

ASTRONOMICAL DEPARTMENT.

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S E X T A N T

ASTRONOMICAL OBSERVATIONS.

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Works in Polaris No 25.

" " Circum. No. 249

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U. S. ENGINEER OFFICE.

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FIELD ASTRONOMICAL RECORDS.

Book No. ....

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GEOGRAPHICAL AND GEOLOGICAL

# Explorations and Surveys

West of the 100th Meridian.

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FIRST LIEUT. GEO. M. WHEELER,  
Corps of Engineers,  
In Charge.

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187 .



Party No. 2 Colorado Section.

From .....

To .....

Date .....

Lieut. Eugene Guffin Engineer, Observer.

Messrs. F. O. Mason, M. B. Ken, W. A. Phillips Time Recorder S.

1878.

REMARKS.

Watch G. Lt. Guffin's watch.

Watch M. Mr. Mason's watch.  
" W. Mr. Wauvridy "

# SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. 1671 and artificial horizon of Mercury 13.

Watch Chronometer No. G. by Lt. Kiffin Sextant Observer.

Station: Camp No. 20 Date: Sep 3d } Mr. Wallbridge Observer for time.  
Rio San Nicholas.

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.	Remarks.
	h	m	s					
Polaris.	1	7	35 42	65	24	30		Unable to get true stars on account of clouds. Obs. very poor and water error unknown. Index error = - 42 55"
	2		36 39		24	50		
	3		38 11		25	50		
	4		39 20		27	30		
	5		42 05		30	30		
Sum.			190 117		130	190		
Mean.	7		38 23.4	65	26	38.0		

Reject. Ely

Bur.	25.762
A.T.	80.3
A.T.	79.0

2 June

# SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. 1671 and artificial horizon of Mercury 13.

Watch Chronometer No. G. by

Dr. Giffin.

Sextant Observer.

Station: Camp 20.

Date: Sept. 5<sup>th</sup>

Mr. Kern.

Observer for time.

Ojo San Nicholas.

Recorder

Object observed.	Time of observation by chronometer.			Observed double altitudes.		Time of observation by chronometer.	Remarks.
	n	m	s	0	1		
☉	1	8	03	24.0	60	50	Index error = - 42' 55"
	2		03	47.0		10	
	3		04	10.5		20	
	4		04	35.0		30	
	5		04	59.0		40	
	6		05	24.0		50	
	7		05	49.0	61	50	
	8		06	13.0		10	
	9		06	37.0		20	
	10		07	02.5		30	
	11		07	27.0	61	40	
Sum.	8	55	268				Index and horizon glasses adjusted. E. S.
Mean.	8	05	24.4	60	50 00		
☽	1	3	14	42.0	75	30	Bar. 25.784 A.S. 70.0 W.S. 69.0
	2		15	08.0		20	
	3		15	32.0		10	
	4		15	56.0	75	50	
	5		16	21.0	74	50	
	6		16	45.5		40	
	7		17	09.5		30	
	8		17	35.0		20	
	9		17	59.5		10	
	10		18	25.0	74	50	
	11		18	51.5	73	50	
	12		19	15.5		40	
	13		19	40.0	73	30	
Sum.		2.21	140.5				Index error = - 4' 00"
Mean.	3	07	10.8	74	30 00		

# SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. 1671 and artificial horizon of Mercury 13.

Watch Chronometer No. G. by *Li. Griffin* Sextant Observer.  
 Station: *Camp 20.* Date: *Sept. 5<sup>th</sup>* *U. S. A.* Observer for time.  
*Ci. San Nicholas.*

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.	Remarks.
	h	m	s	o	i	"		
<i>Polaris,</i>	1	7	40	50	64	56	30	<i>Bar. 25.784</i> <i>a.t. 70.</i> <i>at 7. 69.</i>
	2		41	19.5		57	50	
	3		42	50.0	65	50	00	
	4		44	12.0		50	30	
	5		<del>50</del>	<del>06.0</del>		<del>02</del>	<del>30</del>	
	6		<del>55</del>	<del>41.0</del>		<del>06</del>	<del>30</del>	
	7		<del>58</del>	<del>26.0</del>		<del>08</del>	<del>20</del>	
<i>Sun</i>			168	21.5	18	113	110	
<i>Mars</i>	7		42	05.4	64	58	42.5	

4

Lai.

## SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. 1671 and artificial horizon of Mercury

Watch. Chronometer No. G. by

Station: Camp 20.

