. δ				
r				
T				
a	21 30 45.91	21 37 44.73	Reduced 1 11 57.39	
Δ T				

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1868phae.proj..337A

Date	1867 Dec. 18				
Observer					
Illumin'n					
Star	7 Eridani	A. Eridani	BAC. 938		
Mag.					
δ					
Wire a					
" b					
" c					
" 1	2 49 26.0	2 52 40.7	2 52 41.5		
" 2	2 49 29.7	45.3	46.4		
" 3	2 49 33.6	50.2	51.0		
" 4	2 49 37.1	55.0	56.0		
" 5	2 49 41.0	59.8	53 02.7		
" d					
" e					
" f					
Sum	14 7 47.4	251.0	~~2~~ 255.6		
Mean	2 49 33.58	2 52 50.20	2 52 51.12		
Red'n to					
m					
n . tan. δ					
c . sec. δ					
r					
T					
a					
Δ T					

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Date			
Observer Illumin'n			
Star Mag. δ			
Wire a			
" b			
" c			
" 1			
" 2			
" 3			
" 4			
" 5			
" d			
" e			
" f			
Sum Mean			
Red'n to m n . tan. δ c . sec. δ			
τ			
T a			
Δ T			

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1888phae.proj..337A

Date			
Observer			
Illumin'n			
Star			
Mag.			
δ			
Wire	a		
"	b		
"	c		
"	1		
"	2		
"	3		
"	4		
"	5		
"	d		
"	e		
"	f		
Sum			
Mean			
Red'n to			
m			
n . tan. δ			
c . sec. δ			
τ			
T			
a			
Δ T			

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