

APPENDIX No. 5—Continued.

August 29, 1846.—Santa Fe.

DETERMINATION OF LONGITUDE.

Time, p. m.			Distance of α Aquilæ from moon's west limb.	Longitude.		
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>	<i>h.</i>	<i>m.</i>	<i>s.</i>
3	05	55.0	56 49 50	7	05	52.5 rej.
3	07	05.0	55 49 00	7	04	25.1
3	09	59.0	55 48 00	7	04	41.8
3	12	03.8	55 46 55	7	03	48.4
3	15	12.0	55 45 45	7	03	51.1
3	17	00.0	55 45 20	7	04	33.8
3	19	05.6	55 44 20	7	03	59.1
3	21	19.0	55 43 40	7	04	25.8

August 30, 1846.—Santa Fe.

Time, p. m.			Distance of Antares from moon's west limb.	Longitude.		
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>	<i>h.</i>	<i>m.</i>	<i>s.</i>
3	42	09.0	16 15 55	7	04	39.7
3	43	39.8	16 16 40	7	04	02.2
3	48	23.8	16 18 20	7	03	59.3
3	50	33.5	16 18 50	7	04	42.6
3	51	48.0	16 19 20	7	04	28.2
3	52	49.1	16 19 40	7	04	36.8
3	55	59.5	16 20 30	7	04	22.4
3	56	57.5	16 21 15	7	04	08.0

Longitude by 7 observations of α Aquilæ	<i>h.</i>	<i>m.</i>	<i>s.</i>
“ 8 “ “ Antares	7	04	14.73
“ “ “ “ “	7	04	22.40
Mean	7	04	18.56

APPENDIX No. 5—Continued.

September 1, 1846.—Santa Fe.

DETERMINATION OF TIME.

Time, p. m.			Double altitudes of α Coronæ Borealis.	Chronometer fast.
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>	
3	29	17.8	97 57 35	
3	30	52.0	97 20 00	
3	31	40.1	97 00 15	
3	32	32.5	96 39 10	
3	33	32.0	96 14 30	
3	34	26.0	95 53 10	
3	36	32.1	95 01 30	

Time, p. m.			Double altitudes of α Aquarii, in the east.	Chronometer fast.
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>	
3	53	23.8	92 10 30	
3	54	28.6	92 34 00	
3	55	16.5	92 51 40	
3	56	07.6	93 09 50	
3	57	08.8	93 31 20	
3	57	50.5	93 46 30	
3	58	34.3	94 02 15	

Thermometer 70°.

Thermometer 70°
Chronometer fast by 4 obs. of east star
Chronometer fast by 8 obs. of west star
Mean

APPENDIX No. 5—Continued.

September 4, 1846.—Camp 49, on the Rio del Norte, near the Alalavo.

DETERMINATION OF TIME.

Time, p. m.			Double altitudes of <i>a</i> Aquilæ in the east.	Chronometer fast.		
<i>h.</i>	<i>m.</i>	<i>s.</i>	Deg. min. sec.	<i>h.</i>	<i>m.</i>	<i>s.</i>
2	41	22.8	108 33 40	7	37	03.0
2	42	06.5	108 46 35	7	37	04.0
2	43	00.5	109 02 40	7	37	04.7
2	43	42.0	109 14 55	7	37	05.4

Thermometer 64°.

Time, p. m.			Double altitudes of Arcturus in the west.	Chronometer fast.		
<i>h.</i>	<i>m.</i>	<i>s.</i>	Deg. min. sec.	<i>h.</i>	<i>m.</i>	<i>s.</i>
2	53	28.8	69 52 00	7	37	06.2
2	54	15.5	69 34 15	7	37	07.5
2	55	10.0	69 09 20	7	37	03.2 rej.
2	56	11.9	68 45 40	7	37	07.2
2	57	07.0	68 23 00	7	37	06.9
2	58	09.8	67 57 55	7	37	08.5
2	59	04.0	67 35 35	7	37	08.0
2	59	58.4	66 13 00	7	37	07.2
3	00	49.0	65 52 50	7	37	07.7

Thermometer 64°.

Chronometer fast by 4 obs. of east star.....	<i>h.</i>	<i>m.</i>	<i>s.</i>
Chronometer fast by 8 obs. of west star.....	7	37	04.28
			07.40
Mean.....	7	37	05.84

APPENDIX No. 5—Continued.

