

# OBSERVATIONS

FOR

# TIME

U. S. ENGINEER OFFICE.

Explorations West of the 100th Meridian.

ASTRONOMICAL DEPARTMENT.

No. 39

Himmelueca, Nevada

1873 W. W. Mayall.



15 20 59.8

16.8

15 21 16.6

Winnemucca No. 2

Line & Longitude

W. W. Mangalt

Approximate Latitude

40° 58' 17"

VAS

Station

Winnunee Nevada

Object	33 Bostin		p. Mrs. Ulin	
Illum. and Description	merit			
Factor	A.	(Azimuth)		
"	B.	(Level)		
"	C.	(Collimation)		
"	F.	(For Broken transits)		
Levels			E.	W.
"				
Sums				
Threads				
"				
"				
	14 56 27.5			
Means				
Transit mean Thread				
Cor. for Rate				
" " Level				
" " Coll				
" " Azim				
Reduced Transit				
Tabular A. R.	14 57	17.37	15 20	59.8
Error of Chron.	slow	43.87		
Observed A. R.				

set chronometer ahead 1 minute  
 it is now fast approximately 16.8



Station *Winnuunen, Nov. July 11<sup>th</sup>*

Object			
Illum. and Description			
Factor	A.	(Azimuth)	
"	B.	(Level)	
"	C.	(Collimation)	
"	F.	(For Broken transits)	
Levels			E. W.
"			
Sums			
Threads			
"			
"			
Means.			
Transit mean Thread			
Cor. for Rate			
" " Level			
" " Coll			
" " Azim			
Reduced Transit			
Tabular A. R.			
Error of Chron.			
Observed A. R.			

1873

Observer. *M.B.*

Exchange of signals with Left Lake observatory.

	29.6		30.0
	39.8		40.1
	49.8		50.3
	59.6		0.3
	9.7		10.0
	19.8		20.0
No 19	29.8	No 26	30.1
	29.8		30.1
	39.9		39.8
	50.0		50.0
	59.8		0.3
	<del>20.1</del>		10.2
No 21	30.1	No 28	20.3
			30.2
	30.2		30.1
	40.1		40.2
	50.4		50.2
	0.1		0.1
	10.6		10.1
	20.3		20.1
No 23	30.5	No 30	30.0

M.B. One refraction at Corinne Watch

Station

Winnemouca Nev. July 11<sup>th</sup>

Object	K D flurichi d Arcubis 44 Of flurich		
Illum. and Description	Sunset West		
Factor	A.	(Azimuth)	
"	B.	(Level)	
"	C.	(Collimation)	
"	F.	(For Broken transits)	
Levels	E 40.0 W. 32.8	E 37.1 W. 37.0	39.1 31.1
"	E 38.0 W. 35.0	E 40.0 W. 33.1	42.6 33.1
Sums			
Threads			
"			
"	32.6	44.5	28.3
	44.6	58.1	41.0
	56.9	12.8	54.5
	9.2	27.6	7.7
	16 52 21.6	16 57 42.0	17 19 20.9
Means.	16 51 56.98	16 57 13.06	17 18 54.48
Transit mean Thread			
Cor. for Rate			
" " Level			
" " Coll			
" " Azim			
Reduced Transit			
Tabular A. R.	16 51 41.34	16 56 56.93	17 18 39.21
Error of Chron.			
Observed A. R.			



1873.

Maryatt

Observer.

W. Bootis

Comae Ber.  
C. West

Serpentis  
C. East

E. Serpentis

E 37.0 W 44.0	E 40.0 W 39.8	39.0 W 44.6
E 29.5 W 38.5	E 41.1 W 38.7	E 40.2 W 40.3
	N. P.	

27.4

8.2

53.7

22.0

42.3

21.2

5.6

33.9

57.8

34.9

17.9

46.3

13.2

48.6

30.2

58.6

15 20 28.5

15 30 2.3

38 41.9

15 45 10.4

15 19 57.84

15 29 35.04

15 38 17.86

15 44 46.24

15 19 43.26



Exchange of signals with Lake  
 Observatory.  
 July 16<sup>th</sup> 1873.

Observer. *W. H. C. B.*

Signals Received.

Signals Sent.

First Series  
 16.7  
 27.0  
 37.0  
 47.1  
 57.2  
 7.3  
 16 57 17.2

Second Series  
 17.3  
 27.4  
 37.5  
 47.4  
 57.5  
 7.8  
 16 59 17.6

17.7  
 27.8  
 38.0  
 47.1  
 57.8  
 7.9  
 17 1 17.8

First Series  
 50.1  
 0.0  
 10.1  
 20.1  
 30.3  
 40.2  
 17 2 50.0  
 Requisite 45.0  
 50.2

Second Series  
 0.1  
 10.2  
 20.2  
 30.3  
 40.2  
 17 4 50.0

Third Series  
 50.0  
 0.1  
 10.1  
 20.2  
 30.2  
 40.3  
 17 6 50.2

Station

Object	LM Ophiuchi		β Draconis		w Draconis	
Illum. and Description	C. East					
Factor	A.	(Azimuth)				
"	B.	(Level)				
"	C.	(Collimation)				
"	F.	(For Broken transits)				
Levels	E 41.2 W 41.2		E 43.3 W 42.3		E.	W.
"	E 41.5 W 43.9		E 45.0 W 40.9			
Sums						
Threads						
"						
"		28.5	114		52.5	
		41.8	31.0		25.8	
		55.0	51.1		59.9	
		8.2	11.0		33.4	
	17	19	21.3	17	29	30.3
					29	5.7
Means.	17	19	54.9%	17	29	50.9%
				17	37	59.4%
Transit mean Thread						
Cor. for Rate						
" " Level						
" " Coll						
" " Azim						
Reduced Transit						
Tabular A. R.						
Error of Chron.						
Observed A. R.						

