

APPENDIX No. 5—Continued.

June 30, 1846.—Camp No. 4.

DETERMINATION OF LATITUDE.

Time, p. m.			Double altitude of <i>a</i> Serpents, near the meridian.	Latitude.
<i>h.</i>	<i>m.</i>	<i>s.</i>	Deg. min. sec.	Deg. min. sec.
3	49	20.8	115 59 10	38 53 54
3	50	36.8	116 00 10	38 54 05
3	51	41.7	116 01 15	38 53 59
3	52	52.0	116 02 05	38 53 58
3	54	01.0	116 02 45	38 53 53
3	55	32.7	116 02 55	38 53 54
3	56	55.8	116 02 45	38 53 55
3	58	04.5	116 01 40	38 54 15
3	59	4.8	116 01 25	38 53 50
4	00	46.0	116 00 00	38 54 07
4	02	3.1	115 58 31	38 54 10
4	03	20.0	115 56 50	38 54 08
4	04	33.0	115 53 40	38 53 45

The four last observations rather doubtful; musquitos so very troublesome.

Mean of 13 observations, 38° 53' 59".

APPENDIX No. 5—Continued.

June 30, 1846.—Camp No. 4.

DETERMINATION OF LATITUDE.

Time, p. m.			Double altitudes of Polaris.	Latitude.
<i>h.</i>	<i>m.</i>	<i>s.</i>	Deg. min. sec.	Deg. min. sec.
4	13	42.0	75 35 50	38 54 00
4	15	19.8	75 37 30	38 54 23
4	16	36.0	75 38 30	38 54 33
4	17	58.2	75 39 05	38 54 27
4	19	27.7	75 39 50	38 54 27
4	20	50.0	75 40 00	38 54 09
4	22	2.8	75 40 40	38 54 08
4	23	0.0	75 41 25	38 54 13
4	24	34.2	75 42 20	38 54 16
4	26	28.5	75 43 15	38 54 14
4	27	48.7	75 43 55	38 54 10

Thermometer, 67°.

Latitude by 13 observations of Polaris, 38 54 18
 Latitude by 13 observations of *a* Serpents, 53 59
 Mean 38 54 08 lat. of camp.

Thermometer, 66°
 Chronometer fast by 10 obs. of west star
 Chronometer fast by 6 obs. of east star

APPENDIX No. 5—Continued.

June 30, 1846.—Camp 4.

DETERMINATION OF TIME.

Time, p. m.			Double altitudes of α Lyrae 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	30	19.1	102	54	10	6	54	05.5
3	32	16.0	103	37	55	6	54	05.3
3	33	51.0	104	13	30	6	54	00.3 rej.
3	34	54.2	104	38	05	6	54	03.3
3	36	21.5	105	09	55	6	54	06.0
3	37	29.8	105	35	50	6	54	05.0
3	38	49.0	106	05	15	6	54	06.4

Thermometer, 68°.

Time, p. m.			Double altitudes of Arcturus 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>
4	33	00.0	114	07	30	6	54	12.9
4	34	16.0	113	40	40	6	54	12.7
4	35	28.7	113	15	00	6	54	12.3
4	36	44.0	112	48	30	6	54	12.4
4	37	49.0	112	24	55	6	54	11.0
4	39	03.5	111	59	20	6	54	13.4
4	40	18.7	111	32	30	6	54	16.1 rej.
4	41	47.0	111	01	10	6	54	14.0
4	42	38.2	110	42	20	6	54	12.5
4	44	34.0	110	00	00	6	54	10.2
4	45	48.5	109	33	50	6	54	12.1

Thermometer, 66°.

Chronometer fast by 6 obs. of east star	<i>h.</i>	<i>m.</i>	<i>s.</i>
Chronometer fast by 10 obs. of west star	6	54	05.30
			12.55
Mean	6	54	8.82

APPENDIX No. 5—Continued.

July 4, 1846.—Camp 8, Big John Spring.

DETERMINATION OF TIME.

Time, p. m.			Double altitude of sun's upper limb.		Chronometer fast.		
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min.</i>		<i>h.</i>	<i>m.</i>	<i>s.</i>
10	33	24.2	86	10	6	58	49.7
10	33	50.8	86	00	6	58	50.6
10	34	17.0	85	50	6	58	51.0
10	34	41.8	85	40	6	58	50.3
10	35	08.2	85	30	6	58	51.1
10	35	33.7	85	20	6	58	50.9
10	35	59.0	85	10	6	58	50.6
10	36	25.8	85	00	6	58	51.7
10	36	49.2	84	50	6	58	49.4
10	37	17.0	84	40	6	58	51.6
10	37	42.0	84	30	6	58	51.0
10	38	08.5	84	20	6	58	51.8
10	38	35.2	84	10	6	58	52.9
10	38	58.7	84	00	6	58	50.7

Thermometer, 88°.

