

APPENDIX No. 5—Continued.

October 24, 1846.—Camp 81, on the Gila.

DETERMINATION OF LONGITUDE.

Time, p. m.			Distance of Fomalhaut, from moon's western limb.		
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
2	32	14.8			
2	34	03.6	67	42	20
2	35	16.8	67	42	15
2	37	04.5	67	41	45
2	38	39.0	67	40	55
2	39	57.8	67	40	30
2	41	12.5	67	40	05
2	42	38.5	67	39	55
2	44	02.0	67	39	10
2	46	01.0	67	38	20
2	47	17.0	67	37	40
2	48	35.8	67	37	10
2	50	04.0	67	36	50

Thermometer 68°.

Longitude by mean of observations, 7h. 12m. 17.4s.

<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
7	12	17.4			

Chromometer fast by 9 observations of east star....  
 Chromometer fast by 8 observations of west star....  
 Mean.....

APPENDIX No. 5—Continued.

October 24, 1846.—Camp 81, on the Gila.

DETERMINATION OF TIME.

Time, p. m.			Double altitudes of $\alpha$ Andromedæ in the east.			Chronometer fast.		
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>	<i>h.</i>	<i>m.</i>	<i>s.</i>
3	13	24.8	98	23	55	8	35	05.6
3	14	25.2	98	50	00	8	35	05.8
3	15	15.5	99	10	50	8	35	04.3
3	16	04.7	99	31	30	8	35	04.1
3	16	50.6	99	51	30	8	35	02.2
3	17	41.0	100	11	50	8	35	04.1
3	18	38.0	100	36	15	8	35	03.6
3	19	33.0	100	58	10	8	35	04.3
3	20	17.5	101	17	35	8	35	03.7

Thermometer 54°.

Time, p. m.			Double altitudes of $\alpha$ Lyrae in the west.			Chronometer fast.		
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>	<i>h.</i>	<i>m.</i>	<i>s.</i>
3	23	15.0	118	53	55	8	35	04.5
3	24	01.2	118	37	20	8	35	08.3 rej.
3	24	54.0	118	15	10	8	35	04.5
3	25	34.0	117	59	50	8	35	05.3
3	26	15.5	117	43	20	8	35	04.7
3	26	59.8	117	25	50	8	35	04.3
3	27	40.8	117	09	30	8	35	03.4
3	28	24.0	116	52	30	8	35	05.4
3	29	08.0	116	35	30	8	35	03.7

Chromometer fast by 9 observations of east star.... *h. m. s.* 8 35 03.97  
 Chromometer fast by 8 observations of west star... 8 35 04.48  
 Mean..... 8 35 04.22



## APPENDIX No. 5—Continued.

October 24, 1846.—Camp 81, on the Gila.

## DETERMINATION OF LATITUDE.

Time, p. m.			Double altitudes of <i>b</i> Aquarii, near the meridian.			Latitude.		
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>			<i>Deg. min. sec.</i>		
3	34	52.0	101	51	50	32	45	03
3	35	59.5	101	53	50	32	44	56
3	37	17.9	101	55	50	32	45	01
3	38	51.8	101	57	30	32	45	17 rej.
3	40	02.5	102	00	20	32	44	31
3	41	12.0	102	00	40	32	44	57
3	42	21.2	102	02	25	32	44	31
3	43	45.0	103	03	20	32	44	26
3	45	10.8	102	03	15	32	44	41
3	46	30.0	102	03	40	32	44	31
3	47	36.0	102	04	00	32	44	16
3	48	22.8	102	03	10	32	44	34
3	49	13.2	102	03	10	32	44	22
3	50	06.8	102	02	20	32	44	31
3	51	14.2	102	01	40	32	44	28
3	52	10.0	102	00	55	32	44	20
3	53	07.0	102	00	15	32	44	08 rej.
3	54	18.8	101	58	10	32	44	24
3	55	37.6	101	55	25	32	44	45
3	57	13.5	101	52	40	32	44	43

Mean of 18 observations, 32° 44' 37".

Latitude by 12 obs. of Polaris..... 32 45 06

Latitude by 18 obs. of *b* Aquarii..... 32 44 37

Mean of north and south stars... 32 44 52 lat. of camp.

## APPENDIX No. 5—Continued.

October 24, 1846.—Camp 81, on the Gila.