Observer. \_\_\_\_\_

$\mu$ Herculis	$\theta$ Herculis C. East	$\sigma$ Herculis C. West	$\mu$ Sagittarii
E 43.2 W 45.0 E 44.9 W 43.3		E 44.3 W 45.7 E 44.7 W 45.5	
19.3 32.9 46.9 0.5 42 13.6	40.8 55.8 12.0 26.6 17 52 41.0	25.0 38.6 52.6 6.3 18 3 19.9	2.7 15.1 28.1 41.0 6 54.0
17 41 46.64	17 52 11.04	18 3 52.48	18 6 28.18

Station

Object	η Serpentis		ωγ Herculis		ι Aquilae	
Illum. and Description	C. West					
Factor	A.	(Azimuth)				
"	B.	(Level)				
"	C.	(Collimation)				
"	F.	(For Broken transits)				
Levels	E 42.3	W 45.1	E 42.8	W 45.2	E.	W.
"	E 44.1	W 45.2	E 42.8	W 45.1		
Sums						
Threads						
"						
"		37.8		8.1		11.1
		49.5		21.0		23.0
		1.7		33.9		35.4
		24.0		47.6		47.8
	19 15	25.9	18 19	0.3	28	59.9
Means.	18 15	1.78	18 18	34.18	18 28	35.44
Transit mean Thread						
Cor. for Rate						
" " Level						
" " Coll						
" " Azim						
Reduced Transit						
Tabular A. R.						
Error of Chron.						
Observed A. R.						

Observer. \_\_\_\_\_

✓ Signal

β Signal

50 Diacoris

E. 454 W 44.9

E. 428 W 44.7

E 446 W 42.9

E 456 W 44.8

E 440 W 43.2

E 460 W 44.7

N.B.

24.7

11.9

10.3

39.5

25.9

56.5

55.0

40.4

44.1

10.9

55.0

32.6

33 26.1

46

9.3

18

52

19.4

18 32 56.24

19 43 40.50

18 50 44.58

Station *Winnucea, Nov. July 17<sup>th</sup>*

Object	<i>0<sup>2</sup> Subrae</i>	<i>Alusac line</i>	<i>B B outis</i>
Illum. and Description	<i>C. West</i>		
Factor	A.	(Azimuth)	
"	B.	(Level)	
"	C.	(Collimation)	
"	F.	(For Broken transits)	
Levels	<i>E 26.5 W. 26.3</i>	<i>E 29.3 W 28.9</i>	<i>30.9 E. 30.9 W.</i>
"	<i>E 26.1 W. 27.2</i>	<i>E 28.3 W. 30.0</i>	<i>31.0 31.1</i>
Sums			
Threads			
"			
"	<i>41.6</i>	<i>52.8</i>	<i>53.7</i>
	<i>53.5</i>	<i>37.1</i>	<i>9.2</i>
	<i>6.4</i>	<i>23.0</i>	<i>25.4</i>
	<i>19.0</i>	<i>9.6</i>	<i>41.7</i>
	<i>14 44 31.4</i>	<i>14 52 55.0</i>	<i>14 57 57.5</i>
Means.	<i>14 44 6.38</i>	<i>14 51 23.50</i>	<i>14 57 25.50</i>
Transit mean Thread			
Cor. for Rate			
" " Level			
" " Coll			
" " Azim			
Reduced Transit			
Tabular A. R.	<i>14 43 52.65</i>	<i>14 51 8.46</i>	<i>14 57 11.26</i>
Error of Chron.			
Observed A. R.			

*13.63*

*15.64*

*14.24*



1873.

Maryatt

Observer. \_\_\_\_\_

β Sibrae

γ<sup>2</sup> Urae Min.  
C. West

α Corona Bor  
C. East

γ Serpentis

E 32.2	N. 32.0	E 34.5	N. 34.0	E 35.0	N. 35.0	E 35.9	N. 34.7
E. 33.1	W. 32.0	E 35.1	N. 33.9	E 35.2	N. 34.8	E 36.0	N. 34.7

1.7	55.3	7.5	52.5
13.4	34.0	21.2	4.6
25.8	13.5	34.9	16.9
38.4	54.2	48.5	29.2
15 10 58.3	15 22 33.8	15 30 1.8	15 38 41.0
15 10 25.92			

15 10 11.98

13.94

Station

Object	ε Serpentis		3 <sup>h</sup> 55 <sup>m</sup> 10 <sup>s</sup> Scorpi	
Illum. and Description	C East			
Factor	A.	(Azimuth)		
"	B.	(Level)		
"	C.	(Collimation)		
"	F.	(For Broken transits)		
Levels			E. 35.0	W. 36.0
"			E. 35.3	W. 35.8
Sums				
Threads				
"				
"				
		20.9	0.4	53.8
		33.0	59.0	6.6
		45.5	59.3	19.4
		57.6	58.8	32.5
	15 45	9.1	55.9	59 44.8
Means.				
Transit mean Thread				
Cor. for Rate				
" " Level				
" " Coll				
" " Azim				
Reduced Transit				
Tabular A. R.				
Error of Chron.				
Observed A. R.				

Signals passed between  
Salt Lake & Winnemucca  
July 17<sup>th</sup> 1893

Observer.

No. 2320

Sig. Received. Sent.

Was ready at nine.

E 36.7 W 35.2  
E 36.0 W 36.0

After calling Corinne  
about an hour the operator  
Corinne

12.3

44.6

17.3

50.1

W 7 21.5

said, "Cut for Observatory  
for night. Ogden operator  
gone home."

