

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

CALIFORNIA SECTION.

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GENERAL SUMMARY.

The outstanding feature of the weather during February was the persistence of deficient precipitation which has characterized the last five consecutive months. The average precipitation for the State during February was 2.80 inches, or 63 per cent of the normal. It was the driest February in seven years. At the close of the month the accumulated seasonal precipitation was about 35 to 45 per cent of the normal in the northern and central portions of the State, and 70 to 80 per cent of the normal in southern California. The snowfall in the mountains was markedly deficient, and the amount of snow on the ground at the close of February was only about one-third of that usually to be found at that time of the year. As storms were infrequent, more than the usual amount of sunshine was received, and the mean temperature was slightly above normal. As far as personal comfort was concerned it was a mild and pleasant month. The wind movement was moderate. Scattered light hail fell on several occasions, but did no damage. Several waterspouts were seen over the ocean near Port San Luis on the 22d. A forest fire burned over 85 acres in Trinity County on the 21st, an extraordinary occurrence in a month which is usually one of the wettest of the year. Streams maintained extremely low stages. In northern California the stages of most streams were the lowest on record for February, and springs which had never before been known to cease flowing were rapidly drying up. In southern California conditions were not so serious, as heavy rains fell during the last decade of February and continued into March. Up to the close of February the accumulated seasonal rainfall was heavier in southern California than elsewhere in the State, a condition just the reverse of that which usually obtains.

Agriculturally, the weather during February was unfavorable only because of deficient rainfall. Almond, apricot, peach, plum and prune trees blossomed under satisfactory weather conditions. While frost did no damage to citrus fruit, the harvest of which continued without interruption, low temperatures did some slight damage to blossoming almond trees from the 20th to the 22d. The scattered showers which began about the 19th and continued into March did much good, but the moisture did not penetrate to the roots of trees. In most places the ground was moistened only to plow depths, and the subsoil remained dry. Grains, grasses and vegetables were benefited, and some early vegetables were harvested. A fair yield of early maturing crops was assured by the occurrence of timely rains. But because of the deficient snowfall in the mountains and the dry condition of the subsoil, it now appears inevitable that there will be a serious shortage of water for irrigation and power purposes during the coming summer. The utmost conservation of water is recommended.

A. H. P.

PRESSURE.

The mean sea level pressure, determined from the records of twelve regular Weather Bureau stations, was 30.08 inches. The highest was 30.42 inches at Independence on the 6th; the lowest was 29.59 inches at Independence on the 19th; the range for the State was 0.83 inch.

TEMPERATURE.

The monthly mean temperature for the State, as shown by the records of 100 stations, was 49.4°, which is 0.9° above the normal. The highest monthly mean was 60.6°, at Mecca; and the lowest was 27.5°, at Summit. The highest temperature, 87°, occurred at Redding on the 2d; and the lowest, -22°, occurred at Madeline on the 21st. The range for the State was 109°.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 250 stations, was 2.80 inches, or 1.61 inches below the normal. The greatest monthly amount was 12.68 inches, at Nellie; and the least monthly was 0.22 inch, at Montague and Yreka. The greatest amount in 24 hours was 4.50 inches at Nellie on the 22d.

RELATIVE HUMIDITY, SUNSHINE AND CLOUDINESS.

Stations.	Relative humidity. (Per cent.)			Sunshine.	
	5 a. m.	5 p. m.	Mean.	Actual No. of hours	Percent of possible.
Eureka.....	89	77	83	166	54
Fresno.....	87	54	70	226	72
Independence.....	64	39	52	215	68
Los Angeles.....	82	70	76	200	63
Mount Tamalpais.....	67	68	68	216	69
Red Bluff.....	76	38	57	228	74
Sacramento.....	85	52	68	222	71
San Diego.....	84	76	80	146	46
San Francisco.....	81	66	74	204	65
San Jose.....	61	61	61	192	61
San Luis Obispo.....	80	63	72	190	60

WIND MOVEMENT.—(Miles.)

Stations.	Total mov. for month.	Ave. hr. velocity.	Maximum velocity.	Direction.	Date.	Prev. dir.
Eureka.....	3,752	5.4	33	n.	7	se.
Fresno.....	3,214	4.6	21	nw.	20	nw.
Independence.....	4,369	6.3	36	w.	19	nw.
Los Angeles.....	4,026	5.8	26	ne.	29	ne.
Mount Tamalpais.....	10,059*	14.5	56	n.	8	se.
Point Reyes.....	9,602	13.9	50	s.	27	nw.
Red Bluff.....	3,775	5.4	31	nw.	7	nw.
Sacramento.....	4,422	6.4	35	nw.	8	se.
San Diego.....	3,971	5.7	36	s.	8	nw.
San Francisco.....	5,103	7.3	30	ne.	8	w.
San Jose.....	3,383	4.8	25	se.	1	se.
San Luis Obispo.....	2,546	3.7	20	ne.	7	nw.