Date: Sep. 5<sup>th</sup>

Ojo San Nicholas.

Sextant Observer.

Observer for time.

L. Griffin  
Ken.

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.		Remarks.
	h	m	s	0	1	11			
Altair.									Recorder Mr. Ken.
1	8	38	55.0	131	58	30			
2		40	35.0	132	03	40			
3		42	10.0	132	03	40			
4		46	08.0	132	02	30			
5		47	15.0	131	59	30			
6		48	59.5	131	56	40			
7		52	14.0	131	50	30			
8		53	58.0	131	45	10			
9		56	24.0	131	37	40			
Sum.									
Mean.									

Bar 25.784  
 A. T. 64.  
 A. T. 70.

In E = -2-00

# SEXTANT ASTRONOMICAL OBSERVATIONS.

Series 5

Sextant No. 1671 and artificial horizon of Mercury 13

Water Chronometer No. G. by

Station: Camp 20.

Date: Sep. 6 =

} Lieut. Griffin  
Ren.

Sextant Observer.

Observer for time.

Ojo San Nicholas.

Object observed.	Time of observation by chronometer.			Observed double altitudes.		Time of observation by chronometer.	Remarks.
	n	m	s	o	i		
⊙							
1	9	15	50.0	87	40		Recorded Mr. Ren.
2		15	26.5		50		
3		15	53.0	88	50		Index error = -3' 35"
4		16	19.5		10		
5		16	46.5		20		
6		17	13.0		30		
7		17	39.5		40		On arc 35' 30" Off " 28 20
8		18	06.0		50		
9		18	32.5	89	50	75 121	
10		18	59.0		10		
11		19	25.5		20		Bar. 23.854 A.T. 71. A.T. 68.5
12		19	52.0		30		
13		20	18.5		40		
14		20	45.0		50		
15		21	11.5	90	50		
16		21	38.0	90	10		
Sum							
Mean.	9	18	19.1	88	55		

6

Sun.

## SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. 1671 and artificial horizon of Mercury 13

Watch Chronometer No. G. by Lt. Giffin. Sextant Observer.

Station: Camp 20. Date: Sep. 7<sup>th</sup> Observer for time.

Cgo San Nicholas.

Object observed.	Time of observation by chronometer.			Observed double altitudes.		Time of observation by chronometer.	Remarks.
	h	m	s	o	i		
☉							Recorder Mr. Kerr.
1	8	12	17.0	63	00		
2		12	41.5		10		
3		13	06.5		20		On arc 36 40
4		13	31.5		30		Off " 28 20
5		13	56.5		40		
6		14	21.0		50		Index error =
7		14	45.5	64	00		-4' 10"
Sum							
Mean	8	13	31.4	63	30		Bar. 25.852 a. t. 78.5 d. t. 69.5

*Zuni* 7

# SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. 1671 and artificial horizon of Mercury 13.

Watch Chronometer No. G by

Station: Camp 20.

Ojo San Nicholas.

Date: Sep. 8<sup>th</sup>

Sextant Observer. } *L. Giffen*  
Observer for time. } *F. O. Mason*

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.	Remarks.
	h	m	s	o	i	"		
☉								
1	8	45	58.0	76	20			<i>Recorded</i> <i>F. O. Mason</i>  <i>Index error =</i> <i>- 4' 20"</i>  <i>Bar. 25.800</i> <i>A.T. 71.5</i> <i>Hy. 69.0</i>
2		46	21.0		30			
3		46	46.0		40			
4		47	11.0		50			
5		47	37.0	77	50			
6		48	03.0		10			
7		48	28.0		20			
8		48	53.5	77	30			
9		49	21.2	77	40			
Sum								
Mean	8	47	37.4	77	50			



# SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. 1671 and artificial horizon of Mercury 13

Station Camp 20 Chronometer No. G by

Date: Sept. 8<sup>th</sup>

Leut. Griffin  
Zona

Sextant Observer.

Observer for time.

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.	Remarks.
	h	m	s	o	i	"		
①								
1	3	20	15.4	70	40			Revedue F. O. Manson  On arc 36-30 off " 27-50  Index error = - 4 20  Bar. 25.786 A. Y. 83.5 D. Y. 81.4
2		20	41.3		30			
3		21	07.2		20			
4		21	32.0		10			
5		21	57.7		00			
6		22	03.0	69	50			
7		22	48.2		40			
8		23	12.0		30			
9		23	37.5		20			
Sum.								
Mean.	3	21	57.1	70	00			

# SEXTANT ASTRONOMICAL OBSERVATIONS.

*Linn*  
9

Sextant No. 1671 and artificial horizon of Mercury 13

Watch Chronometer No. G. by

Station: Camp 23.