September 4, 1846.—Camp 49, on the Rio del Norte, near the Alalavo.

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.		
3	06	11.0	69 51 35	35	11	19
3	07	08.0	69 52 25	35	11	21
3	08	35.5	69 53 35	35	11	17
3	09	45.0	69 54 20	35	11	18
3	10	51.3	69 55 10	35	11	17
3	11	48.5	69 56 00	35	11	20
3	12	44.0	69 56 30	35	11	13
3	13	20.0	69 57 10	35	11	20
3	13	56.8	69 57 55	35	11	32
3	14	54.5	69 58 30	35	11	21
3	15	30.3	69 59 00	35	11	22
3	16	19.0	69 59 40	35	11	25
3	17	03.4	70 00 00	35	11	18

Thermometer 64°.

Mean of 13 observations, 35° 11' 20".

APPENDIX No. 5—Continued.

September 6, 1846.—Peralta, about 500 feet north of the Charoís chapel.

DETERMINATION OF TIME.

Time, p. m.			Double altitudes of a Coronæ Borealis.	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	36	42.2	87 58 00	7	37	15.9
3	37	43.6	87 31 55	7	37	13.6
3	38	44.0	87 07 45	7	37	14.9
3	39	37.1	86 46 15	7	37	15.4
3	40	42.5	86 19 45	7	37	15.8
3	41	46.0	85 53 10	7	37	14.4
3	43	09.0	85 19 00	7	37	13.7
3	44	14.3	84 51 50	7	37	12.5
3	45	01.2	84 33 20	7	37	14.0
3	46	12.8	84 03 50	7	37	13.4
3	47	12.3	83 39 40	7	37	13.6
3	48	03.8	83 18 50	7	37	14.1

Thermometer 60°.

Mean of 12 observations, 7h. 37m. 14.28s.

Thermometer 61°.

Mean of 12 observations, 7h. 37m. 05.84s.

APPENDIX No. 5—Continued.

September 6, 1846.—Peralta.

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>	<i>Deg. min. sec.</i>	
3	53	54.0	69 54 30	34	50 49	
3	56	13.5	69 56 30	34	50 55	
3	57	39.0	69 57 10	34	50 56	
3	58	52.8	69 58 40	34	50 56	
4	00	03.7	69 59 40	34	50 59	
4	01	09.2	70 00 45	34	51 06	
4	02	16.8	70 01 20	34	50 57	
4	11	29.2	70 07 55	34	50 58	
4	12	37.5	70 09 40	34	51 03	
4	13	30.2	70 10 10	34	50 59	
4	14	51.0	70 10 50	34	50 47	
4	15	52.5	70 11 55	34	50 55	
4	16	58.1	70 13 00	34	51 03	

Thermometer 56°.

Mean of 13 observations, 34° 50' 57".

APPENDIX No. 5—Continued.

September 6, 1846.—Peralta.

DETERMINATION OF TIME.

Time, p. m.			Double altitudes of α Pegasi, 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>
4	36	53.8	91	52	10	7	37	15.2
4	37	44.5	92	12	10	7	37	15.1
4	38	31.5	92	31	00	7	37	14.3
4	39	14.0	92	47	50	7	37	14.0
4	40	03.9	93	07	30	7	37	13.8
4	41	16.3	93	35	30	7	37	14.9
4	42	16.5	93	59	40	7	37	13.5
4	43	30.8	94	29	10	7	37	12.5
4	44	29.7	94	51	40	7	37	13.9

Chronometer fast by 9 obs. of east star.....	<i>h. min. sec.</i>
Chronometer fast by 12 obs. of west star.....	7 37 14.13
	14.28
Mean	7 37 14.20

APPENDIX No. 5—Continued.

September 10, 1846.—Camp 55, on the Rio del Norte, about one mile south of San Felipe.

DETERMINATION OF LATITUDE.

Time, p. m.			Double altitudes of Po- laris.			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>
3	01	13.1	70	34	10	35	24	47 rej.
3	02	04.2	70	36	10	35	25	37
3	02	56.2	70	36	50	35	25	37
3	03	42.8	70	37	30	35	25	35
3	04	25.5	70	37	30	35	25	32
3	05	25.5	70	38	40	35	25	33
3	06	11.1	70	39	15	35	25	33
3	07	35.2	70	40	05	35	25	23
3	08	48.0	70	40	40	35	25	15

Thermometer 52°.

