

APPENDIX No. 5—Continued.

August 6, 1846.—Camp 35, in the Rat m.

DETERMINATION OF TIME.

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 00 00.8	85 48 55	7 29 28.4
4 01 09.0	85 22 15	7 29 29.6
4 02 09.0	84 58 20	7 29 29.4
4 03 06.6	84 35 45	7 29 30.2
4 04 19.7	84 08 05	7 29 33.8 rej.
4 05 12.5	83 45 50	7 29 30.7
4 06 18.8	83 19 55	7 29 31.9

Thermometer 64°.

Time, p. m.	Double altitudes of <i>a</i> Aquilæ, in the east.	Chronometer fast.
<i>h. m. s.</i>	<i>Deg. min. sec.</i>	<i>h. m. s.</i>
4 11 33.4	101 09 55	7 29 31.9
4 13 42.8	101 50 00	7 29 32.3
4 14 54.7	102 11 50	7 29 33.5
4 15 50.5	102 28 40	7 29 34.4
4 16 43.6	102 45 10	7 29 33.5
4 17 42.5	103 03 10	7 29 33.2
4 18 52.0	103 24 10	7 29 33.4

Thermometer 63°.

Chronometer fast by 6 observations of west star..	<i>h. m. s.</i>
Chronometer fast by 7 observations of east star..	7 29 30.03
	33.17
Mean.....	<u>7 29 31.60</u>

APPENDIX No. 5—Continued.

August 7, 1846.—Camp 36, on the Canadian, south side, about one and a half mile below the crossing.

DETERMINATION OF TIME.

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>
3 35 22.7	94 01 50	7 29 20.2
3 36 14.5	93 41 30	7 29 20.6
3 37 01.0	93 22 30	7 29 19.1
3 37 45.3	93 04 55	7 29 18.9
3 38 39.0	92 44 20	7 29 20.5
3 39 34.6	92 21 40	7 29 18.9
3 40 13.0	92 04 50	7 29 14.8 rej.
3 41 02.0	91 47 35	7 29 20.1

Thermometer 59°.

Time, p. m.	Double altitudes of <i>a</i> Aquilæ, in the east.	Chronometer fast.
<i>h. m. s.</i>	<i>Deg. min. sec.</i>	<i>h. m. s.</i>
3 43 56.5	93 43 00	7 29 22.7
3 45 13.3	94 09 30	7 29 21.6
3 46 15.8	94 30 20	7 29 22.6
3 47 01.0	94 46 00	7 29 21.0
3 47 53.8	95 03 05	7 29 24.5
3 48 43.0	95 19 50	7 29 22.8
3 49 36.2	95 37 40	7 29 23.2
3 50 34.0	95 57 15	7 29 22.5

Thermometer 59°.

Chronometer fast by 7 observations of west star...	<i>h. m. s.</i>
" " " " east star...	7 29 19.76
	22.61
Mean.....	<u>7 29 21.18</u>

APPENDIX No. 5—Continued.

August 7, 1846.—Camp 36.

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	55	48.0	72	23	45	36	47	11
3	56	59.3	72	24	55	36	47	25
3	57	59.3	72	25	40	36	47	25
3	59	09.0	72	27	00	36	47	37
4	00	32.6	72	28	10	36	47	52
4	01	39.0	72	28	50	36	47	38
4	02	25.3	72	29	55	36	47	54
4	03	31.0	72	30	25	36	47	44
4	04	15.0	72	31	00	36	47	45
4	05	24.2	72	31	10	36	47	25
4	06	15.5	72	31	40	36	47	21

Thermometer 59°.

Mean of 11 observations, 36° 47' 34".

Variation of the needle, determined by the eastern elongation of Polaris, = 12° east.

<i>h.</i>	<i>m.</i>	<i>s.</i>	<i>Deg. min. sec.</i>	<i>Deg. min. sec.</i>	
7	29	17.7	78	37	10
7	29	18.7	78	15	30
7	29	18.9	77	52	30
7	29	17.3	77	32	05
7	29	17.4	77	03	25
7	29	16.6	76	41	30
7	29	18.1	76	24	20
7	29	15.9	75	57	35
7	29	18.2	75	38	30
7	29	16.1	75	21	30

APPENDIX No. 5—Continued.

August 8, 1846.—Camp 36.

