

ASTRONOMICAL DEPARTMENT.
SEXTANT
ASTRONOMICAL OBSERVATIONS.

Book No. *29*, 1876.

ASTRONOMICAL RECORDS.

STATIONS:

Party N^o 2 - Cal: Carson City

Aug: 25th to Oct: 9th

Lt: Macomb

Engineer Department, U. S. Army.

Geographical Surveys West of 100th Meridian.

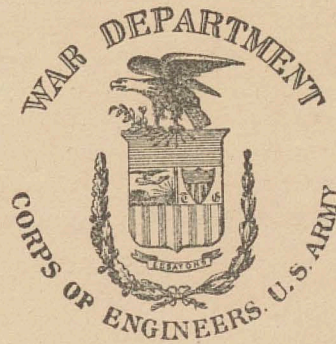
List of Stars for 1876.

STARS FOR SEXTANT OBSERVATIONS.

LATITUDE 32° TO 38° NORTH.

DATE.		STARS IN ORDER OF OBSERVATION.				REMARKS.
From—	To—	1st.	2d.	3d.	4th.	
June 1 to June 15.	June 1 to June 15.	α Virginis (S.)	γ Ursæ Majoris (W.) 99° to 98°.	α Lyrae (E.) 98° to 90°.	Polaris (N.)	α Virginis crosses the meridian June 1 at 8^h 38^m 36^s local time.
June 15 to July 1.	June 15 to July 1.	γ Ursæ Majoris (W.) 99° to 98°.	α Serpentis (S.)	α Lyrae (E.) 98° to 99°.	Polaris (N.)	α Serpentis crosses the meridian July 1 at 9^h 00^m 39^s local time.
July 1 to July 30.	July 1 to July 30.	α Serpentis (S.)	Polaris (N.)	α Lyrae (E.) 118° to 119°.	Arcturus (W.) 119° to 118°.	α Serpentis crosses the meridian July 10 at 8^h 20^m 3 local time, <u>about</u> or five minutes after α Lyrae attains double altitude, 110°.
July 30 to Aug. 15.	July 30 to Aug. 15.	Arcturus (W.)	<i>α Ophiuchi. Lat 32 to 38</i> <i>α Ophiuchi " 36 " 38</i>		α Cygni (E.)	Order of observation of these stars to be determined. α Ophiuchi crosses meridian August 1st, 1876 about 8 ^h 44 local time.
Aug. 15 to Sept. 30.	Aug. 15 to Sept. 30.	α Cor. Borealis (W.) 81° to 80°.	Markab (E.) 80° to 81°.	Polaris (N.)	Altair (S.)	<u>merid passage α Ophiuchi 8h 19m</u> Altair crosses meridian September 1st at 24 minutes after α Cor. Borealis attains double altitude, 81°.
Sept. 30 to Nov. 1.	Sept. 30 to Nov. 1.	α Andromedæ (E.) 109° 30' to 110° 30'.	α Lyrae (W.) 110° 30' to 109° 30'.	Polaris (N.)	ϵ Pegasi (S.)	ϵ Pegasi crosses meridian October 15th at about 20 minutes after α Andromedæ attains double altitude, 109° 30'. <u>7h 58.</u>
Nov. 1 to Nov. 15.	Nov. 1 to Nov. 15.	Altair (W.) 89° to 88° 30'.	α Arietis (E.) 88° to 89°.	Polaris (N.)	Markab (S.)	Markab crosses meridian at 8 ^h 12 ^m 11 , November 1, 1876 <u>about</u>
Nov. 15 to Nov. 30.	Nov. 15 to Nov. 30.	ϵ Pegasi (W.) 89° 30' to 88° 30'.	α Ceti (E.) 88° 30' to 89° 30'.	β Ceti (S.)	Polaris (N.)	β Ceti crosses meridian Nov. 15, 1876 at 8h 55m local time. <u>about 8h. 55m</u>

NOTE.—The above stars should be observed in the order and at the altitudes given, for the purpose of simplifying the work and lessening the labor of computation.



U. S. ENGINEER OFFICE.

FIELD ASTRONOMICAL RECORDS.

Book No. *A*.....

GEOGRAPHICAL AND GEOLOGICAL

EXPLORATIONS AND SURVEYS

West of the 100th Meridian.

FIRST LIEUT. GEO. M. WHEELER,
Corps of Engineers,
IN CHARGE.

1876.

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SEXTANT ASTRONOMICAL OBSERVATIONS.

1

Sextant No. _____ and artificial horizon of Mercury

Chronometer No. _____ by _____ } *Macomb* Sextant Observer.

Station: *Carson City Nev* Date: *Aug. 25 '75* } *Sycow* Observer for time.

Object observed.	Time of observation by chronometer.	Observed double altitudes.	Time of observation by chronometer.	Remarks.
<i>Cor. Borealis</i> (W)	9 7 58.5	80 40 00		<i>Well served to determine the most expeditious order of observations for tomorrow Altair (S) was observed too late approx. time of camp from Photographic field map</i>
	25.5 9 8 24	80 30 00		
	25.0 9 8 49	80 20 00		
	28.5 9 9 17.5	80 10 00		
	23.5 9 9 41	80 00 00		
	25.0 9 10 06	79 50 00		
	26.0 9 10 32	79 40 00		
Mean	9 64 48.0			<i>Bar 25.392 alt. 64.2 Dial. 61.2</i>
<i>Polaris N</i>	9 18 14	78 33 10		<i>These observations not to be worked up.</i>
	9 18 24	78 34 20		
	9 19 09	78 35 10		
	9 20 11	78 36 00		
	9 21 00	78 36 50		
	9 21 44	78 37 10		
	9 22 37	78 37 20		
9 23 06	78 37 30			
<i>Markab E</i>	9 28 14	81 50		<i>Altair (S) was observed too late</i>
	9 29 03	82 10		
	9 29 26.5	82 20		
	9 30 28	82 40		
	9 32 09	83 20		
<i>Altair (S) 4</i>	9 35 44	118 40 00		<i>approx. time of camp from Photographic field map</i>
	9 36 57.5	118 38 20		
	9 39 18	118 34 20		
	9 40 45	118 37 10		

These observations not to be worked up.
to determine the most expeditious order of observations for tomorrow Altair (S) was observed too late
approx. time of camp from Photographic field map

119 46 30
7 59 6
7 98 5
39° 10 30

SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. 1557 and artificial horizon of Mercury

Chronometer No. *Time taken Henshaw's watch* by *M. M. Macomb*

Sextant Observer.

Station: *Carron Bay New* Date: *Aug 26 76* *Henshaw*
Rendezvous camp *+ Symons*

Observer for time.