Mean of 8 observations, 35° 25' 30".

18

APPENDIX No. 5—Continued.

September 10, 1846.—Camp 55.

DETERMINATION OF TIME.

Time, p. m.	Double altitudes of <i>a</i> Coronæ Borealis, in the west.	Chronometer fast.
<i>h. m. s.</i>	<i>Deg. min. sec.</i>	<i>h. m. s.</i>
3 13 37.8	89 47 05	7 36 06.6
3 16 43.0	89 20 50	7 36 07.3
3 17 34.9	88 59 40	7 36 07.1
3 18 28.7	88 37 45	7 36 06.7
3 19 30.7	88 12 50	7 36 08.6
3 20 37.4	87 44 45	7 36 05.3
3 21 27.0	87 24 15	7 36 04.6

Time, p. m.	Double altitudes of <i>a</i> Pegasi, in the east.	Chronometer fast.
<i>h. m. s.</i>	<i>Deg. min. sec.</i>	<i>h. m. s.</i>
3 47 10.1	78 32 10	7 36 03.4
3 48 00.0	78 51 30	7 36 05.2
3 48 37.5	79 14 20	7 36 05.7
3 50 07.5	79 42 10	7 36 06.3
3 51 04.2	80 05 50	7 36 05.8
3 51 44.5	80 21 20	7 36 05.4
3 52 48.5	80 46 50	7 36 05.4
3 53 49.8	81 11 05	7 36 05.4

Thermometer 52°.

Chronometer fast by 8 obs. of east star.....	<i>h. m. s.</i>	7 36 05.19
Chronometer fast by 7 obs. of west star		06.60
Mean.....		<u>7 36 05.90</u>

APPENDIX No. 5—Continued.

September 13, 1846.—Santa Fe.

DETERMINATION OF TIME.

Time, a. m.	Double altitudes of sun's upper limb.	Chronometer fast.
<i>h. m. s.</i>	<i>Deg. min. sec.</i>	<i>h. m. s.</i>
4 31 12.0	76 30 00	7 33 54.2
4 31 39.8	76 40 00	7 33 54.4
4 32 07.5	76 50 00	7 33 54.3
4 32 35.8	77 00 00	7 33 54.9
4 33 02.3	77 10 00	7 33 53.6
4 33 32.0	77 20 00	7 33 55.5
4 34 00.2	77 30 00	7 33 55.9
4 34 27.2	77 40 00	7 33 55.0
4 34 54.8	77 50 00	7 33 54.7
4 35 22.7	78 00 00	7 33 55.7
4 35 51.1	78 10 00	7 33 55.1
4 36 19.0	78 20 00	7 33 55.1
4 36 46.5	78 30 00	7 33 54.6

Thermometer 59°.

Mean of 13 observations, 7h. 33m. 54.78s.

DETERMINATION OF INDEX ERROR.

On the arc.....	<i>Min. sec.</i>	31 20	<i>Min. sec.</i>	31 40
Off the arc.....		31 50		31 50

Index error = + 10".

APPENDIX No. 5—Continued.

September 13, 1846.—*Santa Fe.*

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>sec.</i>	<i>h.</i>	<i>m.</i>	<i>s.</i>
10	53	10.2	67	10	00	7	33	53.4
10	53	37.5	67	00	00	7	33	54.1
10	54	03.0	66	50	00	7	33	53.1
10	54	30.3	66	40	00	7	33	53.8
10	54	56.3	66	30	00	7	33	53.3
10	55	22.7	66	20	00	7	33	53.2
10	55	49.0	66	10	00	7	33	53.0
10	56	15.2	66	00	00	7	33	52.7
10	56	41.0	65	50	00	7	33	52.1
10	57	08.4	65	40	00	7	33	53.0
10	57	36.5	65	30	00	7	33	54.7
10	58	01.0	65	20	00	7	33	52.7
10	58	29.2	65	10	00	7	33	54.5

Thermometer 74°.

Mean of 13 observations, 7*h.* 33*m.* 53.50*s.*

APPENDIX No. 5—Continued.

