THE RAINFALL OF HETCH HETCHY VALLEY.

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The Hetch Hetchy Valley, the Tiltill Valley, and the Grand Canyon of the Tuolumne are located in the northern portion of the Yosemite National Park. The Park, together with the Stanislaus National Forest to the west and the Sierra National Forest to the south, embraces large portions of Tuolumne, Mariposa, and Madera conties, Cal. The Hetch Hetchy Valley is in latitude 37° 58′ N., and longitude 119° 45′ W. The accompanying map (fig. 4), compiled from data furnished by the United States Forest Service and issued by the State Mining Bureau, Lewis C. Aubury, State Mineralogist, dated May, 1909, shows the boundaries of the portion of the park in Tuolumne County and the relative positions of the Hetch Hetchy Valley and Lake Eleanor. The proposed reservoir sites for the city of San Francisco are Lake Eleanor with an area of 1,159.21 acres and the Hetch Hetchy, about five miles to the southeast on the Tuolumne River, with an area of 1,170.45 acres. The elevation of Lake Eleanor is, approximately, 1,433 meters (4,700 feet) above sea level. The floor of the Hetch Hetchy is about 1,128 meters (3,700 feet) above sea level. The general watershed has an elevation exceeding 1,830 meters (6,000 feet), and in some parts, as Rancheria Mountain, is 2,743 meters (9,000 feet). The general drainage system consists of Tuolumne River and Cherry Creek. Into the former drain Falls Creek, Tiltill Creek, Rancheria Creek, Piute Creek and numerous tributaries of the upper Tuolumne. Into Cherry Creek empties Eleanor Creek, McGill Creek, and Frog Creek by way of Lake Eleanor. The estimated area of the Cherry Creek watershed is 103 square miles; of the Eleanor watershed, 84 square miles; of the Hetch Hetchy watershed, 452 square miles. It is estimated by engineers[1] that the combined drainage area above Lake Eleanor and Hetch Hetchy Valley, covering over 500 square miles, is sufficient to supply more than 200,000,000 gallons of water daily. The storage reservoir sites are said to be the best that can be found in the mountains and from 4 to 10 times larger than others suggested. The drainage area lies high, is beyond contamination, can be visited during few months in the year, and then only by small camping parties. It has been pointed out that the construction of such storage reservoirs will be doubly beneficial in restraining the devastating floods that so frequently overrun the lowlands of the San Joaquin, on the one hand, and on the other, will afford a supply of water available during the long dry season, and especially during years of minimum rainfall or the so-called dry winters.

The photograph by J. F. Kinman, reproduced in fig. 1, shows the present beauty of the Hetch Hetchy Valley, as do also the views of Wapama Fall and Kolana Rock, loaned by the Sierra Club, and reproduced in figs. 5 and 6.

The normal annual rainfall in the Sierra Nevada ranges from 101 centimeters to 152 centimeters (40 to 60 inches). Records covering a period of 20 years or longer show that there is a well-marked increase in the amount of precipitation from the floor of the Great Valley of California to elevations of about 6,000 or 7,000 feet above sea-level, where a maximum is reached. It has been shown that along the line of the railroad from Sacramento to Summit, the rainfall increases from 53 centimeters (20.87 inches) at Sacramento, elevation 22 meters (72 feet), to 118 centimeters (46.64 inches), at Colfax, elevation 738 meters (2,421 feet), or an increase of 1 centimeter for every 11 meters of ascent, or an increase of about 1 millimeter in depth of precipitation for every meter rise in altitude. With further increase of altitude the rate of increase of precipitation is smaller. Thus at Cisco, elevation 1,810 meters (5,939 feet), the mean annual precipitation is 126 centimeters (49.68 inches). At Summit, elevation 2,139 meters (7,017 feet), the average annual precipitation is lower than that of stations of less altitude, being but 118 centimeters, or 46.58 inches.

FIG. 1.—General view of the Hetch Hetchy Valley. Photo loaned by the Sierra Club.

Making a cross-section farther south we find that at Modesto, elevation 27 meters, the total precipitation during a year of normal rainfall, was 21 centimeters; and at Oakdale, 48 meters elevation, for the same period, 21 centimeters. Assuming that this value fairly represents the precipitation on the floor of the Great Valley, we find that in a rise of about 200 meters the precipitation increases nearly 100 per cent. Grouping the stations at Milton, 183 meters; and Jacksonville, 210 meters, we obtain a probable value of 36 centimeters. In a third group are Jamestown, 449 meters; Angels Camp, 468 meters; and Mokelumne Hill, 473 meters, with a mean precipitation of 47 centimeters. Above the 500 meter level are 5 stations, as follows:

Station.	Elevation.	Precipitation.
	meters.	*cm.*
West Point	710	54
Penstock	1,143	56
Yosemite	1,202	44
Crockers	1,357	75
Summerdale	1,607	96

For levels under 500 meters, there appears to be an increase of 1 centimeter for every 16 meters of elevation. For levels above 500 meters the rate is uncertain, partly because of the difficulty of accurately determining the water equivalent of snow and partly because of canyon effects, as in the Yosemite Valley.

Owing to the peculiar topography of California and the varying inclinations of mountain ranges to the rain-bearing winds, isohyets are irregular and less certain than in sections where less diversified conditions prevail. In other words, both the intensity and frequency of precipitation are materially modified by the conditions referred to above, and it is also to be remembered that our measurements of depth of snowfall and conversion to water are open to criticism. Again, the elevations are considerable and the population sparse in these Sierra sections. Due allowance must therefore be made as to the accuracy of the isohyets drawn in fig. 2.

Actual records at Lake Eleanor and Hetch Hetchy are limited to the present season and are given in full on the following pages. An effort was made to install two seasonal snow gages in order that the water equivalent of the snowfall of the winter of 1909–10 might be obtained; but, unfortunately, owing to a misunderstanding of the purpose by those in charge

[1] J. D. Galloway, Transactions of Commonwealth Club of Calfornia, November, 1909, page 364.

of the Park, the installation was delayed until a time when it was impossible to carry out the work. It is probable that the coming season will find these gages in place and records of the snowfall, or rather its water equivalent, available.

RECORD OF OBSERVATIONS AT LAKE ELEANOR, TUOLUMNE COUNTY, CAL., LATITUDE 37° 59′ N., LONGITUDE 119° 53′ W.

Observations at Lake Eleanor are made daily at 4 p. m., Pacific time, with United States Weather Bureau instruments, by Mr. O. J. Todd, of the engineering corps of the city of San Francisco, under general direction of Dr. Marsden Manson. The record, presented in Table 1, begins on October 19, the date of installation of instruments. It is recorded that, previous to the beginning of instrumental records, October 1 and 2 were rainy days; and the other days, until the 18th, were fair or clear:

There are three stations the records of which may be used in studying the precipitation of the section under discussion. The records at Summerdale, Mariposa County, and Crockers, Tuolumne County, cover a period of about 13 years and are believed to be fairly representative as well as accurate. The record from Yosemite covers but a few years, and with the exception of the last two years, during which time the present observer has faithfully recorded the amounts, is of somewhat doubtful value. These records are given in Table 2.

The accompanying relief map of the Yosemite and Hetch Hetchy valleys (fig. 3) was photographed by the writer through the courtesy of Dr. Marsden Manson, City Engineer of San Francisco.

The accompanying sketch of the Tuolumne basin (fig. 2) is based upon a map compiled for the California Water and Forest Association, published in 1900. The isotherms and isohyets are based upon all available records of the Weather Bureau, as contained in the monthly climatological summaries of the California section.

The accompanying Table 3 of seasonal rainfalls near the Tuolumne River Basin was prepared by Dr. Marsden Manson, City Engineer of San Francisco. The records are those of the Weather Bureau; but the season is computed from September 1. The data are chiefly interesting to engineers. It is understood that this table will be used in the preparation of a water report to the Honorable Secretary of the Interior.

TABLE 1.—*Observations of temperature and precipitation at Lake Eleanor, Tuolumne County, Cal.*

Date.	Maximum.	Minimum.	Range.	Precipitation.	Date.	Maximum.	Minimum.	Range.	Precipitation.
1909.	°F.	°F.	°F.	Inches.	1909.	°F.	°F.	°F.	Inches.
October 19	72	44	28	0.00	October 26	73	35	38	0.00
20	64	32	32	0.00	27	74	35	39	0.01
21	63	32	31	0.00	28	60	35	25	0.10
22	65	31	34	0.00	29	58	26	32	0.44
23	65	33	32	0.00	30	49	21	28	0.30
24	68	34	34	0.00	31	62	32	30	0.00
25	71	36	35	0.00					
November 1	62	32	30	0.00	December 1	48	45	3	1.77
2	64	34	30	0.00	2	45	33	12	0.76
3	62	31	31	0.00	3	36	16	20	0.00
4	69	31	38	0.00	4	34	12	22	0.00
5	66	28	38	0.00	5	37	24	13	1.12
6	60	26	34	0.83	6	34	4	30	0.00
7	59	28	31	0.00	7	41	25	16	1.32
8	58	30	28	0.00	8	40	26	14	0.35
9	55	32	23	1.32	9	42	32	10	3.00
10	42	31	11	1.10	10	41	21	20	0.37
11	39	32	7	0.20	11	53	15	38	0.00
12	52	24	28	0.18	12	54	26	28	0.00
13	41	26	15	0.00	13	56	20	36	0.00
14	40	24	16	0.75	14	56	21	35	0.00
15	43	10	33	0.00	15	60	27	33	0.00
16	56	17	39	0.00	16	59	24	35	0.00
17	63	17	46	0.00	17	49	22	27	0.00
18	64	27	37	0.00	18	43	16	27	0.00
19	48	34	14	0.30	19	40	14	26	0.00
20	54	30	24	0.12	20	37	26	11	0.15
21	53	42	11	2.00	21	40	11	29	0.00
22	59	36	23	0.00	22	37	18	19	0.00
23	59	32	27	0.00	23	45	16	29	0.00
24	59	34	25	0.20	24	44	13	31	0.00
25	48	33	15	1.53	25	42	19	23	0.00
26	40	30	10	0.53	26	48	17	31	0.00
27	47	20	27	0.00	27	54	17	37	0.00
28	55	28	27	0.00	28	58	20	38	0.00
29	58	40	18	0.00	29	60	21	39	0.00
30	53	31	22	0.04	30	44	33	11	0.41
					31	43	32	11	3.95
Sums				9.10	Sums				13.20
Means	54.3	29.3	25.3		Means	45.8	21.5	24.3	

TABLE 2.—*Monthly, seasonal, and annual precipitation, 1896–1909.*

SUMMERDALE, MARIPOSA COUNTY, CAL. (Elevation, 5,270 feet.)

Season.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.	Seasonal.	Year.	Annual.
1896	.....	.....	.....	.....	.....	.....	21.56	0.40	6.39	9.21	1.45	0.00	.....	1896	58.80
1896—97	0.38	1.38	1.28	2.53	9.66	4.56	4.42	17.66	11.35	1.13	0.28	0.63	55.26	1897	47.84
1897—98	0.00	0.00	0.08	5.02	2.80	4.57	2.60	7.25	3.36	0.53	3.18	0.00	29.39	1898	24.33
1898—99	0.00	0.00	1.93	1.20	1.64	2.64	7.96	1.24	18.66	1.70	0.99	1.79	39.75	1899	60.35
1899—1900	0.00	0.02	0.00	7.11	7.25	13.63	7.05	0.72	6.36	5.50	1.87	0.07	49.58	1900	52.59
1900—01	0.00	T.	0.75	9.57	13.91	1.79	24.46	18.87	3.00	5.76	2.31	0.04	85.46	1901	68.71
1901—02	0.01	T.	3.23	4.67	3.51	2.85	1.89	13.02	8.19	7.03	1.33	0.11	45.84	1902	47.29
1902—03	T.	0.00	0.00	4.85	6.92	3.95	14.13	3.70	11.83	3.37	0.79	0.29	49.83	1903	42.72
1903—04	0.00	0.00	0.00	0.66	5.90	2.05	2.60	14.96	17.09	5.37	0.73	0.02	49.38	1904	61.22
1904—05	0.00	0.40	8.52	6.51	0.63	4.39	3.38	9.50	10.53	2.56	3.80	0.02	50.24	1905	36.80
1905—06	0.00	0.00	0.55	0.00	4.30	2.16	26.41	8.20	35.41	5.91	11.28	0.62	84.84	1906	96.25
1906—07	0.00	0.00	0.19	T.	1.99	15.24	14.95	6.81	27.06	3.27	0.75	1.44	71.70	1907	67.09
1907—08	T.	0.07	0.02	3.16	0.21	9.35	5.39	6.39	12.44	1.75	3.50	0.00	42.28	1908	37.97
1908—09	.01	0.00	1.04	1.85	2.36	3.24	34.49	14.02	7.73	0.86	0.06	.....	.....	1909	.....
Averages	0.03	0.14	1.35	3.63	5.08	5.42	12.24	8.77	12.10	3.85	2.31	0.39	54.46	.....	53.92

CROCKERS, TUOLUMNE COUNTY, CAL. (Elevation, 4,452 feet.)

Season.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.	Seasonal.	Year.	Annual.
1896	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1896	.....
1896—97	0.00	3.10	0.14	2.30	9.18	5.41	6.56	15.97	21.80	1.33	0.00	0.75	66.54	1897	59.45
1897—98	0.00	0.00	0.45	6.09	2.70	3.80	2.60	7.15	3.74	1.10	3.74	0.00	31.37	1898	25.75
1898—99	0.00	0.00	1.58	1.87	1.85	2.12	11.72	1.80	18.09	1.60	0.15	1.65	42.43	1899	66.14
1899—1900	0.00	0.00	0.00	11.50	7.45	12.18	5.98	1.18	4.38	3.56	1.80	0.47	48.40	1900	46.42
1900—01	0.00	0.00	0.62	9.71	17.43	1.39	16.99	15.71	3.03	6.35	3.81	0.00	75.04	1901	60.16
1901—02	0.00	0.00	3.28	4.59	3.90	2.50	2.33	15.03	8.55	6.54	1.80	0.00	48.52	1902	52.05
1902—03	0.00	0.11	0.00	5.27	7.83	4.59	13.04	4.94	15.04	2.63	0.46	1.55	55.46	1903	48.26
1903—04	0.00	0.00	0.50	0.16	6.77	3.17	1.87	17.10	19.56	6.06	0.00	0.00	55.09	1904	65.05
1904—05	0.00	0.00	6.61	7.91	1.09	4.95	3.62	7.60	11.32	2.70	3.03	0.00	48.73	1905	35.30
1905—06	0.00	0.00	0.85	0.00	3.80	2.38	22.52	9.61	27.26	5.58	10.79	0.75	83.54	1906	90.62
1906—07	T.	0.00	T.	T.	2.60	11.51	13.49	5.82	27.41	2.50	1.54	1.64	66.51	1907	64.55
1907—08	0.00	T.	T.	2.00	T.	10.15	4.74	5.19	4.42	1.60	3.69	T.	31.79	1908	29.35
1908—09	T.	0.00	1.24	2.30	2.92	3.25	29.67	13.70	7.19	0.06	0.00	0.87	61.20	1909	80.01
Averages	0.00	0.25	1.17	4.13	5.19	5.18	10.39	9.29	13.21	3.20	2.39	0.59	54.98	.....	49.47

YOSEMITE, MARIPOSA COUNTY, CAL. (Elevation, 3,945 feet.)