COMPARATIVE DATA FOR FEBRUARY.

Year.	Mean temp.	Ave. precip.	Year.	Mean temp.	Ave. precip.	Year.	Mean temp.	Ave. precip.	Year.	Mean temp.	Ave. precip.
1897.....	48.0	5.85	1903.....	43.7	1.76	1909.....	46.6	8.00	1915.....	46.6	10.08
1898.....	49.4	2.95	1904.....	54.5	7.91	1910.....	46.0	2.43	1916.....	49.8	3.94
1899.....	48.5	0.45	1905.....	50.8	4.24	1911.....	43.7	3.33	1917.....	45.7	6.25
1900.....	49.9	0.94	1906.....	52.0	4.58	1912.....	49.7	0.75	1918.....	46.9	6.18
1901.....	47.7	6.03	1907.....	53.3	4.14	1913.....	46.7	2.07	1919.....	45.7	7.46
1902.....	50.3	8.14	1908.....	46.8	3.99	1914.....	48.4	5.49	1920.....	49.4	2.80

The departures from the normal temperature and precipitation are computed only for such stations as have ten or more years of record, but all complete reports are used in determining section or division means. † Also on other dates. * a, b, c, etc., indicate respectively, 1, 2, 3, etc., days missing from the record.

Daily evaporation (inches) and wind movement (miles) for February, 1920.

Stations.	Data.	Day of Month.																															Monthly.
		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	
Chula Vista**1..	Evaporation.....	.099	.071	.055	.102	.122	.140	.174	.169	.129	.137	.093	.099	.111	.101	.122	.115	.058	.089	.062	.083	.046	.036	.101	.113	.071	.109	.121	.139	.061	.....	.....	2.918
	Wind movement.....	.75	.66	.50	.75	.66	.111	.97	.96	.163	.77	.60	.71	.74	.81	.82	.76	.63	.70	.63	.111	.102	.103	.77	.70	.60	.71	.70	.63	.44	.....	.....	2.293
Dodgeland**2...	Evaporation.....	.064	.010	.061	.054	.040	.050	.133	.101	.158	.135	.065	.070	.057	.088	.075	.065	.065	.130	.122	.028	.040	.115	.025	.025	.106	.124	.004	.006	.030	.....	.....	2.044
	Wind movement.....	.10	.30	.10	.50	.10	.20	.160	.60	.50	.60	.20	.20	.20	.36	.19	.15	.30	.50	.50	.90	.70	.30	.10	.70	.40	.40	.50	.40	.60	.....	.....	1,220
Oakdale (near)*3	Evaporation.....	.044	.076	.022	.052	.040	.060	.082	.098	.050	.110	.175	.125	.070	.080	.077	.033	.095	.093	.062	.071	.119	.028	.067	.053	.056	.094	.190	.092	.090	.....	.....	2,304
	Wind movement.....	.100	.140	.40	.4	.50	.50	.50	.180	.50	.65	.65	.60	.60	.30	.50	.55	.75	.90	.70	.100	.90	.105	.85	.82	.168	.170	.180	.50	.50	.....	.....	2,400
Tahoe**4.....	Evaporation.....	.020	.110	.010	.050	.020	.020	.000	.060	.150	.030	.060	.110	.040	.020	.010	.070	.120	.050	.120	.150	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Wind movement.....	.46	.19	.49	.50	.48	.49	.36	.62	.44	.84	.60	.27	.50	.12	.77	.62	.29	.23	.45	.84	.114	.57	.104	.121	.103	.133	.111	.133	.103	.....	.....	1,941

* Observation taken at 7 a. m.; ** at 8 a. m. † Included in next following entry. 1 Ele. 9 ft.; 10 miles SE of San Diego. 2 Ele. 125 ft.; 16 miles SW of Chico. 3 Ele. 215 ft.; Woodward Reservoir, 3 miles N of Oakdale. 4 Ele. 6230 feet; float in Lake Tahoe.

Climatological Data for February, 1920.