Date: Sep. 15<sup>th</sup>

}

*Lieut. Giffin*  
*W. A. Phillips*

Sextant Observer.

Observer for time.

*Point of Rocks.*

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.	Remarks.
	h	m	s	o	'	"		
☉								
1	8	24	47.0	65	00			<p><i>Recorder</i> <i>W. A. Phillips.</i></p> <p><i>Index error =</i> <i>- 4' 10"</i></p> <p><i>Bar. 25.840</i> <i>a. t. 70.</i> <i>d. t. 66</i></p>
2		25	12.0		10			
3		25	37.0		20			
4		26	02.5		30			
5		26	28.2		40			
6		26	53.5		50			
7		27	19.0	66	00			
8		27	46.0		10			
9		28	11.0	66	20			
Sum.								
Mean.	8	26	28.4	65	40			

# SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. 1671 and artificial horizon of Mercury 13

Watch Chronometer No. G by


Station: Camp 26

Date: Sep. 21<sup>st</sup>

} Lt. Giffen  
Phillips

Sextant Observer.

Observer for time.

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.			Remarks.
	h	m	s	o	i	ii				
										<p><u>Recorder</u> <u>W. A. Phillips</u></p> <p><u>Bar. 26.016</u> <u>U.T. 83.5</u> <u>D.T. 79.0</u></p>
1	11	36	56.6	115	20					
2		37	40.0		22					
3		38	33.2		24					
4		39	43.2		26					
5		40	52.5		28					
6		42	02.2		30					
7		43	23.1		32					
8		45	00.0		34					
9		53	21.5		34					
10		54	58.5		32					
11		56	23.5		30					
12		57	42.5		28					
13		58	49.2		26					
14		59	55.0		24					
15	12	00	50.8		22					
16		01	34.5	115	20					
17										
<p><u>Sun.</u> <u>Mean.</u></p>										

# SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. 1671 and artificial horizon of Mercury 13.

Watch Chronometer No. G by

Station: Camp 26

Date: Sept 21<sup>st</sup> 1892

*Wm. Phillips*

Sextant Observer.

Observer for time.

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.			Remarks.
	h	m	s	o	'	"				
☉										<i>Recorder</i> <i>W.A. Phillips</i>  <i>Index error =</i> <i>-4 00</i>  <i>Bar, 25.886</i> <i>A.T. 81.5</i> <i>D.T. 80.0</i>
1	3	58	24.5	47	00					
2		58	49.0	46	50					
3		59	13.0		40					
4		59	37.0		30					
5	4	00	02.2		20					
6		00	27.5		10					
7		00	52.8		00					
8		01	17.3	45	50					
9		01	41.8		40					
Sum.										
Mean	4	00	02.8	46	20					

# SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. 1671 and artificial horizon of Mercury 13.

Watch. Chronometer No. G. by } Lieut. Giffen  
 Station: Fort Bliss Texas. Date: Oct. 4 } " Davis  
 Sextant Observer.  
 Observer for time.

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.	Remarks.
	h	m	s	o	'	"		
☉								
1	1	35	15.0	91	00			Revised Lieut. Davis.
2		35	50.5	90	50			
3		36	25.5		40			On arc 35 30
4		36	59.0		30			Off " 29 00
5		37	34.5		20			
6		38	10.0		10			End of run - 3' 15"
7		38	45.5		00			
8		39	21.0	89	50			
9		39	56.0		40			Bar. 26.312
10		40	31.0		30			A.7. 91.8
11		41	06.0		20			D.7. 88.0
Sum								
Mean	1	38	10.4	90	10			

# SEXTANT ASTRONOMICAL OBSERVATIONS.

*Lucie* 13

Sextant No. 1671 and artificial horizon of Mercury 13

Watch ~~Chronometer~~ No. 7 by

Station: San Augustin Date: Oct. 18<sup>th</sup>

*L. Giffin*  
*Phillips*

Sextant Observer.

Observer for time.