Season.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.	Seasonal.	Year.	Annual.
1904	.....	.....	.....	.....	.....	.....	2.99	13.95	12.53	4.88	0.00	0.00	.....	1904	49.36
1904—05	0.00	0.24	7.09	3.36	0.69	3.63	1.81	5.30	8.19	2.61	2.97	0.34	36.23	1905	.....
1905—06	0.00	0.01	0.86	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1906	.....
1906—07	.....	0.98	0.04	0.01	1.55	16.02	11.96	3.72	20.98	1.50	1.26	3.13	55.15	1907	54.97
1907—08	T.	0.47	T.	1.73	0.90	9.32	2.53	2.23	1.21	0.67	2.28	0.32	21.66	1908	17.28
1908—09	0.02	0.05	1.48	2.26	2.27	1.96	24.62	11.35	3.91	0.46	0.78	0.39	49.55	1909	.....
1909—10	0.00	T.	0.46	.....	10.15	13.12	.....	.....	.....	.....	.....	.....	.....	1910	.....
Averages	T.	0.30	1.66	1.84	3.12	7.81	8.78	7.31	9.36	2.02	1.46	0.84	40.64	.....	40.54

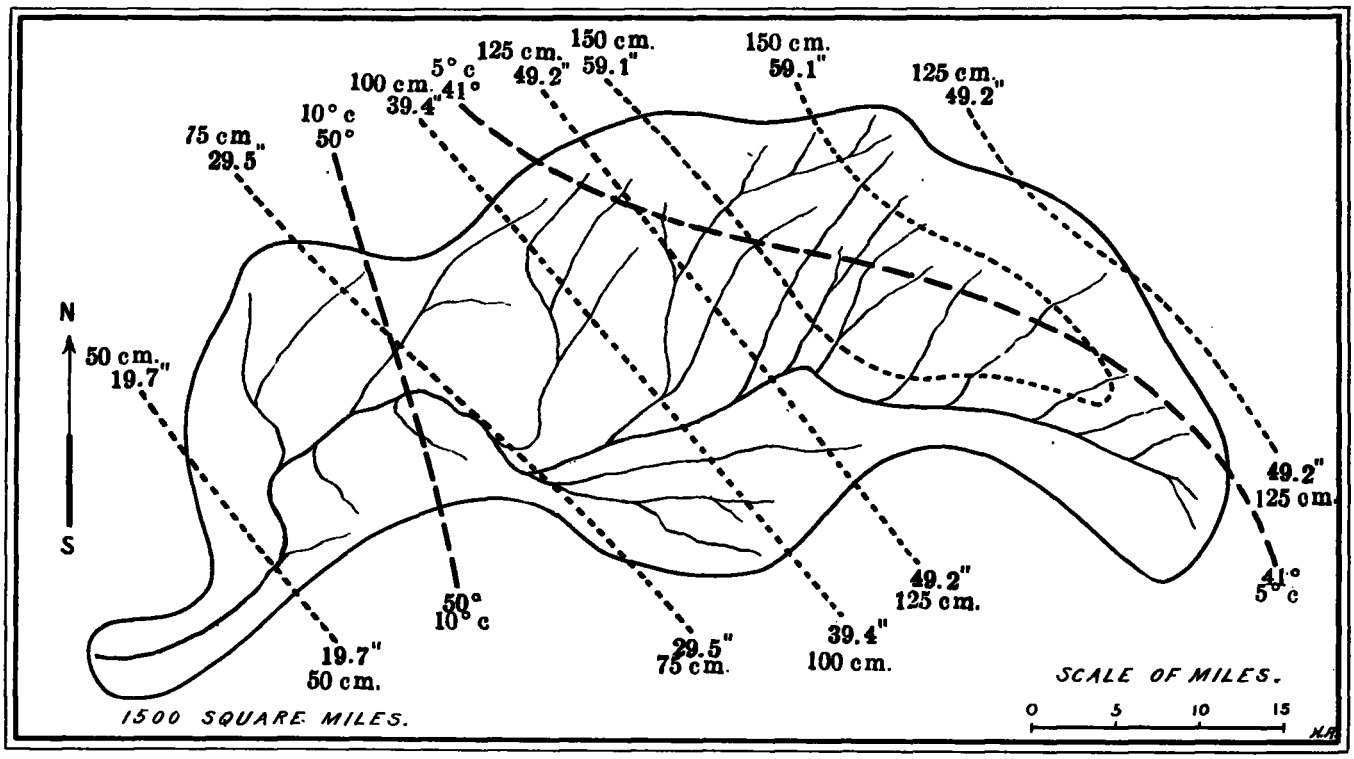

FIG. 2.—Isotherms and isohyets of the Tuolumne Basin.

TABLE 3.—*Seasonal rainfalls at various stations near the Basin of Tuolumne River, Cal., compiled from records of the United States Weather Bureau by Marsden Manson, C. E., Ph. D.*

Season.	San Francisco. Elev. 191 feet.	Sacramento. Elev. 71 feet.	Shingle Springs. Elev. 1,427 feet.	Stockton. Elev. 23 feet.	Independence. Elev. 4,598 feet.	La Grange. Elev. 293 feet.	Georgetown. Elev. 2,500 feet.	Merced. Elev. 173 feet.	Modesto. Elev. 90 feet.	Placerville. Elev. 2,106 feet.	Farmington. Elev. 111 feet.	Ione. Elev. 287 feet.	Jackson. Elev. 19.75 feet.	Fresno. Elev. 293 feet.	Bishop. Elev. 4,450 feet.	Second Garotte. Elev. 2,714 feet.	Sonora. Elev. 1,900 feet.	Mokelumne Hill. Elev. 1,550 feet.	Valley Springs. Elev. 673 feet.
1849-50	33.10	36.00	38.26																
1850-51	**7.44**	**4.71**	**17.18**																
1851-52	18.44	17.98	32.50																
1852-53	35.30	**36.35**	47.55																
1853-54	23.84	20.06	30.45																
1854-55	23.75	18.62	19.50																
1855-56	21.68	13.76	18.60																
1856-57	19.94	10.46	26.51																
1857-58	21.97	15.00	18.92																
1858-59	22.03	16.03	32.31																
1859-60	22.46	22.69	28.09																
1860-61	19.51	16.10	26.25																
1861-62	**49.27**	35.56	**77.80**																
1862-63	13.74	11.58	19.27																
1863-64	10.29	7.87	24.27																
1864-65	24.52	22.51	34.44																
1865-66	22.93	17.93	36.98																
1866-67	34.92	25.30	50.30		11.43														
1867-68	38.84	32.79	64.21	20.71	19.46														
1868-69	21.35	16.64		16.45	3.33														
1869-70	19.31	13.57		7.64	2.63														
1870-71	14.13	8.47		**6.73**	3.68	10.46													
1871-72	30.77	23.65		20.80	7.06	20.48			12.71										
1872-73	15.74	14.21		13.31	1.63	14.35	46.46	12.21	7.65										
1873-74	24.64	22.90		15.14	7.06	14.63	63.64	**6.94**	11.36	33.95									
1874-75	20.56	17.70		11.14	3.33	**10.29**	47.08	10.00	7.40	33.76									
1875-76	31.21	26.53		18.33	5.27	25.87	81.24	12.85	13.52	61.81									
1876-77	11.04	8.96		7.03	2.46	(5.74)	40.48	(3.03)	(4.30)	22.67									
1877-78	35.17	24.86		18.76		18.90	61.31	11.81	11.51	37.72	17.73		33.44						
1878-79	24.46	17.85		11.46		11.54	60.96	5.83	8.48	38.70	13.46	17.00	27.78						
1879-80	26.63	26.47		15.34		19.50	70.40	11.89	12.88	56.21	16.94	21.79	37.88						
1880-81	29.86	26.57		14.68		15.12	65.82	11.59	8.40	48.04	13.20	17.26	29.97						
1881-82	16.14	16.51		9.69		14.51	54.14	8.58	6.64	42.46	13.09	19.11	28.87	6.91					
1882-83	20.12	18.11		15.26		15.98	45.94	9.81	10.03	36.56	16.80	16.08	27.44	9.33				21.15	
1883-84	32.42	24.78		20.36		25.01	72.66	**22.08**	12.87	57.39	23.34	30.89	37.90	18.90	2.86	52.61		38.99	
1884-85	18.12	16.58		9.62		11.89	50.01	7.18	6.40	36.53	**9.27**	14.06	21.20	7.20	1.81	29.50		24.04	
1885-86	31.50	32.27		17.36		24.09	73.05	13.43	12.79	54.63	20.40	25.14	37.12	**19.45**	2.28	46.50		41.84	
1886-87	18.82	13.97		7.83		11.01	41.32	6.20	**5.72**	33.32	9.44	14.72		8.47	3.68	27.00		20.86	
1887-88	16.75	11.56	22.79	10.81		11.52	36.16	7.08	6.58	32.87	11.39	**11.35**		6.73	3.89	25.00	21.75	19.61	
1888-89	23.85	19.95	28.79	12.99		14.43	36.79	7.80	7.61	35.73	11.49	14.41	40.72	7.99	4.60	27.25	25.66	20.14	14.58
1889-90	45.86	33.80	**71.01**	22.37		**30.34**	**86.80**	17.81	16.40	**73.23**	**24.83**	32.38	**50.17**	13.01	7.13	**67.25**	**67.39**	**54.59**	**38.15**
1890-91	17.68	15.81	30.10	10.09		(13.35)	40.24	8.92	7.49	24.10	15.46	13.66	33.64	8.25	8.60	36.02	32.29	26.52	19.49
1891-92	18.41	15.18	27.59	12.21		(12.82)	44.55	9.64	10.35	44.20	14.38	19.53	35.15	9.93	5.86	32.25	30.40	28.95	19.03
1892-93	21.77	23.95	41.37	15.89	8.38	19.37	74.93	10.98	14.17	63.97	23.11	21.69	19.41	11.10	7.43	47.25	43.76	39.45	28.33
1893-94	18.45	16.35	32.13	15.83	2.34	22.77	66.13	10.86	11.40	51.29	18.75	20.54	30.25	8.59	2.55	37.25	37.53	37.24	26.32
1894-95	25.71	24.15	41.73	19.78	4.48	22.36	71.99	12.63	16.40	60.51	21.46	23.66	33.42	14.67	3.83	52.00	45.95	45.73	33.80
1895-96	21.37	23.39	38.34	14.89		14.71	65.51	12.55	10.60	51.97	16.01	20.03	39.74	8.42	2.69	32.05	31.17	31.05	21.21
1896-97	23.30	17.13	45.72	12.44		19.80	66.52	11.36	11.63	50.83	18.65	23.60	32.70	10.32	4.13	37.79	38.23	40.94	30.02
1897-98	9.38	10.50	**14.60**	6.93		(10.57)	**31.90**	(5.76)	(3.87)	**21.81**	9.30	13.77	Closed	**4.94**	**1.69**	**20.25**	**21.04**	**18.09**	**12.34**
1898-99	16.87	15.06	28.65	14.45	1.54	12.83	46.70	7.82	9.35	32.06	14.09	20.03		7.98	3.09	29.29	32.81	27.23	17.11
1899-00	18.47	20.22	35.08	16.24	3.70	(17.18)	55.67	11.25	11.91	41.57	17.94	21.51		10.28	3.34	35.22	33.14	29.87	22.91
1900-01	21.17	20.21	38.28	16.74	6.51	(17.17)	53.99	11.42	14.62	46.70		25.48		11.33	**11.90**	55.75	46.79	33.73	25.09
1901-02	18.98	17.27	32.70	14.03	4.23	(14.58)	49.13	9.98	10.10	34.22		20.19		6.15	4.48	*30.50	28.42	28.18	21.94
1902-03	18.28	16.62	31.49	14.54	2.06	(14.04)	55.07	11.89	12.23	37.07	16.41	22.39		8.50	2.68		33.03	31.28	26.03
1903-04	20.67	16.94	49.28	15.07	2.66	(14.30)	79.53	8.36	8.85	49.80	15.36	21.52		8.04	5.41		34.47	38.08	30.09
1904-05	23.37	21.91	38.63	18.07	3.98	(18.50)	49.35	13.20	15.64	36.63	18.79	25.85		12.09	6.64		32.83	31.74	29.86
1905-06	20.61	23.93	45.40	18.68	6.79	(20.21)	76.23	17.76	12.55	53.95	19.46	30.88		13.52	9.08		*51.16	42.94	28.48
1906-07	26.00	24.04	50.63	**22.49**	4.17	(20.30)	82.76	16.38	**19.04**	59.85	24.37	**33.82**		10.85	5.95		*49.77	49.33	35.76
1907-08	17.36	12.20	20.59	11.18	6.01	(10.30)	38.06	8.41	9.79	27.11	10.04	14.27		7.65	6.82		(20.03)	18.90	14.26

Season.	Milton. Elev. 660 feet.	Oleta. Elev. 1,510 feet.	Oakdale. Elev. 156 feet.	Pilot Creek. Elev. 4,000 feet.	Kernville. Elev. 2,600 feet.	West Point. Elev. 2,326 feet.	Bodie. Elev. 8,248 feet.	Crocker's. Elev. 4,452 feet.	Storey. Elev. 296 feet.	Bear River. Elev. 5,800 feet.	Tamarack. Elev. 8,030 feet.	Jamestown. Elev. 1,471 feet.	Groveland. Elev. 2,323 feet.	Yosemite. Elev. 4,063 feet.	Coulterville. Elev. 1,660 feet.	Electra. Elev. 725 feet.	Grizzly Flats. Elev. —— feet.	Summerdale. Elev. 5,270 feet.	Kennedy Mine. Elev. 1,500 feet.
1890-91	**13.06**																		
1891-92	17.00																		
1892-93	26.72	46.15																	43.60
1893-94	25.37	31.32	18.80																44.25
1894-95	**32.31**	**53.24**	22.05	(76.49)	14.73	**59.95**													**54.07**
1895-96	23.99	34.97	13.95	77.35	10.27	41.32	18.48												37.54
1896-97	27.33	44.39	15.84	71.10	12.41	45.83	14.77	63.44						*53.38				53.50	45.97
1897-98	13.29	20.12	**7.17**	(37.68)	**15.60**	22.78	9.77	**31.37**										**29.39**	22.27
1898-99	24.70	27.58	11.55	58.50	**5.33**	34.40	10.54	42.43							18.64			**39.77**	**29.74**
1899-00	32.21	35.25	16.01	60.23	5.69	39.57	10.30	48.40	9.25		36.20				21.84		**13.64**	**49.56**	**29.66**
1900-01	24.54	Closed	16.80	66.18	13.03		23.32	75.04	**13.68**		58.61				31.92		48.47	**85.47**	**42.24**
1901-02	17.84		13.35	63.42	7.18	38.02	10.39	48.63	9.81		43.89						40.49	45.83	37.55
1902-03	19.62		15.49	60.06	11.24		**8.69**	55.35	8.36	52.00	*47.37						53.08	49.83	43.10
1903-04	20.33		14.56	**94.80**	7.97	52.65	17.28	55.19	8.32	69.24	67.68	33.07					57.93	49.78	37.86
1904-05	20.33		16.46	58.68	7.61	38.19	12.96	48.73	7.99	52.84	62.70	29.97	34.40	36.00			45.92	49.84	33.25
1905-06	26.59		20.72	93.75	14.37	57.10	25.73	**83.54**	**13.69**	74.50	76.71	47.63	55.46			42.60	67.69	84.84	37.12
1906-07	28.88		**22.62**	94.71	8.77	58.42	Closed	66.51	10.21	**93.13**	**94.80**	48.49	*45.25	55.64		50.97	**80.08**	71.77	46.15
1907-08	13.72		8.41	45.79	8.37	**22.64**		31.79	8.22	*36.03	37.20	18.95		21.26		19.59	31.62	33.72	**18.94**

* Signifies incomplete record. ( ) enclose interpolated values based on adjacent stations.

