

APPENDIX No. 3.—METEOROLOGICAL OBSERVATIONS—Continued.

Place of observation.	Date.	Time.	Barometer.	Thermometer.			Approximate altitude.	Remarks.
				Attached.	Free.	Wet bulb.		
San Diego.....	December 23	5 p. m. ....	76.83	C. 16	F. 60½	F. 57½	Brilliant sunset; just clearing off; no wind. Cloudy; wind light NE. Cloudy in the west; calm. Clear and calm. Wind east; brilliant sunset; fair. Raining moderately, though steady; no wind. Clear and calm. Wind NW; quite fair. We had a heavy shower during the night. Clear and calm. Clear sunset; wind N. by W. Cloudy; no wind.	
Do .....	December 24	8.45 a. m. ....	76.77	15	59	55		
Do .....	do	5 p. m. ....	76.58	17	60½	57½		
Do .....	December 25	8.30 a. m. ....	76.42	15	60	57		
Do .....	do	5 p. m. ....	76.47	18	65	62		
Do .....	December 26	8.30 a. m. ....	76.66	17	63	.....		
Do .....	do	5 p. m. ....	76.52	17	64	59		
Do .....	December 27	8.30 a. m. ....	76.72	16	60½	59		
Do .....	do	5 p. m. ....	76.70	16	60	56		
Do .....	December 28	do	76.75	16	60	55		
Do .....	December 29	8 a. m. ....	76.55	14	56	52		

APPENDIX No. 4.

TABLE

of

GEOGRAPHICAL POSITIONS.

No.	Name of Place	Latitude	Longitude
1	San Diego	32° 42' N	117° 05' W
2	San Francisco	37° 47' N	122° 25' W
3	San Jose	37° 15' N	121° 48' W
4	San Pedro de San Pedro	37° 00' N	121° 30' W
5	San Juan	36° 45' N	121° 15' W
6	San Mateo	36° 30' N	121° 00' W
7	San Rafael	36° 15' N	120° 45' W
8	San Francisco de Assisi	36° 00' N	120° 30' W
9	San Francisco de Solis	35° 45' N	120° 15' W
10	San Francisco de Paula	35° 30' N	120° 00' W
11	San Francisco de Xavier	35° 15' N	119° 45' W
12	San Francisco de Sales	35° 00' N	119° 30' W
13	San Francisco de Borja	34° 45' N	119° 15' W
14	San Francisco de Regis	34° 30' N	119° 00' W
15	San Francisco de Solano	34° 15' N	118° 45' W
16	San Francisco de Torres	34° 00' N	118° 30' W
17	San Francisco de Soto	33° 45' N	118° 15' W
18	San Francisco de Oropesa	33° 30' N	118° 00' W
19	San Francisco de Abasco	33° 15' N	117° 45' W
20	San Francisco de Asis	33° 00' N	117° 30' W
21	San Francisco de Paula	32° 45' N	117° 15' W
22	San Francisco de Xavier	32° 30' N	117° 00' W
23	San Francisco de Sales	32° 15' N	116° 45' W
24	San Francisco de Borja	32° 00' N	116° 30' W
25	San Francisco de Regis	31° 45' N	116° 15' W
26	San Francisco de Solano	31° 30' N	116° 00' W
27	San Francisco de Torres	31° 15' N	115° 45' W
28	San Francisco de Soto	31° 00' N	115° 30' W
29	San Francisco de Oropesa	30° 45' N	115° 15' W
30	San Francisco de Abasco	30° 30' N	115° 00' W

APPENDIX No. 4.

TABLE OF GEOGRAPHICAL POSITIONS.

Date.	Places of observation.	Distances measured by the viaheter.		North latitudes.	West of Greenwich.		Authorities.
		Distance from camp to camp.	Total distance from Fort Leavenworth.		In time.	In arc.	
				Deg. min. sec.	H. min. sec.	Deg. min. sec.	
1846. June 23	Fort Leavenworth, on the Missouri...			39 21 14	6 18 56	94 44 00	Latitude of Fort Leavenworth by W. H. Emory. Longitude of Fort Leavenworth by J. N. Nicolle.
30	Camp 4, Oregon trail, about one mile from where it strikes the Wakarussi creek	43	43	38 54 08	6 20 08		W. H. Emory.
July 4	Camp 8, Big John Spring	81	124	38 39 28	6 24 58		do
5	Camp 9, Diamond Spring	20	144	38 29 30	6 26 09		do
6	Camp 10, Cotton-wood creek	29	173	38 29 30	6 23 07		do
11	Camp 13, Cow creek	53	231				
13	Camp 14, bend of the Arkansas river, where the road strikes it	22	253	38 21 17	6 33 28		do
19	Camp 16, Pawnee Fork	35	288	38 10 10	6 35 41		do
19	Camp 20, Jackson Grove	64	352	37 41 38	6 38 22		do
22	Camp 23, Arkansas, on the river	66	418	37 57 39	6 42 29		do
25	Camp 26, Arkansas, on the river	64	482	38 01 08	6 46 44		do
30	Camp 30, Bent's Fort	82	564	38 02 53	6 52 04	103 01 00	do
3	Camp 32, on the Timpa	34	598	37 44 56	6 54 16		do
5	Camp 34, on the Purgatory	53	651	37 11 59	6 56 47.9		do
6	Camp 35, on the Raion	17	668	37 00 21	6 57 01		do
7	Camp 36, on the Canadian	17	685	36 47 34	6 56 59		do