Object observed.	Time of observation by chronometer.			Observed double altitudes.	Time of observation by chronometer.			Remarks.
	A.M.	E			P.M.	W		
<i>82° 30'</i>	<i>9 4 00</i>			<i>82° 30'</i>	<i>29.5</i>	<i>2 60</i>	<i>22.5</i>	<i>Index Error</i>
<i>28.5</i>	<i>9 5 21</i>	<i>5</i>		<i>40</i>	<i>29.</i>	<i>2 59</i>	<i>53</i>	<i>00' 00"</i>
<i>28.7</i>	<i>9 5 30</i>	<i>2</i>		<i>50</i>	<i>27.5</i>	<i>2 59</i>	<i>24</i>	<i>A.M.</i>
<i>29.8</i>	<i>9 6 20</i>			<i>83 00</i>	<i>30.0</i>	<i>2 58</i>	<i>56.5</i>	<i>Bar. 25.443</i>
<i>26.6</i>	<i>9 6 46</i>			<i>10</i>	<i>28.5</i>	<i>2 58</i>	<i>26.5</i>	<i>All. 63.9</i>
<i>29.8</i>	<i>9 7 15</i>	<i>8</i>		<i>20</i>	<i>26.8</i>	<i>2 57</i>	<i>58</i>	<i>Det 64.9</i>
<i>28.4</i>	<i>9 7 44</i>	<i>2</i>		<i>30</i>	<i>00.0</i>	<i>2 57</i>	<i>31 2</i>	
		<i>44</i>	<i>10 7</i>			<i>41 2</i>	<i>31 7</i>	<i>Mean</i>
<i>Mean</i>	<i>9 6 18.7</i>			<i>83 00</i>		<i>2 58</i>	<i>56 0</i>	<i>Index Error</i>

Bar. 25.444
All. 76.3
Det. 77.4

Object observed.	Time of observation by chronometer.			Observed double altitudes.	Time of observation by chronometer.			Remarks.
	A.M.	E			P.M.	W		
<i>(5)</i>								<i>P.M.</i>
		<i>42</i>	<i>50.0</i>	<i>121 45 00</i>				<i>Index Error</i>
		<i>44</i>	<i>19.5</i>	<i>121 49 30</i>				<i>00' 00"</i>
		<i>45</i>	<i>26.1</i>	<i>121 54 00</i>				<i>Bar. 25.412</i>
		<i>47</i>	<i>42.3</i>	<i>122 01 00</i>				<i>All. 81.9</i>
		<i>49</i>	<i>00.5</i>	<i>122 05 40</i>				<i>Det. 81.9</i>
		<i>50</i>	<i>52.0</i>	<i>122 09 30</i>				
		<i>52</i>	<i>49.5</i>	<i>122 14 20</i>				
	<i>x</i>	<i>53</i>	<i>57.0</i>	<i>122 16 30</i>				
	<i>x</i>	<i>55</i>	<i>26.5</i>	<i>122 18 40</i>				
	<i>x</i>	<i>56</i>	<i>54.5</i>	<i>122 21 00</i>				
		<i>58</i>	<i>21.0</i>	<i>122 22 40</i>				
		<i>59</i>	<i>19.4</i>	<i>122 22 50</i>				
	<i>x</i>	<i>00</i>	<i>54.5</i>	<i>122 23 10</i>				
	<i>x</i>	<i>02</i>	<i>00.5</i>	<i>122 23 40</i>				
	<i>o</i>	<i>02</i>	<i>55.</i>	<i>122 24 50</i>				
	<i>o</i>	<i>04</i>	<i>27.5</i>	<i>122 24 10</i>				
	<i>x</i>	<i>05</i>	<i>39.5</i>	<i>122 23 40</i>				
	<i>x</i>	<i>06</i>	<i>46.1</i>	<i>122 23 00</i>				
	<i>x</i>	<i>08</i>	<i>43</i>	<i>122 21 50</i>				
	<i>x</i>	<i>10</i>	<i>03.5</i>	<i>122 18 20</i>				
	<i>x</i>	<i>10</i>	<i>55.5</i>	<i>122 16 40</i>				

SEXTANT ASTRONOMICAL OBSERVATIONS.

3

Sextant No. 1557 and artificial horizon of Mercury

Watch
Chronometer No. 8032 by Hammond & Co } Symons

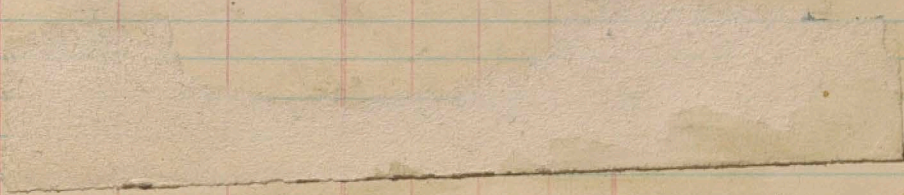
Sextant Observer.

Station: *Cannon City New* } Date: *Aug 26 '76* } *Macomb*
 Rendezvous Camp

Observer for time.

Object observed.	Time of observation by chronometer.				Observed double altitudes.		Time of observation by chronometer.	Remarks.
	<i>n</i>	<i>m</i>	<i>s</i>	<i>dec</i>	<i>°</i>	<i>'</i>		
<i>α Cor. Bor (W)</i>	9	03	14	8	80	00		
		03	38	0	79	50		
		04	07	4	79	40		
		-	-	-	79	30		<i>Missed</i>
		-	-	-	79	00		<i>Missed</i>
		06	13	5	78	50		
		06	39	3	78	40		
<i>altam (S)</i>	9	12	21	0	118	43	00	
		15	14	0	118	50	00	
		16	06	2	118	46	30 ?	
		17	26	4	118	49	20	
		19	15	0	118	50	00	
		20	50	9	118	49	00	
		21	48	1	118	50	00	
		22	27	0	118	48	30	
		23	45	5	118	47	20	
		24	40	2	118	47	20	
	26	05	0	118	49	10		

Not to be worked up.



SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. 1587 and artificial horizon of Mercury

Watch Chronometer No. 8032 by Macoub's Macomb Sextant Observer.

Station: Rendezvous Camp at Pearson City Nev. Date: Aug. 28. 1846 Birnie Observer for time.