Shedd's Ranch

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.	Remarks.
	h	m	s	0	1	"		
①								
1	3	03	27.0	50	20			<i>Revised</i> <i>W. A. Phillips</i>
2		03	54.5		10			
3		04	22.5		50			<i>Index error =</i> <i>- 3' 15"</i>
4		04	50.3	49	50			
5		05	18.7		40			
<i>Sum</i>								
<i>Mean</i>	3	04	22.6	50	50			<i>Bar. 25.733</i> <i>a. t. 71.1</i> <i>s. t. 70.0</i>

14 Time

# SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. 1671 and artificial horizon of Mercury 13

Watch Chronometer No. G by

Station: San Augustin.

Date: Oct. 22<sup>a</sup>

*Dr. Guffin*  
*Ken*

Sextant Observer.

Observer for time.

Shedd's Ranch.

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.			Remarks.
	h	m	s	0	1	"				
①										Recorder M. B. Ken.  Bar. 25.694 A. T. 62.0 W. T. 60.0
1	8	27	10.5	52	20					
2		27	40.5		30					
3		28	11.0		40					
4		28	41.0		50					
5		29	10.0	53	00					
6		29	39.0		10					
7		30	09.0		20					
8		30	39.0		30					
9		31	09.5	53	40					
Sum:										
Mean:	8	29	09.9	53	00					

# SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. 1671 and artificial horizon of Mercury 13.

Water Chronometer No. M. by } Sextant Observer.  
 Station: Dowling Mill. Date: Nov. 1<sup>st</sup> } Dr. Yuffin  
 Observer for time. 70m

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.			Remarks.
	h	m	s	0	1	"				
①										Recorder F. O. Mason  Index error = - 3 40  Bar. 23.846 A.T. 68.5 A.T. 67
1	2	17	05.6	58	00					
2		17	41.2	57	50					
3		18	10.8		40					
4		18	46.0		30					
5		19	24.4		20					
6		19	55.6		10					
7		20	28.8		00					
8		21	02.4	56	50					
9		21	33.2		40					
Sum		171	1880							
Mean	2	19	20.9	57	20					



SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. 1671 and artificial horizon of Mercury #13

Watch Chronometer No. *A.* by

Station: *Silver Spring.* Date: *Nov. 8<sup>th</sup>*

} *Lieut. Stephen Phillips*

Sextant Observer.

Observer for time.

Object observed.

Time of observation by chronometer.

Observed double altitudes.

Time of observation by chronometer.

Remarks.

☉

	w	m	s
1	3	04	36.0
2		05	07.5
3		05	37.5
4		06	06.8
5		06	38.0

R	'	"
42	00	
41	50	
	40	
	30	
41	20	

Sum.  
Mean. 3 05 37.2

41 40

*Recorder*  
*W.A. Phillips*

*Index error*  
*- 3 30*

*Bar. 22.642*  
*A.T. 49.8*  
*D.T. 47.0*



## SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. 1671 and artificial horizon of Mercury #13

Watch Chronometer No. W. by

Station: Peñasco, C. 44. Date: Nov. 10<sup>th</sup>

} Lr. Guffin

Sextant Observer.

Observer for time.

Recorder.

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.			Remarks.
	h	m	s	0	1	2	3	4	5	
☉										
1	3	13	09.0	38	20					On arc 35 40
2		13	39.0		10					Off " 29 20
3		14	09.0		00					- 3 10
4		14	39.4	37	50					
5		15	08.2		40					
6		15	37.0		30					
7		16	05.8		20					Bar. 22.376
8		16	35.0		10					A.T. 53.0
9		17	04.0		00					A.Y. 53.0
10		17	33.1	36	50					
11		18	02.2		40					
Sum.										
Mean.	3	15	36.5	37	30					

# SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. *1671* and artificial horizon of Mercury *13*

*Walter* Chronometer No. *G.* by

Station: *Penasco, C.* 44 Date: *Nov. 10<sup>th</sup>*

} *Lt. Huppin* Sextant Observer.  
*Mason* Observer for time.

