

APPENDIX No. 5—Continued.

November 13, 1846.—Camp 97.

DETERMINATION OF TIME.

Time, a. m.			Double altitudes of sun's upper limb.	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>
5	41	04.8	50 23 10	8	45	18.9
5	42	28.7	50 47 35	8	45	19.7
5	42	59.0	50 57 15	8	45	17.2
5	43	40.0	51 08 50	8	45	18.5
5	44	34.0	51 24 55	8	45	17.3
5	45	38.5	51 43 20	8	45	18.6
5	46	35.8	52 00 10	8	45	17.7
5	47	05.8	52 09 00	8	45	17.2
5	47	42.5	52 18 28	8	45	21.0 rej.
5	48	38.0	52 35 15	8	45	17.8
5	49	22.5	52 48 05	8	45	17.7
5	50	14.5	53 02 35	8	45	18.8

Thermometer 60°.

Mean of 11 observations, 8h. 45m. 18.13s.

<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>	<i>h.</i>	<i>m.</i>	<i>s.</i>
8	45	20.9				
8	45	20.5				
8	45	21.9				
8	45	21.2				
8	45	21.3				
8	45	21.9				
8	45	22.2				
8	45	27.9				
8	45	27.5				
8	45	26.8				
8	45	26.7				
8	45	26.2				

Thermometer 50°.

Mean of 22 observations, 8h. 45m. 25.79s.

APPENDIX No. 5—Continued.

November 14, 1846—Camp 99, on the Gila.

DETERMINATION OF TIME.

Time, p. m.			Double altitudes of α 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>
2	42	53.0	114 56 50	8	47	49.3
2	43	54.6	115 22 45	8	47	49.2
2	44	54.2	115 47 50	8	47	51.2
2	45	57.5	116 13 45	8	47	50.7
2	46	43.0	116 35 35	8	47	49.2
2	47	47.0	117 00 10	8	47	47.6
2	48	32.0	117 19 00	8	47	50.1
2	49	21.5	117 40 05	8	47	49.5

Thermometer 50°.

Time, p. m.			Double altitudes of α Lyrae, 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	17	07.0	94 16 50	8	47	54.0
3	17	55.8	93 58 10	8	47	52.9
3	18	44.0	93 39 40	8	47	53.2
3	19	38.8	93 19 10	8	47	54.8
3	20	37.0	92 55 20	8	47	51.3
3	22	02.8	92 21 15	8	47	48.5 rej.
3	22	52.8	92 03 10	8	47	51.7
3	23	37.0	91 46 20	8	47	52.2

Thermometer 50°.

Mean of 15 observations, 8h. 47m. 51.23s.

APPENDIX No. 5—Continued.

November 14, 1846.—Camp 99, on the Gila.

DETERMINATION OF LATITUDE.

Time, p. m.			Double altitude of Saturn, near the meridian.	Latitude.
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>	<i>Deg. min. sec.</i>
2	52	36.2	84 14 10	32 59 17
2	53	33.0	84 15 40	32 59 07
2	54	23.5	84 16 30	32 59 10
2	55	06.8	84 17 05	32 59 13
2	56	52.5	84 18 30	32 59 14
2	58	08.2	84 19 55	32 58 53
2	59	15.5	84 20 05	32 59 03
3	00	25.8	84 20 50	32 58 50
3	01	51.5	84 20 30	32 59 03
3	02	48.0	84 20 10	32 59 10
3	03	50.0	84 19 55	32 59 10
3	04	54.8	84 19 15	32 59 17
3	06	04.8	84 18 35	32 59 21
3	07	19.2	84 17 45	32 59 16
3	08	26.8	84 17 10	32 59 04
3	09	22.8	84 15 40	32 59 20
3	10	10.8	84 14 40	32 59 22

Thermometer 50°.

Mean of 17 observations, 32° 59' 10".

APPENDIX No. 5—Continued.