Station *Winnuoca. Nev. July 18. 1873*

Object	<i>or Librae</i>	<i>Bureau diam.</i>	<i>or Librae</i>
Illum. and Description	<i>C. East</i>		
Factor	A. (Azimuth)		
"	B. (Level)		
"	C. (Collimation)		
"	F. (For Broken transits)		
Levels	<i>E 250 W. 32.0</i>	<i>E 311 W. 30.0</i>	<i>301 E. 32.0</i>
"	<i>E 271 W. 31.0</i>	<i>E 300 W. 31.0</i>	<i>315 W. 31.4</i>
Sums	<i>Re leveled</i>		
Threads			
"			
"	<i>41.8</i>	<i>52.8</i>	<i>1.7</i>
"	<i>54.2</i>	<i>38.0</i>	<i>13.9</i>
"	<i>6.9</i>	<i>24.6</i>	<i>26.4</i>
"	<i>19.4</i>	<i>10.9</i>	<i>38.5</i>
"	<i>14 44 32.0</i>	<i>14 57 55.0</i>	<i>15 10 50.5</i>
Means.	<i>14 44 6.86</i>	<i>14 56 24.26</i>	<i>15 10 26.20</i>
Transit mean Thread			
Cor. for Rate			
" " Level			
" " Coll			
" " Azim			
Reduced Transit			
Tabular A. R.			
Error of Chron.			
Observed A. R.			

1873

Observer. *[faint]*

$\beta$ Draconis West	$\omega$ Draconis West	$\gamma$ Draconis East	$\sigma$ Herculis
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E 408 W. 36.0  
E 440 W. 32.8

E 46.0 W. 32.2 E 42.0 W. 25.5  
E 44.7 W. 36.5 E 39.8 W. 31.0

13.4	56.5	20.0	25.8
32.9	28.7	39.0	39.5
52.5	2.5	58.7	53.4
12.6	36.3	18.2	7.5
17 28 32.3	17 39 9.2	<del>17 34</del> 37.1	18 3 20.5

17 27 52.74	17 38 2.64	17 58 58.60	18 2 53.34
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17 27 36.20	17 37 45.24	17 53 42.02	
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Station

Object	7 Sextans		1 Aquilae	
Illum. and Description				
Factor	A.	(Azimuth)		
"	B.	(Level)		
"	C.	(Collimation)		
"	F.	(For Broken transits)		
Levels			39.0	28.0
"			42.0	35.0
Sums				
Threads				
"				
"	37.4	<del>8.9</del>	10.4	
	49.5	<del>35.0</del>	22.9	
	1.5	<del>42.0</del>	35.0	
	13.2	<del>0.5</del>	49.6	
	15 25.4	18 19 0.5	28 59.9	
Means.	15	1.48	18 28	30.14
Transit mean Thread				
Cor. for Rate	(not good)			
" " Level				
" " Coll				
" " Azim				
Reduced Transit				
Tabular A. R.	18	14	46.41	18 28 19.90
Error of Chron.				
Observed A. R.				

Observer. *[Signature]*

*a* Seyour

*p* Seyour

56 Dracoin  
Clarf East

~~58~~ Dracoin  
Clarf West

E41.0 W.37.2  
E40.2 W.38.0

E44.6 W.34.7 E42.5 W.37.4  
E42.2 W.37.0 E45.4 W.34.0

25.7  
41.2  
57.0  
12.6

13.1  
27.2  
41.9  
56.4

16.8  
4.0  
52.1  
39.5

49.3  
19.9  
51.8  
23.5

*A* 02 27.8

*U* 10.4

*A* 52 26.5

*A* 13 54.3

18 32 56.78

18 45 41.80

18 50 51.78

19 12 51.76

18 32 40.54

18 45 25.62

18 50 31.87

19 12 34.47

Station

Object	<i>β Cygni</i>		
Illum. and Description			
Factor	A.	(Azimuth)	
"	B.	(Level)	
"	C.	(Collimation)	
"	F.	(For Broken transits)	
Levels			E. W.
"			
Sums			
Threads			
"			
"			
		26.4 39.9 53.4 7.5 26 21.0	
Means.		25 53.70	
Transit mean Thread			
Cor. for Rate			
" " Level			
" " Coll			
" " Azim			
Reduced Transit			
Tabular A. R.			
Error of Chron.			
Observed A. R.			



Station

Winnuueca, Nevada, July ~~15~~ 14

~~15~~ 14

Object

Illum. and Description

Clamp West.

Factor

A. (Azimuth)

"

B. (Level)

"

C. (Collimation)

"

F. (For Broken transits)

Levels

E 35.0 W. 32.1

E. W.

"

E 35.0 W. 32.1

Sums

Threads

"

"

Means.

Transit mean Thread

Cor. for Rate

" " Level

" " Coll

" " Azim

Reduced Transit

Tabular A. R.

Error of Chron.

Observed A. R.

Clouded up  
Did not succeed in getting  
a single star  
Sent to Salt Lake

1873

Mangato

Observer.

Checked up entirely  
No change to night

Station *Winnucea Nev. July 15<sup>th</sup> 1873*

Object	<i>e Bootes</i>	<i>v<sup>2</sup> Librae</i>	<i>(Mars Min.)</i>
Illum. and Description	<i>Slamp West</i>		
Factor	A.	(Azimuth)	
"	B.	(Level)	
"	C.	(Collimation)	
"	F.	(For Broken transits)	
Leve's		<i>E. 33.5 W. 40.0</i>	<i>35 E. 41.7</i>
"		<i>E 37.0 W. 37.0</i>	<i>38.3 W. 38.4</i>
Sums			
Threads			
"			
"	<i>16.1</i>	<i>44.5</i>	<i>50.8</i>
	<i>29.2</i>	<i>56.0</i>	<i>35.0</i>
	<i>43.0</i>	<i>8.7</i>	<i>51 21.4</i>
	<i>56.5</i>	<i>21.4</i>	<i>7.8</i>
	<i>14 40 10.4</i>	<i>414 33.6</i>	<i>53.0</i>
Means.			
Transit mean Thread			
Cor. for Rate			
" " Level			
" " Coll			
" " Azim			
Reduced Transit			
Tabular A. R.			
Error of Chron.			
Observed A. R.			

