

KG
11365
340

O'g

W. C. O.
Observations for Time
1871 Dec. 1 to 27.

KG-11365, 340

Harvard Coll. Obs.

Observations for Time,
for Longitude Purposes.

Field Reductions.

Russian Transit.
South Clock.

Henry Gannett. Observer.

2.4.2

KG 11365.340

Date

Dec 1 - 1871 -

Observer

Humin'n

Circle

H. G.

E

E

E

Star

Mag.

 δ γ Pegasi

6-1

 ϵ Ceti γ Cassiope

11-6

Wire

a

7 41.8

11. 51.5

b

26.3

12 7.1

23 31.5

c

13.4

~~20.5~~

4.7

1

7 3.7

~~38.5~~

50.9

2

54.6

38.5

10.9

3

6 38.3

54.3

44.3

4

10.3

5

19.0

d

41.0

e

56.0

f

15.31

Sum

Mean

~~7 41.80~~

6 38.30

12. 54.37

23. 44.30

Red'n to

m. λ

-0.03

-0.06

-0.05

+0.05

n. tan. i B6

-0.08

-0.06

-0.25

c. sec. δ

+12

+12

+26

 r

+0.01

-0.05

+0.06

T

38.31

54.32

44.30

a

37.90

53.54

44.08

 ΔT

+0.41

+0.78

+0.22

C2 - 12

C2 - 0.70

HARVARD
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Date	Dec 1 - 1871		
Observer	E E E		
Humid'n	Circle		
Star	K Draco, S & Cassiop β Ceti		
Mag.	3 - 11		
δ			
Wire	a		
"	b	26.17.0	31 25.0
"	c	45.0	52.6
"		11.5	14.6
"	1	58.8-	30.9
"	2	45.0	47.3
"	3	12.7	15.1
"	4	40.3	43.1
"	5	17.0	58.8
"		3.4	15.1
"	d		37.2
"	e	23 03	4.1
"	f	180	
Sum		4103	3438
Mean		58.81	14.90
Red'n to		-15	+20
m Δa		-19	+03
n. tan. δ B6		+14	-22
c. sec. δ		-36	+21
r		-56	+22
T		58.05	15.12
a		57.77	14.98
ΔT		+0.28	+0.19

Date			
Observer			
Illumin'n	Circle	E	E
Star		ζ Androm	32 Camelop
Mag.		Lb reg-	Lb reg-
δ		3, 14, 5	5 4 3-
Wire	a		
"	b	39. 25.7	42. 38.0
"	c	42.6	44. 7.8
"	1	56.0	45. 35.0
"	2	6.1	35.3
"	3	16.3	6.8
"	4	33.3	7.4
"	5	50.4	8.3
"	d	0.0	15
"	e	10.1	7.50
"	f	23.6	57.3
"		40.1	1.77
"		30 4.2	.89
Sum		264.2	
Mean		33.1	
Red'n to		+12	
m. Δa		-0.3	
n. tan. δ 36.		-.13	
c. sec. δ		+13	
τ		+0.9	
T		33.20	
a		32.74	
ΔT		0.46	

c = -.09

Date	Dec 1- 1876-		
Observer	C. C. W.		
Illumin'n	Circulo N.		
Star	ε Piscium Blandorn τ Piscium		
Mag.	4 - 11		
δ			
Wire	a		
"	b	55 16.6	1 19.7
"	c	31.7	38.0
		44.0	53.2
"	1	53.5	4.4
"	2	2.2	15.3
"	3	18.1	34.5
"	4	33.9	53.4
"	5	43.0	4.7
		52.4	16.0
"	d	4.9	31.0
"	e	20.4	49.9
"	f		
		32.07	32.01
		120	6.0
Sum		202.7	380.1
Mean		18.25	34.55
Red'n to		-11	-13
m	4a	-04	-01
n. tan. δ	36	-07	-10
c. sec. δ		-12	-15
r	-	-34	-39
T		17.91	34.16
a		17.46	33.71
Δ T		+45	+0.45

Date

Observer

Illumin'n Circle

W

Star

V Piscium · 5 Cassiop 38 Cassiop.