November 14, 1846.—Camp 99, 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>
3	28	14.8	68 14 20	32 59 36
3	29	28.5	68 14 35	32 59 25
3	30	27.0	68 15 15	32 59 29
3	32	19.0	68 16 00	32 59 20
3	33	36.8	68 17 05	32 59 34
3	35	02.5	68 18 05	32 59 40
3	36	06.8	68 18 25	32 59 34
3	37	08.5	68 19 05	32 59 39
3	38	04.6	68 19 45	32 59 35

Thermometer 50°.

Mean of 9 observations, 32° 59' 34".

APPENDIX No. 5—Continued.

November 15, 1846.—Camp 99.

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.</i>	<i>min.</i>	<i>sec.</i>	<i>h.</i>	<i>m.</i>	<i>s.</i>
2	41	43.6	116	12	05	8	47	36.7
2	42	41.7	116	35	50	8	47	38.3
2	43	22.5	116	53	20	8	47	37.5
2	43	59.8	117	08	20	8	47	38.8
2	44	35.0	117	23	45	8	47	37.6
2	45	28.0	117	46	20	8	47	36.9
2	46	14.8	118	05	40	8	47	37.6
2	46	56.0	118	23	10	8	47	37.2

Thermometer °.

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.</i>	<i>min.</i>	<i>sec.</i>	<i>h.</i>	<i>m.</i>	<i>s.</i>
2	48	47.8	103	38	55	8	47	40.1
2	49	42.0	103	18	35	8	47	41.2
2	50	23.0	103	02	05	8	47	40.6
2	51	06.8	102	44	10	8	47	57.5 rej.
2	51	50.0	102	28	40	8	47	40.8
2	52	38.5	102	08	50	8	47	38.2
2	53	19.0	101	53	55	8	47	40.4
2	54	15.2	101	32	05	8	47	40.4

Mean of 15 observations, 8h. 47m. 38.91s.

APPENDIX No. 5—Continued.

November 14, 1846.—Camp 101, on the Gila.

DETERMINATION OF TIME.

Time, p. m.			Double altitudes of Algebr, 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	14	02.8	116	17	50	8	49	33.0
3	15	00.0	116	38	55	8	49	32.9
3	16	12.5	117	05	45	8	49	32.3
3	17	12.5	117	26	55	8	49	34.2
3	18	08.0	117	47	30	8	49	33.2
3	19	02.5	118	07	35	8	49	32.4
3	19	55.3	118	26	45	8	49	32.4
3	20	42.2	118	43	25	8	49	33.1
3	21	52.8	119	09	15	8	49	31.9

Thermometer 40°.

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.</i>	<i>min.</i>	<i>sec.</i>	<i>h.</i>	<i>m.</i>	<i>s.</i>
3	24	29.8	87	31	20	8	49	37.1
3	25	16.8	87	13	20	8	49	37.2
3	26	03.5	86	55	10	8	49	36.6
3	26	57.8	86	34	10	8	49	36.0
3	28	02.0	86	08	45	8	49	33.9 rej.
3	28	52.6	85	49	55	8	49	35.4
3	29	54.3	85	26	20	8	49	38.3
3	30	35.5	85	10	50	8	49	36.1
3	31	14.0	84	56	20	8	49	37.1

Thermometer 40°.

Mean of 17 observations, 8h. 49m. 34.76s.

APPENDIX No. 5—Continued.

November 17, 1846.—Camp 101.

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>		
3	51	28.5	68	22	55	32	55	40
3	52	32.8	68	23	20	32	55	38
3	53	52.3	68	24	05	32	55	43
3	54	46.0	68	25	10	32	56	05
3	56	07.0	68	25	00	32	55	41
3	57	42.8	68	25	50	32	55	46
3	58	50.5	68	26	25	32	55	48
3	59	35.0	68	27	00	32	55	58
4	00	13.5	68	27	25	32	56	00
4	00	52.8	68	27	45	32	56	02
4	01	28.0	68	28	05	32	56	04
4	02	20.0	68	28	20	32	56	00

Thermometer 38°.