# Margate

Observer. *[Signature]*

β Boath

Subrae  
C. West

Coronae Bot,  
Clamp East

Esperantia

E 36.7	W 42.0	E 39.1	W 44.8	E 40.7	W 44.0	E 42.1	W 44.3
E 38.7	W 40.0	E 38.6	W 42.3	E 40.6	W 43.2	E 42.7	W 43.4

54.5

3.3

9.0

22.9

10.1

15.6

22.4

35.0

26.4

27.9

36.3

47.0

42.2

46.1

49.9

59.4

57

58.7

15

10

52.3

30

3.2

45

11.1

Station

Object	Eusebius Min		P' Scipii		No. 2320	
Illum. and Description	C. East				East	
Factor	A.	(Azimuth)				
"	B.	(Level)				
"	C.	(Collimation)				
"	F.	(For Broken transits)				
Leve's	E 45.5 W 40.3		E 42.7 W 42.7		E 42.5 W 42.3	
"	E 40.3 W 45.0		E 43.0 W 41.8			
Sums						
Threads						
"						
"	59.0		55.7		11.9	
	56.9		8.6		44.3	
	56.5		21.6		16.8	
	57.0		34.5		50.0	
	15	50	53.6	59	47.0	16 7 20.9
Means.						
Transit mean Thread						
Cor. for Rate						
" " Level						
" " Coll						
" " Azim						
Reduced Transit						
Tabular A. R.						
Error of Chron.						
Observed A. R.						

Went to Exchange at this point. But found it  
all out of order after trying for about an hour  
The Wearing shown on lines reported by Burns

Observer. \_\_\_\_\_

Station

Winnemucca, Nevada, July 16<sup>th</sup> 7

Object	$\beta$ Ursa Min	$\beta$ Bootis	$\beta$ Librae
Illum. and Description	Camp West		
Factor	A.	(Azimuth)	
"	B.	(Level)	
"	C.	(Collimation)	
"	F.	(For Broken transits)	
Leve's	E. 33.0 W. 34.0	E. 35.9 W. 36.7	37.7 E. 37.3 W. 3
"	E. 34.0 W. 33.0	E. 36.3 W. 34.5	37.0 38.1
Sums			
Threads			
"			
"	50.9	54.1	2.9
	35.0	9.6	14.6
	21.3	25.7	27.1
	7.5	42.0	39.4
	14 52 51.24	14 57 57.9	14 10 51.6
Means.	14 51 21.42	14 57 25.86	14 10 27.12
Transit mean Thread			
Cor. for Rate			
" " Level			
" " Coll			
" " Azim			
Reduced Transit			
Tabular A. R.	14 51 8.55	14 57 11.27	15 10 17.99
Error of Chron.			
Observed A. R.			

Maryatt

Observer. *[Signature]*

$\gamma^2$ Mrs. Min.	+ Cor. Prov. C. East	+ Suspect's C. West.	E Suspect's
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E 33.0 W. 33.0	E 33.9 W. 35.0	E 35.7 W. 33.8	
E 34.1 W. 32.0	E 33.8 W. 34.9	E 35.0 W. 34.6	

55.8	7.4	52.4	20.7
35.0	21.0	4.1	32.6
15.0	24.8	16.5	44.9
55.3	48.5	28.7	57.2
15 22 33.9	15 30 1.4	38 40.6	15 45 9.3

15 21 15.00	15 29 34.62	15 38 16.46	15 44 44.94
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Station

Object	β Ursa Minoris β' Scorpii Gr. 2320	
Illum. and Description	C. West	
Factor	A.	(Azimuth)
"	B.	(Level)
"	C.	(Collimation)
"	F.	(For Broken transits)
Leve's	E 36.3 N. 33.5	E 35.9 N. 34.4
"	E 35.4 N. 34.4	E 35.9 N. 34.4
Sums		
Threads		
"		
"	0.5	53.8
	57.3	6.0
	56.7	18.9
	57.2	32.0
	15 50 55.8	15 58 44.5
Means.	15 48 57.50	15 58 19.04
Transit mean Thread		
Cor. for Rate		
" " Level		
" " Coll		
" " Azim		
Reduced Transit		
Tabular A. R.		
Error of Chron.		
Observed A. R.		

Obscured by a cloud

Exchange of signals with Lake  
Observatory

Winnipeg July 18<sup>th</sup> 1873 Observer. *[Signature]*

*Piceon*

*Leit*

First Series  
47.0  
56.6  
6.8  
16.6  
26.9  
36.9  
17 4 47.0

First Series  
30.2  
40.0  
50.1  
0.2  
10.1  
20.0  
17 10 30.2

Second Series  
47.1  
57.1  
7.4  
16.9  
27.0  
37.1  
17 6 47.2

Second Series  
30.0  
40.1  
50.0  
0.0  
10.1  
20.0  
17 12 30.0

Third Series  
47.4  
57.5  
7.6  
17.4  
27.6  
37.4  
17 8 47.5

Third Series  
30.2  
40.0  
49.9  
59.9  
20.0  
20.1  
17 14 30.0

Station

Object		cc Dracoms	$\mu$ Arcturus	$\delta$ Arcturus	
Illum. and Description		C. West			
Factor	A.	(Azimuth)			
"	B.	(Level)			
"	C.	(Collimation)			
"	F.	(For Broken transits)			
Leve's		E 391 W. 38.5	E 389 W. 39.4	E.	W.
"		E 400 W. 38.7	E 389 W. 39.5		
Sums					
Threads					
"					
"		53.0	18.4	40.1	
		25.5	31.6	54.7	
		59.3	45.2	10.0	
		33.6	59.2	25.4	
		17 39 6.2	42 12.9	52 40.5	
Means.		57.52	48.46	10.14	
Transit mean Thread					
Cor. for Rate					
" " Level					
" " Coll					
" " Azim					
Reduced Transit					
Tabular A. R.					
Error of Chron.					
Observed A. R.					