Table with columns: Stations, Counties, Elevation, Length of record, Temperature (Mean, Departure from normal, Highest, Date, Lowest, Date, Greatest daily range), Precipitation (Total, Departure from normal, Greatest in 24 hours, Snowfall, Precipitation on inch or more, Clear, Partly cloudy, Cloudy), Number of days (Prevaling direction of wind), and Observers. The table lists data for numerous California locations including Antioch, Atascadero, Bakersfield, Barstow, Berkeley, Blue Canon, Blythe, Bonita, Branscomb, Brawley, Calexico, Chico, Chula Vista, Claremont, Cloverdale, Colfax, Colusa, Corona, Crescent City, Davis, Dodgeland, Durham, El Cajon, Elsinore, Escondido, Eureka, Folsom, Fontana, Fort Bidwell, Fresno, Grass Valley, Greenland Ranch, Hanford, Healdsburg, Hollister, Independence, Indio, Inskip, Kennett, La Porte, Lemon Cove, Lick Observatory, Lindsay, Lone Pine, Los Angeles, McCloud, Marysville, Mecca, Merced, Mount Tamalpais, Mount Wilson, Napa, Needles, Nevada City, Newman, Oakdale, Oakland, Ojai, Orland, Oroville, Pasadena, Paso Robles, Petaluma, Placerville, Point Reyes, Pomona, Porterville, Portola, Red Bluff, Redding, Redlands, Riverside, Rocklin, Rohnerville, Sacramento, St. Helena, Salinas, San Bernardino, San Diego, San Francisco, San Jacinto, San Jose, San Luis Obispo, Santa Ana, Santa Barbara, Santa Cruz, Santa Rosa, Serterre, Sisson, Spreckels, Squirrel Inn, Stockton, Summit, Tahoe, Ukiah, Visalia, Watsonville, Weaverville, Willow, Yosemite, and Yreka.

Daily Temperature for February, 1920.

Table with 32 columns for stations (1-31) and a Mean column. Rows list various California cities like Bakersfield, Calexico, Chico, Escondido, Eureka, Fresno, Independence, Los Angeles, Merced, Mount Tamalpais, Oakland, Orland, Oroville, Paso Robles, Point Reyes, Pomona, Porterville, Red Bluff, Redlands, Sacramento, San Bernardino, San Diego, San Francisco, San Jose, San Luis Obispo, Santa Barbara, Santa Rosa, and Stockton, each with maximum and minimum temperature values.

SUPPLEMENTAL PRECIPITATION TABLE.

Table with 10 columns: Stations, Watersheds, Precip. inches. It lists precipitation data for various locations such as Abbots, Aruanga, Angiola, Antelope Valley, Arrowhead Springs, Auberry, Auburn, Avalon, Azusa, Bagdad, Barrett Dam, Beaumont, Bellota, Benson's Ferry, Betteravia, Big Bar, Bishop Creek, Calaveras R. S., Campbell, Campo, Camptonville, Canon Dam, Cascada, Cedarville, Centerville Pwr. H., Chester, China Flat, Churn Creek, Clovis, Coalinga, Colgate, Crockett, Cuyamaca, Deer Creek, Del Monte, Denair, De Sable, and Dinuba, along with their respective watersheds and precipitation amounts.

* Data obtained from 3-inch rain gage.

SNOWFALL IN THE MOUNTAINS.

At the close of January there was little or no snow on the ground in the Coast Ranges or in the mountains of southern California. In the Sierra Nevada Mountains there was no snow below the 5,000-foot level, while above that level the amounts were much smaller than is usual at that time of the year.

While more snow fell during February than during the preceding month, the snowfall was everywhere below normal. Less than a foot of snow fell at any station in the Coast Ranges or in the mountains of southern California. In the Sierras the snowfall varied from about 25 inches, at the 5,000-foot level, to about 72 inches, at the 7,000-foot level. Because of the dry condition of the soil and the prevalence of desiccating, northerly winds, the snow decreased rapidly in depth. Only at great elevations was there observed any tendency of the snow to pack.

Except on the highest peaks, there was no snow on the ground at the close of February in the Coast Ranges or in the mountains of southern California. In the Sierra Nevada the amounts on the ground varied from about 5 inches, at the 5,000-foot level, to 50 inches, at the 8,000-foot level. There was everywhere a deficiency of the densely packed snow usually to be found in large amounts at the close of February, and which in past years has served as the principal source of the summer water supply.

Measures favoring the utmost conservation of water are demanded by the present conditions. While some snow ordinarily falls after the close of February, it is usually light, and it does not often show a tendency to congeal. Because of the deficient precipitation of the past three years and the marked deficit of the present season to the close of February, the conclusion is inevitable that there will be a serious shortage of water for irrigation and power purposes during the coming summer.

A. H. P.

COMPARATIVE SNOWFALL DATA FOR FEBRUARY.