10	Camp 38, on the Cimmaron Citron	30	715	36 27 50	6 58 39	104 39 45	do
12	Camp 40, at the Pools, about one mile west of the road	50	765	35 54 21	6 59 49	104 57 15	do
14	Camp 42, about one mile south of the Vegas	27	792	35 35 05	7 00 46	105 11 30	do
15	Camp 43, Vernal Springs	19	811	35 23 19	7 01 23	105 20 45	do
Sept. 10	Camp Santa Fe	62	873	35 41 06	7 04 05.5	106 01 23	do
4	Camp on the Rio del Norte, about one mile below San Felipe	38	911	35 25 30	7 06 16.2	106 34 04	do
6	Camp on the Rio del Norte, near the Alameda			35 11 20	7 07 00	106 45 00	do
30	Camp at Peralta, near Señora Chavis's private chapel			34 50 57	7 07 08.4	106 47 06	do
4	Camp 62, a little south of, and about one mile west of Peralta	48	959	34 48 33	7 07 14.2	106 48 33	do
7	Camp 65, west bank of Rio del Norte, about two miles below Limatar	52	1011	34 07 39	7 07 54	106 58 29	do
9	Camp 68, west bank of Rio del Norte	37	1048	33 41 19	7 03 14	107 03 36	do
15	Camp 70, east bank of Rio del Norte			33 20 02	7 03 57	107 04 17	do
17	Camp 73, first camp after leaving Rio del Norte	63	1116	32 55 04	7 10 25	107 36 15	do
19	Camp 75, in the mountains, between the Del Norte and Copper Mines	38	1154	32 42 11	7 12 00	108 00 00	do
20	Camp 77, Night creek	47	1201	32 50 54	7 14 32	108 38 00	do
22	Camp 78, first camp on the Rio Gila	8	1200	32 50 08	7 15 00	108 45 00	do
24	Camp 80			32 38 13	7 16 30	109 07 30	do
26	Camp 81, on the Gila	50	1259	32 44 52	7 17 23	109 22 00	do
30	Camp 83, on the Gila	38	1297	32 53 16	7 18 06.3	109 31 34	do
31	Camp 86, on the Gila	63	1360	33 12 10	7 21 23	110 20 46	do
Nov. 2	Camp 87, on the San Francisco, about two miles from its mouth	9	1369	33 14 29	7 22 01.6	110 30 24	do
5	Camp 89, Disappointment creek	21	1390	33 14 54	7 23 00.4	110 45 06	do
8	Camp 91, on the San Pedro, near its mouth	38	1423	32 57 43	7 23 19.5	110 49 53	do
10	Camp 93, on the Gila	29	1457	33 05 40	7 24 52.6	111 13 10	do
12	Camp 97, between Pijos and Cocco Maricopas villages	37	1494	33 04 21	7 27 03.8	111 45 58	do
14	Camp 99, on the Gila	23	1517	33 09 23	7 28 28.8	112 07 13	do
17	Camp 101, on the Gila	44	1561	32 59 22	7 31 20	112 50 01	do
19	Camp 103, on an island in the Gila	39	1600	32 55 52	7 33 41.6	113 25 25	do
		39	1639	32 43 38	7 35 50.7	113 57 41	do

APPENDIX No. 4—GEOGRAPHICAL POSITIONS—Continued.