Observer. *W. H. ...*

$\gamma$  Draconis       $\delta$  Aurigae  
C. West              E. East.

E 40.9	W. 38.2	E 38.6	W. 40.3	E 41.0	W. 38.3	E 40.3	W. 38.3
E 40.2	W. 38.7	E 39.3	W. 39.9	E 41.7	W. 37.7	E 40.0	W. 38.6

(5) ~~18.9~~

		24.5					8.1
	36.5	37.7					26.0
	56.1	51.5	18	13	55.5		34.0
	15.8	5.4			-1.38		47.1
54	35.0	18	3	19.3		18	18
							59.6

56.46

51.68

54.12

33.96

Station *10*

Object		<i>1 Aquilae</i>	<i>+ Seyrae</i>	<i>β Seyrae</i>	
Illum. and Description					
Factor	A.	(Azimuth)			
"	B.	(Level)			
"	C.	(Collimation)			
"	F.	(For Broken transits)			
Levels		<i>E 381 W. 40.3</i>	<i>E 400 W. 39.0</i>	<i>E.</i>	<i>W.</i>
"		<i>E 400 W. 38.5</i>	<i>E 400 W. 39.0</i>		
Sums					
Threads					
"					
"		<i>10.1</i>	<i>(5) 24.6</i>	<i>11.4</i>	
		<i>22.3</i>	<i>(5) 40.4</i>	<i>25.9</i>	
		<i>34.5</i>	<i>55.3</i>	<i>40.5</i>	
		<i>47.0</i>	<i>10.9</i>	<i>55.0</i>	
		<i>18 28 58.7</i>	<i>18 33 26.0</i>	<i>18 46 9.0</i>	
Means.		<i>34.52</i>	<i>55.44</i>	<i>40.36</i>	
Transit mean Thread					
Cor. for Rate					
" " Level					
" " Coll					
" " Azim					
Reduced Transit					
Tabular A. R.					
Error of Chron.					
Observed A. R.					

Observer. *Smith*

50 Diacnis

E 42.0 W 39.8  
E 41.0 W 38.9

13.0

0.6

48.3

36.4

19 52 21.8

~~48.02~~

Station *Winnunee, Nev. July 19<sup>th</sup> 1873*

Object	<i>3 Brass Min.</i>			
Illum. and Description				
Factor	A.	(Azimuth)		
"	B.	(Level)		
"	C.	(Collimation)		
"	F.	(For Broken transits)		
Levels	<i>E 351</i>	<i>W. 36.7</i>		E. W.
"	<i>E 351</i>	<i>W. 36.7</i>		
Sums				
Threads				
"				
"		<i>51.5</i>		
		<i>36.0</i>		
		<i>21.8</i>		
		<i>8.4</i>		
	<i>14</i>	<i>52</i>	<i>53.5</i>	
Means.				
Transit mean Thread				
Cor. for Rate				
" " Level				
" " Coll				
" " Azim				
Reduced Transit				
Tabular A. R.				
Error of Chron.				
Observed A. R.				





Station *Winnemucca, Nevada July 23<sup>d</sup> 1873*

Object	<i>Winnemucca</i>		<i>+ Cor. Bar</i>	<i>+ Super. Bar</i>
Illum. and Description	<i>C. West</i>		<i>+ Bar. Bar</i>	
Factor	A.	(Azimuth)		
"	B.	(Level)		
"	C.	(Collimation)		
"	F.	(For Broken transits)		
Levels	<i>E. 32.8 W. 32.0</i>	<i>E. 36.0 W. 36.0</i>	<i>38.1 E. 35.5 W.</i>	
"	<i>E. 34.0 W. 31.0</i>	<i>E. 37.7 W. 34.3</i>	<i>37.0 37.3</i>	
Sums				
Threads				
"				
"	<i>56.1</i>	<i>7.7</i>	<i>52.4</i>	
	<i>34.4</i>		<i>4.4</i>	
	<i>14.6</i>	<i>20.9</i>	<i>16.5</i>	
	<i>54.8</i>	<i>34.7</i>	<i>29.0</i>	
	<i>15 22 34.0</i>	<i>48.4</i>	<i>15 38 41.1</i>	
		<i>15 30 1.8</i>		
Means.				
Transit mean Thread				
Cor. for Rate				
" " Level				
" " Coll				
" " Azim				
Reduced Transit				
Tabular A. R.				
Error of Chron.				
Observed A. R.				

# Maryatt

Observer. \_\_\_\_\_

elephants      3 Urac Min B' Scottii      Jr. 2320  
 C. West      C. East

E40.3 W.36.6      E40.0 W.38.2      E41.2 W.38.1  
 E40.0 W.37.0      E39.3 W.39.2      E40.0 W.39.2

21.0	1.1	53.7	11.9
32.6	58.5	6.2	43.8
44.9	57.8	19.0	16.9
57.4	56.7	32.1	49.8
485 9.6	50 56.0	15 58 44.5	16 7 21.0

Station

Object	$\Gamma$ Hercules	$\omega$ Hercules	+ Scorpi	
Illum. and Description	C. East		C. East	
Factor	A.	(Azimuth)		
"	B.	(Level)		
"	C.	(Collimation)		
"	F.	(For Broken transits)		
Levels			U. E. 29 W.	
"			E 40 W 40	
Sums				
Threads				
"				
"				
		37.1	24.6	26.5
		54.4	37.0	40.1
		12.2	49.5	53.2
		30.0	21	7.1
	Up Up	47.1	20 14.2	22 20.1
Means.				
Transit mean Thread				
Cor. for Rate				
" " Level				
" " Coll				
" " Azim				
Reduced Transit				
Tabular A. R.				
Error of Chron.				
Observed A. R.				