September 17, 1846.—*Santa Fe.*

Time, a. m., Sept. 18.			Double altitudes of the sun's upper limb.		Time, p. m.		
<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	48	02.0	80	20	10	09	13.0
4	47	32.8	80	10	10	09	42.6
4	47	02.0	80	00	10	10	11.0
4	46	34.0	79	50	10	10	42.0
4	46	04.2	79	40	10	11	10.2
4	45	36.0	79	30	10	11	39.5
4	45	06.8	79	20	10	12	09.4
			79	10	10	12	38.8
			79	00	10	13	07.5

Thermometer 68°.

Thermometer 72°.

APPENDIX No. 5—Continued.

September 17, 1846.—Santa Fe.

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>		
5	02	37.0	96	06	55	35	40	34
5	04	14.0	96	08	40	35	40	35
5	05	29.0	96	09	30	35	40	44
5	06	48.9	96	10	20	35	40	46
5	08	05.5	96	11	05	35	40	42
5	09	57.5	96	11	20	35	40	47
5	11	39.8	96	11	20	35	40	44
5	13	09.0	96	11	15	35	40	33
5	14	29.5	96	09	55	35	40	51
5	16	00.0	96	08	50	35	40	50
5	17	29.8	96	07	20	35	40	50
5	19	06.8	96	05	10	35	40	55

Thermometer 60°.

Mean of 12 observations, 35° 40' 44".

APPENDIX No. 5—Continued.

September 17, 1846.—Santa Fe.

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	26	53.8	73	16	20	35	41	11
5	28	25.8	73	17	20	35	41	12
5	29	40.0	73	18	15	35	41	18
5	30	59.5	73	19	20	35	41	26
5	32	11.0	73	20	20	35	41	34
5	33	48.0	73	21	10	35	41	30
5	35	31.8	73	22	40	35	41	43
5	36	37.8	73	23	35	35	41	45
5	39	05.5	73	24	15	35	41	26
5	41	01.0	73	25	40	35	41	34

Thermometer 60°.

Mean of 9 observations, 35° 41' 30".

By North Star.					By South Star.				
<i>Deg. min. sec.</i>					<i>Deg. min. sec.</i>				
Aug. 19..	35	41	13	7 obs.	Aug. 25..	35	40	32	15 obs.
" 20..	35	41	18	9 "	" 29..	35	41	01	11 "
" 29..	35	41	33	9 "	" 29..	35	40	57	14 "
Sept. 17..	35	41	30	9 "	Sept. 17..	35	40	44	12 "
Mean..	35	41	23.5		Mean..	35	40	48.5	

Mean of north, and south 35° 41' 06", latitude of Santa Fé.

APPENDIX No. 5—Continued.

September 18, 1846.—Santa Fe.

Time, a. m.			Double altitudes of sun's upper limb.	
<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg.</i>	<i>min.</i>
4	45	06.8	79	20
4	45	36.0	79	30
4	46	04.2	79	40
4	46	34.0	79	50
4	47	02.0	80	00
4	47	32.8	80	10
4	48	02.0	80	20
4	48	30.5	80	30
4	49	00.5	80	40
4	49	30.0	80	50
4	49	58.0	81	00

Thermometer 68°.

Mean of 3 observations 38.24s

<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg.</i>	<i>min.</i>
4	41	25.5	76	20
4	40	58.6	76	10
4	40	29.2	76	00
4	40	01.0	75	50
4	39	31.5	75	40
4	39	03.0	75	30

Thermom. 65.

APPENDIX No. 5—Continued.

September 21, 1846.—Santa Fe.

DETERMINATION OF TIME.

Time, a. m.—Sept. 22.	Double altitudes of sun's upper limb.	Time, p. m.	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>	<i>h.</i>	<i>m.</i>	<i>s.</i>
4	41	25.5	76	20	10	12	47.0	7	33	38.18
4	40	58.6	76	10	10	13	14.8	7	33	37.26
4	40	29.2	76	00	10	13	46.2	7	33	38.39
4	40	01.0	75	50	10	14	14.3	7	33	38.48
4	39	31.5	75	40	10	14	42.9	7	33	38.16
4	39	03.0	75	30	10	14	12.6	7	33	38.99

Thermom. 74°.

Mean of 6 observations, 7h. 33m. 38.24s.

Mean of 6 observations 38.24s

<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg.</i>	<i>min.</i>
4	41	25.5	76	20
4	40	58.6	76	10
4	40	29.2	76	00
4	40	01.0	75	50
4	39	31.5	75	40
4	39	03.0	75	30

Thermom. 65.