Date.	Places of observation.	Distances measured by the viameter.		North latitudes.	West of Greenwich.		Authorities.
		Distance from camp to camp.	Total distance from Fort, Leavenworth.		In time.	In arc.	
1846.							
Nov. 21	Camp 105, on the Gila.	26	1665	Deg. min. sec. 32 43 17	h. min. sec. 7 37 22.8	Deg. min. sec. 114 20 43	W. H. Emory.
Nov. 22	Camp 106, about one and a half mile south of the junction of the Gila and Colorado of the west.	22	1687	32 42 09	7 38 28.6	114 37 09	do
25	First camp after leaving the Rio Colorado.	22	1709	32 40 22	7 39 45.8	114 56 28	do
28	Camp 111, Ceriso creek.	77	1766	32 52 33	7 44 24.6	116 06 09	do
29	Camp 112, Yalle Cison.	16	1802	32 58 15	7 45 22.7	116 20 40	do
Dec. 2	Camp 114, a few hundred yards south of Warner's rancheria.	35	1837	33 16 57	7 46 34.8	116 38 43	do
7	Camp 118, battle ground of the 7th San Diego, (public square).	50	1887	33 03 42	7 48 14	117 03 29	do
		29	1916	32 45 00	7 48 44	117 11 00	Latitude by W. H. Emory. Longitude by Sir Ed. Belcher.

APPENDIX No. 5.

TABLE

OF

ASTRONOMICAL OBSERVATIONS.