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.			Remarks.	
	<i>h</i>	<i>m</i>	<i>s</i>	<i>0</i>	<i>1</i>	<i>''</i>					
<i>Polaris.</i>	<i>6</i>	<i>27</i>	<i>13.0</i>	<i>67</i>	<i>32</i>	<i>20</i>				<i>Recorder</i> <i>F. O. Mason.</i>	
		<i>29</i>	<i>04.0</i>		<i>40</i>	<i>00</i>					
		<i>30</i>	<i>30.5</i>		<i>40</i>	<i>30</i>					
		<i>31</i>	<i>17.0</i>		<i>41</i>	<i>40</i>					
		<i>32</i>	<i>19.0</i>		<i>41</i>	<i>50</i>					
		<i>33</i>	<i>43.4</i>		<i>42</i>	<i>40</i>					
		<i>35</i>	<i>12.0</i>		<i>43</i>	<i>30</i>					
		<i>37</i>	<i>09.2</i>		<i>44</i>	<i>20</i>					
		<i>39</i>	<i>01.0</i>		<i>46</i>	<i>00</i>					
		<i>41</i>	<i>31.3</i>		<i>46</i>	<i>30</i>					
		<i>42</i>	<i>50.0</i>		<i>46</i>	<i>40</i>					
	<i>Sum</i>										
	<i>Mean</i>	<i>6</i>	<i>34</i>	<i>31.9</i>	<i>67</i>	<i>42</i>	<i>54.5</i>				
<i>α Lyrae.</i>	<i>1</i>	<i>6</i>	<i>47</i>	<i>50</i>	<i>93</i>	<i>57</i>	<i>30</i>			<i>Watch stopped.</i>	

*Bar. 22.365*  
*a.f. 42.8*  
*a.f. 39.0*

SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. 1671 and artificial horizon of Mercury 13

Watch, Chronometer No. *A*, by

Station: *Penasco Sp. C. 47* Date: *Nov 16-*

} *Lt. Griffin* Sextant Observer.  
*Mason* Observer for time.

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.			Remarks.
<i>x Aquilas.</i>										<i>Records</i>
1	6	49	49.0	81	14	50				<i>F. V. Mason</i>
2		50	27.4	81	00	00				
3		51	28.2	80	33	45				
4		52	05.0	80	20	50				
5		52	30.7	80	09	15				<i>Bar. 22.306</i>
6		54	24.0	79	23	30				<i>A.T. 35.0</i>
7		56	07.0	78	41	10				<i>A.T. 30.0</i>
8		57	37.2	78	06	10				
<i>Sum.</i>										
<i>Mean.</i>	6	53	03.6	79	56	05				

*Zenith Distance, Longitude*  
**SEXTANT ASTRONOMICAL OBSERVATIONS.**

Sextant No. 1671 and artificial horizon of Mercury  $\star 13$

Water Chronometer No. G, by

Station: Camp 47.

Date: Nov. 17<sup>m</sup>

} *Lt. Tappin*  
*Phillips*

Sextant Observer.

Observer for time.

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.			Remarks.
	h	m	s	o	i	ii				
①										<i>Revised</i> <i>W. A. Phillips</i>
1	8	13	00.0	40	00					
2		13	31.7		10					
3		14	02.5		20					
4		15	02.0		40					
5		15	36.0		50					
6		16	10.0	41	00					
7		16	43.5	41	10					
8		17	13.8		20					
9		17	47.0		30					
10		18	19.5		40					
11		18	49.0	41	50					
Sum		176	15.0	40	630					<i>On arc 36 00</i> <i>Off " 28 40</i> <i>7 20</i> <i>L.S. = - 3 40</i>
Mean	8	16	01.4	40	57	16.4				
②										
1	8	32	07.0	90	40					
2		32	32.5		30					
3		32	55.8		20					
4		33	23.0		10					
5		33	45.5		00					
6		34	12.0	89	50					
7		34	38.0		40					
8		35	02.0		30					
9		35	29.0	89	20					
Sum										
Mean	8	33	47.2	90	00	00				

*over.*

*Summer Distances Continued.*  
SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. \_\_\_\_\_ and artificial horizon of Mercury

Chronometer No. \_\_\_\_\_ by \_\_\_\_\_

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

Station: \_\_\_\_\_ Date: \_\_\_\_\_

Observer for time. \_\_\_\_\_

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.			Remarks.
	h	m	s	0	1	11				
☉ ↔ ☾										
1	8	55	32.5	90	54	10				
2		57	08.5		52	10				
3		59	16.0		50	30				
4	9	00	38.0		50	10				
5		01	18.5		49	50				
6		02	02.0		49	30				
7		03	29.0		49	15				
8		04	31.0		48	40				
9		05	31.5		48	10				
10		06	41.5		47	55				
Sum.		10	3885							
Mean.	9	01	36.8	96	50	02				
<i>K</i>										
1	9	24	27.0	69	30					
2		25	17.0	69	10					
3		26	06.0	68	50					
4		28	08.0	68	00					
5		28	57.5	67	40					
6		29	46.0	67	20					
7		30	35.0	67	00					
8		31	23.5	66	40					
9		32	11.5	66	20					
10		23	01.0	66	00					
11		33	52.0	65	40					
Sum		319	2845	737	310					
Mean.	9	29	25.9	67	28	10.9				