Mean of 12 observations, 32° 55' 52".

APPENDIX No. 5—Continued.

November 19, 1846.—Camp 103, on an island of the Gila.

DETERMINATION OF TIME.

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.</i>	<i>m.</i>	<i>s.</i>
3	40	47.5	78	47	20	8	51	21.6
3	41	34.8	78	29	00	8	51	20.7
3	42	21.0	78	10	45	8	51	18.7
3	43	12.0	77	51	05	8	51	17.9
3	44	16.5	77	26	55	8	51	18.8
3	45	04.3	77	09	10	8	51	19.7
3	45	48.2	76	52	35	8	51	19.9
3	46	34.8	76	34	55	8	51	19.9
3	47	26.5	76	15	10	8	51	19.4

Thermometer 50°.

Time, p. m.			Double altitudes of <i>a</i> Arietis, 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	53	19.0	97	50	55	8	51	17.1
3	54	11.2	98	13	10	8	51	16.5
3	54	57.8	98	32	00	8	51	18.4
3	55	39.8	98	50	05	8	51	17.4
3	56	32.0	99	12	20	8	51	16.8
3	57	21.0	99	33	10	8	51	16.3
3	58	40.0	100	05	45	8	51	18.0
3	59	30.8	100	27	45	8	51	16.4
4	00	11.0	100	44	45	8	51	16.4
4	00	51.2	101	01	35	8	51	16.5

Thermometer 50°.

Mean of 19 observations, 8h. 51m. 18.30s.

APPENDIX No. 5—Continued.

November 19, 1846.—Camp 103.

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>		
4	08	37.0	68	09	05	32	43	55
4	09	32.5	68	10	00	32	44	13
4	10	37.8	68	10	00	32	44	01
4	11	06.5	68	10	25	32	44	08
4	12	42.0	68	10	50	32	44	02
4	13	27.2	68	11	00	32	43	59
4	14	10.8	68	11	25	32	44	03
4	14	32.0	68	11	50	32	44	09
4	15	57.0	68	12	20	32	44	12
4	16	46.0	68	12	50	32	44	18
4	17	56.5	68	12	55	32	44	09
4	19	33.0	68	13	10	32	44	00
4	20	40.5	68	13	25	32	43	55

Thermometer 46°.

Mean of 13 observations, 32° 44' 05".

<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>			<i>Deg. min. sec.</i>		
1	11	15	97	05	10	0	01	55
2	01	15	01	13	28	8	11	44
1	31	15	00	22	22	8	57	16
1	11	15	05	06	28	8	08	55
2	01	15	02	12	02	0	22	55
2	01	15	01	23	02	0	27	01
0	21	15	100	02	00	0	40	00
0	21	15	100	27	45	8	08	30
1	01	15	100	14	00	0	11	00
2	21	15	101	10	10	2	09	14

Thermometer 50°.

Mean of 19 observations, 32° 43' 11".

APPENDIX No. 5—Continued.

November 19, 1846.—Camp 103.

DETERMINATION OF LATITUDE.

Time, p. m.			Double altitudes of Procyon, near the meridian.			Latitude.		
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>			<i>Deg. min. sec.</i>		
12	16	18.0	125	24	55	32	43	40
12	17	58.8	125	39	55	32	43	00
12	20	46.8	125	43	15	32	43	37
12	23	26.2	125	46	15	32	43	27
12	25	00.5	125	48	00	32	42	58
12	27	09.0	125	48	10	32	42	55
12	29	42.0	125	46	30	32	43	04
12	31	34.0	125	42	35	32	44	02
12	33	49.8	125	41	50	32	42	39
12	34	47.7	125	39	05	32	43	06
12	36	54.5	125	35	40	32	42	21

Thermometer 28°.

Mean of 11 observations, 32° 43' 11".