Observer. *scit13*

Operator at Celko reports a  
heavy storm on line  
between Celko + Corvum.  
Says there will be no chance  
for us tonight

~~11.5  
11.0  
9/10 2  
39.5~~

Station

Winnemucca Nevada July 24<sup>th</sup> 1873.

Object	γ <sup>2</sup> Ursae Min		+ Cor. Bot.	2 Spectis
Illum. and Description	C. West.			
Factor	A.	(Azimuth)		
"	B.	(Level)		
"	C.	(Collimation)		
"	F.	(For Broken transits)		
Levels	E 33.0	N. 30.1	E. 34.0	N. 33.0
"	E 33.2	N. 30.6	E. 35.0	N. 32.1
Sums				
Threads				
"				
"		55.3	6.9	51.8
		33.6	20.2	31.6
		13.9	33.8	15.9
		54.1	47.6	28.2
	15	22 33.5	15 30 1.3	15 38 40.3
Means.		14.08	33.96	15.96
Transit mean Thread				
Cor. for Rate				
" " Level				
" " Coll				
" " Azim				
Reduced Transit				
Tabular A. R.				
Error of Chron.				
Observed A. R.				

Maryatt.

Observer. [unclear]

8 Serpents

Zhusuolin  
C West

Pr 2320  
C. East

8 D. Phinchi

E 378 W 3573  
E 381 W 3550

E 392 W 3613  
E 398 W 3610

20.7  
32.1  
44.4  
56.6  
415 8.6

0.2  
57.4  
57.0  
56.8  
50 53.3

11.4581  
43.3  
16.2  
49.0  
16 7 20.7

27.5  
39.5  
51.7  
39  
12 12 15.7

94.98

57.34

16.12

51.66

W 72 53

Station

Object	♄ T Herculis & Herculis		♄ Scorpi
Illum. and Description			
Factor	A.	(Azimuth)	
"	B.	(Level)	
"	C.	(Collimation)	
"	F.	(For Broken transits)	
Leve's			28.8 E. 38.1 W
"			38.6 38.3
Sums			
Threads			
"			
"			
	36.3	24.1	26.1
	53.8	36.5	39.6
	11.7	49.1	53.5
	29.4	1.6	6.5
	No 16 46.5	20 13.8	1/2 22.98
Means.	11.54	49.02	53.08
Transit mean Thread			
Cor. for Rate			
" " Level			
" " Coll			
" " Azim			
Reduced Transit			
Tabular A. R.			
Error of Chron.			
Observed A. R.			

# Exchange signals with Salt Lake Observatory July 21<sup>st</sup>

Observer. \_\_\_\_\_

*S. S. Finch*  
C. East

Received

Sent

8.7  
~~18.8~~  
28.6  
38.7

0.1  
10.1  
20.0  
30.3  
40.3  
50.1

389 W. 38.0  
E 40.0 W. 37.0

16 45 8.6

16 51 0.2

1.0  
13.3  
25.8  
38.0

9.1  
~~19.1~~  
29.1  
39.2  
42.2

0.0  
10.1  
20.2  
30.2  
40.3

16 30 49.9

16 47 9.2

16 53 0.0

25.60

9.3  
19.4  
29.5  
39.1  
~~49.4~~  
59.5

0.1  
10.0  
20.1  
30.0  
40.3  
50.3  
0.1

16 49 9.6

16 55 0.1



Station

Object	H Arcturus 44 of Muschi 3 Draconis		
Illum. and Description	C. East		
Factor	A.	(Azimuth)	
"	B.	(Level)	
"	C.	(Collimation)	
"	F.	(For Broken transits)	
Levels	E 40.2	W 39.3	E 40.2
"	E 39.7	W 40.0	E 40.6
Sums			
Threads			
"			
"			
		23.4	26.3
		38.1	39.5
		53.6	52.9
		8.8	6.1
	17 W	23.5	17 19 19.0
			28 29.6
Means.		53.68	52.76
Transit mean Thread			50.87
Cor. for Rate			
" " Level			
" " Coll			
" " Azim			
Reduced Transit			
Tabular A. R.			
Error of Chron.			
Observed A. R.			

Observer. *[Signature]*

w Draconis	M Anteculis C. East	P Draconis C. West	γ <sup>2</sup> Sagittarii (S)
------------	------------------------	-----------------------	-------------------------------

2430 W. 390

52.5	18.0	17.5	43.5
25.7	31.5	36.3	56.4
59.9	45.4	53.8	10.8
33.2	58.9	15.6	24.6
39 5.8	17 42 12.3	54 34.9	57 38.5
59.42	45.22	56.02	10.76

Station

Object		o Hercules	μ' Sagittarii	η Serpentis
Illum. and Description				
Factor	A.	(Azimuth)		
"	B.	(Level)		
"	C.	(Collimation)		
"	F.	(For Broken transits)		
Levels				USED 4200
"				45.4 41.5
Sums				
Threads				
"				
"				
		24.1	0.5	36.4
		37.4	13.8	48.1
		51.3	26.4	0.4
		5.5(5)	39.6	12.5
	19 3	19.2	6 52.0	24.6
Means.		51.50	26.36	0.40
Transit mean Thread				
Cor. for Rate				
" " Level				
" " Coll				
" " Azim				
Reduced Transit				
Tabular A. R.				
Error of Chron.				
Observed A. R.				