Mean of 14 observations, 6h. 58m. 50.96s.

Thermometer 75°.

APPENDIX No. 5—Continued.

July 5, 1846.—Camp 8, Big John Spring.

DETERMINATION OF TIME.

Time, a. m.			Double altitudes of α Aquilæ in the west.	Chronometer fast.
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>	<i>h. m. s.</i>
10	31	28.0	85 48 40	6 58 47.9
10	32	30.8	85 28 30	6 58 50.8
10	33	37.0	85 04 20	6 58 46.6
10	34	57.9	84 36 05	6 58 47.4
10	36	25.8	84 06 35	6 58 47.9
10	38	06.2	83 31 25	6 58 46.8
10	39	10.0	83 09 35	6 58 47.9
10	40	09.7	82 48 30	6 58 47.0
10	41	04.5	82 28 40	6 58 44.9 rej.
10	42	03.2	82 08 30	6 58 46.0

Mean of 9 observations, 6h. 58m. 47.59s.

APPENDIX No. 5—Continued.

July 5, 1846.—Camp 8, Big John Spring.

DETERMINATION OF LATITUDE.

Time, a. 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>
10	03	11.0	79 24 45	38 39 50
10	04	43.8	79 25 50	38 39 55
10	06	16.7	79 26 25	38 39 44
10	07	31.0	79 27 20	38 39 52
10	09	20.0	79 28 20	38 39 53
10	11	54.0	79 29 50	38 39 54

Time, a. 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>
10	16	59.0	77 13 20	38 38 43
10	18	39.9	77 12 55	38 38 59
10	19	46.2	77 12 15	38 39 16
10	21	37.3	77 11 55	38 39 10
10	22	52.0	77 11 30	38 39 05
10	24	01.8	77 10 35	38 39 11
10	25	29.2	77 09 00	38 39 10
10	26	49.0	77 08 05	38 39 11

Thermometer 75°.

	Latitude of camp.
	<i>Deg. min. sec.</i>
Latitude by 6 observations of Polaris.....	38 39 51
" 8 " " Saturn	06
Mean	38 39 28

APPENDIX No. 5—Continued.

July 5, 1846.—Camp 9, Diamond Spring.

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	53	40.0	74	58	35	38	36	52
3	55	03.2	74	59	10	38	36	48
3	56	33.0	75	00	15	38	36	58
3	58	06.5	75	00	55	38	36	54
3	59	11.0	75	01	40	38	36	58
4	00	05.0	75	02	00	38	36	54
4	01	07.0	75	02	35	38	36	56
4	01	59.0	75	03	00	38	36	54
4	03	13.5	75	03	35	38	36	53
4	04	35.7	75	04	35	38	36	57
4	10	58.0	75	07	25	38	36	57
4	12	00.0	75	08	20	38	36	49
4	13	07.2	75	09	25	38	36	49
4	14	56.0	75	09	55	38	36	50
4	15	56.2	75	10	40	38	36	51

Thermometer 72°.

Mean of 16 observations, 38° 36' 52".

APPENDIX No. 5—Continued.

July 5, 1846.—Camp 9, Diamond Spring.

DETERMINATION OF TIME.

Time, p. m.			Double altitudes of α Lyrae 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	26	57.2	106	40	45	6	59	54.8
3	28	49.8	107	21	55	6	59	58.4
3	29	55.7	107	47	20	6	59	57.0
3	30	45.0	108	07	25	6	59	53.2
3	32	32.0	108	47	10	6	59	54.9
3	33	39.7	109	11	55	6	59	57.2
3	34	38.2	109	22	50	6	59	60.4
3	35	34.0	109	55	40	6	59	56.0
3	36	31.5	110	17	40	6	59	55.4
3	37	24.7	110	37	40	6	59	55.8
3	38	47.5	111	9	00	6	59	55.9

Thermometer 72°.

Time, p. m.			Double altitudes of Areturus in the west.			Chronometer fast.		
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>			<i>h. m. s.</i>		
4	20	57.0	113	44	20	6	59	60.8
4	22	02.0	113	21	15	6	59	60.9
4	23	07.8	112	52	35	6	59	60.2
4	24	16.0	112	33	15	6	59	60.2
4	25	20.8	112	10	00	6	59	60.0
4	26	09.7	111	52	35	6	59	60.4
4	27	10.7	111	30	25	6	59	59.5
4	28	11.0	111	08	30	6	59	58.9
4	29	33.8	110	38	55	6	59	59.8

Thermometer 71°.