FIG. 3.—Relief map of the Hetch Hetchy and Yosemite valleys. By Marsden Manson, C. E.

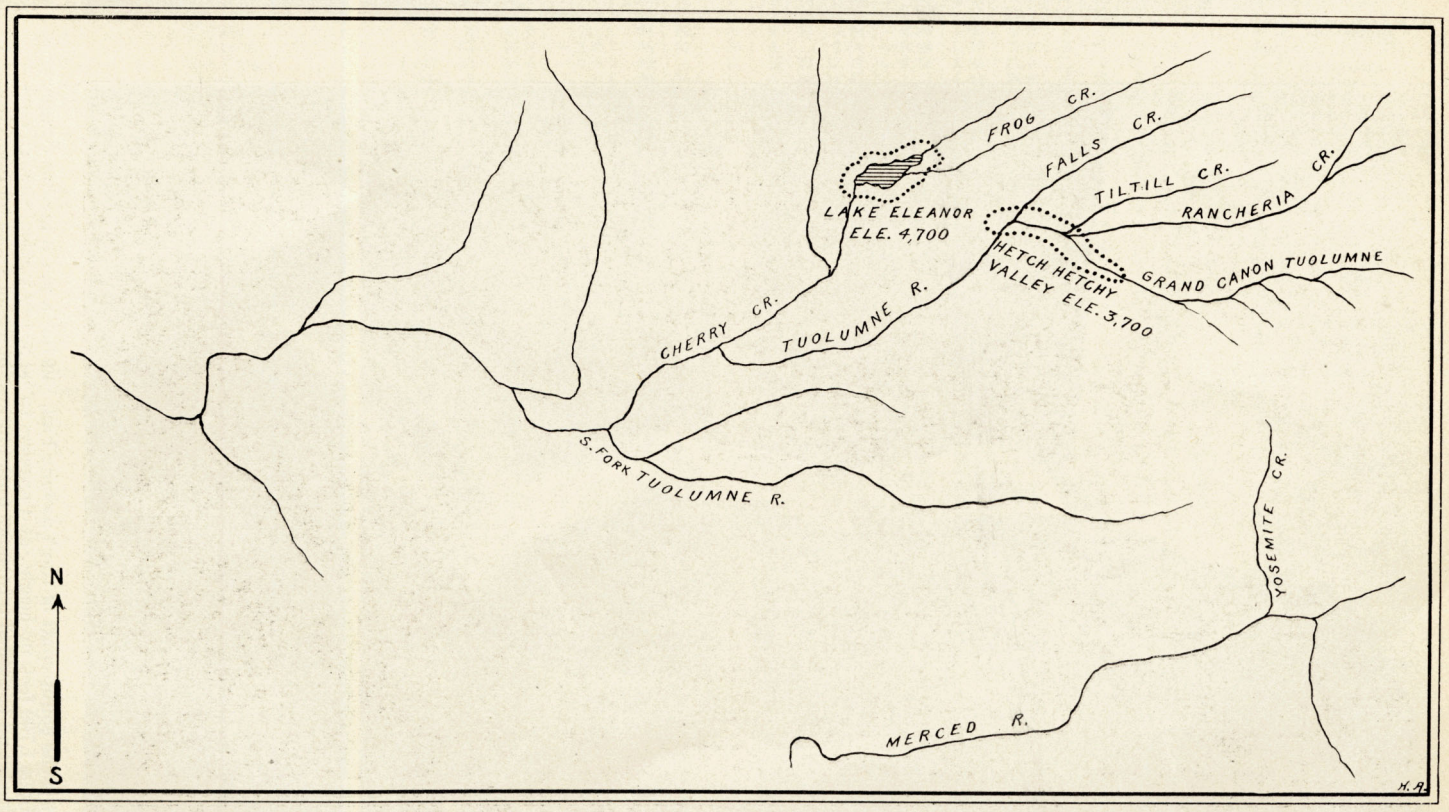

FIG. 4.—Key to relief map of the Hetch Hetchy and Yosemite valleys.

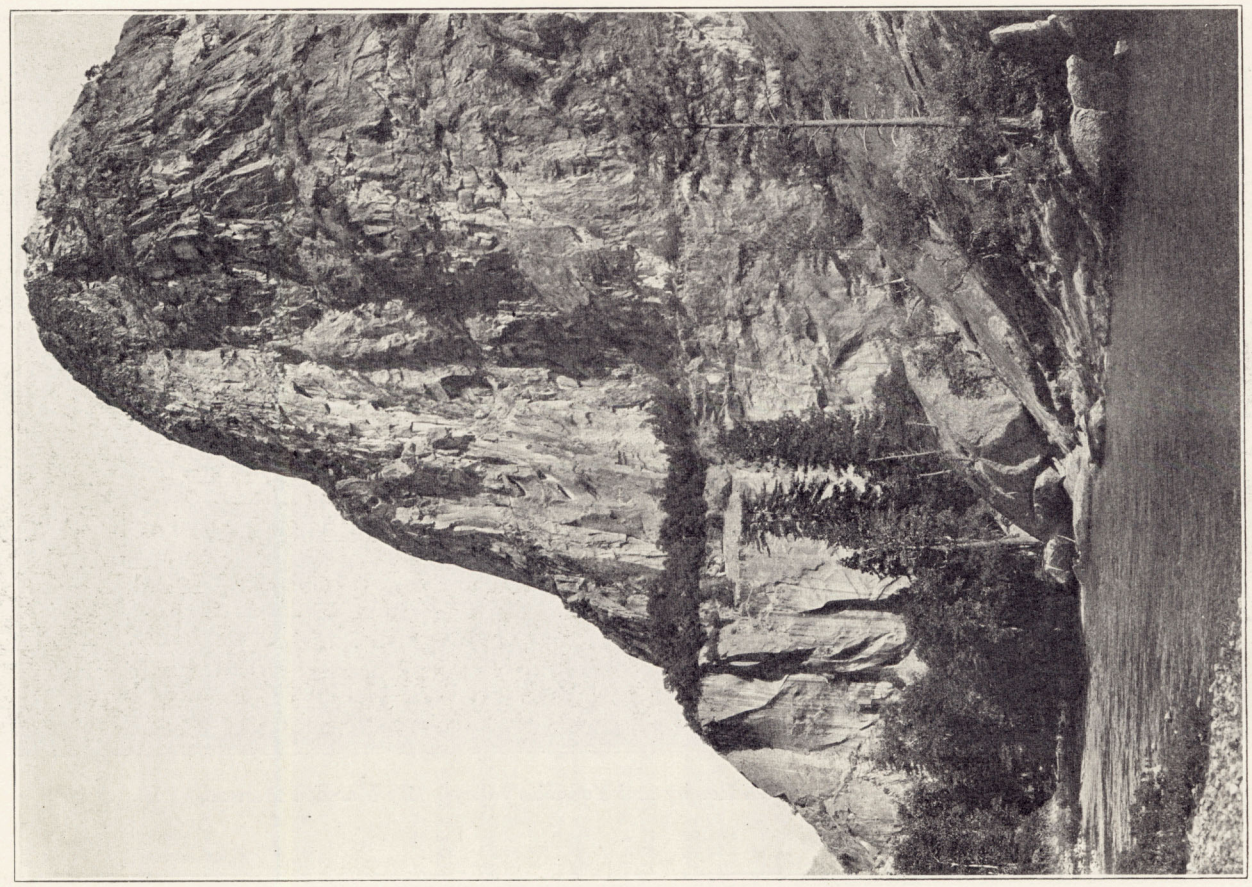

FIG. 6.—"The most strikingly picturesque rock in Hetch Hetchy Valley is a majestic pyramid over 2,000 feet in height, which is called by the Indians 'Kolana.' It is the outermost of a group like the Cathedral Rocks of Yosemite and occupies the same relative position on the south wall."—*John Muir.* Photo by Herbert W. Gleason.

FIG. 5.—"It is the counterpart of the Yosemite Fall, but has a much greater volume of water, is about 1,700 feet in height, and appears to be nearly vertical though considerably inclined, and is dashed into huge outbounding bosses of foam on projecting shelves and knobs of its jagged gorge."—*John Muir.* Photo by Herbert W. Gleason.