Object observed.	Time of observation by chronometer.			Observed double altitudes.		Time of observation by chronometer.	Remarks.
	h	m	sec tenths	o	'		
(1) Cor. Bor. (West) 56.9	8	57	15 3	80	30		
		57	12 2		20		
		58	12 2		10		
		27.8	58	40 0	80	00	
		23.8	59	03 8		50	
		22.4	59	26 2		40	
		24.8	8	59 51 0		30	
		25.0	9	00 16 0		20	
		26.2	9	00 40 2		10	
		26.0	9	01 06 2	79	00	
		59	23 9 0 3 4				
		8	59 51.9	79	30		
(2) Polaris (North)	9	04	17 5	78	38	50	Index Error 0 Sun 25.184 alt 57.3 Del 57.3
		04	53 6		35	30	
		05	39 8		35	30	
		06	30 9		34	30	
		09 (09 7) ²			36	30	
		10	01 4		36	30	
		11	42 7		37	00	
		13	03 0		39	00	
		14	20 8		40	30	
		9	15	48 6	78	42	
	9	12	59 3	78	39	36	
(3) Aquilae (Altair) (South)	9	18	43 2	118	45	00	Strong wind blowing Mercury unsteady Clouds forming with great rapidity pres- sured on east stars being taken. M.M.M.
		20	05 3		45	10	
		21	16 4		43	50	
		22	40 4		43	45	
		24	11 5		42	00	
		25	53 3		39	50	
		28	02 2		35	00	
		9	29	01 8	118	35	

SEXTANT ASTRONOMICAL OBSERVATIONS.

5

Sextant No. _____ and artificial horizon of Mercury

Chronometer No. ^{Waters} 8032 by _____

Macomb

Sextant Observer.

Station: Reindeer Point Camp Date: Sept 2, 1882

Lillman

Observer for time.

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.			Remarks.
	h	m	s	h	m	s	h	m	s	
<u>Arcturus</u> (<u>Arcturus</u>) <u>W</u>	8	48	32.3	70	00		8	40	00	Index error 0' 0"
	32.6	49	04.9	69	50					This D.A. is probably 80°-79°
	13.7	49	28.6	40						
	21.7	49	36.3	30						
	24.5	50	15.9	20						
	35.1	51	11.0	10						
<u>β Aquilae</u> (<u>Altair</u>) <u>S</u>	8	54	58.0	118	35					Bar 25.394 alt 62.6 Det 62.1
	9	56	11.2	118	38	20				
		57	44.5	118	40					
		59	35.9	118	42	20				
	9	00	52.0	118	43	10				
		02	41.9	118	45	50 +				
		04	09.8	118	45	00 +				
		05	32.0	118	44	30 +				
		07	39.5	vernier error						
		09	10.2	118	bad					
		10	54.0	118	44	10 +				
		12	30.0	118	40	40 -				
		14	03.2	118	37	30				
		15	11.5	118	36	30				
		16	48.4	118	33	00				
<u>γ Regulus</u> (<u>Regulus</u>) <u>E</u>	9	26	59.4	85	10	00				
	30.2	27	30.2	20						
	30.2	28	00.4	30						
	27.5	28	28.0	40						
	23.5	28	57.8	50						
	25.2	29	17.0	86	00	00				
	24.0	29	41.0	86	10	00				
		9	19 47 8							
		9	28 28 0							

SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. 155.7 and artificial horizon of Mercury

Chronometer No. *Maacomb's Watch*

by *Maacomb*

Sextant Observer.

Station: *Rendezvous Camp*
Canyon of Nev.

Date: *Sept 2*

St Tallman

Observer for time.

Object observed.	Time of observation by chronometer.	Observed double altitudes.	Time of observation by chronometer.	Remarks.
Polaris ✓	h m s	° ' "		Index Error 00' 00" 10 Bar 25.390 alt 59.00 Det 59.5
	9 - 47 - 42.4	79 15 00		
	- 50 - 26.0	79 17 00		
	10 - 00 - 55.2	79 22 00		
	- 02 - 52.3	79 <i>Merrier model</i>		
	- 03 - 44.8	79 - 23 00		
	- 05 - 48.4	79 - 25 00		
	- 07 - 40.1	79 - 25 - 50		
	10 - 09 - 21.5	79 - 27 - 00		
	26 44 8	317 40 50		
10 6 41 2	79 25 12.5			
10 11 56 0	79 29 40			
<i>Polaris</i> 10 13 02 8	79 30 00			
<i>Tillman Sextant</i> 10 14 09 0	79 30 10			
<i>Maacomb Watch</i> 10 14 59 8	79 30 20			
10 16 58 0	79 30 40			
10 17 29 1	79 31 20			
10 28 21 1	79 31 30			
71 46 49 8	556 33 40			
10 15 15 7	79 30 31.2			

SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. *1557* and artificial horizon of Mercury

Chronometer No. *Macomb's Watch* by *Lt. Macomb* Sextant Observer.

Station: *Wasmuth's New* Date: *Sept 8th* *H. W. Henshaw* Observer for time.