Chronometer fast by		<i>h.</i>	<i>m.</i>	<i>s.</i>
11 observations of east star		6	59	56.27
9 " " west star				60.08
Mean.....		6	59	58.18

APPENDIX No. 5—Continued.

July 6, 1846.—Camp 10, Cottonwood Grove.

DETERMINATION OF TIME.

Time, p. m.	Double altitudes of α Lyræ, in the east.	Chronometer fast.
<i>h. m. s.</i>	<i>Deg. min. sec.</i>	<i>h. m. s.</i>
4 05 32.8	122 05 00	7 01 54.0
4 06 40.0	122 31 55	7 01 57.0
4 07 59.5	123 01 10	7 01 54.3
4 09 07.0	123 27 55	7 01 52.0
4 10 21.8	123 56 55	7 01 51.1
4 11 45.8	124 28 15	7 01 53.7
4 13 04.5	124 59 20	7 01 51.5
4 14 24.0	125 29 50	7 01 51.7

Time, p. m.	Double altitudes of Arcturus in the west.	Chronometer fast.
<i>h. m. s.</i>	<i>Deg. min. sec.</i>	<i>h. m. s.</i>
4 19 30.0	113 37 55	7 01 56.5
4 20 52.8	113 07 50	7 01 54.9
4 22 43.2	112 28 15	7 01 54.8
4 24 04.3	111 59 15	7 01 55.2
4 25 25.2	111 30 35	7 01 56.6
4 27 26.5	110 45 50	7 01 54.1
4 29 40.0	109 57 55	7 01 55.8
4 32 42.8	108 51 10	7 01 55.5
4 34 54.0	108 13 40	7 01 57.1
4 35 46.2	107 44 15	7 01 56.6
4 38 05.8	106 52 55	7 01 55.8
4 39 14.0	106 26 55	7 01 54.6

Thermometer 72°.

	<i>h. m. s.</i>
Chronometer fast by 8 observations of east star	7 01 52.44
“ “ “ 12 “ west star	55.62
Mean.....	<u>7 01 54.03</u>

APPENDIX No. 5—Continued.

July 6, 1846.—Camp 10, Cottonwood Grove.

DETERMINATION OF LATITUDE.

Time, p. m.	Double altitudes of Polaris.	Latitude.
<i>h. m. s.</i>	<i>Deg. min. sec.</i>	<i>Deg. min. sec.</i>
4 49 21.0	75 17 45	38 29 44
4 53 05.0	75 19 35	38 29 25
4 54 07.0	75 20 35	38 29 35
4 55 36.2	75 21 35	38 29 35
4 56 58.3	75 22 10	38 29 25
4 58 07.0	75 22 35	38 29 12
4 59 31.0	75 23 50	38 29 26
5 01 14.7	75 25 20	38 29 35
5 02 28.7	75 26 10	38 29 38
5 03 46.0	75 27 05	38 29 37

Thermometer, 71°.

July 7, 1846.—Camp 10.

Time, p. m.	Double altitudes of Polaris.	Latitude.
<i>h. m. s.</i>	<i>Deg. min. sec.</i>	<i>Deg. min. sec.</i>
4 16 45.0	74 59 45	38 29 31
4 19 27.5	75 01 05	38 29 22
4 20 16.0	75 01 40	38 29 27

Thermometer 68°.

	<i>Deg. min. sec.</i>
Latitude by 10 obs. of Polaris, July 6.....	38 29 31
Latitude by 3 obs. of Polaris, July 7.....	27
Mean of 13 observations.....	<u>38 29 30</u>

APPENDIX No. 5—Continued.

July 7, 1846.—Camp 10, Cottonwood Grove.

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.</i>	<i>min.</i>	<i>h.</i>	<i>m.</i>	<i>s.</i>
4	01	24.2	95	50	7	01	50.3
4	01	50.4	96	00	7	01	50.7
4	02	16.3	96	10	7	01	50.8
4	02	41.8	96	20	7	01	50.4
4	03	07.0	96	30	7	01	49.8
4	03	58.8	96	50	7	01	49.9
4	04	50.8	97	10	7	01	50.3
4	05	17.0	97	20	7	01	50.5
4	05	42.7	97	30	7	01	50.4
4	06	08.7	97	40	7	01	50.5
4	06	34.0	97	50	7	01	49.9
4	06	59.6	98	00	7	01	49.6

Thermometer, 88°.