Mag.

3-11

δ

Wire a

" b

" c

" 1

" 2

" 3

" 4

" 5

" d

" e

" f

11. 18.0

34.9

48.4

58.9

8.7

26.2

43.8

54.0

4.3

18.1

25.3

350.6

60

290.6

26.42

15. 27.4

57.1

16 21.7

39.8

57.4

17 28.4

59.0

18 17.8

35.4

19 0.1

30.4

37 4.5

60

214.5

28.59

20 2.0

35.2

10.5

1.0

46.3

30.1

57.2

23.7

57.0

13.7

57.3

46.0

45.2

46.3

46.4

46.0

45.9

46.0

45.9

46.0

45.9

46.0

45.9

46.0

45.9

46.0

45.9

46.0

45.9

46.0

45.9

46.0

45.9

46.0

45.9

46.0

45.9

46.0

45.9

46.0

45.9

46.0

45.9

Sum

Mean

Red'n to

m Aa

n. tan. δ

c. sec. δ

-11

-02

-11

-13

-37

26.05

25.55

ΔT

+0.50

-21

+04

-19

-23

-59

28.00

27.57

+0.43

—

+08

-26

-34

-57

45.47

44.76

+0.71

Date

Dec 1- 1871

Observer

Illumin'n

Circle

W

E.

Star

Ho Cassiop

Ho Cassiop

Mag.

1-6 to 54.

5-1

 δ

Wire

a

"

b

"

c

"

1

"

2

"

3

"

4

"

5

"

d

"

e

"

f

	24.58.9	29	12.2
	22.4		41.6
	49.0		21.2
21.1	36.4	20.3	12.5
21.4	30.0	20.4	53.4
21.7	51.8	20.8	22.4
21.7	29.8	21.0	43.1
22.0	51.8	20.9	22.2
	22.0		
29		34	
	21.58	20.68	
	20.68		
	90		
	38/45		
	10/135	C=-.14	

Sum

Mean

 $\delta T = 0.40$ fast.

Red'n to

m

n. tan. δ c. sec. δ τ

T

a

 ΔT

+ 0.41	01	0501
.19	21	0441
.46	6	36
45	5	25
45	5	25
32	8	64
50	10	100
43	3	9

321
0.40 δT .

0701

01001

10

070

prob error of 100.

Date Dec. 2, 1871.

Observer

Hamin'n Circle

E

E

E

Star

L Cassiop. B Ceti.

Z Androm

Mag.

7 mid.

 δ

Wire a

" b

" c

" 1

" 2

" 3

" 4

" 5

" d

" e

" f

32 13.7

30.2

46.4

14.0

42.4

58.0

14.5

21 9 2

120

992

36 3.7

20.0

33.0

42.7

52.8

9.0

25.8

35.0

44.9

57.8

13.9

33.86

240

986

8.76

+2

+12

+46

-04

+32

+86

+12

+18

-10

+33

+27

+53

+53

+53

+53

+53

+53

+53

+53

+53

+53

+53

+53

+53

+53

+53

+53

39. 249

41.9

55.1

5.2

15.5

32.2

49.4

57.1

9.3

23.0

39.2

35.48

Sum

Mean

14.17

8.76

+2

32.25

+2

Red'n to

m

n. tan. δ c. sec. δ

+09

-21

-14

+53

+53

+53

+53

+53

+53

+53

+53

+53

+53

+53

+53

+53

+53

+53

+53

+53

+53

+53

+53

+53

+53

+53

C = -.30

a = +.50

Date	Dec. 2, 1871		
Observer	E E W		
Star	32 Camelopardis μ Andromedae E Piscium		
Mag.	fol. 345		
Wire	a		
"	b	42.37.2	48 20.1
"	c	44 24.2	39.9
"	1	45 33.4	55.2
"	2	33.3	6.7
"	3	7.0	18.9
"	4	6.8	38.4
"	5	6.7	58.2
"	d		9.4
"	e		21.0
"	f		36.8
Sum			55.9
Mean			36.05
			60
			420.5
			38.23
Red'n to			
m. Aa			+14
n. tan. d Bb.			+05
c. sec. d			-25
			+38
r			+1.81
T			+32
a			-28
ΔT			8.64
			38.55
			17.33
			6.60
			38.51
			56 17.45
			+2.04
			+0.04
			-0.12