<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>			<i>Deg. min. sec.</i>		
1	11	15	97	05	10	0	01	55
2	01	15	01	13	28	8	11	44
1	31	15	00	22	22	8	57	16
1	11	15	05	06	28	8	08	55
2	01	15	02	12	02	0	22	55
2	01	15	01	23	02	0	27	01
0	21	15	100	02	00	0	40	00
0	21	15	100	27	45	8	08	30
1	01	15	100	14	00	0	11	00
2	21	15	101	10	10	2	09	14

Thermometer 40°.

Mean of 16 observations, 32° 43' 11".

APPENDIX No. 5—Continued.

November 21, 1846.—Camp 105, on the Gila.

DETERMINATION OF TIME.

Time, p. m.			Double altitudes of α 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	21	02.0	83 44 15	8 52 28.0
3	21	49.2	83 25 35	8 52 26.4
3	22	43.9	83 05 10	8 52 27.6
3	23	27.8	82 48 25	8 52 27.6
3	24	17.2	82 29 55	8 52 28.6
3	25	12.0	82 08 35	8 52 27.7
3	25	55.5	81 52 15	8 52 28.2
3	27	16.0	81 20 20	8 52 25.0 rej.
3	27	55.9	81 06 05	8 52 27.6

Thermometer 40°.

Time, p. m.			Double altitudes of α Arietis, 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	32	43.3	92 00 30	8 52 25.9 rej.
3	33	36.0	92 24 00	8 52 21.9
3	34	32.0	92 47 10	8 52 22.8
3	35	40.8	93 16 10	8 52 23.0
3	36	27.6	93 35 45	8 52 23.3
3	37	16.8	93 57 15	8 52 21.4
3	38	19.5	94 23 45	8 52 21.3
3	39	15.5	94 47 30	8 52 20.9
3	40	15.0	95 12 40	8 52 21.8

Thermometer 40°.

Mean of 16 observations, 8h. 52m. 24.83s.

APPENDIX No. 5—Continued.

November 21, 1846.—Camp 105.

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>
3	45	29.0	68 00 30	32 42 58 rej.
3	46	38.8	68 01 40	32 43 17
3	47	23.8	68 01 50	32 43 13
3	48	20.7	68 02 10	32 43 10
3	49	03.1	68 02 30	32 43 12
3	49	47.8	68 03 05	32 43 19
3	50	24.2	68 03 25	32 43 22
3	50	58.0	68 03 50	32 43 27
3	51	49.5	68 04 00	32 43 22
3	52	25.0	68 04 10	32 43 20
3	53	04.9	68 04 20	32 43 16
3	53	46.8	68 04 30	32 43 13
3	54	23.5	68 04 45	32 43 13

Thermometer 40°.

Mean of 12 observations, 32° 43' 17".

APPENDIX No. 5—Continued.

November 22, 1846.—Camp 106, near the mouth of the Gila, 5, p. m.

DETERMINATION OF LONGITUDE.

Time, p. m.	Distance of Flam-ll aut from moon's western limb.	Double altitudes of moon's lower limb.
<i>h. m. s.</i>	<i>Deg. min. sec.</i>	<i>Deg. min. sec.</i>
2 41 39.0	46 52 15	58 40 50
2 44 10.8	46 51 40	58 01 20
2 46 53.8	46 50 20	57 18 30
2 49 15 0	46 49 45	56 41 10
2 52 36.2	46 48 45	55 46 20
2 56 17.5	46 47 30	54 46 10
3 02 06.0	46 45 35	53 08 55
3 03 49.2	46 45 10	52 49 50
3 06 13.8	46 44 40	51 58 50

Thermometer 60°.

Longitude, by mean of observations, 7h. 40m. 50.00s.

APPENDIX No. 5—Continued.

November 22, 1846.—Camp 106, near the mouth of the Gila.

DETERMINATION OF TIME.