TABLE 1.—*Climatological data for December, 1909. District No. 11, California.*

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit. Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Precipitation, in inches. Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Sky. Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.	Prevailing wind direction.	Observers.
Oregon.																				
Klamath Agency	Klamath		1	23.4		47	1	−10	23	47	2.60		1.30	4.0	3	13	10	8	n.	H. G. Wilson.
Klamath Falls	do	4,250	18	27.0	− 5.8	45	12	1	6	30	1.27	− 0.79	0.38		9	9	8	14	nw.	W. H. Heilman.
Lakeview	Lake	4,825	24	25.8	− 4.4	46	17	4	6	37	1.24	− 1.01	0.33	13.4	8	17	3	11	s.	Walter Dutton.
Long Valley	do										2.11		0.44	19.0	13	13	5	13	w.	Cyrus L. Becraft.
Merrill	Klamath	4,070	4																	Mrs. E. L. Gifford.
Yonna	do	4,146	1	26.5		64	15	1	28†	42	1.02		0.25	2.2	11	7	20	4	s.	Agent, So. Pac. Co.
California.																				
Alturas	Modoc	4,460	5	28.3		51	29	− 3	6	42	1.78		0.95	12.0	10	13	7	11	s.	Prof. C. B. Towle.
Angiola	Tulare	208	9	34.6		60	20	19	10	38	3.48		1.02	2.0	5	7	4	20	nw.	Agent, Santa Fe R. R.
Antioch **	Contra Costa	46	30	47.7	− 0.6	70	17	30	4†		4.87	+ 2.33	1.12	0.0	8	13	6	12		Agent, So. Pac. Co.
Aptos **	Santa Cruz	102	24	47.6	− 2.1	54	27	28	4		9.00	+ 3.75	2.52	0.0	8	13	2	16	nw.	Do
Auburn	Placer	1,360	38	46.7	− 0.3	65	13†	20	4	30	5.82	− 0.25	1.72	8.0	7	20	2	9	s.	Do
Azusa	Los Angeles	540	7	48.6		72	14	27	19	34	11.70	+10.16	4.40	0.0	10	20	1	10	sw.	A. F. Griffith.
Bagdad	San Bernardino	784	6	50.1		73	2	26	18	36	0.00		0.00	0.0						Agent, Santa Fe R. R.
Bakersfield	Kern	404	20	42.2	0.0	65	1†	30	31	31	1.36	+ 0.56	0.53	0.0	6	17	7	7		Do
Barstow	San Bernardino	2,105	6	41.0		75	3	14	18	48	1.83	+ 1.19	0.43	4.5	7	24	0	7	w.	E. L. White.
Beckwith	Plumas	5,005	1	25.8		52	13	−17	6	46	6.55		1.70	36.5	11	8	1	22	sw.	F. F. Peck.
Berkeley	Alameda	317	22	47.6	− 1.3	60	7†	34	4	16	7.24	+ 2.45	1.66	0.0	10	13	6	12	se.	State University.
Biggs **	Butte	98	10	49.2	+ 4.8	62	31	30	4†		3.83	+ 0.63	1.01	0.0	8	12	3	16	s.	Agent, So. Pac. Co.
Bishop	Inyo	4,450	14																	W. A. Chalfont.
Blocksburg	Humboldt	1,700	3	42.1		67	14	24	4	32	9.63		1.57	9.0	14	8	5	18	se.	Victor Hopa.
Blue Canon	Placer	4,695	10	36.3	− 5.0	63	29	11	6	32	16.80	+ 7.45	4.00	39.0	12	15	3	13	n.	Agent So. Pac. Co.
Blythe	Riverside																			H. V. Blenkiron.
Branscomb	Mendocino	2,000	9	42.4		68	15	22	4†	35	8.11		1.47	3.5	16	16	6	9	n.	A. J. Haun.
Brawley	Imperial	−105		49.4		74	2	24	19	35	0.59		0.34	0.0	5	10	8	13	nw.	U. S. Weather Bureau.
Brush Creek	Butte	2,140	5	37.4		58	15	18	6	32	13.83		2.75	23.0	13	6	12	12	n.	Cal. Gas & Electric Co.
Calexico	Imperial	0	4	50.2		72	2	26	19	31	0.30		0.30	0.0	1	9	8	14	nw.	J. E. Peck.
Caliente **	Kern	1,290	33	50.9	+ 1.2	67	2	32	11		0.75	− 1.26	0.45	0.0	2					Agent So. Pac. Co.,
Calistoga **	Napa	363	37	43.7	− 5.5	65	1†	25	23†		9.22	+ 2.79	3.15	0.0	8	15	0	16	s.	Do
Campbell	Santa Clara	217	12	44.8	− 2.1	67	1	25	4	29	5.08	+ 3.24	2.12	0.0	10	12	4	15	se.	F. M. Righter.
Camptonville (near)	Yuba	3,500	2	41.0		66	28	20	6	30	20.14		3.02	47.5	13	11	1	19		S. B. Johnson.
Cedarville	Modoc	4,675	15	24.1	− 6.1	47	1†	1	22	42	2.09	+ 0.22	1.10	15.5	12	9	22	0	w.	T. H. Johnstone.
Chico	Butte	189	39	44.0	− 3.5	67	16	24	4†	37	6.11	+ 1.89	1.45	3.0	12	11	5	15	n.	Agent, Butte R. R. Co.
Chino **	San Bernardino	714	17	48.6	− 3.6	70	23	27	4		7.33	+ 5.15	1.92	0.0	8	17	0	14	e.	Agent, So. Pac. Co.
Cisco **	Placer	5,939	38	30.7	− 2.7	40	1†	8	6		14.65	+ 6.15	3.20	48.0	13	17	0	14		Do
Claremont	Los Angeles	1,200	17	48.6	− 3.0	72	14†	28	4	33	8.17	+ 6.02	2.85	0.0	11	13	3	15	e.	F. P. Brackett.
Cloverdale	Sonoma	340	7	46.6		85	17	27	4	45	6.52		1.33	0.0	13	15	5	11	n.	Lloyd Browne.
Colfax	Placer	2,421	38	33.7	−12.9	46	16	16	3	26	11.09	+ 2.41	2.50	15.8	11	14	3	14	n.	Agent, So. Pac. Co.
Colusa	Colusa	60	6	45.6		63	15†	29	4	27	3.05	− 0.05	1.06	0.0	7					W. K. De Jarnatt.
Corning **	Tehama	277	23	44.3	− 3.0	56	15	30	4		3.01	− 0.98	1.10	6.0	6	15	0	16	n.	Agent, So. Pac. Co.
Cuyamaca (1)	San Diego	4,677	10	38.4	− 0.3	62	1	21	3†	23	11.76	+ 6.34	2.90	11.0	11	4	13	14	e.	L. L. Macquarie.
Daunt	Tulare	4,000	2	42.6		70	31	18	4	40	14.47		4.60	26.0	8	16	5	10		D. L. Wishon.
Davisville	Yolo	51	37	42.0	− 6.8	60	17	20	4	30	4.76	+ 1.43	1.32	0.0	13	9	6	16	n.	S. H. Beckett.
Deer Creek	Nevada	3,700	2	34.9		59	28	11	6	35	16.88		3.50	38.0	14	11	5	15		Cal. Gas & Electric Co.
Delta	Shasta	1,138	24	43.6	− 0.6	77	25	23	4	44	8.43	− 2.45	2.60	32.0	8	13	1	17	n.	Agent, So. Pac. Co.
Denair	Stanislaus	126	9	45.0		65	1	22	4	31	1.99		0.80	0.0	7	11	1	19	se.	Agent, Santa Fe R. R.
Dobbins	Yuba	1,650	5	45.7		72	15	28	4	34	12.88		2.86	3.5	15	11	9	11		Bishop & Taylor.
Dudleys	Mariposa	3,000		37.2		64	29	5	6	39	10.17		3.17	13.0	12	12	4	15	s.	W. H. Dudley.
Dunnigan **	Yolo	65	32	45.0	− 2.3	67	16	28	4		7.04	+ 3.21	2.91	0.0	10	15	3	13	n.	Agent, So. Pac. Co.
Dunsmuir **	Siskiyou	2,285	20	34.9	− 4.8	53	17	19	6		8.28	− 3.15	2.00	42.5	11	12	0	19	n.	Do.
Durham	Butte	160	14	42.0	− 1.7	67	15	23	23	34	7.08	+ 2.40	1.55	6.0	10	13	5	13	n.	R. W. Durham.
El Cajon	San Diego	482	10	51.3	− 3.3	72	30	27	19	34	4.75	+ 3.47	1.48	0.0	11	18	5	8	sw.	H. H. Kessler.
Electra	Amador	725	5	46.0		58	7†	31	3†	26	8.09		2.20	0.0	12	8	9	14		Cal. Gas & Electric Co.
Elsinore	Riverside	1,234	14	46.6	− 6.0	69	29	19	4	37	6.65	+ 4.73	1.57	0.0	9	15	2	14	n.	W. H. Bohannon.
Emigrant Gap	Placer	5,230	35	29.5	− 7.4	46	1	10	22	25	13.35	+ 4.21	2.00	32.0	12	13	6	12	sw.	Agent, So. Pac. Co.
Escondido	San Diego	657	15	52.5	+ 3.0	76	12	23	19	40	7.71	+ 6.01	2.39	0.0	7	4	17	10	w.	A. R. Moon.
Eureka	Humboldt	64	23	46.3	− 1.7	66	17	32	23	27	4.29	− 2.99	1.20	0.0	15	13	5	13	se.	U. S. Weather Bureau.
Farmington **	San Joaquin	111	30	44.7	− 2.3	61	9	28	4†		4.32	+ 1.55	1.15	0.0	9	12	5	14	se.	Agent, So. Pac. Co.
Folsom	Sacramento	252	37	45.4	− 2.2	66	13	28	5†	30	4.46	+ 0.43	1.32	0.0	11	14	4	13	n.	F. O. Hutton.
Fordyce Dam	Nevada	6,500	14	26.1		42	13	0	23	32	16.77	+ 8.59	3.78	76.0	14	14	4	13	sw.	E. E. Roening.
Fouts Springs	Colusa	1,650	5	42.4		64	12†	18	4	33	5.02		1.60	12.0	11					H. S. Green.
Fresno	Fresno	293	22	45.2	− 1.6	62	1	30	3	26	4.50	+ 3.00	1.51	0.0	11	6	6	19	e.	U. S. Weather Bureau.
Fruto **	Glenn	624	20	43.0	− 4.8	65	15	28	4†		1.72	− 2.51	0.70	6.0	4	20	1	10	s.	Agent, So. Pac. Co.
Galt **	Sacramento	49	31	42.2	− 6.5	60	31	29	4		5.05	+ 1.81	1.40	0.0	10	2	0	29	s.	Do.
Georgetown	El Dorado	2,650	36	41.0	− 7.5	64	16	21	6	28	12.68	+ 3.29	2.73	16.0	13	7	3	21	nc.	C. M. Fitzgerald.
Gilroy **	Santa Clara	193	35	44.0	− 4.0	75	30	24	4		6.33	+ 3.12	2.66	0.0	12	1	2	28	sw.	Agent, So. Pac. Co.
Gold Run	Placer	3,222	10	40.6	− 6.5	68	29	22	5	29	6.80	0.00	2.05	12.0	7	14	7	10	se.	Do.
Gonzales **	Monterey	127	10	50.0	+ 2.2	75	11†	22	4		4.04	+ 2.57	1.50	0.0	9	10	0	21	s.	Do.
Grass Valley	Nevada	2,690	37	40.3		65	16†	18	6	32	13.84	+ 4.93	2.62	19.5	13	6	10	15	se.	F. R. Hull.
Greenville	Plumas	3,600	15	31.8	− 1.8	54	15†	0	6	40	7.55	+ 1.09	1.80	45.5	13	12	2	17	sw.	C. H. Higbie.
Groveland	Tuolumne	2,828		38.4		64	29	19	4	34	13.43		3.40	0.0	10	10	3	18		H. S. Richardson.
Guinda **	Yolo	350	11	42.2	− 3.3	61	14†	27	23†		5.80	+ 2.85	2.15	1.5	8	11	9	11	n.	Agent, So. Pac. Co.
Hanford	Kings	249	9	45.4		60	1†	26	4	29	1.95		0.60	0.0	5	17	5	9		Agent Santa Fe R. R.
Healdsburg	Sonoma	110	16	45.2	− 0.8	66	14	26	4	31	7.51	+ 1.13	2.22	0.0	13	13	1	17	n.	C. A. Menefee.
Heber	Imperial	−20	3	49.4		76	2	21	19	36	0.19		0.09	0.0	3	22	5	4	w.	E. F. Chumard.
Helen Mine	Lake	2,750	8								12.22		4.75	12.0	8					A. Rocca.
Hollister	San Benito	284	35	46.8	− 3.3	71	27	21	4	35	5.45	+ 3.47	1.70	0.0	10	13	5	13	n.	J. N. Thompson.
Hornbrook **	Siskiyou	2,154	21	34.3	− 3.2	48	1	15	6		3.10	+ 0.16	1.10	16.0	6	19	3	9	n.	Agent, So. Pac. Co.
Hot Springs	Tulare	3,300	2			59[m]	31	18[m]	14	34[m]	8.24		2.47	0.0	9	14	6	11		U. S. Forest Service.
Hullville (near)	Lake	2,250	2	39.0		66	16	16	23	39	6.38		1.07	14.0	13	5	8	18	sw.	S. J. Smith.
Idyllwild	Riverside	5,250	8	38.4[d]		66[d]	1	16[d]	6	31[d]	8.53		3.26	21.0	10	16	3	12	w.	R. D. Fobes.
Independence	Inyo	3,907	13	26.0	−15.6	67	1	3	6	35	3.90	+ 1.90	1.02	6.0	10	11	12	8	nw.	U. S. Weather Bureau.
Indio	Riverside	−20	31	49.8	− 6.8	75	2	24	4†	37	0.86	+ 0.45	0.48	0.0	4	13	13	5	nw.	F. N. Johnson.
Inskip	Butte	4,975	2	32.4		54	29	12	6	24	13.07		2.75	39.8	9	12	2	17		Cal. Gas & Electric Co.
Ione **	Amador	287	31	43.2	− 5.0	65	1†	24	16		4.47	+ 1.20	1.10	0.0	9	10	0	21	s.	Agent, So. Pac. Co.
Iowa Hill	Placer	2,825	28	42.0	− 3.3	68	28	21	6	32	12.25	+ 2.83	3.16	10.5	11	13	2	16	sw.	C. F. Macy.
Jamestown	Tuolumne	1,471	6	41.8		60	29	25	4	29	8.45		2.30	0.0	11	13	5	13		Agent, Sierra R. R.
King City	Monterey	333	22	46.2	− 2.8	68	2†	14	4	46	3.15	+ 0.96	1.40	0.0	7	23	0	8		Agent, So. Pac. Co.
La Porte	Plumas	5,000	15	33.5	− 0.6	61	29	10	23	41	20.14	+ 9.66	3.13	52.5	15	14	1	16	n.	C. W. Hendel.
Le Grand	Merced	255	9	43.8		58	1	27	4	25	4.99		1.55	0.0	8	12	0	19	w.	Agent, Santa Fe R. R.
Lemon Cove	Tulare	600	14	46.6	+ 0.2	71	3	28	15	42	3.68	+ 2.04	1.00	0.0	6	7	7	17	nw.	G. W. Sandidge.
Lick Observatory	Santa Clara	4,209	20	38.0	− 4.0	52	16†	22	3	21	6.87	− 0.31	2.19	19.5	13	14	0	17	se.	The Director.
Livermore	Alameda	485	38	45.4	− 5.1	63	16†	23	4†	32	5.77	+ 2.66	1.62	0.0	15	14	2	15	ne.	E. G. Still.
Lodi	San Joaquin	45	27	43.6	− 3.7	57	7†	24	4	28	5.34	+ 1.78	1.43	0.0	13	8	9	14	se.	Ezra Fiske.
Lone Pine	Inyo	2,728	4	34.1		66	1	2	27	38	2.92		1.20	26.0	8	17	12	2	n.	G. F. Marsh.
Long Valley	Lassen																			A. G. Evans.
Los Angeles	Los Angeles	293	32	53.8	− 1.5	74	30	37	4	25	7.00	+ 3.02	3.03	0.0	10	12	7	12	ne.	U. S. Weather Bureau.