## DETERMINATION OF LATITUDE.

Time, p. m.			Double altitudes of Polaris.			Latitude.		
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>			<i>Deg. min. sec.</i>		
2	56	31.0	66	39	20	32	45	14
2	57	30.5	66	40	20	32	45	14
2	58	18.8	66	40	45	32	45	01
2	58	58.5	66	41	10	32	44	57
2	59	39.2	66	42	00	32	45	06
3	00	34.5	66	42	45	32	45	09
3	01	24.0	66	43	15	32	45	07
3	02	21.5	66	44	10	32	45	13
3	03	18.8	66	44	55	32	45	15
3	03	58.8	66	45	20	32	45	12
3	04	57.0	66	45	50	32	45	08
3	05	55.6	66	46	20	32	44	59

Thermometer 62°.

Mean of 12 observations, 32° 45' 06".



## APPENDIX No. 5—Continued.

October 26, 1846.—Camp 83, on the Gila.

## DETERMINATION OF LONGITUDE.

Time, p. m.			Distance of $\alpha$ Pegasi from moon's western limb.	Double altitudes of moon's lower limb.
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>	<i>Deg. min. sec.</i>
4	14	49.0	56 00 10	63 59 20
4	16	28.2	55 59 10	63 14 40
4	18	20.8	55 58 30	62 47 00
4	19	43.5	55 58 10	62 26 10
4	22	33.0	55 57 30	61 43 55
4	24	11.8	55 57 10	61 19 20

Thermometer 66°.

## DETERMINATION OF TIME.

Time, p. m.			Double altitudes of — in the west.
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>
5	19	35.8	96 03 40
5	20	24.0	95 46 20

Time, p. m.			Double altitudes of $\alpha$ Lyrae in the west.
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>
5	25	51.0	70 07 10

## APPENDIX No. 5—Continued.

October 27, 1846.—Camp 83, on the Gila.

## DETERMINATION OF LATITUDE.

Time, p. m.			Double altitudes of Polaris.	Latitude.
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>	<i>Deg. min. sec.</i>
2	40	42.0	66 50 10	32 55 11
2	41	27.8	66 50 50	32 55 15
2	42	29.2	66 51 35	32 53 15
2	44	02.0	66 52 50	32 53 18
2	45	15.3	66 53 40	32 53 12
2	46	10.8	66 54 30	32 53 17
2	46	58.5	66 55 10	32 53 20
2	47	46.7	66 55 45	32 53 19
2	48	28.8	66 56 10	32 53 16

Thermometer 51°.

Mean of 10 observations, 52° 55' 16".

Time, p. m.			Double altitudes of $\alpha$ Lyrae in the west.	Latitude.
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>	<i>Deg. min. sec.</i>
2	40	42.0	66 50 10	32 55 11
2	41	27.8	66 50 50	32 55 15
2	42	29.2	66 51 35	32 53 15
2	44	02.0	66 52 50	32 53 18
2	45	15.3	66 53 40	32 53 12
2	46	10.8	66 54 30	32 53 17
2	46	58.5	66 55 10	32 53 20
2	47	46.7	66 55 45	32 53 19
2	48	28.8	66 56 10	32 53 16

Thermometer 51°.

Mean of 17 observations, 52° 55' 16".



## APPENDIX No. 5—Continued.

October 27, 1846.—Camp 83, on the Gila.

## DETERMINATION OF TIME.

Time, p. m.	Double altitudes of <i>a</i> Andromedæ, in the east.	Chronometer fast.
<i>h. m. s.</i>	<i>Deg. min. sec.</i>	<i>h. m. s.</i>
2 54 45.6	94 11 05	8 38 24.3
2 55 30.5	94 29 00	8 38 26.3
2 56 16.7	94 48 05	8 38 26.8
2 57 08.5	95 09 05	8 38 28.1
2 57 50.4	95 27 10	8 38 26.8
2 58 36.8	95 47 25	8 38 24.8
2 59 57.8	96 11 45	8 38 26.4
3 00 22.0	96 30 10	8 38 27.6
3 01 08.2	96 49 55	9 38 26.5

Thermometer 51°.