Date	Dec 2, 1871		
Observer			
Illumin'n	Circulo	W	W
Star	B Androm t Piscium v Piscium		
Mag.			
δ	H - 11		
Wire	a		
"	b	1. 18.8	4. 8.2
"	c	37.6	18.4
"		52.4	36.3
"	1	4.0	54.1
"	2	14.8	5.1
"	3	34.0	
"	4	52.6	1821
"	5	4.1	
"		15.3	
"	d	30.5	
"	e	49.2	
"	f	3137	
Sum		3737	
Mean		33.97	36.42
Red'n to		-13	-02
m	Aa	+08	+13
n. tan. δ	B6.	-24	-23
c. sec. δ		-36	-35
r		-65	-47
T		33.32	35.95
a		33.70	36.40
ΔT		-0.38	-0.45

-0.48
 +.04
 +.04
 -.02
 -38
 -45
 -25

^{17.6}
 -0.25 δT

Instrument probably disturbed
both in azimuth & collimation
in reversal.

Date	Dec. 2, 1871 -		
Observer			
Illumin'n	Circ. N.	E.	E
Star	38 Cassiopeae		40 Cass.
Mag.	1-5	5-1	10-7
δ			
Wire	a		
"	b	18 50.0	22.28.9
"	c	55.5 33.0 12.7 9.4 3.0 35.0 16.5 0.5 44.5	44.5 54.9 10.8 21.4 37.0 56.4 12.7 40.0 45.8
"	1		25.46.4
"	2		53.5 23.1 56.5 57.6 26.1 28.4 51.2
"	3		
"	4	44.5	19.6
"	5	44.4	20.2
"		44.4	19.7
"		44.4	19.6
"	d	45.5	
"	e	45.0	
"	f	26	31
		45.62	19.78
		44.28	
		1.34	
Sum		3) 1.77	
Mean		.26	
		45.62	
Red'n to			
m	Ac	- .66	
n. tan. d	Bb.	- .45	
c. sec. d		- .86	
r		- 1.97	
T		43.65	
a		44.72	
ΔT		- 1.07	

Date *Dec. 2, 1871*

Observer

Illumin'n *Circle W*

Star

Mag.

 δ *40 Cass-
7-11-*

Wire a

" b

" c

" 1

" 2

" 3

" 4

" 5

" d

" e

" f

29 13.1
51.2
44.0
22.1
14.6
54.9
33.2
46.2
24.2

21.9
21.9
22.1

21.7
22.0

46

Sum

Mean

21.92
19.76

Red'n to

m

n. tan. δ c. sec. δ

333 / 1.080 (32)
999
810

r

T

a

 ΔT

1-

Date	Dec 5. 1871		
Observer	H. G.		
Illumin ⁿ	Cruli	rr	rr
Star	32 Camelop	μ Androm.	E Piscine
Mag.	6.2 L.C.	9 mid.	
δ			
Wire	a		
"	b	48 7.8	48 38.4
"	c		54.3
"	1		5.7
"	2		17.0
"	3		36.9
"	4		56.6
"	5		8.4
"	d		19.9
"	e		35.6
"	f		2.4
Sum			174.7
Mean	48. 7.40	36.97	15.88
Red'n to		-0.06	-0.11
m	Aa	-1.98 2.36 -0.24 0.02	-1.17 -0.15
n tan.	B6.	-0.87	+1.19
c. sec.		+2.15	-0.22
τ		-1.08 -0.66	-1.17 -0.38
T		6.72 7.12	36.80 36.80
a		7.07	38.48
ΔT		-0.35 +0.05	-1.68 -1.68