TABLE 1.—*Climatological data for December, 1909. District No. 11*—Continued

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.							Precipitation, in inches.				Sky.				Prevailing wind direction	Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.		
California—Cont'd.																				
Los Banos **	Merced	121	22	40.8	+ 0.9	60	4†	30	4†	....	3.29	+ 1.96	0.95	0.0	7	8	5	18	sw.	Agent, So. Pac. Co.
Los Gatos	Santa Clara	600	22	47.4	− 1.4	64	15†	31	4	27	8.63	+ 2.16	2.80	0.0	12	14	1	16	n.	F. H. McCullagh.
Macdoel	Siskiyou	4,258	2	27.2	.....	48	30	− 4	21†	35	.....	.....	.....	.....	.....	12	8	11	s.	Robert Miller.
Madeline	Lassen	5,270	....	24.9	.....	45	2	− 5	6	40	2.08	.....	0.65	10.5	9	13	2	16	nw.	J. H. Williams.
Magalia	Butte	2,321	5	41.8	.....	64	27	18	6	39	18.50	.....	4.86	31.0	11	14	0	17	s.	Agent, Butte Co. R. R.
Mammoth Tank	Imperial	257	31	51.8	− 3.6	71	2	31	19	29	0.68	+ 0.28	0.25	0.0	6	12	7	12	e.	Agent, So. Pac. Co.
Marysville	Yuba	67	38	51.6	+ 1.7	82	9	27	16	35	4.99	+ 1.53	1.25	0.0	8	9	0	22	n.	Do.
Mecca	Riverside	−185	3	50.6	.....	74	16	21	19	36	0.85	.....	0.73	0.0	4	17	8	6	nw.	A. Lunsted.
Menlo Park**	San Mateo	64	31	47.6	− 1.4	62	1	30	4	....	5.65	+ 2.30	1.75	0.0	8	11	0	20	s.	Agent, So. Pac. Co.
Merced	Merced	173	35	50.5	+ 2.2	68	8†	32	2†	34	2.92	+ 1.22	1.00	0.0	9	10	0	21	nw.	Agent, Santa Fe R. R.
Mill Creek (1)	Amador	.....	2	39.2	.....	62	15	21	6	30	12.95	.....	3.18	8.2	12	13	3	15	s.	Cal. Gas & Electric Co.
Milton (near)	Calaveras	660	19	44.4	− 2.5	58	17	28	2	22	5.55	+ 1.84	2.17	1.0	9	8	8	15	se.	J. H. Southwick.
Modesto **	Stanislaus	90	37	45.7	− 2.4	61	1	25	4	....	3.35	+ 1.50	0.85	0.0	8	16	10	5	.....	Agent, So. Pac. Co.
Mojave	Kern	2,751	32	45.1	− 1.7	72	13	20	3†	38	2.10	+ 0.84	1.00	16.0	5	19	0	12	.....	Do.
Mokelumne Hill	Calaveras	1,550	16	43.3	− 0.2	62	29	27	3	25	8.89	+ 3.42	2.79	0.0	9	12	2	17	.....	C. E. Prindle.
Mono Ranch	Ventura	3,210	5	38.7	.....	63	1	14	4	29	11.74	.....	4.64	12.0	8	17	6	8	nw.	H. Lathrop.
Montague	Siskiyou	2,450	21	32.4	− 5.7	55	17	12	24	36	1.21	− 0.50	0.60	T.	6	14	4	13	n.	G. H. Chambers.
Monterey **	Monterey	15	44	47.4	− 4.3	68	1	28	4	....	5.42	+ 2.64	1.60	0.0	7	13	12	6	se.	Agent, So. Pac. Co.
Monterio	Kern	4,500	10	41.8	− 9.9	60	1	22	23	24	3.75	+ 1.73	1.00	0.0	7	9	5	17	s.	John C. Knecht.
Monumental	Del Norte	.....	4	35.5	.....	63	15	20	5	32	11.29	.....	1.85	22.0	11	16	1	14	.....	G. F. Morgan.
Mount Tamalpais	Marin	2,375	10	41.8	− 5.8	57	29	29	3	19	7.30	+ 4.39	1.87	T.	14	8	5	18	ne.	U. S. Weather Bureau.
Napa (1)§	Napa	20	32	44.7	− 1.8	63	14†	25	4	29	8.03	+ 3.84	2.46	0.0	14	11	6	14	s.	Thomas Hull.
Napa (2)	.....do	60	31	45.0	− 1.5	65	15	29	4	27	6.64	+ 2.40	2.34	0.0	12	12	5	14	n.	W. H. Martin. (S. H.)
Needles	San Bernardino	477	17	51.6	− 1.2	86	18	25	4	54	1.20	+ 0.72	0.53	0.0	6	17	1	13	w.	Agent, Santa Fe R. R.
Nevada City	Nevada	2,580	17	38.6	− 3.3	69	28	14	6	45	11.04	− 0.07	2.22	18.0	14	10	1	20	se.	S. W. Marsh.
Newcastle	Placer	970	16	52.9	+ 5.5	89	16	29	2†	58	6.07	+ 1.84	2.15	0.0	13	8	9	14	nw.	George D. Kellogg.
Newhall **	Los Angeles	1,200	32	45.0	− 4.5	70	12†	20	4	....	12.26	+ 8.86	4.46	T.	9	21	0	10	se.	Agent, So. Pac. Co.
Newman	Stanislaus	91	20	46.0[e]	− 3.4	67[e]	1	29[e]	14†	27[e]	3.69	+ 1.60	0.92	0.0	8	19	0	12	n.	E. S. Wangenheim.
Nimshew	Butte	2,500	5	39.4[b]	.....	64[b]	28	19[b]	23	34[b]	14.57	.....	2.98	26.5	13	17	0	14	.....	Cal. Gas & Electric Co
North Bloomfield	Nevada	3,200	12	41.0	− 4.0	64	1†	8	25	38	10.47	+ 0.65	2.00	23.0	12	15	3	13	.....	W. G. Shand.
North Fork	Madera	3,000	5	38.8	.....	58	15	18	6	31	13.36	.....	4.35	9.0	11	6	14	11	sw.	C. H. Shinn.
Oakdale **	Stanislaus	156	15	44.0	− 0.9	56	7†	26	4	....	3.36	+ 1.13	0.97	0.0	9	8	8	15	se.	Agent, So. Pac. Co.
Oakland	Alameda	36	33	47.9	− 1.3	62	15†	33	4	21	6.22	+ 1.97	1.48	0.0	13	10	7	14	w.	Chabot Observatory.
Ojai Valley	Ventura	900	3	50.4	.....	76	16†	23	4	39	12.28	.....	4.87	0.0	6	17	8	6	w.	W. H. Duncan.
Orland	Glenn	254	27	43.6	− 4.3	65	16	26	3	31	3.13	+ 0.03	1.00	5.0	6	15	6	10	n.	W. W. Patch.
Orleans	Humboldt	520	6	43.8	.....	69	14	26	21	38	6.91	.....	1.28	6.0	12	12	3	16	.....	Fred T. Hale.
Oroville (near)	Butte	250	25	44.4	− 4.4	68	15	28	6†	35	6.97	+ 2.18	2.06	4.0	8	8	1	22	s.	E. D. Fairchild.
Palermo	.....do	213	13	43.2	− 2.0	72	15	25	4	35	4.47	+ 1.05	1.50	0.0	7	11	11	9	s.	Miss Hettie Boalt.
Palm Springs **	Riverside	584	20	48.6	− 6.5	70	1	32	4	....	1.85	+ 0.65	1.00	T.	4	14	10	7	w.	Agent, So. Pac. Co.
Pasadena	Los Angeles	827	19	50.6	− 3.4	73	14†	30	4†	36	8.66	+ 6.02	3.28	0.0	10	18	3	10	sw.	E. R. Sorver.
Paso Robles **	San Luis Obispo	800	22	45.6	0.0	67	28	15	4	43	6.30	+ 3.31	2.80	0.0	9	15	5	11	nw.	Dr. F. W. Sawyer.
Peachland	Sonoma	190	13	45.0[b]	− 2.3	67[b]	15†	24[b]	4	35[b]	10.60	+ 5.50	2.98	0.0	15	13	7	11	s.	E. H. Parnell.
Penstock Camp	Tuolumne	3,750	2	39.3	.....	60	15	22	3	22	12.57	.....	3.15	19.0	11	6	12	13	se.	Tuolumne W. P. Co.
Pine Crest	Santa Barbara	1,000	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Dr. C. M. Richter.
Placerville	El Dorado	1,875	20	40.3	− 1.7	58	31	23	4	26	8.32	+ 0.49	1.84	3.0	11	11	0	20	sw.	A. Baring-Gould.
Point Lobos	San Francisco	250	16	49.4	.....	62	15	40	4†	14	4.71	+ 1.78	0.96	0.0	13	10	7	14	ne.	John Hyslop.
Point Reyes	Marin	490	17	49.6	− 1.0	68	17	40	3	21	3.50	− 0.24	1.09	0.0	13	10	7	14	nw.	U. S. Weather Bureau.
Porterville	Tulare	464	20	45.6	− 2.9	65	8†	27	4	29	2.78	+ 1.16	0.79	0.0	9	8	11	12	.....	Harry E. Cowie.
Poway	San Diego	460	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Adams Chapin.
Quincy	Plumas	3,400	14	29.6	− 4.9	54	1	8	8†	28	8.50	+ 2.61	1.85	25.0	12	14	3	14	sw.	L. A. Barrett.
Red Bluff	Tehama	307	32	44.0	− 2.4	64	16	29	4	30	4.35	− 0.96	1.16	15.0	10	12	2	17	nw.	U. S. Weather Bureau.
Redding	Shasta	552	34	45.4	− 1.6	66	28	26	6	31	6.55	− 0.19	1.05	23.0	12	16	3	12	n.	L. F. Bassett.
Redlands	San Bernardino	1,352	16	47.6	− 5.6	70	12	26	4	35	4.43	+ 2.37	1.10	0.0	11	12	9	10	n.	Paul W. Moore.
Reedley	Fresno	347	9	45.1	.....	64	8	27	16	30	5.66	.....	2.25	0.0	6	15	1	15	n.	Agent, Santa Fe R. R.
Rialto (near)	San Bernardino	2,250	3	47.0	.....	66	13	34	5†	20	21.32	.....	6.70	2.0	11	14	2	15	n.	Edison Electric Co.
Riverside	Riverside	851	27	49.5	− 3.9	70	12†	25	4	34	5.03	+ 3.29	1.47	0.0	11	17	4	10	n.	C. W. Barton.
Rocklin	Placer	249	38	44.6	− 3.3	73	8	25	6	38	5.60	+ 1.83	1.84	0.0	11	16	4	11	ne.	Agent, So. Pac. Co.
Rohnerville	Humboldt	75	6	45.9	.....	66	17	29	23	34	5.24	.....	1.11	0.0	12	12	7	12	n.	Dr. R. Callham.
Sacramento (1)	Sacramento	71	32	44.0	− 2.3	60	17	29	4	26	3.87	− 0.27	1.33	T.	13	8	8	15	se.	U. S. Weather Bureau.
Sacramento (2)	.....do	35	56	44.1	− 2.9	58	17	28	4	28	4.71	+ 0.59	1.08	T.	12	13	5	13	n.	S. H. Gerrish.
St. Helena	Napa	255	1	44.2	.....	70	13	23	4	37	8.22	.....	3.01	0.0	10	16	0	15	n.	B. F. Kettlewell.
Salinas	Monterey	40	35	48.8	− 1.3	67	29	27	4	28	4.90	+ 2.55	1.65	0.0	8	17	7	7	w.	Miss E. Ruth Abbott.
San Bernardino	San Bernardino	1,054	17	48.4	− 3.6	73	12	22	4	42	7.19	+ 4.30	2.90	0.0	11	11	9	11	n.	Dr. A. K. Johnson.
San Diego	San Diego	93	38	53.8	− 1.9	71	30	36	19	22	3.76	+ 1.63	1.68	0.0	9	14	8	9	ne.	U. S. Weather Bureau.
San Francisco	San Francisco	207	38	49.2	− 1.7	63	15	38	4	17	5.59	+ 0.56	1.41	0.0	14	11	4	16	nw.	Do.
San Jacinto	Riverside	1,550	16	48.2	− 1.8	73	13	20	19	40	4.89	+ 3.25	1.42	0.0	9	13	6	12	w.	E. T. Tanner.
San Jose	Santa Clara	95	34	45.8	− 4.1	66	5	26	4	33	5.37	+ 2.72	2.40	0.0	14	9	6	16	se.	U. S. Weather Bureau.
San Leandro	Alameda	48	14	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Dr. J. E. Childs.
San Luis Obispo	San Luis Obispo	201	14	51.0	− 1.8	72	15	29	19	30	10.09	+ 5.59	3.95	0.0	13	9	6	16	n.	U. S. Weather Bureau.
San Mateo**	San Mateo	22	35	49.9	+ 0.3	64	1†	34	4	....	5.61	+ 1.93	2.30	0.0	9	9	6	16	e.	Agent, So. Pac. Co.
San Miguel**	San Luis Obispo	616	22	47.3	− 0.3	64	1†	22	4	....	4.30	+ 2.06	1.95	0.0	8	10	11	10	.....	Do.
Sanger**	Fresno	371	20	50.1	+ 2.5	58	8	42	23†	....	1.25	− 0.58	0.90	0.0	6	10	0	21	.....	Do.
Santa Barbara	Santa Barbara	130	25	51.8	− 3.9	73	29	33	4	31	9.53	+ 6.30	2.44	0.0	9	16	5	10	sw.	George W. Russell.
Santa Clara	Santa Clara	90	20	46.4	− 3.0	69	15	26	4	38	5.28	+ 2.08	1.98	0.0	13	12	3	16	se.	Santa Clara College.
Santa Cruz	Santa Cruz	20	36	48.2	− 4.2	73	29	26	4	39	11.39	+ 6.10	2.80	0.0	9	15	2	14	n.	W. R. Springer.
Santa Margarita**	San Louis Obispo	996	20	50.6	+ 5.6	70	30	28	4†	....	13.12	+ 7.96	7.70	0.0	9	20	0	11	w.	Agent, So. Pac. Co.
Santa Maria	Santa Barbara	220	21	51.4	− 2.3	67	16	31	4	29	5.89	+ 3.43	1.50	0.0	8	.....	.....	.....	.....	L. E. Blochman.
Santa Monica	Los Angeles	110	24	51.3	+ 5.7	72	30	35	19	30	6.70	+ 4.54	1.63	0.0	8	13	7	11	w.	N. D. Ingham.
Santa Rosa	Sonoma	181	20	45.4	− 3.5	66	14†	24	4	35	7.61	+ 1.55	2.04	0.0	12	9	7	15	sw.	M. L. McDonald, jr.
Selma**	Fresno	311	23	45.1	− 0.9	59	10	29	3	....	3.09	+ 1.67	0.72	0.0	7	6	7	18	nw.	Agent, So. Pac. Co.
Shasta	Shasta	1,049	13	42.4	− 5.3	72	23	22	3†	48	6.62	− 0.88	2.18	26.8	9	15	0	16	nw.	Dr. T. J. Edgecomb.
Sierra Madre	Los Angeles	1,400	12	50.1	− 6.4	67	30	33	4	23	11.07	+ 9.15	4.65	0.0	10	15	1	15	se.	Miss A. E. Carter.
Sisson	Siskiyou	3,555	20	29.7	− 4.8	51	1	8	5	28	6.19	− 1.09	1.90	37.0	10	15	3	13	n.	Agent, So. Pac. Co.
Soledad**	Monterey	188	35	46.7	− 2.6	81	4	22	15†	....	4.10	+ 2.60	1.35	0.0	7	10	11	10	s.	Do.
Sonora	Tuolumne	1,825	21	42.5	.....	61	18	25	4	32	8.59	+ 2.93	2.44	0.5	11	11	7	13	sw.	Charles P. Jones.
Southeast Farallon	San Francisco	30	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	U. S. Weather Bureau.
Stirling City	Butte	3,525	5	38.8	.....	62	31	12	6	28	14.05	.....	3.55	28.0	10	15	10	6	se.	Agent, Butte Co. R. R.
Stockton (1)	San Joaquin	23	38	42.6	− 4.5	57	1	26	4	21	4.82	+ 1.46	1.45	0.0	11	2	6	23	se.	State Hospital.
Storey	Madera	296	9	40.0	.....	58	1†	22	17	31	5.00	.....	2.00	0.0	5	10	0	21	e.	Agent, Santa Fe R. R.
Suisun**	Solana	20	29	45.8	− 2.8	60	15†	28	4	....	4.61	+ 0.72	2.00	0.0	9	18	10	3	se.	Agent, So. Pac. Co.
Summerdale	Mariposa	5,270	13	37.0	− 2.5	63	29	13	6	30	19.92	+14.50	7.52	30.0	11	9	2	20	se.	J. H. Lowry.
Summit	Placer	7,017	36	25.4	− 5.1	49	2	10	6	25	8.30	+ 0.42	2.70	83.0	10	8	0	23	.....	Agent, So. Pac. Co.
Susanville	Lassen	4,175	20	28.0	− 4.4	51	1	4	6	25	2.38	− 0.59	0.49	26.0	11	6	6	19	sw.	J. Branham.
Tamarack	Alpine	8,000	3	16.0	.....	58	8	−24	4	51	10.34	.....	2.04	92.0	16	10	2	19	n.	William Bennett.
Tehachapi**	Kern	3,964	32	36.3	− 3.2	55	29	25	4	....	2.93	+ 0.97	1.00	12.0	7	.....	.....	.....	.....	Agent, So. Pac. Co.
Tehama**	Tehama	220	38	47.0	− 1.6	61	6†	30	13	....	4.52	+ 0.96	2.09	3.0	5	13	8	10	n.	Do.
Towle	Placer	3,704	23	36.8	− 5.5	64	28	14	6	36	10.91	+ 3.27	2.15	15.0	8	12	0	19	s.	Do.

TABLE 1.—*Climatological data for December, 1909. District No. 11*—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.							Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.		
California—Cont'd.																				
Tracy**	San Joaquin	64	29	43.1	− 6.5	54	27	22	3	....	3.27	+ 1.11	1.01	0.0	10	8	4	19	nw.	Agent, So. Pac. Co.
Tulare (near)	Tulare	274	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	J. T. Bearss.
Ukiah	Mendocino	620	16	42.8	− 1.9	63	14†	24	4	35	5.81	− 0.96	1.17	3.0	13	11	11	9	nw.	Dr. George McCowen.
Upland	San Bernardino	1,750	12	47.1	− 6.3	70	15	26	4	31	11.41	+ 9.90	4.30	0.0	10	14	6	11	w.	A. P. Harwood.
Upper Lake	Lake	1,350	24	42.9	− 2.7	68	15	24	22	35	4.65	− 0.93	1.18	2.0	11	19	0	12	se.	C. M. Hammond.
Vacaville	Solano	175	21	45.7	− 1.9	64	15†	25	4	29	9.45	+ 3.57	3.87	0.0	12	14	6	11	n.	G. O. Coburn.
Valley Springs**	Calaveras	673	20	47.2	− 0.5	59	1	31	3	....	5.25	+ 0.98	1.50	0.0	10	7	10	14	s.	Agent, So. Pac. Co.
Visalia	Tulare	334	21	49.0	.....	65	25†	35	29	27	2.79	.....	0.73	0.0	10	14	3	14	.....	Agent, Santa Fe R. R.
Warner Springs	San Diego	3,165	1	45.6	.....	78	13	22	3†	45	7.93	.....	2.28	2.5	9	.....	.....	.....	.....	Mrs. F. S. Sanford.
Wasco	Kern	336	9	45.9	.....	69	5	26	24†	27	0.75	.....	0.75	0.0	1	12	1	18	.....	Agent, Santa Fe R. R.
Watsonville	Santa Cruz	23	13	48.8	− 2.5	72	3	24	4	42	10.41	+ 6.32	2.30	0.0	10	8	13	10	nw.	Spreckels Sugar Co.
Westley**	Stanislaus	90	20	46.5[d]	− 2.8	61[d]	9	30[d]	24	....	3.21	+ 1.12	0.96	0.0	5	13	0	18	.....	Agent, So. Pac. Co.
Wheatland	Yuba	84	22	43.0	− 2.1	61	17	27	4	30	5.99	+ 2.31	1.16	0.0	12	12	9	10	n.	Wm. Lumbard.
Willows	Glenn	136	30	43.2	− 4.0	66	16	24	4	27	3.05	− 0.21	0.67	4.5	12	12	5	14	n.	M. T. Harrington, jr.
Yosemite	Mariposa	3,945	5	30.4	.....	50	15	9	6	30	13.12	.....	4.06	22.5	10	10	6	15	n.	C. W. Tucker.