Observer.

log Arculis

445.4 42.2  
E 46.7 41.0

7.4  
20.1  
33.0  
46.4  
18 18 59.6

33.30

Station

Winnemucca, Nev. July 25<sup>th</sup>

Object	β Sibrae			7 <sup>2</sup> Uranellin + Corona B.	
Illum. and Description	C. West.				
Factor	A.	(Azimuth)			
"	B.	(Level)			
"	C.	(Collimation)			
"	F.	(For Broken transits)			
Leve's	E 26.9	W. 26.0	E 33.0	W. 28.0	25.4 E. 20.4 W.
"	E. 27.0	W. 26.2	E. 33.1	W. 28.1	25.0 30.0
Sums					
Threads					
"					
"		0.9		54.9	6.7
		12.7		33.5	19.9
		25.0		13.3	33.7
		37.5		53.7	47.4
	15" W	49.4	15" W	22 33.6	15 30 0.9
Means.		25.10		15.68	33.72
Transit mean Thread					
Cor. for Rate					
" " Level					
" " Coll					
" " Azim					
Reduced Transit					
Tabular A. R.					
Error of Chron.					
Observed A. R.					

1873

Mary att

Observer. *colt*

† <i>Serpentis</i>	e <i>Serpentis</i>	3 <i>Ursae Min.</i> C. West	β <i>Scorpii</i> C. East
E 37.0 W. 21.0 E 37.1 W. 21.0		E 39.0 W. 32.8 E 39.3 W. 33.0	E 39.8 W. 34.1 E 40.1 W. 34.2
51.6 9.6 15.5 28.0 38 40.1	20.3 31.9 44.2 56.4 15 45 8.5	0.1 57.3 57.1 56.7 15 50 55.2	52.8 5.5 18.4 31.4 15 58 44.0
15.76	14.26	57.28	18.42

Station *Wimmerman* *July 25<sup>th</sup> 1873*

Object	<i>Pr. 2320</i>		<i>E. Hercules</i>	<i>30<sup>th</sup> Meridi</i>
Illum. and Description				
Factor	A.	(Azimuth)		
"	B.	(Level)		
"	C.	(Collimation)		
"	F.	(For Broken transits)		
Levels	<i>0.410 W. 36.1</i>		<i>E. 4.9 W. 17.0</i>	<i>42.0 39.1</i>
"	<i>0.410 W. 36.2</i>		<i>0.410 W. 38.4</i>	<i>42.7 40.0</i>
Sums				
Threads				
"				
"	<i>11.8</i>		<i>36.2</i>	<i>0.7</i>
	<i>43.4</i>		<i>53.5</i>	<i>12.9</i>
	<i>76.2</i>		<i>11.3</i>	<i>25.6</i>
	<i>49.0</i>		<i>29.4</i>	<i>31.9</i>
	<i>16 7</i>	<i>20.3</i>	<i>16 16</i>	<i>20 49.8</i>
Means.	<i>16 6 16.14</i>		<i>11.34</i>	<i>22.38</i>
Transit mean Thread				
Cor. for Rate				
" " Level				
" " Coll				
" " Azim				
Reduced Transit				
Tabular A. R.				
Error of Chron.				
Observed A. R.				

Signals to and from Sult  
Lake July 25<sup>th</sup> 1973.

Observer. \_\_\_\_\_

Mercuris  
C East

Received,

Sent,

17 0 55.1  
 44.9  
 24.7  
 24.8  
 14.8  
 4.9  
 34.7

17 7 0.0  
 50.0  
 40.1  
 30.0  
 20.0  
 10.3  
 0.2

17.2  
 32.7  
 48.6  
 4.1  
 39 19.3

17 2 55.4  
 45.4  
 35.1  
 25.0  
 15.2  
 5.1  
 55.2

17 8 59.9  
 50.0  
 40.0  
 30.0  
 20.1  
 9.9  
 59.8

48.38

17 4 55.8  
 45.7  
 35.4  
 25.5  
 15.5  
 5.5  
 55.5

17 10 59.9  
 50.0  
 39.9  
 30.2  
 20.0  
 9.9  
 0.0



Station

Object		<i>α Draconis</i>	<i>ω Draconis</i>	<i>μ Aurigae</i>
Illum. and Description		<i>C. East</i>		
Factor	A.	(Azimuth)		
"	B.	(Level)		
"	C.	(Collimation)		
"	F.	(For Broken transits)		
Levels		<i>E 47.7 W 43.5</i>	<i>0</i>	<i>46.5 W. 44.5</i>
"		<i>E 46.3 W 45.0</i>		<i>47.0 44.0</i>
Sums				
Threads				
"				
"		<i>10.8</i>	<i>52.6</i>	<i>17.9</i>
		<i>30.1</i>	<i>25.8</i>	<i>31.3</i>
		<i>50.4</i>	<i>59.3</i>	<i>45.2</i>
		<i>10.4</i>	<i>33.4</i>	<i>59.0</i>
		<i>17 28 29.5</i>	<i>39 55</i>	<i>17 42 19</i>
Means.		<i>50.24</i>	<i>59.32</i>	<i>45.06</i>
Transit mean Thread				
Cor. for Rate				
" " Level				
" " Coll				
" " Azim				
Reduced Transit				
Tabular A. R.				
Error of Chron.				
Observed A. R.				

Observer. \_\_\_\_\_

♂ *Arceuthobium*

♂ *Arceuthobium*  
C. West

♂ *Arceuthobium*

E 490 W 420 E 490 W 421  
E 476 W 435 E 490 W 427

39.5  
54.3  
529.9  
26.4  
39.9

~~53.5~~

289  
372  
511  
52  
A 3 18.7

7 4.0  
8 10 21.0  
14 13 47.0  
17 14.5  
20 37.0

9.84

51.22

48.70

Station

Object	+ Signal	β Signal	50 Draconis
Illum. and Description			C. West
Factor A.	(Azimuth)		
“ B.	(Level)		
“ C.	(Collimation)		
“ F.	(For Broken transits)		
Levels	E 49.3 W 431	E 48.0 W 437	47.7 4400
“	E 47.9 W 448	E 48.3 W 433	48.7 430
Sums			
Threads			
“			
“	23.7	10.7	12.0
	38.5	24.8	37.5
	54.1	39.4	46.0
	9.9	54.0	33.9
	W 33 25.1	W 46 8.3	52 21.3
Means.	54.26	39.44	46.14
Transit mean Thread			
Cor. for Rate			
“ “ Level			
“ “ Coll			
“ “ Azim			
Reduced Transit			
Tabular A. R.			
Error of Chron.			
Observed A. R.			