$$C = -0.22$$

$$a = 7.35 - 30 \quad " - 43$$

Date			
Observer			
Illumin'n	W	W	W
Star	Blandorn	τ Piscium	ν Piscium
Mag.	<u>9^m</u>	5 ^m 10	
δ			
Wire	a		
"	b	4 64	11.15.1
"	c	16.6	32.2
		50.4	46.0
"	1	1.8	56.2
"	2	12.7	6.2
"	3	31.9	23.8
"	4	51.9	41.2
"	5	2.2	51.6
		13.3	1.9
"	d	28.5	15.5
"	e	47.3	32.9
"	f	2927	2229
		60	60
Sum	3527		2629
Mean	32.06	34.60	23.63
Red'n to	-13	-03	-12
m	-05 - ~~4.07~~	-07 - ~~4.07~~	-10 - ~~4.08~~
n. tan. δ	+18	+17	+16
c. sec. δ	-26	-25	-24
τ	-26 - ~~-25~~	-20 - ~~-24~~	-30 - ~~-22~~
T	31.80 ~~31.81~~	34.40 ~~34.25~~	33.33 ~~33.57~~
a.	33.67	36.36	25.51
ΔT	-1.97 - ~~+1.86~~	-1.96 - ~~1.86~~	-2.18 - ~~2.18~~

Date	Dec. 5. 1871.			
Observer				
Illumin'n	Circle	N.	E.	
Star	5 Cassiop	38 Cassiopeae		
Mag.	1-6	1-5	5-1	
δ				
Wire	a			
"	b	15 24.5	18.47.2	22.26.2
"	c	54.5	42.7 50.4	51.5
"	1	16 18.6	43.1 5.6	18.8
"	2	37.0	42.6 27.0	53.9
"	3	54.3	42.5 57.4	37.1
"	4	17 25.2	41.8 41.5	50.5
"	5		24 42.56	41.7
"	d		41.4	41.0
"	e		1.16	41.5
"	f		2.87 1.580 (.20)	41.2
			5.74	41.6
			C = 20	20
				41.40
Sum				
Mean		15 24.5	42.56	
	mid wire 17. 25.20			
Red'n to				
m	Aa.	+17	+39	
n	B6.	+28	+58	
c. sec. δ		-43	-63	
r		-1.82 -29 +02	+14	
T		25.22 24.88	42.70	
a		27.49	44.62	
ΔT		2.58	1.92	
		2.27		

1.68

93

87

76

21.8

1.82

83

94

76

200

190

1001

1.91

$$\delta T = -1.91.$$

Date _____

Observer

Illustration

Star

Mag.

ॐ

Wire

a

b

C

1

2

67

4

5

d

e

f

Sum

Mean

Red'n to

m

 $n \cdot \tan. \delta$ c. sec. δ

T

T

a

 ΔT

Date	Dec. 5.			
Observer	E E E E			
Illumin'n	Circle			
Star	opiscum 2 Trianguli Borealis.			
Mag.	7 mid. 7-1			
δ				
Wire	a			
"	b	38 1.5	44.34.0	47 15.4
"	c	10.7	51.6	31.9
		20.2	5.9	48.9
"	1	36.0	16.3	52.0
"	2	51.8	27.1	52.2
"	3	0.5	45.0	48.0
"	4	10.1	2.7	36.0
"	5		12.5	42.2
		-130.8	23.4	37.2
"	d	120	37.7	31.9
"	e	250.8	54.9	32.0
"	f		31.1	31.3
			180	31.9
			47.1	65
			57.1	
Sum				
Mean		35.83	54.65	47.31.93
Red'n to		+0.5	+12	—
m	22	-24	-11	-17
n-tan. δ 166.		+0.7	+0.4	+03
c. sec. δ		+1.22	+25	+23
r		+10	+30	+09
T				
		35.93	44.95	32.02
a		37.76	46.93	33.88
ΔT		1.83	1.98	1.86