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.			Remarks.		
<i>Altair (S)</i> <i>α Aquilae</i>	<i>h</i>	<i>m</i>	<i>sec</i>			<i>"</i>	<i>h</i>	<i>m</i>	<i>sec</i>	<i>Index Error</i> <i>00' 00"</i> <i>Passed</i> <i>B 25.308</i> <i>A 56.8</i> <i>D 50.2</i>		
	<i>8</i>	<i>52</i>	<i>57</i>	<i>8</i>	<i>118</i>	<i>48</i>						
		<i>54</i>	<i>15</i>	<i>9</i>	<i>118</i>	<i>46</i>						
		<i>55</i>	<i>30</i>	<i>10</i>	<i>118</i>	<i>45</i>						
		<i>56</i>	<i>30</i>	<i>8</i>	<i>118</i>	<i>43</i>	<i>30</i>					
		<i>57</i>	<i>28</i>	<i>7</i>	<i>118</i>	<i>43</i>	<i>20</i>					
	<i>59</i>	<i>6</i>	<i>0</i>	<i>118</i>	<i>41</i>	<i>30</i>						
<i>(W)</i>												
<i>α Ophiuchi</i>	<i>9</i>	<i>9</i>	<i>51</i>	<i>2</i>	<i>94</i>		<i>94</i>	<i>24</i>	<i>28</i>	<i>5</i>	<i>(E)</i> <i>35.0 Marked</i>	
	<i>26</i>		<i>10</i>	<i>17</i>	<i>2</i>			<i>23</i>	<i>53</i>	<i>5</i>		
	<i>32.6</i>		<i>10</i>	<i>49</i>	<i>8</i>			<i>23</i>	<i>30</i>	<i>4</i>		
	<i>30.1</i>		<i>11</i>	<i>19</i>	<i>9</i>			<i>28</i>	<i>3</i>	<i>7</i>		
	<i>25.9</i>		<i>11</i>	<i>45</i>	<i>8</i>			<i>22</i>	<i>34</i>	<i>8</i>		
	<i>29.7</i>		<i>12</i>	<i>15</i>	<i>5</i>			<i>22</i>	<i>4</i>	<i>5</i>		
	<i>33.3</i>		<i>12</i>	<i>48</i>	<i>8</i>	<i>93</i>		<i>9</i>	<i>21</i>	<i>40</i>		<i>5</i>
		<i>9</i>	<i>79</i>	<i>08</i>	<i>2</i>			<i>16</i>	<i>15</i>	<i>9</i>		
		<i>9</i>	<i>41</i>	<i>18</i>	<i>3</i>			<i>9</i>	<i>23</i>	<i>2</i>		<i>3</i>
		<i>9</i>	<i>30</i>	<i>37</i>	<i>0</i>	<i>71</i>	<i>17</i>	<i>50</i>				
<i>β Capricorni</i>	<i>9</i>	<i>32</i>	<i>49</i>	<i>6</i>	<i>71</i>	<i>15</i>	<i>20</i>	<i>Passed meridian</i>				
		<i>34</i>	<i>31</i>	<i>8</i>	<i>71</i>	<i>12</i>	<i>0</i>					
		<i>38</i>	<i>7</i>	<i>8</i>	<i>79</i>	<i>16</i>	<i>20</i>					
<i>Polaris</i>	<i>9</i>	<i>38</i>	<i>7</i>	<i>8</i>	<i>79</i>	<i>16</i>	<i>20</i>	<i>mean of all</i> <i>79 19 44.3</i> <i>mean of times</i> <i>9 44 19.5</i> <i>10. P.M.</i> <i>Bar 25.336</i> <i>49.1</i> <i>49.3</i>				
		<i>40</i>	<i>13</i>	<i>0</i>		<i>17</i>	<i>30</i>					
		<i>42</i>	<i>49</i>	<i>6</i>		<i>19</i>	<i>00</i>					
		<i>44</i>	<i>12</i>	<i>2</i>		<i>20</i>	<i>0</i>					
		<i>45</i>	<i>23</i>	<i>4</i>		<i>20</i>	<i>50</i>					
		<i>49</i>	<i>2</i>	<i>7</i>		<i>22</i>	<i>00</i>					
		<i>50</i>	<i>3</i>	<i>2</i>		<i>22</i>	<i>30</i>					
		<i>5</i>	<i>38</i>	<i>2</i>	<i>81</i>	<i>2.7</i>	<i>30</i>					
<i>γ Capricorni</i>	<i>10</i>	<i>6</i>	<i>46</i>	<i>8</i>		<i>26</i>	<i>50</i>	<i>Past meridian</i>				
		<i>8</i>	<i>22</i>	<i>0</i>		<i>21</i>	<i>30</i>					

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.
	<i>a.m.</i>			
	H M S	94°	H M S.	Index Error am 00' 00"
(1) 30.5	10 01 44	10		
31.7	01 02 46 2	20		Bar
33.3	03 29 .5	30		alt.
34.7	04 14 .2	40		Det.
30.8	^{corrected} 3504 45 0	95 00		
33.2	05 18 2	95 00		Bright Clouds
	05 13 0	50		
(1) 31.8	05 44 8	40		
34.2	06 19 0	30		
4.2	07 3 2	20		
37.8	07 41 0	10		
35.8	08 16 8	95 00		
		95		Not completed
	12 4 11 0	111 5		
	16 2	111 4		
	18 0	111 1		
	02 5	111 0		
	50 0	110 57		
	12 10 52 2			
				on 32.30 off 31.30

SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. _____ and artificial horizon of Mercury
 Chronometer No. _____ by *L. Tracumb* Sextant Observer.
 Station: _____ Date: _____ *Riding* 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>		
<i>actair</i>	8	25	44	5	118	48		
		32	16		118	46		
			22		118	45		
<i>Polaris</i>	8	37	31		78	50		
		39	4		78	51	40	
		40	38		78	53	40	
		42	13		"	54	—	
		44	42		"	55	—	
		45	40	5	"	56	—	
		46	23	5	"	57	—	
		47	19	5	"	57	30	
		48	12		79	57	—	
<i>Not computed</i>								
<i>alpha Andro</i>	9	1	57	5	86	40		
24.5		2	22			50		
26.0		2	48			50		
25.5		3	18	5		10		
29.0		3	42	5		20		
25.5		4	8			30		
21.0		4	29		87	40		

SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. 1557 and artificial horizon of Mercury

Operator
Chronometer No. 8082 by Hammond & Co } Macourt

Sextant Observer.

Station: Glenbrook New Date: Sept. 17 '20 The Brown

Observer for time.

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.			Remarks.
	A M			0	1	"	P M			
☉ Sun's V.L.	h	m	s				h	m	s	Index Error
	9	44	55.0	82	30	37.2	26	01	0	-55"
33.0		45	28.0		40	36.9	25	23	8	A.M.
35.5		46	03.5		50	32.8	24	47	0	A
34.9		46	38.4	83	00	30.2	24	14	2	D
31.6		47	10.0		10	37.0	23	44	0	B
34.8		47	44.8		20	38.6	23	07	0	
33.2		48	18.0		30		2	22	28.4	
Sum	9	328	17.7				169	46	41	P.M.
Mean	9	46	36.8				2	24	15.0	P A D
				Noon						
	11	44	17.0?	106	2					Clouds prevented good observations.
	11	55	16.5		4					
	11	56	53.0		3					
	11	57	35.0		4					Obs. for time bad
	11	58	08.5		6					
	11		09		6					

Dec. Gr. App. Nam
58.15
7.99
523.35
523.35
407.85
467.6185

2° i 41.7
-7 44.6
1° 53 57.1

E Gr. App. Nam
.879
7.99
791.1
6153
7023.21

Int 4 37 36.2
2.911 2 18 49.1
12 05 25.9

Not Computed

SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. *1557* and artificial horizon of Mercury

Watch
Chronometer No. *8032* by *Hammond & Co* } *Maumont*

Sextant Observer.

Station: *Glenbrook Nev.* Date: *Sept 20 '76* } *J. Brown*

Observer for time.