* Precipitation included in that of the next measurement.
** Temperature extremes are from observed readings of the dry-bulb; means are computed from observed readings.
† Also on other dates.
‡ Separate dates of fall not recorded.
§ Data are from standard instruments not supplied by the U. S. Weather Bureau.
§§ Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.
‖ Estimated by observer.
‖‖ Precipitation for the 24 hours ending on the morning when it is measured.
T. Precipitation is less than 0.01 inch rain or melted snow.
[a], [b], [c], etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.

TABLE 2.—*Daily precipitation for December, 1909. District No. 11, California.*

Stations.	River basins.	Day of month.																															Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Oregon.																																	
Klamath Agency	Klamath										.90		1.30														.40						2.60
Klamath Falls	do		T.		T.	T.	T.	.38	.07	.15	.02	.13	.05	.02											T.	T.					.15	.30	1.27
Lakeview	Pitt				.06	.06	.04	.33	.33														.02			T.	.10				.30		1.24
Long Valley	Pitt		T.		.16	.07	.19	.21	.24	.02	.15	.16									T.		.07			.09					.24	.44	2.11
Merrill	Interior																																
Yonna	Interior		.02		.10	.03	.21		.25	.05		.09	.04													.06					.10	.07	1.02
California.																																	
Aguanga	Coast					.20	.17			1.03	.15										.77	.79										1.05	4.16
Alturas	Sacramento	.95	T.			.08	.02	.03	.02	.32	T.	.10									.04		T.								.02	.20	1.78
Anderson	do	.23			.35	.79	.38	1.05	.64	.88		.02	T.													.27	.14				.19	.19	5.13
Angels Camp	San Joaquin	1.02				1.75			2.25			.25							.70												.66	2.00	8.63
Angiola	do																																13.48
Antioch	do	.35				1.12	.52		.83												.40					.40					.20	1.05	4.87
Aptos	Coast		.30		1.41		1.86			2.52	.20										.28							.06				2.31	9.00
Arrowhead Springs	do					.90			.01	2.01	.30										.70	.09	.80									3.85	8.66
Auburn	Sacramento	1.00	1.72			.80		.40	.20													.20								T.	T.	1.50	5.82
Asuza	Coast					.71		.05	2.00	2.23										.03	1.70	.13	.37								.08	4.40	11.70
Bagdad	Desert																																0.00
Bakersfield	San Joaquin		.05					.13	.20	.32												.13										.53	1.36
Barstow	Desert					.38			.06	.33											.05	.43		.30								.28	1.83
Bear River	San Joaquin																																
Bear Valley (1)	Sacramento	1.75			1.40	.30	1.05	1.50	2.45	.55										.15		.35				.15					4.10	2.10	15.85
Bear Valley (2)	San Joaquin		1.02				.30		1.05													.45		.48									3.30
Beckwith	Sacramento	.58	.12	.01		.81		.30	.18	1.46	.25										T.	T.				.18					.96	1.70	6.55
Ben Lomond	Coast	.33			3.67		2.87	.05	3.76	.18									T.						.27	.18					1.50	1.34	14.15
Berkeley	do	.52				1.66		1.29	.67	1.18									T.	.12	.01					.05					.14	1.60	7.24
Big Bar	Sacramento																																
Biggs	do	.30	.05			.90	1.01		.62	.80																					.10	.05	3.83
Bishop	Owens																																
Blocksburg	Coast	.84	.10			.80	1.08	1.57	1.47	1.30	.08	.03								.15	T.	T.	T.		.45	.44					.32	1.00	9.63
Blue Canon	Sacramento	2.30	3.00			1.80	.30	.70	1.00	2.60	.60										.10		.30	.10							T.	4.00	16.80
Blythe	Colorado																																
Boulder Creek	Coast	.14	.28			4.03		1.85	.05	3.96	.12																.40	.07			.11	1.42	12.43
Bowmans Dam	Sacramento	2.10	1.72			1.95		1.04	1.44	2.17	.60										.15	.40	.10	.25			.60			1.60	.80	.70	15.62
Branscomb	Coast	.73			.30	1.10	.20	1.47	1.03	1.38			.07	.02						.04	.08	.07				.33	.07				.68	.54	8.11
Brawley	Desert								T.	.11											.20	.14	.01								T.	.13	0.59
Brush Creek	Sacramento	1.51	.08		T.	2.00	.10	1.80	2.75	2.03	.06	T.									.05		.35			.13					1.07	1.90	13.83
Butte Valley	do	.50			.20	.40		1.01			.05										.06		.13	.05		.08				1.00		1.60	5.08
Calexico	Desert								T.						T.					T.	T.											.30	0.30
Caliente	San Joaquin						.30		.45																								0.75
Calistoga	Coast.	.50	.52			2.40		.80	.90	3.15																		.05				.90	9.22
Campbell	do	.05			1.52		.26	T.	.56	.02										.25		T.				.25	.01				.04	2.12	5.08
Campo	do		.11		.11	.72				1.24	.33										1.52	1.00	.14	.20								.45	5.82
Camptonville (near)	Sacramento	2.12	.30			3.00		2.69	3.02	2.75	.25										.10	.04	.70			.13					2.14	2.90	20.14
Cedarville	Mountain Lakes	1.10	T.		.08	.07	.06	.06		.16		.09	.07							T.	.03	.03	.04				T.					.30	2.09
Chico	Sacramento	.72			.08	1.25	.19	1.45	.99	.82											.06					.05	.08				.34	.08	6.11
Chico (near)	do	.38				1.40		2.00	1.77												.05					.12					.35	.45	6.52
China Flat	Coast	.30			.63	.27	1.03	.67	.85	.93			.24							T.					.30	.68					.24	.97	7.11
Chino	do						.73		.16	1.92	.51										.30	1.41	1.10									1.20	7.33
Cisco	Sacramento	1.70	2.10			2.00		.80	.40	3.05	.60										.30		.10				.10	.10			.20	3.20	14.65
Claremont	Coast			.04		.02	.60		.10	1.84	.63										.07	1.45		.57								2.85	8.17
Clear Lake	Klamath																																
Cloverdale	Coast	.76			.38	1.33	.57	.75	1.32	.46	.07									T.	.02					.20	.13				.35	.18	6.52
Colfax	Sacramento	1.03	1.50			1.50		1.00	.60	2.30	.24										.02		.30								.10	2.50	11.09
Colgate	do	1.58	1.86			1.32	.20	.70	1.26	1.88	.13										.04	.14	.30	.04			.11				.22	2.14	11.92
Colusa	do					.79	.06	1.06	.32	.39											.17					.26							3.05
Corning	do					1.10	.20	.26	1.05																	.10					.30		3.01
Corona	Coast					.73		.10	.25	1.87											.82	.50	.47	.54								2.10	7.38
Crescent City	do																																
Crockers	San Joaquin																																
Cuyamaca (1)	Coast		.12			.77		.15	2.06	1.57										.72	2.73	.18	.29	.27								2.90	11.76
Cuyamaca (2)	do																																
Daunt	San Joaquin	1.91	.20		1.20		3.35		4.60	.15								T.			1.20											1.86	14.47
Davisville	Sacramento	.12			1.32		.12	.56	.38	1.19										.04	.30	.01				.05	.01				.03	.63	4.76
Deer Creek	do	3.05	.25			1.83	.12	2.12	.96	3.02	.30										.10	.06	.25			.09		T.			1.23	3.50	16.88
Delta	do	.04			1.40		1.60	.20	2.60	1.33																.64					.62		8.43
Denair	San Joaquin					.40	.15	T.	.32	T.	.02										.23	.07	T.									.80	1.99
Descanso	Coast						.88			1.94		1.10									.90		1.85		.51							.61	7.79
Dinuba	San Joaquin	.20				.62	.72		.95	.34											.63										.35	.85	4.56
Dobbins	Sacramento	2.86	.18			1.42	.04	1.52	1.25	1.24	.09										.15	.07	.30			.10	.01				1.38	2.27	12.88
Downieville	do	1.51	.21			1.72		1.85	1.08	3.19	.41										.13		.30			.40					1.59	2.75	15.14
Dudleys	San Joaquin	1.23	.48			.75		.88	.53	2.51	.03									T.	.24	.10	.01								.24	3.17	10.17
Dunnigan	Sacramento	.11	.07			1.50	1.15	.36	2.91													.16						.46			.06	.26	7.04
Dunsmuir	do					2.00	.10	1.20	.83	2.00	.05		.10													.50	.20				.10	1.20	8.28
Durham	do					1.18	1.13	1.48	1.55	.32											.08	T.				.15					.46	.73	7.08
Dyerville	Coast	.30			2.00	.71	.54	1.30	1.30	1.02	.01			.01		.01									.60	1.44					.35	.62	10.21
Edgewood	Klamath	.20			.80				.19	.58																.10						.19	2.06
Edison	San Joaquin					.05		.21	.53	.56											.44											.62	2.41
El Cajon	Coast		T.			.50	.28		.01	1.48	.38										.58	.75	.20	.21	.03							.33	4.75
Electra	San Joaquin	1.25	.20			1.22		.51	.14	1.83	.02										.31	.05	.02								.34	2.20	8.09
Elsinore	Coast		T.				.91		.06	.11	1.57										.16	1.35		.88							.41	1.20	6.65
Emigrant Gap	Sacramento	1.60	2.00	2.00	2.00	.20			1.00		.40										.20		.30	.10							.15	3.40	13.35
Escondido	Coast					1.39				2.39											2.00	.62	.32	.24								.75	7.71
Eureka	do	.22			.70	.17	.02	.33	.93	.31	.02	T.	.14							.02	.01				.08	.14					1.11	.09	4.29
Fairmont	do					.24			T.	1.70											1.25	.12	.10									2.05	5.46
Farmington	San Joaquin		.20			.81		.45		1.15	.11										.47	.39	.04									.70	4.32
Felton	Coast		.25		3.10			2.33	.05	3.28	.32										.15						.25				.10	1.54	11.37
Firebaugh	San Joaquin					.24		.69		.80											.27	.23		.06								.18	2.47
Folsom	Sacramento	.60	.26			1.32		.38	.04	1.22	.10										.12	.12									.12	.18	4.46
Fordyce Dam	do	3.78	.82		T.	1.04	.17	1.35	.90	3.25	.23									T.	.12	.08	.15			.13					1.50	3.25	16.77
Fort Bragg	Coast				1.78		.23	.55	.78																.20	.65					.80	.24	5.23
Fort Ross	do	1.40			.93	1.91	.40	1.21	2.90	.61	.07									.05						.21	.03	.06			.30	.28	10.36
Foute Springs	Sacramento																																15.02
Fresno	San Joaquin	.17	.05			.50	.41	.40	.73	.23											.44	.05	T.								.01	1.51	4.50
Fruto	Sacramento					.30		.30		.70																	.42						1.72
Galt	San Joaquin		.28		1.25			.35		1.40	.20										.25	.22	.10			.30						.70	5.05
Georgetown	do	1.75	2.62			1.26	.10	.50	.28	2.73	.53										.13		.17			.03					.03	2.56	12.68
Gilroy	Coast		.20			1.16		.75	.04	2.66	.03										.17	.06	.06					.03			.02	1.15	6.33
Glendora	do																																
Glen Ranch	do							.50	.30	3.32	.86										.13	2.05		.70								3.89	11.75
Glenwood	do	.22			4.00		1.78	.11	2.64	.15										.13	T.				T.	.25	.05				1.50	.95	11.78
Gold Run	Sacramento					1.00	.60	.80	2.00	T.													.20								.15	3.05	6.80
Gonsales	Coast		.17			.61		.60		1.50	.09										.31	.19	.05									.52	4.04
Grass Valley	Sacramento	2.53	.44			1.76		1.39	1.12	2.25	.23										.17	.04	.28			.06					.95	2.62	13.84

TABLE 2.—*Daily precipitation for December, 1909. District No. 11*—Continued.