Date				
Observer				
Illumin'n	Circulo	E	E	E
Star	50 Cassiop	γ Androm	ϵ Arietis	1
Mag.	7 mid.	9 mid.	11-6	
δ				
Wire	a	49.12.3		
"	b	2.0	54.59.3	58.48.0
"	c	<u>41.3</u>	15.8	15.0
		10.9	28.0	18.3
"	1	40.5	40.6	28.3
"	2	30.2	1.4	38.6
"	3	21.0	22.4	55.3
"	4	48.8	34.3	
"	5	<u>18.7</u>	46.7	
			5.2	
"	d	21.14	<u>253.7</u>	
"	e		240	
"	f		137	
Sum				
Mean		30.20	1.25	58.55.30
Red'n to		+1.6	+0.7	—
m		+68	-0.2	-1.5
n. tan. δ		+0.3	0	-0.1
c. sec. δ		+1.70	+1.30	+2.4
r		+1.57	.35	+0.8
T		31.77		
a		33.62	1.60	55.38
			3.60	57.28
ΔT		1.85	2.00	1.90

Date	Dec 5.		
Observer	H. G.		
Illumin'n	circle	E.	N
Star	2 Draco-Lb. 4 Urs. Min. Lb.		
Mag.	5-11	2-6	5-3
δ			
Wire	a		
"	b	0.14.5	5.34.7
"	c	51.6	34.4
		28.0	19.0
"	1	50.4	2.4
"	2	12.0	19.0
"	3	41.6	
"	4	17.4	
"	5		
		941	
"	d	1541	
"	e	51.37	
"	f		
Sum			
Mean		51.37	5.19.0
Red'n to		+14	—
~~na~~ <i>Aa</i>		+97	
~~n. ten. d~~ <i>Bb.</i>		+0.2	+0.4
c. sec. d		-52	-1.07
τ		1.33	
T		50.04	
a		52.65	
ΔT		2.61	

Date	Dec. 6. 1871.		
Observer	H. G.		
Illumin'n	Circle	W	W
Star	32 Camelop.	μ Androm	ϵ Piscium
Mag.	7.	6-11	
δ			
Wire	a		
"	b	45.35.9	49 36.2
"	c		55.9
"	1		17.2
"	2		27.7
"	3		19.5
"	4		35.0
"	5		54.6
"	d		36.2
"	e		36.3
"	f		36.1
Sum			36.3
Mean			36.4
Red'n to			16
m	45.35.9	49.36.27	55 13.4
n. tan. δ	48.7.2		24.8
c. sec. δ			41.1
r	-5.10	-06	50.4
T	+ .11	-02	59.3
a	+2.44	-32	15.2
ΔT	-2.55	-40	31.0
	48.4.65	49.35.87	40.1
	48.7.35		49.5
	56.17.42	49.38.47	2.0
	-2.70	2.60	17.6

$$c = -.25$$

$$a = -.65$$

Date	Dec 6. 1871.		
Observer			
Humid'n	Circle	rr	rr rr
Star	β Androm	τ Piscium	ν Piscium
Mag.	9 mid.	9 mid.	
δ			
Wire	a		
"	b	1.16.6	3.41.0
"	c	<u>34.8</u>	55.0
		50.0	5.8
"	1	1.0	15.8
"	2	12.0	33.9
"	3	31.1	51.5
"	4	50.1	2.3
"	5	1.3	13.0
		12.9	26.9
"	d	<u>24.9</u>	24.52
"	e		60
"	f	15.44	30.52
		60	
Sum		2184	
Mean		31.20	33.91
Red'n to		-06	-06
m	Aa	-09	-17
n tan. d	B6.	0	0
c. sec. d		-30	-29
r		-45	-52
T		30.75	33.39
a		2 33.66	4 36.37
Δ T		2.91	2.98

Date			
Observer			
Illumin'n	Circle W	W	E.
Star	δ Cassiop	38. Cassiopeae	
Mag.	5 mid.	1-5	5-1
δ			
Wire	a	15. ~~78.0~~ 16.53.6	
"	b	18.45.8	22.25.0
"	c	24.8 -	50.2
"		55.5	18.0
"	1	13.8	52.8
"	2		35.5
"	3	183.7	40.5
"	4	60.7	39.7
"	5	123.7	41.0
"		41.82	40.1
"	d	40.26	40.0
"	e	156	19
"	f	287) 780 (27.41	40.26
		2060 41.82	
Sum		24.74	
Mean		-70	
		24.74	
Red'n to		-10	
m	Aa	+37	+85
n. tan. δ	136	0	0
c. sec. δ		-49	-72
r		-22	+13
T		24.52	41.95
a		17.27.47	21.44.59
ΔT		2.95	2.64

C = -27

Date

Dec 6 - 1871.