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>	<i>Deg. min. sec.</i>			<i>h.</i>	<i>m.</i>	<i>s.</i>
4	01	14.8	100	44	25	7	29	16.8
4	02	07.6	100	59	55	7	29	20.4
4	03	02.2	101	17	20	7	29	19.8
4	03	53.7	101	33	30	7	29	19.7
4	05	12.8	101	57	45	7	29	21.4
4	06	08.8	102	15	50	7	29	19.1
4	07	03.7	102	33	25	7	29	17.2
4	08	03.5	102	52	30	7	29	15.1 rej.

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	10	06.0	78	37	10	7	29	17.7
4	11	00.8	78	15	30	7	29	18.7
4	11	57.7	77	52	30	7	29	18.9
4	12	48.0	77	32	05	7	29	17.3
4	13	59.8	77	03	25	7	29	17.4
4	14	53.7	76	41	30	7	29	16.6
4	15	38.0	76	24	20	7	29	18.1
4	16	42.5	75	57	35	7	29	15.9
4	17	32.5	75	38	30	7	29	18.2
4	18	12.8	75	21	30	7	29	16.1

Thermometer 63°.

	<i>h.</i>	<i>m.</i>	<i>s.</i>
Chronometer fast by 7 obs. of east star.....	7	29	19.29
“ “ “ “ “ west star.....	10		17.49

Mean 7 29 18.34

DETERMINATION OF INDEX ERROR.

	<i>Min. sec.</i>	<i>Min. sec.</i>
On the arc.....	31 40	31 35
Off the arc.....	31 45	31 45

Index error = + 3.7.

APPENDIX No. 5—Continued.

August 10, 1846.—Camp 33, on the Ciman Citon.

DETERMINATION OF TIME.

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>
3 10 58.7	99 36 40	7 30 32.9
3 11 49.0	99 17 25	7 30 34.3
3 12 40.2	98 56 45	7 30 33.1
3 13 43.5	98 31 40	7 30 32.7
3 14 31.0	98 13 00	7 30 32.9
3 15 17.0	97 54 45	7 30 32.6
3 16 10.0	97 34 10	7 30 33.5

Thermometer 59°.

Time, p. m.	Double altitudes of α Aquilæ in the east.	Chronometer fast.
<i>h. m. s.</i>	<i>Deg. min. sec.</i>	<i>h. m. s.</i>
3 18 54.0	89 01 35	7 30 33.1
3 20 03.2	89 27 40	7 30 34.1
3 21 17.1	89 52 25	7 30 33.1
3 22 34.1	90 18 45	7 30 35.6
3 23 43.8	90 43 20	7 30 35.6
3 24 43.5	91 03 55	7 30 36.5
3 25 27.0	91 20 00	7 30 34.4

Thermometer 59°.

	<i>h. m. s.</i>
Chronometer fast by 7 obs. of east star.....	7 30 34.63
Chronometer fast by 7 obs. of west star.....	33.14
Mean	7 30 33.88

APPENDIX No. 5—Continued.

August 10, 1846.—Camp 33.

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>
3 29 03.5	71 33 25	36 27 43
3 29 58.0	71 34 00	36 27 44
3 31 09.0	71 35 10	36 27 52
3 32 20.0	71 35 50	36 27 47
3 33 25.0	71 36 50	36 27 54
3 34 36.5	71 37 30	36 27 50
3 35 27.2	71 38 20	36 27 59
3 36 14.5	71 38 50	36 27 55
3 37 03.8	71 39 10	36 27 47
3 37 45.4	71 39 55	36 27 52
3 38 44.0	71 40 30	36 27 51

Thermometer, 58°.

Mean of 11 observations, 36° 27' 50".

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APPENDIX No. 5—Continued.

August 12, 1846.—Camp 40.

DETERMINATION OF TIME.

Time, p. m.	Double altitudes of α Lyræ, in the west.	Chronometer fast.
<i>h. m. s.</i>	<i>Deg. min. sec.</i>	<i>h. m. s.</i>
9 16 50.0	71 35 30	7 31 26.9
9 17 38.5	71 18 15	7 31 28.3
9 18 44.6	70 53 50	7 31 27.7
9 19 43.0	70 31 50	7 31 26.0
9 20 24.2	70 16 10	7 31 24.4
9 21 11.8	69 59 20	7 31 25.9
9 22 03.6	69 40 15	7 31 25.5

Time, a. m.—August 13.	Double altitudes of sun's upper limb.	Chronometer fast.
<i>h. m. s.</i>	<i>Deg. min.</i>	<i>h. m. s.</i>
4 05 34.3	77 50	7 31 25.0
4 06 00.5	78 00	7 31 26.1
4 06 26.2	78 10	7 31 26.7
4 06 51.7	78 20	7 31 27.1
4 07 16.2	78 30	7 31 26.5
4 07 41.0	78 40	7 31 26.2
4 08 05.0	78 50	7 31 25.1
4 08 29.2	79 00	7 31 24.1
4 08 54.2	79 10	7 31 24.0
4 09 20.0	79 20	7 31 24.6
4 09 44.6	79 30	7 31 24.1

Thermometer 66°.