Station

Winnemucca, Nev July 26<sup>th</sup>

Object	γ <sup>2</sup> Mon UMi, ✓ Cor. B <sub>2</sub> ✓ Serpens		
Illum. and Description	C. West		
Factor	A.	(Azimuth)	
"	B.	(Level)	
"	C.	(Collimation)	
"	F.	(For Broken transits)	
Leve's	E. 240 W. 29.0	E. 35.0 W. 32.3	37.0 34.1
"	E. 33.8 N. 30.0	E. 36.0 W. 31.7	37.8 34.0
Sums			
Threads			
"			
"	54.6	6.3	51.2
	33.2	19.4	2.9
	13.0	33.2	15.4
	53.3	49.0	27.5
	15 22 32.8	15 30 0.3	38 39.5
Means.	13.38	33.24	15.30
Transit mean Thread			
Cor. for Rate			
" " Level			
" " Coll			
" " Azim			
Reduced Transit			
Tabular A. R.			
Error of Chron.			
Observed A. R.			

Station

Object	† Arcturus		♏ Scorpii	♊ Phucis
Illum. and Description				
Factor	A.	(Azimuth)		
"	B.	(Level)		
"	C.	(Collimation)		
"	F.	(For Broken transits)		
Levels			E. 41.8	W. 39.0
"			E. 42.7	W. 38.1
Sums				
Threads				
"				
"	<del>35926.7</del>		25.1	0.3
	<del>53.237.8</del>		39.5	12.4
	<del>11.1 51.0</del>		52.0	24.8
	<del>28.8 0.0</del>		5.7	37.4
	16 45911.9	16 22 18.5	16 30 24.82	
Means.	16 16 10.98	16 21 51.96	16 30 24.82	
Transit mean Thread				
Cor. for Rate				
" " Level				
" " Coll				
" " Azim				
Reduced Transit				
Tabular A. R.				
Error of Chron.				
Observed A. R.				

Exchange of Signs  
 with Salt Lake Territory  
 Minneroon July 26<sup>th</sup> 1877 Observer.

Arculus	Received		Sent
	<del>40.0 (S)</del>		
	50.1	40.7	30.0
	0.0	50.9	40.0
	9.8	0.8	50.0
	19.0 (S)	10.8	0.0
E 45.0 N. 38.0	29.7	20.7	20.0
	40.0	30.9	20.0
	40.1	17 14 40.7	17 22 30.1
			<u>Burnt Lake 40.0</u>
		41.0	30.0
16.9		51.1	40.0
32.13		1.0	50.0
48.0		10.9	0.1
3.9		21.0	10.0
Up 39 19.0		31.2	20.0
		17 16 41.2	17 24 30.0
16 38 48.02		None	30.1
		None	40.0
	41.9	1.3	49.9
	51.6	11.2	0.1
	1.6	21.4	10.1
	11.7	31.5	20.0
	21.7	18 41.7	17 26 29.0
	31.9		
17 20 42.1			

Station

Object	x' Draconis (hr) & Aurulis		y' Draconis
Illum. and Description			
Factor	A.	(Azimuth)	
"	B.	(Level)	
"	C.	(Collimation)	
"	F.	(For Broken transits)	
Levels	E 430 W 441		<del>433. 43.7</del>
"	E 430 W 442		
Sums			
Threads			
"			
"	11.0	38.8	16.5
	50.3	53.9	35.8
	30.4	9.3	50.6
	10.2	24.6	15.0
	17 415 484	52 394	54339
Means.	30.06	9.20	55.36
Transit mean Thread			
Cor. for Rate			
" " Level			
" " Coll			
" " Azim			
Reduced Transit			
Tabular A. R.			
Error of Chron.			
Observed A. R.			

Observer. *[faint]*

o Ancehis	<i>U. Sugilliani</i>	<i>U. S. fentis</i>	109 Herculis
	C. East	C. West	

45.3 43.7	E 42.9 W 44.8	E 44.9 W 43.0	E 45.7 W 43.9
E 44.7 W 45.0	E 43.0 W 44.3	E 45.0 W 42.9	E 45.4 W 44.2

22.9	59.2	38.3	6.5
36.6	12.1	47.0	19.0
50.6	25.2	59.1	32.1
4.5	38.3	11.4	45.5
18 3 179	A b 50.7	15 23.5	18 58.4

50.50	25.10	59.76	32.30
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Station

Object		Laguna	+ Legree	Syona
Illum. and Description				
Factor	A.	(Azimuth)		
"	B.	(Level)		
"	C.	(Collimation)		
"	F.	(For Broken transits)		
Levels			East W 44.8	E. W.
"			East W 44.0	
Sums			N.B.	
Threads				
"				
"		8.3	23.1	10.2
"		19.5	38.0	24.0
"		32.7	53.5	38.6
"		45.2	9.3	53.4
"		18-28 57.2	33 24.5	18 46 7.5
Means.		32.58	53.68	38.74
Transit mean Thread				
Cor. for Rate				
" " Level		Not good		
" " Coll				
" " Azim				
Reduced Transit				
Tabular A. R.				
Error of Chron.				
Observed A. R.				

Observer. *[faint]*

50 Ducous

466 W 458  
465 W 450

12.4

58.2

461

345

W 52 21.8

4660