Object observed.	Time of observation by chronometer.				Observed double altitudes.			Time of observation by chronometer.			Remarks.			
	A.M.				0.	1.	"	H	m	s.				
☉ Sun's L		h	m	s				12	8	00	0	<i>Agulhas Error</i> <i>00' 00"</i> <i>P.M. Ragg</i> <i>B 23.968</i> <i>a 63.8</i> <i>d 64.3</i>		
		9	33	54	0	76	50	33.8	32	57	0			
			34	29	4	77	00	36.2	32	23	2			
			34	59	0		10	33.6	31	49	0			
			35	30	0		20	32.0	31	13	4			
			36	05	4		30	32.4	30	41	4			
			36	37	2		40	33.8	30	09	0			
			37	16	0		50		2	29	35		2	
			248	21						248	21		2	
			35	31	5					2	31		15	2
☽ Sun's U.L.		9	40	46	0	80	00					<i>A.M.</i> <i>on 32.40</i> <i>off 32.15</i> <i>on 32.15</i> <i>off 32.15</i> <i>on 32.15</i> <i>off 32.15</i> <i>on 32.20</i> <i>off 32.20</i>		
			41	25	2					25	0			
			42	4	6					26	53		0	
				37	0					20	0		0	
			43	08	2					2	25		45	0
				44	6									
			44	20	0	81	00							
☉ Sun's U.L.		11	47	38	0	103	30					<i>23.64</i> <i>69.7</i> <i>68.2</i>		
			49	32	4		35							
			51	24	0		38							
			52	14	8		40							
			52	52	2		41							
				18	0		42							
			53	55	2		43							
			54	22	6		44							
			55	03	0		45							
				45	2		46							
			56	30	6		47							
			57	44	8		48							
			58	48	2		49							
		12	00	15	4		50							
			02	28	0		51							
		46	41	4		50								
		46	40	0		49								

SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. _____ and artificial horizon of Mercury

Chronometer No. _____ by _____ }
 Station: _____ Date: _____ }

Sextant Observer, _____

Observer for time, _____

Object observed.	Time of observation by chronometer.	Observed double altitudes.	Time of observation by chronometer.	Remarks
	11 12 8	0		
	12 8 00 0	103 48 0		Index error Moon - 15"
	9 14 2	47		
	10 16 4	46		
	11 19 8	45		
	12 13 0	44		
	13 51 8	43		
	17 4	42		
	14 47 0	41		
	14 23 4	40		

SEXTANT ASTRONOMICAL OBSERVATIONS.

13

Sextant No. _____ and artificial horizon of Mercury

Chronometer No. _____ by _____

Sextant Observer. _____

Station: *Eleuthera* Date: *Sept 21 76*

Observer for time. _____

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.			Remarks.
	<i>AM</i>									
O Sun U.L.	7 ^H 2 ^m 5 ^s						8	32	51.4	<i>57</i> <i>57</i> <i>center at 57</i> <i>57</i> <i>57</i> <i>57</i> <i>57</i> <i>57</i>
	8 31 27 0	58	30	8	35	55.4				
	31 56 4	40		8	6	46.8				
	32 23 0	50		8	32	23.4				
	32 48 4	57	00							
	33 20 2	10								
	33 50 0	20								
	34 15 0	30								
O Sun L.L.	34 32 2	58	30						<i>B</i> <i>a</i> <i>d</i> <i>23.924</i> <i>60.6</i> <i>59.5</i>	
	34 59 0	40								
	35 24 4	50								
	35 55 8	00								
	36 22 4	10								
	36 51 0	20								
	37 23 0	57	30							
	<i>Noon</i>									
O	11 54 20 0	103	27	20					<i>Blondy + strong</i> <i>wind</i> <i>Mercury in steady</i> <i>off 32.10</i> <i>on 32.10</i> <i>B 23.964</i> <i>a 63.6</i> <i>d 62.8</i>	
	55 24 4	28	40							
	57 02 0	103	30	00	x					
	58 51 4	32	30	*						
	59 08 2	34	00	+						
	59 57 0	35	00	+						
	12 00 46 0	35	30	+						
	01 25 2	36	00	+						
	02 08 0	36	30							
	02 45 0	37	00							
	07 07 6	36	00	+						
	47 0	35	30	+						
	8 27 0	35	00	*						
	58 2	34	30	+						
10 10 0	33	30								
58 0	32	30	*							
12 45 0	103	31	30							
14 42	103	28	00	+						

SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. _____ and artificial horizon of Mercury

Chronometer No. _____ by _____

Sextant Observer, _____

Station: _____

Date: *Sept 21st 78*

Observer for time, _____

Object observed.	Time of observation by chronometer.				Observed double altitudes.			Time of observation by chronometer.	Remarks.
	H	m	s		'	"			
	12	18	4	0	103	52	00		
		28	28	2		20			
<i>d Cor Bar</i>	7	58	10	0	70	20	00		
			28	8					
			55	0					
		59	19	4					
			47	0					
	8	00	14	0					
			38	2					
<i>d Cor Bar</i>	8	02	35	0	68	40	00		
		03	33	0		30			
			55	4	6	10			
<i>p. 302 art. al.</i>		04	18	0	68	00			
		04	47	0		50			
		05	13	6		40			
		5	38	8		30			
		06	03	4		20			
		6	31	0		10			
		07	02	0	67	00	00		
		59	33	8					
		5	39	9					
<i>Algenib y Regasi</i>	8	23	58	0	82	10		26.6	
		24	24	6		30		25.4	
		24	50	0		20		26.0	
<i>d. and</i>		25	16	0		10		25.4	
<i>North</i>		25	41	4		00		22.8	
		26	14	2		00		22.8	
		26	37	0	83	10			
<i>P. 275 North al.</i>		17	01	2					
	8	25	17	3					

8.00
Bar 23.990
a 418.000
d 48.4

9.00
Bar 23.994
art 413.8
Del' 45.8

SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. _____ and artificial horizon of Mercury

Chronometer No. _____ by _____

Sextant Observer. _____

Station: _____

Date: *Sept 21st 76*

Observer for time. _____

Object observed.	Time of observation by chronometer.	Observed double altitudes.	Time of observation by chronometer.	Remarks.
	<i>H 725</i>	<i>0 1 11</i>		
	8 34 24 0	77 02 00		<i>Index Error 00 00</i>
	36 06	02 30		
	40 30	02 40		
<i>Polaris</i>	8 41 21 0	79 08 00		
	42 03 2	08 10		
	36 0	08 20		
	43 08 0	08 30		
	35 4	08 40		
	44 13 4	08 50		
	44 47 0	09 00		} <i>mean of time 8 45 43</i>
	45 15 0	09 10		
	45 48 0	09 20		
	46 13 8	09 30		
46 41 2	09 40			
47 02 8	09 50			
23 0	79 10 00			
8 53 17 0	81 55 00			<i>γ Persei</i>
54 36 0	54 10			
56 28 2	53 10			
9 03 00 0	88 38 40			
04 22 0	89 43 40			
05 57 2	49 30			
07 16 0	53 10			<i>β Aquarii</i>
11 01 0	89 05 50			
13 58 0	89 11 00			
16 05 0	89 19 10			
17 57 4	25 10			<i>δ Capricorni</i>
20 36 0	26 00			
22 25 0	30 30			
23 49 6	33 40			
25 08 2	35 00			<i>Ann. Almanac 317</i>

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

9	26 20 2 ^x	35 30	x	
	27 29 4 ^x	36 30	x	
	28 25 0	37 10	x	
	30 11 0	34 20		
	31 21 4	37 50		
	32 14 0	38 30	x	
	33 35 0	38 20	x	reject
	34 17 2	38 30	x	
	35 18 0	34 30	x	
	36 14 2	36 30	x	
	38 01 0 ⁺	35 00	x	
	38 43 2	34 20		
	40 28 0	32 30		
	41 08 0	31 20		
	41 54 8	30 30		
	42 30	29 10		

⊙ *β Aquarii*

α Aquarii

γ Capricorni

β

SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. *1557* and artificial horizon of Mercury

Let. Maunab's Watch

Chronometer No. *8032* by *Hammund + Co*

Let. Maunab

Sextant Observer.