Chronometer fast by 11 observations of sun in east	<i>h. m. s.</i>	7 31 25.49
Rate for 7 hours.....		88
Chronometer last at 13 <i>h.</i> , August 12.....	<i>h. m. s.</i>	7 31 26.37
Chronometer fast by α Lyræ, in the west.....		26.39

Mean..... 7 31 26.38

APPENDIX No. 5—Continued.

August 12, 1846.—Camp 40.

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>
9 27 11.2	74 33 30	35 54 06
9 28 38.0	74 34 25	35 54 19
9 30 09.0	74 35 00	35 54 20
9 31 14.7	74 35 30	35 54 24
9 32 18.5	74 36 00	35 54 29
9 33 18.5	74 36 00	35 54 18
9 34 27.0	74 36 50	35 54 31
9 35 25.8	74 37 00	35 54 26
9 36 38.5	74 37 15	35 54 22
9 37 38.5	74 37 30	35 54 19

Thermometer 49°.

Mean of 10 observations, 35° 54' 21".

APPENDIX No. 5—Continued.

August 14, 1846.—Camp 42, about one mile south of the Vegas.

DETERMINATION OF TIME.

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>
3 42 51.8	81 21 30	7 32 05.0
3 44 19.8	80 45 45	7 32 05.1
3 45 35.9	80 16 15	7 32 08.9
3 46 38.2	79 50 50	7 32 08.7
3 47 42.7	79 24 20	7 32 08.1
3 48 58.6	78 53 10	7 32 07.4
3 49 55.0	78 30 30	7 32 08.1

Thermometer 60°.

Time, p. m.	Double altitudes of α Aquilæ in the east.	Chronometer fast.
<i>h. m. s.</i>	<i>Deg. min. sec.</i>	<i>h. m. s.</i>
3 52 21.4	105 59 30	7 32 06.3
3 53 39.0	106 23 45	7 32 05.5
3 54 51.7	106 47 25	7 32 01.5
3 56 02.5	107 08 20	7 32 03.8
3 57 12.0	107 29 35	7 32 03.1
3 58 18.8	107 49 50	7 32 02.9
3 59 19.0	108 07 30	7 32 04.4

Thermometer 60°.

Chronometer fast by 7 observations of east star...	<i>h. m. s.</i>	7 32 03.93
“ “ 7 “ west star...		07.36
Mean.....		<u>7 32 05.64</u>

APPENDIX No. 5—Continued.

August 14, 1846.—Camp 42, one mile south of the Vegas.

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 03 54.2	70 23 25	35 34 50
4 05 06.0	70 24 10	35 34 46
4 05 51.0	70 25 30	35 35 08
4 06 52.5	70 25 50	35 34 55
4 08 09.0	70 26 50	35 34 56
4 09 09.0	70 28 10	35 35 13
4 10 11.5	70 29 10	35 35 21
4 11 12.0	70 29 50	35 35 15
4 11 59.0	70 30 35	35 35 20

Thermometer 60°.

Mean of 9 observations, 35° 35' 05".

Time, p. m.	Double altitudes of α Aquilæ in the east.	Chronometer fast.
<i>h. m. s.</i>	<i>Deg. min. sec.</i>	<i>h. m. s.</i>
3 52 21.4	105 59 30	7 32 06.3
3 53 39.0	106 23 45	7 32 05.5
3 54 51.7	106 47 25	7 32 01.5
3 56 02.5	107 08 20	7 32 03.8
3 57 12.0	107 29 35	7 32 03.1
3 58 18.8	107 49 50	7 32 02.9
3 59 19.0	108 07 30	7 32 04.4

Thermometer 60°.

Chronometer fast by 7 observations of east star...	<i>h. m. s.</i>	7 32 03.93
“ “ 7 “ west star...		07.36
Mean.....		<u>7 32 05.64</u>

APPENDIX No. 5—Continued.

August 15, 1846.—Camp 43, Vernal Spring.

DETERMINATION OF TIME.