Stations.	River basins.	Day of month. 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total.
California—Cont'd.																																	
Greenville	Sacramento	.44	.06			.98	T.	.71	.79	1.80	.04												.40	.10		T.	.14				.90	1.19	7.55
Gridley	do	.22	.01		T.	1.18		1.27	.41	1.12	.02										.07		.02			.04	.11	.01			.56	.16	5.20
Groveland	San Joaquin	1.15	.58			1.80		.35	2.75											3.40	.22	.05									.34	2.79	13.43
Guinda	Sacramento		.09			1.50		.81	.35	2.15																.09							5.80
Hanford	San Joaquin																																‡1.95
Head Dam	Sacramento	4.00	.34			1.92	.05	2.00	2.00	2.00											.11			1.00	.50						1.00	1.50	16.42
Healdsburg	Coast	.38	.25			2.22	.24	1.04	2.06	.14	.08															.35	.02	.03			.50	.20	7.51
Heber	Desert									.08											T.	.09	.02									T.	0.19
Helen Mine	Coast																															‡	12.22
Hollister	do		.09			1.06		.59		1.70	.19										.35	.04	.10	.01								1.32	5.45
Hornbrook	Klamath				1.10	.10	.40	.50	.25	T.																				.75	T.		3.10
Hot Springs	San Joaquin		.43			.30	.51	1.88	.43	2.47	.73										.56											.93	8.24
Hullville (near)	Coast	.49			.44	1.00	.53	1.07	1.05	.71	.03															.25	.22	.02			.28	.29	6.38
Idyllwild	do		.41			.42		.40	.20	3.26	.75										.97	.80	.10									1.22	8.53
Independence	Owens	.02	.02			.58	.60	.52	.50	1.02											.16	.01	.01									.46	3.90
Indio	Desert									.10											.24	.48		.04									0.86
Inskip	Sacramento	1.58			.18	2.06	.21	2.05	2.73	2.75	T.		T.								T.	T.	T.			.25						1.26	13.07
Ione	San Joaquin	.20	.64			.60		.17		1.10	.32										.22	.22										1.00	4.47
Iowa Hill	Sasramento	2.51	.62			1.10		1.25	.42	2.34	.18										.05	.06									.56	3.16	12.25
Isabella	San Joaquin		.20			.91		1.40	2.00	.19											.67	.14										1.04	6.55
Jacksonville	do	.10	.60			.42	.10	.70	T.	2.00											.10	.22	.04										4.28
Jamestown	do	1.00	.35			1.05		.95	.20	2.00	.05										.35	.10									.10	2.30	8.45
Jenny Lind	do	.20	.38			.72			.42		.98	.30								.50	.28											.80	4.58
Jolon	Coast	T.				1.25		.91	.10	2.40										T.	.18	.02	.39				.05		T.			.62	5.92
Julian	do					.50		.20		2.60												2.75											6.05
Kennedy's Mine	San Joaquin																																‡7.82
Kennett	Sacramento	.34	.04			.28	.10	.20	2.00	7.74																	.60					.70	12.00
Kentfield	Coast	.46				2.55	.44	2.33	2.62	2.88											.11					.25		.06			.84	1.25	13.79
Kernville	San Joaquin		.19			.45	1.00	1.28	1.95	.15									.40	.40											.80	.60	7.22
King City	Coast					1.40		.09		1.06										.08	.15	.18										.19	3.15
Knights Landing	Sacramento	.20	.08			1.24		.56	.22	1.50											.22	.16	.08				.14				.18	.56	5.16
Knob	do																																
La Grange	San Joaquin	.23	.07			.60		.32	.57	1.02											.30	.29									.04	1.56	5.00
Lakeside	Coast					.65				1.95										.37	1.00											1.50	5.47
La Porte	Sacramento	2.94	.63			2.16	.05	2.07	2.55	3.13	.35										.16	.03	.38			.20	.04				2.60	2.85	20.14
Lathrop	San Joaquin		.16			.98		.83	T.	1.15	.02										.22	.20				.04	.16					.50	4.26
Laurel	Coast.	.25				4.10		1.80	.15	3.00										.05							.15					2.10	11.60
Laytonville	do				.50		2.37	1.23	.98	.29										.25						.46					.85		6.93
Le Grand	San Joaquin			.15	.64		.60			1.30	.10									.60	.05											1.55	4.99
Lemon Cove	do		.32			.71		.88													.63		.14								1.00		3.68
Lick Observatory	Coast	.63				.74		.22	.08	2.04	.02										.55	.03	.07			.20	.08				.02	2.19	6.87
Livermore	do																																‡5.77
Lodi	San Joaquin	.37				1.08	.05	.33	.26	.96	.04									.07	.33	.04				.23					.15	1.43	5.34
Lone Pine	Owens	.10	T.			.20		.60		1.20												.30	.30								.07	.15	2.92
Long Camp	San Joaquin	2.00	.28			1.40	.20	.92	.30	1.65	.38																				.40	4.30	11.83
Long Valley	Mountain Lakes	.16	.07	T.		.09		.13	.07	2.13	.12										.03					.27					.74	1.20	5.01
Lordsburg	Coast						.75			1.95	.45											1.35		.58								1.73	6.81
Los Alamos	do					1.20		.37	.71	2.35										T.	.66	.31	.20									1.30	7.10
Los Angeles	do		.01			.40	T.	.03	2.29	.84											.98	.11	.08	T.							.11	2.15	7.00
Los Banos	San Joaquin		.45		.77			.55		.95										.27	.20		.10										3.29
Los Gatos	Coast	.20				2.80	.10	.62	.40	1.62										T.	.14	.03				.31	.02				.11	2.28	8.63
Los Vaqueros	do		2.00					.90													.25		.17										3.32
Lowe Observatory	do						.74			7.96													1.60	.18								8.50	18.98
Lyonsville	Sacramento																																
Lytle Creek	Coast						.65		.57	6.20	.21										1.27	1.52	.30	.50								7.50	18.72
Macdoel	Klamath																																
Madeline	Mountain Lakes	.65		T.	T.	.20	.10		.40	.10	T.	.10									T.	.08	T.	.05		T.		T.			T.	.40	2.08
Magalia	Sacramento	.84			1.60	.20	3.74	4.39	4.86	.12										.05						.32					.52	1.86	18.50
Mammoth Tank	Desert									.10						.10					.25	.20	.01									.02	0.68
Mariposa	San Joaquin		1.11			1.11		1.05	.03	3.41											.12	.42										2.50	9.75
Marysville	Sacramento			.90			1.00	.45		1.25											.18										.11	.80	4.99
Mecca	Desert									.05											.73		.04	.03									0.85
Melones	San Joaquin	.20	1.14			.90	.10	.64		1.80	.12										.16	.14	.02								.10	1.60	6.92
Menlo Park	Coast	.09				1.80		.30		1.35	.17										.10						.09					1.75	5.65
Merced	San Joaquin		.12			.47		.68	1.00		.03										.22	.15		.07								.18	2.92
Merced Falls	do	.17			.37	.04	.19		1.26	.01										.13	.13	.02									.01	1.05	1.54	4.92
Mesa Grande	Coast		.19			1.30			.28	2.60	.97										1.10	2.28	.29									.99	10.00
Mill Creek (1)	San Joaquin	3.18	.68			1.87	.05	.83	.26	2.27	.37								T.	.14		.08									.60	2.62	12.95
Mill Creek (2)	Coast		.17			.53		.01	.92	1.87											1.37	.30	T.	.17							.08	2.53	7.95
Mills College	do	.88			1.37		.30	.46	.67	1.03	.14									.07	.07					.02					.28	1.48	6.77
Milo	San Joaquin				.70	.69		2.10	4.06												.53											1.10	9.18
Milton (near)	do					.68	.25		1.20	.21											.43	.01				T.					.60	2.17	5.55
Modesto	do		.15				.55	.65		.60											.20	.30									.05	.85	3.35
Mojave	Desert																																12.10
Mokelumne Hill	San Joaquin	1.44				.96	.53		2.08	.23											.39	.17									.30	2.79	8.89
Mono Ranch	Coast					1.18		.28	.72	2.80											.95	.91	.26									4.64	11.74
Montague	Klamath		.05			.20		.15	.11	.10																						.60	1.21
Monterey	Coast		.32			1.27		.28		1.60											.33	.17										1.45	5.42
Monterio	San Joaquin		.45				.50	.25		.55												.75	.25									1.00	3.75
Montgomery Creek	Sacramento								2.20	2.22																.41					.59	1.29	6.71
Monumental	Coast				1.50	.09	.50	1.00	1.18	1.85	.50	1.32	.42																	1.30	1.63		11.29
Morina Dam	do																																
Mount Tamalpais	do	1.10			.90	.22	.21	.47	1.78	.12										.03	.05	T.				.09	.03	.03			.91	1.36	7.30
Mount St. Helena	do	.83				.70			3.25	3.70	.41										T.						.25					1.35	10.49
Napa (1)	do	.83	.04		T.	1.56	.12	.69	.60	2.46	.03									.09	.08					.12	.02				.62	.78	8.03
Napa (2)	do	.16	.51			1.31		.51	.36	2.34	.09										.14	.06					.09				.30	.74	6.64
Needles	Colorado									.32											.19	.53	.05	.05								.06	1.20
Nellie	Coast		.50			1.34			.80	5.15	.90										3.00	4.00										1.65	17.34
Nevada City	Sacramento	1.80	.21			1.16		1.10	.82	2.15	.16	T.	.01								.08	.06	.22			.14					.91	2.22	11.04
Newcastle	do	.04			1.41	.02	.52	.09	1.16	.04											.26	.07	.02			.03					.26	2.15	6.07
Newhall	Coast					1.00		.38	2.68	.73										.09	.75		.22								1.95	4.46	12.26
Newman	San Joaquin	T.				.85		.80		.92	.03										.18	.17	.06									.68	3.69
Nimshew	Sacramento	1.75	.15		.22	2.36	.30	2.75	2.98	1.85											.02	T.				.11	.03				.47	1.58	14.57
North Bloomfield	do	2.00	.80			1.60	.84	.80	.64	2.00	.10										.05	T.	T.	T.		.04				1.60	.80		10.47
North Fork	San Joaquin	.32	1.05	.02		1.17		1.51	.32	4.12	.17										.32			.01								4.35	13.36
North Lakeport	Coast			.44	.36		1.00	.75	1.00	.17											.02					.22					.40		4.36
Oakdale	San Joaquin		.16			.35	.02	.28		.68											.37	.48									.05	.97	3.36
Oakland	Coast	.52			.13	1.39	.58	.26	1.14	.48	.09									.04	.07					.03	.01					1.48	6.22
Oakville	do	.50	.78			2.37	.95		.19	2.47	.04																.34				.24	.36	8.24
Ojai Valley	do					1.20		.33		4.54											1.18	T.	.16							T.		4.87	12.28
Orland	Sacramento				.94		1.00	.13	.71																T.	.26						.09	3.13
Orleans	Klamath				.55		1.28	1.20	.94	.44		.34	.22							.03		.05			.67					.09	1.10		6.91
Oroville	Sacramento				.70		2.06	1.41	1.08													.08				.08						.63	.93	6.97
Osena	Coast					.23			1.25	.85											1.00										1.30	4.00	8.83

TABLE 2.—*Daily precipitation for December, 1909. District No. 11*—Continued.

Stations.	River basins.	Day of month.																															Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
California—Cont'd.																																	
Palermo	Sacramento	.65				.90		1.50	.65												.10					.12						.55	4.47
Palm Springs	Desert									.50											1.00	.25										.10	1.85
Parkfield	Coast					.32		.92	1.12	1.90											1.08	.32	.18									1.18	7.02
Pasadena	do		.05			.47		.05	.40	3.13											.36	.80	.04	.08								3.28	8.66
Pass Robles	do					1.00	.20	.50		2.80											.50	.20	.20	.40								.50	6.30
Peachland	do	.60			.55	1.67	.26	2.02	2.98	1.26	.10									.07	.04					.20	.05	.02			.58	.20	10.60
Penstock Camp	San Joaquin	1.95			.90		.80	.15	3.15	.21										.15	.05									.20	2.51	2.50	12.57
Peyton	Sacramento																																
Phoenix Dam	San Joaquin																																
Pilot Creek	Sacramento	2.76	1.24					3.88	.84	4.41	.38										.15		T.			.10					.85	2.70	17.31
Pine Crest	Coast																																
Pittville	Sacramento		.50			1.00		.60																									2.10
Placerville	do	1.08	1.32				1.04	.52	.11	1.84	.48										.16		.07								.06	1.64	8.32
Point Lobos	Coast	.32			T.	.85	.35	.34	.47	.68	.10									.01	.02					.04	.06	T.			.51	.96	4.71
Point Loma	do	.02	.03	.04			.80			1.40	.17	.01				.04					.21	.31		.14	.02						T.		3.19
Point Reyes	do	.21			.91	.05	.42	.12	1.09	.14										.02						.06	.04	.11			.30	.03	3.50
Pollasky	San Joaquin		.44			.68	.16	.96		1.04											.28	.30										.44	4.30
Porterville	do	.10				.15	.50	.03	.79	.05										.43	.18											.55	2.78
Poway	Coast																																
Priest Valley	do	.05			1.00		.20	.50	.06	3.15	.06										.58	.38	.25									3.47	9.70
Quincy	Sacramento	.50				1.10	.10	.80	1.25	1.85	.18										.05	T.	.15			.12					1.25	1.15	8.50
Red Bluff	do	.37			.62	.52	.76	.49	1.16	.08		T.									T.					.16					.14	.05	4.35
Redding	do	.23			.99	.72	.76	1.00	1.05	.87	.01	.02	T.													.40					.27	.23	6.55
Redlands	Coast		.02			.27	.10	T.	.06	.96	.07										.61	.59	.14	.51								1.10	4.43
Reedley	San Joaquin		.22			.79		.83		.92											.65											2.25	5.66
Represa	Sacramento	.68	.24			1.36		.37	.04	1.37	.11										.11										.30	1.06	5.64
Rialto (near)	Coast		.15			.95		.22	2.00	5.85											2.50	.60	2.00	.25							.10	6.70	21.32
Rio Vista	Sacramento		.32			1.10		.74		1.34	.08										.24	.12	T.				.24	.02			.12	.60	4.92
Riverside	Coast		.02			.28	.06	.06	.05	1.47											.55	.54	.27	.33								1.40	5.03
Rocklin	Sacramento	.55	.29		T.		1.84	.55	.05	1.05	.02										.10	.05									.15	.95	5.60
Rohnerville	Coast	.45			.72	.63	.10	.54	.27	1.11			.12							T.		T.	T.	.16		.28					.12	.74	5.24
Sacramento (1)	Sacramento	.14			.26	.22	.33	.02	1.23	.13										.03	.17	.06				.07			T.		.18	1.03	3.87
Sacramento (2)	do	.24			.22	.89	.33	.12	.69	.56										T.	.26	.04				.08					.20	1.08	4.71
Saint Helena	Coast		.62			2.00		1.01	.48	3.01	.06										.08						.23				.30	.43	8.22
Salinas	do	.10	.16			.43		.64		1.75	.13																	.04				1.65	4.90
San Bernardino	do		.03		T.	.48	.03	T.	.17	1.73	.02										.54	.57	.31	.41							T.	2.90	7.19
San Diego	do		.03			.91			.63	1.10										T.	.53	.04	.08	.01								.43	3.76
San Francisco	do	.53			.96	.28	.66	.02	1.40	.06	.02									.01	.04	T.				.04	.02	T.		T.	.46	1.09	5.59
San Jacinto	do					.61	.17		.08	1.42	.10										.85	.71		.30								.65	4.80
San Jose	do	.20			.28	.94	.19	.01	.54	.27										.06	.18	.07				.18	.01				.05	2.39	5.37
San Leandro	do																																
San Luis Obispo	do	.03	.04			1.49	.05	.86	3.44	.51										.14	.82	.08	.23							T.	.04	2.36	10.09
San Mateo	do	.19				2.30		.52		1.38	.11										.08						.06				.15	.82	5.61
San Miguel	do					.70		.14	.03	1.95											.30	.37	.19									.72	4.30
San Miguel Island	Ocean	.17				1.25		.56	1.36	1.36											.40	.20	.14									.45	4.89
Sanger	San Joaquin									.90	.10	.04					.04	.09	.08														1.25
Santa Ana River	Coast																																
Santa Barbara	do					1.17		.45	1.45	2.44	.27										1.29	.13	.03									2.30	9.53
Santa Clara	do	.17				1.39	.07	.16	.25	.53										.07	.19	.06				.25	.01				.15	1.98	5.28
Santa Cruz	do	.62			1.50		2.40		2.80	.37											.35						.15			2.10	1.10	11.39
Santa Margarita	do					1.25	.70	1.80	7.70											.25	.48	.30	.22									.42	13.12
Santa Maria	do					.55		.27	.77	1.50										.57	1.15		.08									1.00	5.89
Santa Monica	do		T.			.84				3.50												.73	T.									1.63	6.70
Santa Rosa	do	.64			.21	2.04	.22	1.18	1.47	.97	.04															.14	.05				.35	.30	7.61
Sausalito	do	.85			1.73		.40	.97	1.35	.75																					.55	1.50	8.10
Selma	San Joaquin		.17			.46		.72		.68											.22	.44										.40	3.09
Shasta	Sacramento	.17			1.07	.94	2.18	.73	.12	.06																.93					.42		6.62
Shingle Springs	San Joaquin	.95	.99					1.70	.10	1.75	.41																					1.58	7.48
Sierra Madre	Coast		.15			.54		.09		4.65											.44	1.18	.17									3.85	11.07
Sisquoc Ranch	do			.90			.20			2.84										.60	.25		.79				.73			2.11			8.42
Sisson	Sacramento				1.90		.40	.63	1.88											.10					.50	.20					.06	.32	.20	6.19
Soledad	Coast					.96		.40		.70											.11	.33										.25	1.35	4.10
Sonora	San Joaquin	1.32	.38			.84		.64	.21	2.17	.14										.29	.05									.11	2.44	8.59
Southeast Farallon	Ocean																																
Spreckels	Coast	.03	.18			.48		.58		1.74	.15										.35	.10	.05									1.55	5.21
Stirling City	Sacramento	1.10	2.00			1.90	.20	.75	2.80	3.55																			.05		.30	1.40	14.05
Stockton (1)	San Joaquin	.17	.02			.94		.52	.25	.74											.42	.02				.22					.07	1.45	4.82
Storey	do				.75		.70			1.10											.45											2.00	5.00
Suisun	Sacramento	T.				1.20		.65	.13	2.00	.33									.02							.05				.03	.40	4.61
Summerdale	San Joaquin	.90		1.58		1.49		1.91	.36	5.25	.30										.48		.02								.11	7.52	19.92
Summit	Sacramento																																13.30
Surrey	Coast					.51		.03		3.33											1.10	.05	.17									4.30	9.69
Susanville	Mountain Lake	.15	.06			.49	.10		.14	.27												.10	.17								.20	.30	.40	2.38
Tamarack	Sacramento	.76	1.02	.20	.15	1.14	.16	.27	1.02	1.25	.28	.40										.31	.22		.17						.95	2.04	10.34
Tehachapi	San Joaquin							.05		1.00	.20		.50												.40					.30		.48	2.93
Tehama	Sacramento	.23				.30		2.09	1.00	1.80																							4.52
Three Rivers	San Joaquin		.63			.62	.03	1.65	.04	2.08											.53	.01										.98	6.57
Towle	Sacramento	1.70	2.00			1.40		.83	.73	2.00											.10									T.	T.	2.15	10.91
Tracy	San Joaquin		.16			1.01		.50	.80												.08	.02	.07			.03	.15					.45	3.27
Tulare	do	.10				.18		.43	.65	.10											.21	.54										1.62	3.83
Tulare (near)	do																																
Tustin (near)	Coast						.86		.27	1.87	.09										.12	1.03		.84								.40	5.48
Ukiah	do	1.10			.60	1.17	.40	.05	1.15	.57	.05										.06					.25	.08				.16	.17	5.81
Upland	do					.64		.18		4.30											1.63	.04	.62									4.00	11.41
Upper Lake	do	.59			.43	1.18	.31	.56	.59	.65	.03															.09	.05				.17		4.65
Upper Mattole	do	.15				2.05		.57	1.60	1.87	.39	.02	.05	.05							.04		.20			.98	1.14				.12	1.69	10.89
Vacaville	Sacramento	.21			1.60		.88	.77	3.87	.02										.12	.12	T.				.32				.16	.71	.67	9.45
Valley Springs	San Joaquin	.22	.65			.91		.24		1.50	.24										.27	.27	.02									.93	5.25
Ventura	Coast																																
Visalia	San Joaquin																																12.79
Warner Springs	Coast					.64		.06	.60	1.22										1.25	1.40	.06	.42									2.28	7.93
Wasco	San Joaquin									.75																						T.	0.75
Watsonville	Coast	.34			1.82		1.49		2.30	.21										.48	.22						.04				2.10	1.41	10.41
West Branch	Sacramento	2.07	.30		.03	2.10	.10	2.13	3.34	2.49	.20										.02	T.	.03			.06	.03				.63	1.86	15.39
Westley	San Joaquin					.96			.40	.89											.27											.69	3.21
West Point	do	1.38	1.90			.73	.04	.53	.03	2.82	.22																			.96	1.06	1.07	10.74
West Saticoy	Coast					1.12		.30	1.27	2.30											.90		.14								1.42	1.86	9.31
Wheatland	Sacramento	.28				1.16	.21	.76	.79	.83											.29	.02	.02			.07					.56	1.00	5.99
Willows	do	.04			.08	.67	.45	.52	.60	.26		T.								.01	.03					.26	T.				.12	.01	3.05
Woodleaf	do	2.40				1.25	.50	.98	2.15	2.64											.16	.14										3.16	13.38
Yosemite	San Joaquin	1.80	1.11			.85		1.04	.22	3.49	.37										T.	.06	T.								.12	4.06	13.12