Time, p. m.	Double altitudes of <i>a</i> Lyrae, in the west.	Chronometer fast.
<i>h. m. s.</i>	<i>Deg. min. sec.</i>	<i>h. m. s.</i>
3 28 13.0	113 46 20	8 38 28.4
3 29 20.2	113 20 05	8 38 28.6
3 30 12.0	112 59 55	8 38 28.8
3 31 21.0	112 33 05	8 38 29.2
3 32 22.0	112 09 05	8 38 28.8
3 33 11.0	111 48 40	8 38 25.0 rej.
3 33 55.8	111 32 10	8 38 28.0
3 34 45.0	111 13 05	8 38 28.4
3 35 33.0	110 54 10	8 38 28.0

Thermometer 51°.

Mean of 17 observations, 8h. 58m. 27.46s.

## APPENDIX No. 5—Continued.

October 27, 1846.—Camp 83, on the Gila.

## DETERMINATION OF LONGITUDE.

Time, p. m.	Distance of <i>a</i> Pegasi from moon's western limb.	Double altitude of moon's lower limb.
<i>h. m. s.</i>	<i>Deg. min. sec.</i>	<i>Deg. min. sec.</i>
4 46 05.5	42 43 40	74 31 50
4 47 41.0	42 42 50	74 10 10
4 49 05.5	42 42 30	73 51 40
4 50 53.0	42 42 00	73 27 40
4 54 56.0	42 40 30	72 31 10
4 56 52.5	42 39 35	72 04 40
4 58 31.8	42 38 50	71 40 00
5 00 28.3	42 38 20	71 13 10
5 02 42.0	42 37 20	70 41 00
5 04 09.2	42 37 10	70 19 20
5 05 59.5	42 36 35	69 52 15

Thermometer 50°.

Longitude, by mean of observations, 7h. 13m. 04.24s.

7 13 04.24	74 31 50	8 38 28.4
7 13 04.24	74 10 10	8 38 28.6
7 13 04.24	73 51 40	8 38 28.8
7 13 04.24	73 27 40	8 38 29.2
7 13 04.24	72 31 10	8 38 28.8
7 13 04.24	72 04 40	8 38 25.0 rej.
7 13 04.24	71 40 00	8 38 28.0
7 13 04.24	71 13 10	8 38 28.4
7 13 04.24	70 41 00	8 38 28.0
7 13 04.24	70 19 20	
7 13 04.24	69 52 15	

Thermometer 50°.

Mean of 13 observations, 7h. 13m. 04.24s.



## APPENDIX No. 5—Continued.

October 30, 1846.—Camp 86, on the Gila.

## DETERMINATION OF TIME.

Time, p. m.			Double altitudes of — in the east.		
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
8	26	01.0	98	19	05
8	26	50.0	98	38	10
8	28	23.0	99	14	50

## DETERMINATION OF LATITUDE.

Time, p. m.			Double altitudes of Polaris.			Latitude.		
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
8	34	30.5	69	14	50	33	12	05
8	35	46.0	69	14	30	33	12	05
8	36	51.2	69	14	30	33	12	14
8	37	37.8	69	14	10	33	12	11
8	39	01.8	69	15	50	33	12	13
8	40	03.5	69	13	20	33	12	16
8	41	19.0	69	13	05	33	12	11
8	42	55.0	69	12	35	33	12	13
8	44	29.0	69	11	40	33	12	01
8	45	40.5	69	11	20	33	12	04
8	46	27.0	69	11	15	33	12	10
8	47	26.8	69	11	05	33	12	15
8	48	22.7	69	10	45	33	12	17

Thermometer 55°.

Mean of 13 observations, 33° 12' 10".

Mean of 17 observations, 33° 58m. 27.46s.

## APPENDIX No. 5—Continued.

October 30, 1846.—Camp 86, on the Gila.

## DETERMINATION OF TIME.

Time, p. m.			Double altitudes of Aldebaran, in the east.			Chronometer fast.		
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>	<i>h.</i>	<i>m.</i>	<i>s.</i>
8	55	13.8	124	55	50	8	41	02.9
8	56	14.5	125	16	35	8	41	04.9
8	57	24.0	125	41	05	8	41	04.9
8	58	26.8	126	03	30	8	41	03.7
Clouds.								
9	00	44.8	126	51	15	8	41	04.7
9	01	54.0	127	15	15	8	41	04.5
9	03	32.8	127	48	55	8	41	05.1
9	05	35.8	128	31	10	8	41	04.2
9	06	41.9	128	53	15	8	41	05.0

Thermometer 55°.