Station: *Side Camp Marlette's Ranch* Date: *Sept 22 1876*
Nevada

Riding

Observer for time.

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.	Remarks.
	h.	m.	s.	0	1	"		
<i>marked</i> α Pegasi } (E) β Pegasi }	7	47	57	82	50			<i>Stars unknown</i> <i>Index image part wrong</i> Index Error 0" 0" S.P.M. Bar. 22.475 Att. Ther. 41.0 Det. Ther. 42.4
		48	22	25	83	00		
		48	46	24	83	10		
		49	12	26	83	20		
		49	38	24	83	30		
		50	07	27	83	40		
		50	36	28	83	50		
Mean	7	49	14	83	20'			
α Cor. Borealis } (W) (Gamma)	8	0	17.5	68	30			
		0	43.5	68	20			
		1	10 0	68	10			
		1	38 0	68	00			
		2	03 5	67	50			
		2	29 0	67	40			
Mean	8	11	16.5	68	50			
		1	36 6					
β Capricorni (S)	8	18	28	71	17	50		
		21	15		18	50		
		25	07		15	50		
α Urs. Minoris } (N) (Polaris)	8	29	00	79	13	20	<i>20 repeat</i> These observations were taken at intervals of 20" of arc as an experiment	
		30	32		13	40		
		31	16	44	14	00		
		31	59	43	14	20		
		32	29	30	14	40		
		33	07	38	15	00		
Mean	8	31	23	79	14	20		
		31	52.5					
Polaris (N)	8	33	53	79	17	10	Taken by usual methods worked up separately from the above	
		35	19	26	18	30		
		69	12		35	40		
		34	36		17	50		

Sextant No. *1557* and artificial horizon of Mercury

Let Macomb's Watch

Chronometer No. *8032* by *Hammond & Co N.Y.* } *It Macomb*

Sextant Observer.

Station: *Side Camp, Marietta's Ranch* } *Riding*
Nevada

Date: *Sept 23rd 1876*

Observer for time.

Object observed.	Time of observation by chronometer.				Observed double altitudes.			Time of observation by chronometer.			Remarks.
	h	m	s	d							
<i>B Pegasus</i> <i>(Algenib)</i> E	8	53	15		94	00	00				<i>9.00</i> <i>B. 22.40</i> <i>a. 12.58</i> <i>D. 12.20</i>
		53	46			60	00				
		54	17			20	00				
		54	41	5		30	00				
		55	08			40	00				
		55	37			50	00				
		56	07			95	00	00			
		56	51	5		94	30	00			
<i>Polaris</i> N.	8	54	41	6							
	9	02	18		79	35	30				
		04	26			36	20				
		05	41			37	20				
		07	04	5		38	00				
		08	14	5		38	00				
		09	53	5		39	30				
		11	39	0		40	20				
<i>α Lyrae</i> <i>Vega</i> W.	9	46	19	5		26	3	00			
	9	28	51		79	37	51.4				
	25	29	16			30	00				
	27	29	43			20					
	24	30	11		113	00	00				
	22	30	37		112	50	00				
	29	31	06			40	00				
	26	31	30			30	00				
23	31	53		112	20	00					
	21	41	16								
9	30	36	6								

SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. 1557 and artificial horizon of Mercury

Lit. Macomb's Watch

Chronometer No. 8032 by *Hammond & Co, NY* } *Lit. Macomb*

Sextant Observer.

Station: *Peak near Marlett's Rock* } Date: *Sep. 23, 1876* } *Sergt. Ford*
Triang. Sta. No 3

Observer for time.

Object observed.	Time of observation by chronometer.			Observed double altitudes.			Time of observation by chronometer.			Remarks.
	A. M.			P. M.						
	<i>h</i>	<i>m</i>	<i>s</i>	<i>o</i>	<i>'</i>	<i>"</i>	<i>h</i>	<i>m</i>	<i>s</i>	
Sun's Upper Limb	9	22	33	71°	00		2	53	41	Index Error
⊙	32	23	05		10	96 31		53	10	0' 0" 9.30
	29	23	34		20	34		52	39	Bar. 21.959
98	37	24	11		30	28		52	05	Att. 53.6
	30	24	41		40	93 32		51	37	Det. 52.9
91	32	25	13		50	33		50	05	
	32	25	45	72°	00			50	32	
Mean		169	02	71	30			364	49	
	9	24	18.9				2	52	07	B. 21.968 ^{3 00}
Sun's Lower Limb	9	25	57	71	00		2	50	19	a. 64.1
⊙	22	26	27		10		24	49	45	d, 62.5
94	23	27	00		20	97	34	47	16	
	31	27	31		30		31	48	42	
	35	28	06.		40	97	34	48	11	
95	30	28	36		50		32	47	37	
	30	29	06	72	00			47	05	
Mean		192	43	71	30			346	55	
	9	27	31.8				2	48	42.1	
Sun's U. Limb	11	57	25.6	101°	9	13				12 m
⊙	12	00	08.5		14	05				21.973
		02	04.0		16	00				59.7
		03	38.5		18	38				58.2
		06	57.0		19	48				
		09	19.0		21	10				
		10	08.0		20	00				
		14	39.0		18	50.0				
		17	28.5		16	00				
		18	14.0		14	10				
		20	46.0		9	25				

SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. and artificial horizon of Mercury

Chronometer No. by

St 711

Sextant Observer.

Station: Rowlands Cal Date: Oct. 2nd 1876

Observer for time.