Observer

Illumin

Circle

E

W

E

Star

40 Cassiopeae

o Piscium

Mag.

10-6

7-11

 δ

Wire

a

"

b

"

c

"

1

"

2

"

3

"

4

"

5

"

d

"

e

"

f

25.43.0

33.2 23.4

52.5 21.7

22.1 54.2

51.2 24.2

16.0 16.0

16.2

15.4

15.9

15.4

16.3

15.4

15.9

16.6

16.0

16.0

3

38

16.06

15.70

29.9.1

39.8

70.6

51.2

42.0

24.0

17.9

17.7

17.5

18.0

17.8

37

17.78

16.06

1.72

333.360 (26

1940

1978

37.32.8

48.2

0.9

10.0

19.4

35.2

51.0

59.9

9.1

21.9

37.1

32.55

38.58

35.05

Sum

Mean

Red'n to

m

Ar.

n. tan.

B6.

c. sec.

r

T

a

 ΔT

+11

-36

0

+26

+0.1

35.06

38.37.76

2.70

Date

Observer

Illumin'n

Circle

E

E

E.

Star

E Cassiop & Icarusli Baretis.

Mag.

3 mid.

7-1

 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 r

T

a

 ΔT ~~45.9.2~~~~47.14.7~~

47 14.7

~~31.2~~

31.2

45.26.4

48.0

44.2

15.74

2.1

26.2

54.1

13.7

35.0

45.9.2

727

31.2

20.14

1327

31.2

36.5

31.3

5.2

31.2

31.0

31.2

31.3

1.4

44.23

31.20

-0.07

-0.17

-0.04

+2.8

-26

-06

+2.27

0

-0.05

31.15

44.23

45 46.92

47.33.88

2.69

2.73

2.60

15

2.70

5

2.91

16

2.98

23

2.77

2

2.95

20

2.70

5

2.69

6

2.73

2

2.72

8

2.75

8

2.75

8

2.75

8

Date	Dec 6. 1871.	
Observer		
Illumin'n	Circle	E
Star	50 Cassiop.	γ Androm
Mag.	7 mid-	9 mid
δ		
Wire	a	49 11.9
"	b	54 57.7
"	c	<u>1.3</u> 14.0
"	1	41.0 26.3
"	2	10.5 39.0
"	3	40.3 59.9
"	4	30.0 20.7
"	5	20.3 32.7
"	d	48.5 45.0
"	e	<u>18.3</u> 1.4
"	f	20.89 29.67
"		δ 24
"		26.89 53.67
Sum		38
Mean		29.84
Red'n to		59.63
m	La	+1.16
n. tan	136.	+1.02
c. sec. δ		-0.03
		-0.25
		-0.14
		+0.80
		+1.34
r		1.73
		+24
T		31.57
		59.87
a		52 33.59
		56 2.59
ΔT		2.02
		2.72

Date	Dec. 20. 1871.			
Observer	H. G.			
Illumin'n	E	E	E	
Star	θ Aurigae.	ϵ Cassiop	ϵ^2 Ceti.	
Mag.				
δ	Imid	Imid	Imid	
Wire	a			
"	b	11.2	54.4	33.8
"	c	21.0	17.6	43.0
		30.9	41.3	52.3
"	1	47.1	21.0	8.0
"	2	3.9	1.0	24.0
"	3	13.3	23.0	32.8
"	4	23.0	46.6	42.1
"	5	<u>150.4</u>	<u>2049</u>	<u>2360</u>
		180	60	180
"	d		1449	560
"	e	3304	20.70	
"	f	47.20		
		.05		
Sum	L			
Mean	47.20	20.70	8.00	
Red'n to	+0.5	+13	+05	
~~m~~ Aa	42	+21 105	+53.54	+29
n. tan. δ Bb.	98	-17 2.31	-38.83	-14
c. sec. δ	106	+17 2.54	+44.02	+0.16
	-17	-17	-17	
r	+26	-34	+36	
T	47.46	20.36	8.36	
a	11. 0.12	18. 32.94	21. 20.92	
ΔT	12.66	12.58	12.56	