Mean of 12 observations, 7h. 01m. 50.26s.

APPENDIX No. 5—Continued.

July 7, 1846.—Camp 10, Cottonwood Grove.

DETERMINATION OF TIME.

Time, p. m.			Double altitudes of sun's upper limb.		Chronometer fast.		
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg.</i>	<i>min.</i>	<i>h.</i>	<i>m.</i>	<i>s.</i>
10	17	49.0	93	20	7	01	54.0
10	18	14.5	93	10	7	01	53.6
10	18	38.8	93	00	7	01	52.4
10	19	05.1	92	50	7	01	52.8
10	19	31.0	92	40	7	01	53.1
10	19	57.0	92	30	7	04	53.4
10	20	47.5	92	10	7	01	52.4
10	21	13.5	92	00	7	01	52.7
10	21	39.2	91	50	7	01	52.7
10	22	08.0	91	40	7	01	52.8
10	22	30.0	91	30	7	01	52.1
10	22	56.5	91	20	7	01	52.9
10	23	21.8	91	10	7	01	52.5
10	23	48.0	91	00	7	01	53.0

Thermometer, 90°.

Mean of 14 observations, 7h. 01m. 53.10s.

Time, p. m.			Double altitudes of Arcturus 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>
4	04	16.8	117	33	55	7	01	50.4
4	05	24.5	117	11	5	7	01	52.4
4	06	46.0	116	42	20	7	01	51.2
4	07	32.0	116	26	40	7	01	52.5
4	09	54.0	115	36	55	7	01	52.7

Mean of 5 observations, 7h. 01m. 51.84s.

APPENDIX No. 5—Continued.

July 11, 1846.—Camp 14, Bend of Arkansas.

Time, p. m.			Double altitudes of <i>a</i> Lyrae 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	26	08.0	112	31	05	7	07	01.8
3	27	04.0	112	52	20	7	07	02.0
3	28	05.8	113	15	10	7	07	03.8
3	29	04.7	113	38	10	7	07	02.3
3	30	34.0	114	13	10	7	06	59.7 rej.
3	31	35.2	114	35	05	7	07	03.4
3	32	41.0	114	59	50	7	07	04.2
3	34	12.0	115	35	10	7	07	02.8
3	35	03.2	115	54	40	7	07	02.9
3	36	01.2	116	16	40	7	07	03.2
3	37	02.0	116	40	15	7	07	02.1
3	38	06.2	117	05	10	7	06	59.4 rej.

Time, p. m.			Double altitudes of Arcturus 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	41	09.1	121	59	55	7	07	05.0
3	42	10.7	121	39	20	7	07	04.8
3	43	37.5	121	10	25	7	07	05.5
3	44	41.8	120	48	40	7	07	05.4
3	45	38.0	120	29	30	7	07	04.9
3	47	01.0	120	01	25	7	07	05.2
3	47	58.8	119	41	15	7	07	04.0
3	49	01.8	119	19	40	7	07	02.9
3	50	05.5	118	57	30	7	07	03.0
3	51	02.2	118	38	10	7	07	03.7
3	52	00.3	118	18	10	7	07	03.9
3	53	01.5	117	57	15	7	07	04.7

Thermometer, 71°.

Chronometer fast by 10 obs. of east star	<i>h.</i>	<i>m.</i>	<i>s.</i>
Chronometer fast by 12 obs. of west star	7	07	02.85
Mean	7	07	03.64

APPENDIX No. 5—Continued.

July 11, 1846.—Camp 14, Bend of Arkansas.

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>
4	16	18.0	74	48	40	38	21	02
4	17	27.8	74	49	55	38	21	19
4	18	52.5	74	50	30	38	21	09
4	20	33.0	74	51	25	38	21	05
4	21	26.1	74	52	10	38	21	11
4	22	30.5	74	52	40	38	21	07
4	23	55.5	74	53	30	38	21	05
4	24	56.2	74	54	40	38	21	21
4	25	45.0	74	55	10	38	21	21
4	26	24.2	74	55	40	38	21	24
4	27	35.1	74	56	00	38	21	12
4	28	53.0	74	57	20	38	21	27
4	30	07.5	74	57	55	38	21	21
4	31	24.2	74	59	05	38	21	31
4	33	57.0	74	59	55	38	21	10
4	34	52.2	75	01	05	38	21	25
4	36	20.5	75	01	50	38	21	19
4	37	01.0	75	02	20	38	21	24
4	37	45.1	75	02	45	38	21	19
4	39	00.0	75	03	20	38	21	10

Thermometer 71°.

Mean of 20 observations, 38° 21' 16".