Mean of 9 observations, 8h. 41m. 04.43s.



## APPENDIX No. 5—Continued.

October 30, 1846.—Camp 86, on the Gila.

## DETERMINATION OF LONGITUDE.

Time, p. m.			Distance of Aldebaran from moon's western limb.	Double altitudes of moon's lower limb.
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>	<i>Deg. min. sec.</i>
9	23	27.0	72 07 35	58 47 40
9	25	06.0	72 06 50	58 10 50
9	27	55.8	72 05 35	57 06 30
9	30	03.5	72 04 25	56 18 00
9	31	55.8	72 03 25	55 36 10
9	33	36.0	72 02 40	54 58 20
9	35	27.8	72 01 40	54 15 30
9	37	40.8	72 00 25	53 24 50
9	39	28.8	71 59 30	52 43 20

Thermometer 50°.

## APPENDIX No. 5—Continued.

October 31, 1846.—Camp 87, on the San Francisco, about two miles from its mouth.

## DETERMINATION OF LATITUDE.

Time, p. m.			Double altitudes of $\delta$ Aquarii, near the meridian.	Latitude.
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>	<i>Deg. min. sec.</i>
3	17	31.8	100 58 50	33 14 29
3	18	38.7	101 01 00	33 14 04 rej.
3	19	28.5	101 01 20	33 14 19
3	20	33.5	101 02 05	33 14 25
3	21	45.0	101 02 50	33 14 26
3	22	50.9	101 03 30	33 14 22
3	24	00.7	101 03 45	33 14 25
3	25	54.2	101 04 10	33 14 13
3	27	13.7	101 04 30	33 13 53 rej.
3	28	28.0	101 03 10	33 14 15
3	29	51.5	101 02 10	33 14 16
3	31	00.0	101 01 00	33 14 20
3	32	14.2	100 59 45	33 14 16
3	33	31.5	100 57 40	33 14 27

Thermometer 50°.

Mean of 12 observations, 33° 14' 21".

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## APPENDIX No. 5—Continued.

October 31, 1846.—Camp 87.

## DETERMINATION OF TIME.

Time, p. m.	Double altitudes of <i>a</i> Andromedæ in the east.	Chronometer fast.
<i>h.</i> <i>m.</i> <i>s.</i>	<i>Deg. min. sec.</i>	<i>h.</i> <i>m.</i> <i>s.</i>
3 40 05.0	118 29 40	8 41 31.2
3 41 18.2	119 01 00	8 41 29.7
3 42 04.2	119 20 00	8 41 30.4
3 43 12.5	119 49 10	8 41 29.2
3 44 13.0	120 13 25	8 41 31.9
3 45 10.8	120 38 20	8 41 30.3
3 46 06.0	121 01 30	8 41 30.3
3 47 01.0	121 24 55	8 41 29.4
3 48 05.8	121 51 40	8 41 30.5

Thermometer 50°.

Time, p. m.	Double altitudes of <i>a</i> Lyræ, in the west.	Chronometer fast.
<i>h.</i> <i>m.</i> <i>s.</i>	<i>Deg. min. sec.</i>	<i>h.</i> <i>m.</i> <i>s.</i>
3 57 51.0	97 34 30	8 41 32.8
3 58 41.8	97 14 50	8 41 32.8
3 59 29.0	96 56 35	8 41 32.9
4 00 12.8	96 39 50	8 41 33.2
4 01 10.7	96 17 25	8 41 33.1
4 02 24.0	95 49 30	8 41 34.2
4 03 13.3	95 30 05	8 41 33.2
4 03 52.0	95 15 10	8 41 33.2
4 04 46.9	94 54 10	8 41 33.7
4 05 25.5	94 39 10	8 41 33.4
4 06 18.0	94 18 30	8 41 32.4

Thermometer 50°.

Mean of 20 observations, *Sh.* 41<sup>m</sup>. 54.75<sup>s</sup>.

## APPENDIX No. 5—Continued.

October 31, 1846.—Camp 87.