Object observed.	Time of observation by chronometer.					Observed double altitudes.			Time of observation by chronometer.					Remarks.
	h	m	s	d	d	o	'	"	h	m	s	d	d	
Sun's U. Limb	9	28	37	0		69	30	00						Slightly hazy.
33.4		29	10	4			40	00						Wind N. W. by N. (2)
33.2		29	43	6			50	00						A M
34.2		30	17	8		70	00	00						Bar 24.246
31.2		30	49	0			10	00						Alt 70.8
39		31	28	0			20	00						Dist 68.0
33.4		32	01	4			30	00						Index Error
Sun's L. Limb		32	20	0		69	30	00						on 32.20
35.2		32	55	2			40	00						off 32.10
32.8		33	28	0			50	00						has 10
34.0		34	02	0		70	00	00						PM
36.0		34	38	0			10	00						
36.8		35	14	8			20	00						
34.2		35	48	2		70	30	00						
	11	39	19	0		94	10	30						
		40	22	8			10	30						
		41	29	0			17	30						
		42	11	2			19	20						
			59	4			21	00						
		43	40	0			22	50						Dist 67.4
		44	26	6			26	00						Alt 72.7
		45	09	0			26	50						Bar 24.234 (-6)
			59	0			30	10						on 32.30
		46	53	4			32	30						off 31.30
		47	53	2			33	30						on 32.30
		48	38	0			35	30						off 31.50
		50	48	2			39	30						on 32.30
		51	42	4			40	00						
		52	40	0			42	10						
		53	31	2			43	20						
		54	28	0			44	20						
		55	34	0			45	00						
		56	46	0			46	10						

SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. _____ and artificial horizon of Mercury

Chronometer No. _____ by _____

Station: _____

Date: *Oct. 2.*

Macomb Sextant Observer.

J. Brown Observer for time.

Object observed.	Time of observation by chronometer.				Observed double altitudes.			Time of observation by chronometer.				Remarks.
	h	m	s	d	°	'	"	h	m	s	d	
	11	57	37	0	47		00					
		57	32	4	47		40					
		50	15	0	48		20					
12	01	18	0		49		20					
	01	17	8		49		20					
		55	0		49		20					
	02	44	2		49		40					
	03	34	8		50		00	+				66.8
	04	10	0		48		00					66.8
		48	4		48		30					64.9
	05	28	8		48		00					
	06	26	0		48		00					
		57	6		46		30					
	07	44	2		46		15					
	08	22	0		46		15					
		50	0		44		50					
	08	25	0									
	09	51	0		44		00					
	10	40	0									
	11	15	0		44		00					
	10	07	0									
	12	46	0		41		00					
	13	41	0		40		40					
	14	54	0		36		40					
	15	00	0		3							
	16	32			33		40					

SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. _____ and artificial horizon of Mercury
 Chronometer No. _____ by *Macomb* Sextant Observer.
 Station: *Rowlands Cal* Date: *Oct. 2* } *Brown* Observer for time.

Object observed.	Time of observation by chronometer.				Observed double altitudes.			Time of observation by chronometer.	Remarks.
	H	M	S	0	0	1	"		
<i>Sun L Lint</i>	2	41	42	0	66	30			<i>Missed</i>
<i>Q</i>	1 03.2	42	45	2	66	20			
	37.8	43	23	0					
	29.8	43	52	8					<i>on 32.40</i>
	32.2	44	25	0					<i>off 32.00 -20</i>
	37.0	45	02	0					<i>on 32.40</i>
		45	17	2	66	30			<i>off 32.00</i>
<i>Sun U L</i>	31.6	45	48	8		20			
	32.2	46	21	0		10			
	34.0	46	55	0	66	00			<i>24.207</i>
	29.8	47	24	8		50			<i>del 70.8</i>
	34.2	47	59	0		40			<i>alt 72.7</i>
	33.6	48	32	0	65	30			

43 23
46

SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. _____ and artificial horizon of Mercury

My Watch
Chronometer No. _____ by _____

Station: *Rowlands Cat* Date: *Oct 3*

Macomb
Reding
Du Bois

Sextant Observer, _____
Observer for time, _____

Object observed.	Time of observation by chronometer.				Observed double altitudes.			Time of observation by chronometer.				Remarks.
	h	m	s	d	o'	"	"	h	m	s	d	
Suns U.L. <i>Diff</i>	9	7	37	5	64	00	"					A.M. Index Error 0' 00"
<i>0</i> 30.0		7	37	5		10						B. 24.224 - 6
32.5		8	40	0		20		9	9	14	0	A. 58.3
34.0		9	44	0		30		9	12	44	7	D. 51.9
35.0		9	47	0		40		<u>9</u>	<u>10</u>	<u>59.3</u>		
32.0		10	19	0		50						
34.0		10	53	0	65	00						
Mean	9	9	14	0	64	30						Noon
	9	11	06	0	64	00						Index Error 0' 00"
<i>0</i> 31.5		11	37	5		10						B 24.240*
34.5		12	12	0		20						A 76.8
Suns L.L. 32.5		12	44	5		30						D 66.1
34.5		13	19	0		40						
37.0		13	50	0		50						
35.0		14	25	0	65	00						
Mean	9	12	44	7	64	30						
<i>0</i> Suns U.L.	11	52	57		94	00	00					P.M. Index Error
		53	20	5	94	0	30					
		54	8	5	94	1	0					
		54	43	5		1	30					B
		56	23	5	94	2	0					A
	12	0	11	0	94	2	0					D
		1	43	5	94	1	0					
		2	38		93	59	30					
		3	29	5	93	58	50					

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SEXTANT ASTRONOMICAL OBSERVATIONS.

27

Sextant No. _____ and artificial horizon of Mercury

Green Water
Chronometer No. _____ by _____

Station: *Rowlands Cal* Date: *Oct 3*

Mason Sextant Observer.
Dubin Observer for time.

Object observed.	Time of observation by chronometer.				Observed double altitudes.			Time of observation by chronometer.	Remarks.
	h	m	s	d	0'	1	"		
<u>0</u>					59.	30.	"		P M
					59.	30.	"		Index error
					59	30	"		00' 00"
	2	57	23	0	59	30	"		B 24.186
31.0		57	54	0		20	"		A 71.6
32.5		58	26	5		10	"		D 68.4
31.5		58	58	0	59	00	"		
30.0		59	28	0	58	50	"		
32.0	3	0	0	0		40	"		
31.0		30	31		58	30	"		
	2	58	57	2					
	3	0	45	3	59	30	"		
30.3	3	1	15	6		20	"		
31.4	3	1	47	0		10	"		
30.5	3	2	17	5	59	00	"		
31.2	3	2	48	7		50	"		
31.6	3	3	20	3		40	"		
0	3	3	51	3	58	30	"		
		16	05	7					
		2	16	9					

SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. *1355* and artificial horizon of Mercury

Macomb's Watch
Chronometer No. by

Station: *Rowlands Cal* Date: *Oct 4 76* *Macomb*
Riding AM
du Bois Noon + PM

Sextant Observer.

Observer for time.