$$C = +.16$$

$$a = +50$$

$$12.66$$

$$12.56$$

$$12.68$$

$$12.91$$

$$28.1$$

$$OT. 12.70 \text{ slow}$$

Date	Dec. 20. 1871.		
Observer			
Illumin'n	E	W	W
Star	36 H. Cassiopeae		γ Ceti.
Mag.			
δ	72.15		
	10-7	7-11	7 mid
Wire	a		
"	b		
"	c		
"	d		
"	e		
"	f		
Sum			
Mean			
Red'n to			
m			
n. tan. δ			
c. sec. δ			
τ			
T			
a			
Δ T			

72.15

10-7

7-11

7 mid

42.9 10.9

42.7 32.17

42.9 52.0

43.5 21.4

50 52.6

43.25 50.9

44.1 35.0

43.6 21.5

44.0 36.3

44.5 16.6

44.1 32.1

29 6.8

44.58 22.7

43.25 52.0

1.33 1.2

328 1.670 (21)

656 1912

140

44.30

43.25

2028 1.05

1964 5.30 (16)

C = -26

-1.64 -82

2.84 -47

3.28 +55

-17

-94

-27

-212

-25

-08

42.31

42.46

27.23

25.55.13

25.55.13

36.39.91

12.82

12.67

12.68

Date				
Observer				
Illumin'n	W			
Star	γ Persei	Biller Min L.C.		
Mag.		74.41		
δ	7 mid	11-7	7-11	
Wire	a			
"	b	22.9	48.7	54.7
"	c	49.3	48.9	53.4
		11.0	48.4	50.2
"	1	27.1	48.0	54.0
"	2	42.5	48.6	54.0
"	3	10.2	30	58.7
"	4	38.0	48.60	
"	5	54.0		
		10.0		
"	d	192.8		
"	e	120		
"	f	72.8		
		11		
Sum				
Mean		10.40	48.60	
Red'n to		-09		
m	-39	-20	+1.69	3.37
n. tan. δ	1.70	-34	+3.4	-1.72
c. sec. δ	1.74	-30	+1.65	-379
	-20		-20	
r		-93	+2.68	-17
T		9.47	51.28	
a		41.22.38	51.2.84	
ΔT		12.91	13.56	

Inst. probably
disturbed in reversal.

Date	Dec-27-1871.		
Observer	H. G.		
Illumin'n	W. W. W.		
Star	ε Ceti. α Cassiop. ε ² Ceti.		
Mag.			
δ	9 mid. 7 mid		
Wire	a		
"	b	7.0	48.1
"	c	19.3	11.8
		28.7	34.4
"	1	37.6	14.2
"	2	53.6	53.7
"	3	9.0	17.6
"	4	18.7	40.9
"	5	28.0	
		40.3	2207
"	d	242.2	120
"	e	240	1007
"	f	482.2	
			48.8
			4.3
			262.1
			240
			221
Sum			
Mean		53.58	14.30
			2.01
Red'n to		-0.6	-13
m	57	-23 -1.05	+42 .58
n. tan. δ	84	+14 2.31	+42 .83
c. sec. δ	101	+09 2.54	+23 1.02
			4.09
r			
T		53.66	14.69
			2.07 ± .90
a		6. 12.51	18. 32.75
		18.85	18.06
Δ T		18.71	18.71
			18.66

$C = +09$
 $a = 40$
 $ΔT = 18.69$
 18.71 02 0004
 18.66 3 9
 18.59 10 100
 18.78 9 81
 18.71 2 4
 18.59 10 100
 18.71 2 4
 18.81 12 144
 18.63 6 36
 $E = .058$