## DETERMINATION OF LONGITUDE.

Time, p. m.	Distance of <i>a</i> Aquilæ from moon's western limb.	Double altitudes of the moon's upper limb.
<i>h.</i> <i>m.</i> <i>s.</i>	<i>Deg. min. sec.</i>	<i>Deg. min. sec.</i>
4 28 54.2	70 52 15	99 35 55
4 31 02.5	70 58 40	100 17 30
4 34 36.0	70 59 40	101 26 10
4 36 37.3	71 00 55	102 03 30
4 40 35.8	71 01 20	103 18 40
4 42 14.0	71 01 30	103 48 00
4 44 25.0	71 02 00	104 28 15
4 48 19.6	71 04 05	105 38 50
4 50 07.8	71 04 30	106 10 20
4 51 38.0	71 05 40	106 37 40
4 55 08.5	71 06 20	107 03 10
4 56 00.0	71 07 20	107 53 00
4 57 57.0	71 08 10	108 26 30

Thermometer 43°.

Time, p. m.	Distance of <i>a</i> Aldebaran from moon's western limb.	Double altitudes of the moon's upper limb.
<i>h.</i> <i>m.</i> <i>s.</i>	<i>Deg. min. sec.</i>	<i>Deg. min. sec.</i>
5 17 49.0	59 10 20	113 39 20
5 20 59.6	59 09 40	114 24 40
5 24 43.8	59 08 25	115 16 50
5 26 19.5	59 07 45	115 38 20
5 28 07.8	59 07 05	116 02 30
5 29 39.4	59 06 20	116 22 10
5 32 01.8	59 05 35	116 51 55
5 33 33.5	59 04 45	117 11 00
5 35 08.8	59 04 05	117 30 10

Thermometer 40°.

	<i>h.</i> <i>m.</i> <i>s.</i>
Longitude by west star .....	7 23 15.07
Longitude by east star .....	20 18.09
Mean .....	7 21 47.30



## APPENDIX No. 5—Continued.

October 31, 1846.—Camp 87.

## DETERMINATION OF LATITUDE.

Time, p. m.			Double altitudes of Polaris.			Latitude.		
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>			<i>Deg. min. sec.</i>		
5	52	35.2	69	22	35	34	14	28
5	53	26.0	69	22	55	34	14	32
5	54	28.2	69	23	30	34	14	42
5	55	36.5	69	23	40	34	14	39
5	56	21.0	69	23	55	34	14	41
5	57	06.8	69	24	05	34	14	39
5	57	42.8	69	24	10	34	14	38
5	58	24.5	69	24	20	34	14	39
5	59	16.2	69	24	30	34	14	36
6	00	01.3	69	24	40	34	14	36
6	00	33.0	69	24	55	34	14	40

Thermometer 39°.

Mean of 11 observations, 33° 14' 37".

## FOR INDEX ERROR.

	<i>Min. sec.</i>
On the arc	31 55
Off the arc	31 30

Thermometer 40°.

Mean of 26 observations, 33° 14' 37".

Mean of 26 observations, 33° 14' 37".

## APPENDIX No. 5—Continued.

November 2, 1846.—Camp 89, Disappointment creek.

## DETERMINATION OF TIME.

Time, p. m.			Double altitudes of <i>a</i> Andromedæ in the east.			Chronometer fast.		
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>			<i>h. m. s.</i>		
3	20	05.0	113	10	50	8	42	04.9
3	20	50.8	113	31	10	8	42	01.4 rej.
3	21	40.3	113	51	05	8	42	05.3
3	22	45.0	114	17	20	8	42	05.5
3	23	44.0	114	43	10	8	42	02.7
3	24	29.5	115	01	30	8	42	04.4
3	25	13.0	115	20	05	8	42	03.5
3	26	03.8	115	41	15	8	42	03.8
3	26	52.0	116	01	55	8	42	02.7

Thermometer 40°.

Time, p. m.			Double altitudes of <i>a</i> Lyrae in the west.			Chronometer fast.		
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>			<i>h. m. s.</i>		
3	28	38.4	106	06	10	8	42	09.9 rej.
3	30	25.0	105	22	35	8	42	04.6
3	31	09.6	105	05	20	8	42	05.6
3	31	53.0	104	49	00	8	42	06.1
3	32	38.0	104	31	25	8	42	06.9
3	33	18.0	104	15	35	8	42	06.3
3	34	05.3	103	57	10	8	42	06.1
3	34	50.2	103	39	50	8	42	07.8
3	35	35.5	103	22	10	8	42	05.5

Thermometer 40°.

Mean of 16 observations, 8h. 42m. 04.96s.