Time, p. m.	Double altitudes of α Lyrae, in the west.	Chronometer fast.
<i>h. m. s.</i>	<i>Deg. min. sec.</i>	<i>h. m. s.</i>
3 14 13.3	85 09 35	8 53 20.9
3 15 17.7	84 44 55	8 53 20.9
3 16 17.6	81 21 35	8 53 19.8
3 17 13.8	83 59 30	8 53 18.3
3 18 05.9	83 40 10	8 53 19.8
3 18 54 0	83 21 40	8 53 19.5
3 19 53.0	82 59 00	8 53 19.2
3 20 44.8	82 40 05	8 53 21.5
3 21 35.2	82 20 15	8 53 20.0

Thermometer 60°.

Time, p. m.	Double altitudes of α Arietis, in the east.	Chronometer fast.
<i>h. m. s.</i>	<i>Deg. min. sec.</i>	<i>h. m. s.</i>
3 28 17.5	91 26 10	8 53 16.7
3 29 06.0	91 47 40	8 53 14.2
3 29 58.8	92 09 40	8 53 16.0
3 30 49.8	92 30 20	8 53 16.8
3 31 33.5	92 49 30	8 53 15.0
3 32 28.0	93 11 25	8 53 18.6
3 33 33.8	93 40 10	8 53 15.2
3 34 55.0	94 14 15	8 53 15.5
3 35 54 8	94 39 15	8 53 18.0

Thermometer 60°.

Mean of 18 observations, 8h. 53m. 18.10s.

APPENDIX No. 5—Continued.

November 22, 1846.—Camp 106.

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>		
3	48	19.5	68	01	50	32	42	21
3	49	26.0	68	02	15	32	42	19
3	59	18.0	68	02	30	32	42	18
3	59	59.8	68	02	25	32	42	08
3	52	56.0	68	03	30	32	42	15
3	54	08.0	68	04	10	32	42	15
3	55	12.8	68	04	20	32	42	14
3	56	07.8	68	05	05	32	42	25
3	57	10.9	68	05	20	32	42	22
3	58	23.2	68	05	35	32	42	14
3	59	26.8	68	05	45	32	42	08
4	00	35.2	68	06	05	32	42	05
4	01	51.8	68	06	45	32	42	11

Thermometer 60°.

Mean of 13 observations, 32° 42' 15".

<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>	<i>Deg. min. sec.</i>	
3	48	19.5	68	01	50
3	49	26.0	68	02	15
3	59	18.0	68	02	30
3	59	59.8	68	02	25
3	52	56.0	68	03	30
3	54	08.0	68	04	10
3	55	12.8	68	04	20
3	56	07.8	68	05	05
3	57	10.9	68	05	20
3	58	23.2	68	05	35
3	59	26.8	68	05	45
4	00	35.2	68	06	05
4	01	51.8	68	06	45

Mean of 13 observations, 32° 42' 15".

APPENDIX No. 5—Continued.

November 23, 1846.—Camp 106.

DETERMINATION OF TIME.

Time, p. m.			Double altitudes of Saturn in the west.		
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg.</i>	<i>min.</i>	<i>sec.</i>
2	39	36.5	85	06	00
2	40	38.5	85	04	50
2	41	37.0	85	03	20
2	42	42.8	85	02	50
2	43	20.0	85	01	10
2	44	01.0	85	00	00

Thermometer 56°.

DETERMINATION OF LONGITUDE.

Time, p. m.			Distance of α Arietis 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>
3	15	51.0	88 30 55	68 50 20
3	20	08.8	88 28 10	67 47 20
3	22	08.5	88 27 20	67 17 45
3	28	06.0	88 24 45	65 46 50
3	30	41.5	88 23 50	65 06 55
3	34	08.5	88 22 30	64 11 50
3	35	54.8	88 21 40	63 44 00

Thermometer 56°.

Longitude by α Arietis	<i>h. m. s.</i>	7 39 46.5
Longitude by Fomalhaut		7 40 50.0
Mean		<u>7 40 18.25</u>