These observations were not all taken near the same place. The first observations were taken at the public square of San Diego, the second at Warner's rancheria, the third at the battle ground of the 7th, the fourth at Yalle Cison, the fifth at Ceriso creek, the sixth at the junction of the Gila and Colorado of the west, the seventh at Camp 106, the eighth at Camp 105, the ninth at the first camp after leaving the Rio Colorado, the tenth at Camp 114, the eleventh at Camp 112, the twelfth at Camp 111, the thirteenth at Camp 118, the fourteenth at Camp 114, the fifteenth at Camp 112, the sixteenth at Camp 111, the seventeenth at Camp 106, the eighteenth at Camp 105, the nineteenth at the first camp after leaving the Rio Colorado, the twentieth at Camp 114, the twenty-first at Camp 112, the twenty-second at Camp 111, the twenty-third at Camp 118, the twenty-fourth at Camp 114, the twenty-fifth at Camp 112, the twenty-sixth at Camp 111, the twenty-seventh at Camp 106, the twenty-eighth at Camp 105, the twenty-ninth at the first camp after leaving the Rio Colorado, the thirtieth at Camp 114, the thirty-first at Camp 112, the thirty-second at Camp 111, the thirty-third at Camp 118, the thirty-fourth at Camp 114, the thirty-fifth at Camp 112, the thirty-sixth at Camp 111, the thirty-seventh at Camp 106, the thirty-eighth at Camp 105, the thirty-ninth at the first camp after leaving the Rio Colorado, the fortieth at Camp 114, the forty-first at Camp 112, the forty-second at Camp 111, the forty-third at Camp 118, the forty-fourth at Camp 114, the forty-fifth at Camp 112, the forty-sixth at Camp 111, the forty-seventh at Camp 106, the forty-eighth at Camp 105, the forty-ninth at the first camp after leaving the Rio Colorado, the fiftieth at Camp 114, the fifty-first at Camp 112, the fifty-second at Camp 111, the fifty-third at Camp 118, the fifty-fourth at Camp 114, the fifty-fifth at Camp 112, the fifty-sixth at Camp 111, the fifty-seventh at Camp 106, the fifty-eighth at Camp 105, the fifty-ninth at the first camp after leaving the Rio Colorado, the sixtieth at Camp 114, the sixty-first at Camp 112, the sixty-second at Camp 111, the sixty-third at Camp 118, the sixty-fourth at Camp 114, the sixty-fifth at Camp 112, the sixty-sixth at Camp 111, the sixty-seventh at Camp 106, the sixty-eighth at Camp 105, the sixty-ninth at the first camp after leaving the Rio Colorado, the seventieth at Camp 114, the seventy-first at Camp 112, the seventy-second at Camp 111, the seventy-third at Camp 118, the seventy-fourth at Camp 114, the seventy-fifth at Camp 112, the seventy-sixth at Camp 111, the seventy-seventh at Camp 106, the seventy-eighth at Camp 105, the seventy-ninth at the first camp after leaving the Rio Colorado, the eightieth at Camp 114, the eighty-first at Camp 112, the eighty-second at Camp 111, the eighty-third at Camp 118, the eighty-fourth at Camp 114, the eighty-fifth at Camp 112, the eighty-sixth at Camp 111, the eighty-seventh at Camp 106, the eighty-eighth at Camp 105, the eighty-ninth at the first camp after leaving the Rio Colorado, the ninetieth at Camp 114, the ninety-first at Camp 112, the ninety-second at Camp 111, the ninety-third at Camp 118, the ninety-fourth at Camp 114, the ninety-fifth at Camp 112, the ninety-sixth at Camp 111, the ninety-seventh at Camp 106, the ninety-eighth at Camp 105, the ninety-ninth at the first camp after leaving the Rio Colorado, the hundredth at Camp 114, the hundred-first at Camp 112, the hundred-second at Camp 111, the hundred-third at Camp 118, the hundred-fourth at Camp 114, the hundred-fifth at Camp 112, the hundred-sixth at Camp 111, the hundred-seventh at Camp 106, the hundred-eighth at Camp 105, the hundred-ninth at the first camp after leaving the Rio Colorado, the hundred-tenth at Camp 114, the hundred-eleventh at Camp 112, the hundred-twelfth at Camp 111, the hundred-thirteenth at Camp 118, the hundred-fourteenth at Camp 114, the hundred-fifteenth at Camp 112, the hundred-sixteenth at Camp 111, the hundred-seventeenth at Camp 106, the hundred-eighteenth at Camp 105, the hundred-nineteenth at the first camp after leaving the Rio Colorado, the two hundredth at Camp 114, the two hundred-first at Camp 112, the two hundred-second at Camp 111, the two hundred-third at Camp 118, the two hundred-fourth at Camp 114, the two hundred-fifth at Camp 112, the two hundred-sixth at Camp 111, the two hundred-seventh at Camp 106, the two hundred-eighth at Camp 105, the two hundred-ninth at the first camp after leaving the Rio Colorado, the three hundredth at Camp 114, the three hundred-first at Camp 112, the three hundred-second at Camp 111, the three hundred-third at Camp 118, the three hundred-fourth at Camp 114, the three hundred-fifth at Camp 112, the three hundred-sixth at Camp 111, the three hundred-seventh at Camp 106, the three hundred-eighth at Camp 105, the three hundred-ninth at the first camp after leaving the Rio Colorado, the four hundredth at Camp 114, the four hundred-first at Camp 112, the four hundred-second at Camp 111, the four hundred-third at Camp 118, the four hundred-fourth at Camp 114, the four hundred-fifth at Camp 112, the four hundred-sixth at Camp 111, the four hundred-seventh at Camp 106, the four hundred-eighth at Camp 105, the four hundred-ninth at the first camp after leaving the Rio Colorado, the five hundredth at Camp 114, the five hundred-first at Camp 112, the five hundred-second at Camp 111, the five hundred-third at Camp 118, the five hundred-fourth at Camp 114, the five hundred-fifth at Camp 112, the five hundred-sixth at Camp 111, the five hundred-seventh at Camp 106, the five hundred-eighth at Camp 105, the five hundred-ninth at the first camp after leaving the Rio Colorado, the six hundredth at Camp 114, the six hundred-first at Camp 112, the six hundred-second at Camp 111, the six hundred-third at Camp 118, the six hundred-fourth at Camp 114, the six hundred-fifth at Camp 112, the six hundred-sixth at Camp 111, the six hundred-seventh at Camp 106, the six hundred-eighth at Camp 105, the six hundred-ninth at the first camp after leaving the Rio Colorado, the seven hundredth at Camp 114, the seven hundred-first at Camp 112, the seven hundred-second at Camp 111, the seven hundred-third at Camp 118, the seven hundred-fourth at Camp 114, the seven hundred-fifth at Camp 112, the seven hundred-sixth at Camp 111, the seven hundred-seventh at Camp 106, the seven hundred-eighth at Camp 105, the seven hundred-ninth at the first camp after leaving the Rio Colorado, the eight hundredth at Camp 114, the eight hundred-first at Camp 112, the eight hundred-second at Camp 111, the eight hundred-third at Camp 118, the eight hundred-fourth at Camp 114, the eight hundred-fifth at Camp 112, the eight hundred-sixth at Camp 111, the eight hundred-seventh at Camp 106, the eight hundred-eighth at Camp 105, the eight hundred-ninth at the first camp after leaving the Rio Colorado, the nine hundredth at Camp 114, the nine hundred-first at Camp 112, the nine hundred-second at Camp 111, the nine hundred-third at Camp 118, the nine hundred-fourth at Camp 114, the nine hundred-fifth at Camp 112, the nine hundred-sixth at Camp 111, the nine hundred-seventh at Camp 106, the nine hundred-eighth at Camp 105, the nine hundred-ninth at the first camp after leaving the Rio Colorado, the thousandth at Camp 114, the thousand-first at Camp 112, the thousand-second at Camp 111, the thousand-third at Camp 118, the thousand-fourth at Camp 114, the thousand-fifth at Camp 112, the thousand-sixth at Camp 111, the thousand-seventh at Camp 106, the thousand-eighth at Camp 105, the thousand-ninth at the first camp after leaving the Rio Colorado.