619 14) 1130 . 482 . 1077
 18.69 0.00633

Date				
Observer				
Illumin'n	W	E.	E	
Star	5 Urs Min	L. le.	γ Ceti.	
Mag.				
δ	10-6	7-11	Imid.	
Wire	a			
"	b			
"	c			
"	1			
"	2			
"	3			
"	4			
"	5			
"	d			
"	e			
"	f			
Sum				
Mean	27.14	25.98	20.74	
Red'n to				
m	370 -1.48	-1.48 64	-1.48	+0.5
n. tan. δ	-202 -1.40	-1.40 77	-1.40	-26
c. sec. δ	-421 -1.38	-1.38 100	-1.38	+14
r				
T	26.74 ~~27.14~~	25.58	20.93	
a	27. 46.69	27. 46.69	36. 39.87	
ΔT	19 ~~20~~ .95 18.99	21.11 20.01	18.94 18.59	

Date				
Observer				
Illumin'n	E	E	E	
Star	η Persii	τ Persii	η Eridani	
Mag.				
δ				
Wire	a			
"	b	14.3	11.4	48.6
"	c	41.5	36.8	4.2
		3.3	56.7	16.9
"	1	19.6	11.9	26.0
"	2	36.0	27.0	35.6
"	3	3.2	52.4	51.3
"	4	31.0	18.1	7.1
"	5	46.4	32.5	16.0
		2.8	47.5	25.4
"	d	24.2	7.9	38.0
"	e	51.0	32.6	53.3
"	f	273.3	334.8	322.4
		240	240	240
Sum		333	574.8	562.4
Mean		3.03	52.25	51.13
Red'n to		+19	+18	+11
m	-39	+16	+11	-32
n. tan. δ	1.70	+28	+22	+08
c. sec. δ	1.74	-16	-15	-09
τ				
T		3.50	52.65	51.32
a		41.22.28	45.11.40	50.10.32
		18.78	18.75	19.00
ΔT		18.78	18.71	18.59

Date				
Observer				
Illumin'n	E	E	W	
Star	β Urs Min	48 Cephei		
Mag.	L.C.			
δ	7-11	11-6	7-11	lost 9-
Wire	a			
"	b			
"	c			
"	1			
"	2			
"	3			
"	4			
"	5			
"	d			
"	e			
"	f			
Sum				
Mean	43.42	52.78	53.48	
Red'n to				
m	3.37	-1.34	-2.57	+1.04
n. tan. δ	-1.72	-2.2	3.72	+3.7
c. sec. δ	-3.79	+34	4.53	-4.4
r				
T	43.20	53.15	54.22	
a	57. 3.27	4.11.22	4.11.22	
Δ T	20.07	18.07	17.00	
	19.07	18.70	18.45	

Date				
Observer				
Illumin'n	W	W	W	
Star	α Persei	α Tauri	ϵ Tauri.	
Mag.				
δ	γ mid.		γ mid.	
Wire	a			
"	b	0.9	34.7	8.3
"	c	15.0	49.8	20.6
		28.6	2.1	30.0
"	1	52.9 -	11.6	38.9
"	2	16.8	20.4	54.9 -
"	3	31.0	36.4 -	10.8
"	4	45.1	52.0	19.9
"	5	<u>190.3</u>	1.3	29.2
		180	10.8	<u>41.8</u>
"	d	370.3	23.2	~~57.4~~
"	e		39.0	25.41
"	f		<u>281.3</u>	240
			120	49.41
Sum	52.90	401.3		
Mean	52.90	36.78	54.90	
Red'n to	-.08	-.11	-.06	
m	-19	+07.57	-23.55	-22
n. tan. δ	1.53	+31.84	+15.85	+15
c. sec. δ	1.54	+14.102	+09.102	+09
τ				
T	53.13	36.82	54.99	
a	15.11.63	17.55.47	20.13.75	
	18.50	18.95	18.76	
ΔT	18.71	18.81	18.63	

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 r

T

a

 ΔT

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				
r				
T				
a				
ΔT				

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 r

T

a

 ΔT

1873phae.proj..2412