Object observed.	Time of observation by chronometer.				Observed double altitudes.			Time of observation by chronometer.				Remarks.
	A M				o	o	"					A M
	h	m	s	d				h	m	s	d	Index Error
Sun's U limb	9	14	3		65	80						00' 00"
0	33	14	36			40						Bar 24.172
	34	15	10			50						Alt 63.7
	32	15	42		66	00						Det 61.6
	33.5	16	15	5		10						
	33	16	48	5		20						
	36.5	17	25			30						
		110	00	0								
	9	15	42	9	66	00	00					
Sun's L.L.	9	17	42									
0	29.5	18	11	5								
	34.0	18	46	5		15 42.9						
	34.5	19	21			19 20.4						
	33.5	19	54	5		35 03.3						
	32.0	20	26	5		17 31.6						
	34.5	21	1									
	Mean	135	23	0								
Sun's U.L.	9	19	20	4								Noon
0	11	51	9	0	93	13	15					Index Error
		52	30	5	93	14	0					Bar 24.146
		53	43	5	93	15	0					Alt 71.6
		54	41	0	93	15	10					Det 66.2
		55	56	0	93	15	30					
		57	5	5	93	15	45					Qu 32.5
		58	17	5		15	20					off 32.5
		59	32	5		15	10					h. sun 0' 00"
	12		17	5		14	30					
		1	30	5		14						
		2	9	0		13	30					
		2	57	5		12	40					

SEXTANT ASTRONOMICAL OBSERVATIONS.

29

Sextant No. *1557* and artificial horizon of Mercury

Chronometer No. _____ by _____

Sextant Observer. _____

Station: *Rowlands Cal* Date: *Oct 4 '76* }

Observer for time. _____

Object observed.	Time of observation by chronometer.				Observed double altitudes.			Time of observation by chronometer.			Remarks.	
	h	m	s	d	0	1	"					
Suns L.H.												Index Error 00' 00" Bar. <i>24.122</i> air. <i>73.1</i> Det. <i>69.9</i>
⊙	32.0	55	9	0	59	40	00					
	31.5	55	38	5		20						
	32.5	56	11	0		10						
	32.0	56	43	0	59	00						
	32.0	57	13	0	58	50						
	30.5	57	45	5	58	40						
Suns U.L.											The results from to days observations should be better than the others	
⊙		58	1	5	59	40		2	56	11.3		
	29.0	2	58	30	5	30		2	59	33.1		
	30.0	2	59	0	5	20		5	55	46.4		
	31.0	2	59	31	5	10		2	57	52.2		
	32.0	3	0	3	5	59	00					
	33.0	3	0	36	5	50						
	31.5	3	1	8	0	58	40	0				

SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. _____ and artificial horizon of Mercury

Chronometer No. _____

by _____

Maunt
Dubois

Sextant Observer, _____

Station: *Rowlands Cal*

Date: *Oct 4 76*

Observer for time, _____

Object observed.	Time of observation by chronometer.				Observed double altitudes.	Time of observation by chronometer.		Remarks.
	h	m	s	d				
<i>α Aquilae (W)</i> <i>(Altair)</i>	8	27	41	0	88			
	9	29	12	0	88	30		
32.5		29	44	5	88	20		
✓ 27.5		30	12	0	88	10		
✓ 33.0		30	45	0	88	00		
✓ 30.5		31	15	5	87	50		} Mean 87 50 } Mean 9 3 1 15.4
✓ 32.5		31	48	0	87	40		
✓ 27.5		32	15	5	87	30		
✓ 31.5		32	47	0	87	20		
28.0		33	15	0	87	10		
	9	43	20	5	80	00	00	
<i>α Persei</i>	33.5	40	54	0		10	00	
30.0		44	24	0		20	00	
<i>β Persei</i>	31.5	44	55	5		30	00	
<i>γ Persei</i>	36.0	45	31	5		40	00	
32.0		46	3	5		50	00	
33.0		46	36	5	81	00	00	
		314	45	5				
		44	57	9	80	30	00	
<i>α Per</i> <i>Mumbab</i>	10	7	16	0	131	12	30	
		9	3	0	131	13	0	
		10	15	5		13	40	
		11	48	5		13	30	
		13	8	0		12	40	
		14	20	0		11	20	
		15	48	0		10	40	
<i>Polaris</i>	10	27			80	13	30	
		28	11	5	71.5	13	50	20
		29	7	5	56	14	10	20
		30	7	5	50	14	20	10
		31	11	5	54	15	50	20
		32	14	5		15	30	20

B. 240.50
43.8
a. 48.1
d.

114 26.5
28 36.6

80 54
13 57.5

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	a							
70	10	33	2	5	+5	-16					Ind error 0' 0"
		34	9	0							
		34	54	0	+5	-16	10				

SEXTANT ASTRONOMICAL OBSERVATIONS.

Sextant No. _____ and artificial horizon of Mercury

^{Watch} Chronometer No. 39114 by _____

Station: *Savoyus Rebr*

Date: *Oct. 9th 76*

Macomber Sextant Observer.

DuBois Observer for time.

Object observed.	Time of observation by chronometer.				Observed double altitudes.			Time of observation by chronometer.			Remarks.
	h	m	s	d	0	1	2				
<i>α Ophiuchi</i>	7	46	9	0	70	40	0				<i>End En 0.0</i>
<i>W</i>	5	19	51	29	68	40	0				<i>Mag. Glass</i>
		46	52	14	68	20	0				<i>Wilson could not</i>
<i>26.7</i>		53.5	53	7	68	0	0				<i>like rapid obs</i>
		52.	53	54	67	40	0				
			<i>210</i>	<i>48</i>	<i>0</i>						<i>Bar 22.956</i>
			<i>52</i>	<i>42</i>							<i>Att. 39.7</i>
<i>ε Peg. (S)</i>	8	2	39	5	105	33	30				<i>Det 39.1</i>
		7	4	0	105	38	0				
		11	51	0	105	37	40				
		15	12	0	105	36	40				
		18	25	0	105	31	20				
			54								
<i>Polaris N</i>	8	22	42	0	79	18	30	<i>6 46</i>	<i>58.5</i>		
		24	16	5		20	10	<i>8 23</i>	<i>29.2</i>		
		26	15	5				<i>79 19</i>	<i>20</i>		
<i>bad</i>		26	27	5		21	40				<i>bad</i>
		27	33	0		20	50				<i>Watch stopped</i>

SEXTANT. ASTRONOMICAL OBSERVATIONS.

Sextant No. _____ and artificial horizon of Mercury

Chronometer No. _____ by _____

Station: _____ Date: _____

Sextant Observer, _____

Observer for time, _____

Object observed.	Time of observation by chronometer.	Observed double altitudes.	Time of observation by chronometer.	Remarks.
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Index Error
Before observations
 on off
 on off
 on off
 on off

after observations
 on off
 on off
 on off

E
 -0.2 Bar.
 +0.1 alt
 -0.8 Det