*True. 22.356*  
*A. T. 41.9*  
*S. T. 34.9*

*On arc 35 50*  
*Off " 29 00*  
*6 50*  
*25 = - 3 25*

*Lunar Distance Continued*  
**SEXTANT ASTRONOMICAL OBSERVATIONS.**

23

Sextant No. \_\_\_\_\_ and artificial horizon of Mercury \_\_\_\_\_  
 Chronometer No. \_\_\_\_\_ by \_\_\_\_\_ } Sextant Observer. \_\_\_\_\_  
 Station: \_\_\_\_\_ Date: \_\_\_\_\_ } Observer for time. \_\_\_\_\_

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.	Remarks.
	<i>h</i>	<i>m</i>	<i>s</i>	<i>o</i>	<i>'</i>	<i>"</i>		
①								<i>Index error</i>
1	9	44	43.5	64	30			
2		45	30.5		40			- 3 40
3		46	19.0		50			<u>3 25</u>
4		47	09.0	65	00			6 65
5		47	59.5		10			- 8 32.5
6		48	50.5		20			
7		49	40.0	65	30			
<i>Sum</i>		329	72.0					
<i>Mean</i>	9	47	10.3	65	00			

*Summary.*

	<i>h</i>	<i>m</i>	<i>s</i>	<i>o</i>	<i>'</i>	<i>"</i>
<i>Distance</i>	9	01	36.8	90	50	02
<u>0</u>	9	01	35.9	52	58	38.2
<u>2</u>	9	01	36.6	78	44	05.5

— At 9<sup>h</sup> - 01<sup>m</sup> - 36.<sup>s</sup> — + 7 — 45.5 = 9 - 01 - 10.7

<i>Wier.</i>	=	90	50	02
<u>0</u>	=	52	58	51.5
<u>2</u>	=	78	44	00.7



# SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. 1671 and artificial horizon of Mercury  $\frac{1}{13}$ .

Watch Chronometer No. by G.

Station: Sp. Head Pinarco Carriz Date: Nov. 18<sup>th</sup>

Camp 47.

} Lt. Guffin  
Mason

Sextant Observer.

Observer for time.

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.	Remarks.
	h	m	s	0	1	"		
$\alpha$ Arietis E.								Records F. O. Mason
1	6	15	29.0	75	30			
2		15	54.5		40			
3		16	14.5		50			
4		16	38.0	76	00			
5		17	03.0		10			
6		17	25.5		20			
7		17	50.4		30			
8		18	15.4	76	40			
Sum								Bar. 22.340 A. T. 50.0 D. T. 48.0
mean	6	16	51.3	76	05			
$\alpha$ Aquilae W.								In E = -3-10
1	6	24	03.0	96	00			
2		24	28.0	95	50			
3		24	51.2		40			
4		25	16.4		30			
5		25	46.0		20			
6		26	12.3		10			
7		26	39.0		00			
8		27	05.1	94	50			
9		27	34.3		40			
10		27	59.0		30			
11		28	26.2		20			
12		28	52.3		10			
13		29	18.0	94	00			
Sum								
mean	6	26	39.3	95	00			

# SEXTANT ASTRONOMICAL OBSERVATIONS.

*June* 25

Sextant No. *1671* and artificial horizon of Mercury *B*

Watch Chronometer No. *G.* by

Station *Fork Penasco Canon* Date: *Nov. 15*

} *L. Guffin*  
*Mason*

Sextant Observer.

Observer for time.

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.	Remarks.
	h	m	s	0	1	11		
<i>n. up. Limb.</i>								<i>Recorder</i> <i>F. C. Mason</i>
1	6	42	24.0	99	56	20		
2		43	20.0	100	06	00		
3		45	07.0		25	00		
4		47	23.0		52	50		<i>Bar. 23.062</i>
5		48	01.0	101	00	20		<i>air. 39.3</i>
6		48	31.0		03	45		<i>27. 36.5</i>
7		49	37.0		14	10		
8		50	18.0		23	55		
9		51	20.5		34	50		<i>Temp = -3-10</i>
10		51	54.0		39	05		
11		52	29.5		45	00		
12		53	56.0	102	00	00		
13		55	03.0		10	00		
14		56	00.5		20	00		
15		57	00.5		30	00		
<i>Sum.</i>								
<i>Mean.</i>	6	58	09.7	101	20	05		