TABLE 3.—*Maximum and minimum temperatures at selected stations for December, 1909. District No. 11, California.*

Date.	Lakeview, Oreg.		California.																									
			Alturas.		Barstow.		Branscomb.		Brawley.		Colusa.		Eureka.		Fresno.		Independence.		Los Angeles.		Mount Tamalpais.		Nevada City.		Porterville.		Red Bluff.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1...	41	14	43	31	72	31	51	38	70	35	61	58	50	43	62	49	67	32	66	47	52	40	50	47	63	40	53	45
2...	45	13	35	13	70	40	45	29	74	39	59	41	48	41	52	37	54	28	56	48	40	32	50	31	51	43	50	38
2...	42	10	30	2	75	27	48	22	60	41	51	34	44	32	47	30	37	18	57	42	37	29	47	21	47	31	47	32
4...	43	7	31	−1	70	15	34	22	57	28	41	29	44	32	48	32	38	9	57	37	41	32	33	19	52	27	39	29
5...	43	8	30	19	58	25	43	22	52	32	41	35	46	34	49	39	40	10	48	41	39	34	35	28	50	37	37	32
6...	41	4	31	−3	56	27	37	25	59	37	40	33	51	33	45	30	28	3	55	39	40	33	38	14	52	33	35	31
7...	41	6	38	19	45	35	49	35	60	38	42	36	54	48	58	43	34	17	55	49	46	40	43	30	59	39	36	34
8...	40	7	43	32	55	40	49	46	64	39	52	42	62	46	59	48	36	26	59	50	51	45	47	41	65	44	50	34
9...	43	15	44	28	55	39	50	36	63	47	59	52	47	41	58	49	47	28	59	51	48	37	40	31	60	53	54	40
10...	35	11	37	25	55	38	52	32	64	47	52	35	51	43	56	40	34	16	61	47	44	39	47	31	55	38	47	38
11...	35	11	39	20	52	28	54	34	65	42	52	42	58	48	46	38	33	10	56	46	46	38	35	25	49	33	50	38
12...	34	10	44	32	54	27	52	37	65	35	51	41	56	49	44	39	34	12	70	48	52	41	54	25	47	35	51	39
13...	40	15	45	28	60	32	53	36	69	35	54	34	50	39	44	41	41	15	67	49	48	39	60	28	46	38	58	37
14...	40	11	44	25	58	32	67	32	69	39	60	33	63	36	51	40	40	22	71	46	51	34	63	28	49	40	61	46
15...	45	19	49	15	55	28	68	35	63	46	63	46	64	38	55	32	38	20	70	56	53	46	64	29	56	30	64	42
16...	41	19	46	16	56	23	66	34	68	35	62	41	59	41	55	30	39	20	73	51	52	42	67	26	57	28	64	44
17...	46	22	43	20	48	27	67	35	60	35	63	37	66	40	55	34	38	23	61	42	51	45	58	26	56	31	60	46
18...	40	19	45	13	45	14	62	32	56	27	60	35	52	39	55	34	36	11	58	39	50	43	61	23	56	29	61	31
19...	30	19	39	16	48	18	44	31	56	24	59	31	48	42	55	35	32	8	57	39	47	33	44	22	59	32	47	32
20...	47	9	33	13	48	18	49	34	46	34	59	40	49	37	46	41	28	11	51	44	34	31	44	30	49	41	50	39
21...	30	9	34	4	43	32	45	33	59	40	46	35	52	35	54	42	28	14	55	38	36	32	40	23	56	40	48	34
22...	33	15	35	15	44	30	46	28	56	45	50	41	48	35	49	42	27	14	57	45	39	35	48	30	51	40	52	34
23...	30	14	34	7	46	32	48	24	57	44	50	31	46	32	45	34	32	10	61	45	45	35	49	21	44	40	49	32
24...	32	15	39	10	40	30	44	30	60	33	49	30	52	40	45	34	29	6	62	45	44	36	51	22	55	30	46	34
25...	36	17	38	28	46	26	46	35	58	35	45	38	52	47	56	33	28	7	64	46	40	35	41	27	55	32	43	39
26...	37	18	42	15	43	22	56	37	60	35	49	40	57	38	57	32	29	4	64	40	43	34	53	26	58	30	55	36
27...	44	19	45	9	44	24	61	36	60	28	57	40	56	37	58	32	33	3	64	42	50	39	64	24	59	31	61	34
28...	45	10	50	8	47	29	63	32	59	38	58	34	54	37	52	37	35	13	65	50	52	45	69	24	61	34	64	36
29...	41	11	51	11	51	28	67	32	64	35	57	33	62	38	58	35	35	14	71	51	57	38	67	25	62	36	62	34
30...	39	9	43	22	51	35	53	44	68	43	56	40	58	45	57	45	37	20	74	59	54	44	50	31	65	37	47	41
31...	37	6	39	24	60	42	49	32	62	50	50	41	46	39	58	44	49	26	59	54	48	32	38	32	63	45	48	42
Mns	39.2	12.3	40.0	16.6	53.2	28.8	51.2	32.6	61.4	37.5	53.2	38.0	53.1	39.5	52.5	37.8	36.7	15.2	61.7	46.0	46.1	37.4	50.0	27.1	55.1	36.0	51.2	36.9

Date.	California.																											
	Redlands.		Sacramento.		San Diego.		San Francisco.		San Jose.		San Luis Obispo.		Santa Barbara.		Santa Rosa.		Sisson.		Stockton.		Summit.		Susanville.		Yosemite.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1.....	67	38	55	50	62	46	57	50	63	48	64	50	64	42	58	54	51	26	57	47	.....	.....	51	42	40	34
2	53	38	51	42	58	48	54	45	54	39	56	47	65	52	55	30	34	21	54	38	49	.....	46	21	45	29
3.....	52	34	47	35	57	42	51	42	51	29	49	41	64	34	51	30	33	12	49	34	.....	.....	32	15	38	21
4.....	54	26	43	29	58	39	48	38	47	26	51	30	56	33	45	24	28	21	44	26	.....	.....	31	13	37	17
5	43	31	48	35	54	41	52	44	53	34	51	42	55	39	52	39	31	8	50	32	.....	.....	36	23	35	28
6	53	30	43	34	57	44	51	40	46	32	51	33	56	36	51	30	33	19	53	32	.....	10	29	4	33	9
7.....	54	42	53	43	57	48	57	48	60	43	56	43	55	46	54	39	39	33	55	36	.....	.....	37	22	40	29
8	62	46	55	46	64	53	58	51	57	51	61	51	61	50	55	51	39	34	55	47	.....	.....	44	32	37	24
9	59	51	54	43	59	55	57	48	58	47	58	44	63	56	57	39	34	16	56	47	.....	.....	39	30	39	24
10.....	56	43	48	41	59	47	53	45	57	40	58	42	57	47	53	36	33	17	52	42	.....	.....	40	20	40	29
11.....	62	35	54	37	62	43	56	43	57	35	64	48	64	40	56	33	40	30	46	39	.....	.....	37	16	38	19
12.....	70	35	44	36	66	44	52	44	53	36	65	40	64	42	54	37	46	28	44	40	.....	.....	47	26	42	20
13.....	68	52	46	36	62	47	58	43	57	35	63	52	63	43	60	34	42	18	46	32	.....	.....	40	25	40	24
14.....	68	38	57	35	61	45	61	45	58	34	68	42	67	40	66	31	42	20	46	33	.....	.....	37	20	43	20
15.....	63	35	53	32	70	48	63	46	66	33	72	49	70	39	63	36	42	20	45	33	.....	.....	37	14	50	24
16	66	33	53	35	65	50	58	45	62	30	72	42	70	40	59	27	45	21	50	32	.....	.....	35	15	42	19
17.....	57	35	60	34	63	47	61	46	63	36	63	35	65	39	66	36	44	22	50	32	.....	.....	38	13	42	18
18.....	54	28	54	40	56	39	58	47	62	30	62	34	65	37	63	32	46	21	50	32	.....	.....	38	14	40	16
19.....	56	27	44	35	56	36	49	42	49	34	55	29	58	35	48	42	32	25	49	33	.....	.....	39	15	40	10
20.....	47	38	45	40	56	49	43	41	45	39	49	41	51	42	47	36	33	11	46	34	.....	.....	34	23	38	23
21.....	50	37	44	38	58	45	48	43	48	36	49	37	53	38	52	29	34	12	47	38	.....	.....	30	22	36	12
22.....	50	35	50	39	59	48	51	42	50	32	52	44	58	45	55	27	37	11	49	35	.....	.....	35	20	40	20
23.....	56	41	48	36	61	48	52	40	52	32	56	44	55	43	54	25	37	20	44	32	.....	.....	21	11	40	22
24.....	60	30	49	34	61	45	53	41	59	31	60	37	60	39	54	30	38	28	43	35	.....	.....	32	14	40	14
25.....	59	32	44	40	62	45	50	45	49	45	57	38	61	38	53	40	32	20	43	35	.....	.....	34	16	44	17
26.....	57	30	48	35	58	43	53	45	54	36	64	44	60	35	54	46	48	20	44	38	.....	.....	33	27	36	16
27.....	62	32	58	40	59	42	58	47	60	41	68	42	65	37	58	41	47	17	55	37	.....	.....	31	25	34	12
28.....	60	39	49	37	66	49	52	46	53	33	61	38	67	44	52	30	41	20	48	33	.....	.....	28	20	42	18
29.....	67	38	54	37	67	50	57	45	59	33	72	45	73	52	60	30	49	29	54	34	.....	.....	26	20	44	23
30.....	64	49	50	41	71	60	54	44	56	41	71	51	60	54	56	41	34	27	51	38	.....	.....	31	19	41	28
31.....	54	52	48	39	64	58	54	41	55	38	60	46	59	55	52	43	32	20	50	43	.....	.....	36	30	40	31
Means.....	58.2	37.1	50.1	37.9	60.9	46.6	54.2	44.3	55.3	36.4	59.9	42.0	61.4	42.3	55.3	35.4	38.5	20.9	49.2	36.1	.....	.....	35.6	20.3	39.9	21.0