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>
3 25 03.0	87 14 30	7 32 35.7
3 25 59.0	86 51 40	7 32 35.5
3 26 57.1	86 28 30	7 32 36.7
3 27 45.2	86 08 50	7 32 36.5
3 28 26.7	85 51 30	7 32 35.4
3 29 09.8	85 33 55	7 32 35.3
3 29 57.3	85 15 10	7 32 36.7

Thermometer 68°.

Time, p. m.	Double altitudes of α Aquilæ in the east.	Chronometer fast.
<i>h. m. s.</i>	<i>Deg. min. sec.</i>	<i>h. m. s.</i>
3 33 34.8	101 18 30	7 32 30.9
3 34 31.1	101 38 25	7 32 30.3
3 35 34.1	101 58 30	7 32 32.3
3 36 23.0	102 14 30	7 32 32.8
3 37 10.5	102 30 05	7 32 32.8
3 38 15.0	102 51 40	7 32 31.2
3 39 17.0	103 11 15	7 32 33.2

Thermometer 65°.

Chronometer fast by 7 observations of east star	<i>h. m. s.</i>
“ “ 7 “ “ west star	7 32 31.93
Mean.....	7 32 35.97
Mean.....	7 32 38.95

APPENDIX No. 5—Continued.

August 15, 1846.—Camp 43.

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>
3 48 13.5	69 50 40	35 23 05
3 49 19.5	69 51 30	35 23 06
3 50 03.2	69 52 15	35 23 12
3 51 08.5	69 53 30	35 23 25
3 51 59.2	69 54 25	35 23 32
3 53 06.0	69 54 55	35 23 23
3 53 59.0	69 55 25	35 23 10
3 54 54.0	69 56 20	35 23 03
3 55 49.5	69 57 00	35 23 24

Thermometer 65°.

Mean of 9 observations, 35° 23' 19".

APPENDIX No. 5—Continued.

August 19, 1846.—Santa Fé.

DETERMINATION OF TIME.

Time, p. m.	Double altitudes of α Cor- næ Borealis in the west.	Chronometer fast.
<i>h. m. s.</i>	<i>Deg. min. sec.</i>	<i>h. m. s.</i>
4 32 23.0	93 16 00	7 34 49.3 rej.
4 33 37.7	92 47 05	7 34 52.8
4 34 35.0	92 23 40	7 34 52.4
4 35 26.8	92 02 00	7 34 50.9
4 36 20.0	91 41 05	7 34 52.5
4 37 12.9	91 18 50	7 34 50.7
4 38 31.7	90 48 20	7 34 54.4 rej.
4 39 26.0	90 24 35	7 34 50.1
4 40 23.0	90 01 40	7 34 50.6

Thermometer 60°.

Time, p. m.	Double altitudes of α Pegasi in the east.	Chronometer fast.
<i>h. m. s.</i>	<i>Deg. min. sec.</i>	<i>h. m. s.</i>
5 10 46.0	77 41 25	7 34 62.7 rej.
5 11 51.2	78 10 00	7 34 55.5
5 12 39.6	78 28 25	7 34 57.9
5 13 38.8	78 51 20	7 34 59.5 rej.
5 14 22.0	79 10 00	7 34 56.0
5 15 19.0	79 33 20	7 34 54.4
5 16 23.8	79 57 20	7 34 54.5
5 17 31.2	80 23 20	7 34 61.2 rej.
5 18 32.5	80 49 30	7 34 56.8

Thermometer 59°.

Chronometer fast by 6 observations of east star....	<i>h. m. s.</i>	7 34 55.82
Chronometer fast by 7 observations of west star...		51.43
Mean.....		<u>7 34 53.62</u>

APPENDIX No. 5—Continued.

August 19, 1846.—Santa Fé.

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>
5 24 20.0	71 51 10	35 40 47 rej.
5 25 34.0	71 52 40	35 41 03
5 26 51.0	71 53 50	35 41 09
5 27 52.5	71 54 40	35 41 11
5 28 47.0	71 55 40	35 41 18
5 30 07.5	71 56 30	35 41 12
5 30 55.2	71 57 10	35 41 13
5 31 28.0	71 57 55	35 41 23

Thermometer 59°.

Mean of 7 observations, 35° 41' 13".

71 51 10	35 40 47
71 52 40	35 41 03
71 53 50	35 41 09
71 54 40	35 41 11
71 55 40	35 41 18
71 56 30	35 41 12
71 57 10	35 41 13
71 57 55	35 41 23

Thermometer 62°.