(Amount on the Ground.)

	FORDYCE DAM.			SUMMIT.			TAMARACK.		
	1st.	15th.	End of mo.	1st.	15th.	End of mo.	1st.	15th.	End of mo.
1907.....	86	67	81	137	95	88	182	122	97
1908.....	75	81	90	88	115	74	104	108	120
1909.....	105	157	138	172	224	213	190	234	256
1910.....	69	72	74	76	70	72	114	110	101
1911.....	128	138	120	228	240	215	320	407	434
1912.....	59	52	44	38	27	23	54	45	42
1913.....	77	69	80	85	55	55	116	100	115
1914.....	107	98	130	192	150	180	274	253	272
1915.....	90	120	135	106	154	180	132	174	185
1916.....	158	150	154	207	164	145	192	165	168
1917.....	72	65	116	80	56	128	64	58	154
1918.....	9	27	68	2	50	74	20	74	80
1919.....	46	96	122	47	102	145	43	81	147
1920.....	34	30	48	32	21	42	21	27	50

T. means trace.

Snowfall Data. [In inches.]

WATERSHED, COUNTY, STATION.	Elevation. feet.	Total snowfall.	Compr'd with normal.	Am't on ground 15th.	Am't on ground end mo.
Klamath Watershed.					
<i>Siskiyou County.</i>					
Yreka.....	2,625	T.	.....	0	0
<i>Trinity County.</i>					
Hayfork.....	2,300	T.	.....	0	0
Ruth.....	2,925	3	.....	0	0
Weaverville.....	2,162	T.	.....	0	0
Mountain Lakes.					
<i>Inyo County.</i>					
Bishop Creek.....	8,390	36	- 2	3	12
Independence.....	3,907	2	.....	0	0
Lone Pine.....	3,728	6	.....	0	0
<i>Lassen County.</i>					
Madeline.....	5,270	11	.....	0	3
Standish.....	4,000	2	.....	0	0
<i>Modoc County.</i>					
Alturas.....	4,400	.....	.....	.....	.....
Cedarville.....	4,675	11	+ 1	0	1
Fort Bidwell.....	4,375	5	.....	0	2
<i>Nevada County.</i>					
Grass Valley.....	2,690	0	.....	0	0
Nevada City.....	2,850	1	- 6	0	0
North Bloomfield.....	3,214	T.	-11	0	0
Truckee.....	5,817	.....	.....	.....	.....
<i>Placer County.</i>					
Tahoe.....	6,230	24	.....	25	32
Sacramento Watershed.					
<i>Butte County.</i>					
De Sabla.....	2,500	10	+ 2	0	T.
Inskip.....	4,975	38	-12	T.	24
West Branch.....	3,216	9	-11	0	0
<i>Nevada County.</i>					
Deer Creek.....	3,700	10	-18	0	T.
Fordyce Dam.....	6,500	44	-32	30	48
Lake Spaulding.....	4,600	20	-26	T.	8
<i>Placer County.</i>					
Blue Canon.....	4,695	25	-21	0	3
Emigrant Gap.....	5,230	26	-34	0	5
Summit.....	7,017	40	-36	21	42
<i>Plumas County.</i>					
Canon Dam.....	4,570	24	.....	6	22
Chester.....	4,550	16	-10	4	9
La Porte.....	5,000	32	-19	0	15
Portola.....	4,832	9	.....	0	0
Quincy.....	3,400	7	- 6	T.	T.
<i>Sierra County.</i>					
Downieville.....	3,150	2	- 6	0	0
Sierraville.....	5,000	6	-14	0	0
<i>Siskiyou County.</i>					
McCloud.....	3,270	4	- 9	0	0
Sisson.....	3,555	10	-10	0	0
<i>Yuba County.</i>					
Camptonville.....	3,500	9	- 8	0	0
San Joaquin Watershed.					
<i>Alpine County.</i>					
Markleeville.....	5,525	2	.....	0	0
Tamarack.....	8,000	60	-17	27	50
Twin Lakes.....	7,970	.....	.....	.....	.....
<i>Calaveras County.</i>					
Calaveras Ranger Station.....	3,400	0	.....	0	0
<i>Fresno County.</i>					
Camp Seven.....	6,980	37	.....	24	38
Cascada.....	4,900	38	.....	0	0
Hume.....	5,300	.....	.....	.....	.....
Huntington Lake.....	6,950	72	.....	10	36
Stevenson Creek.....	4,250	16	.....	0	0
<i>Kern County.</i>					
Glennville.....	3,300	T.	- 7	0	0
<i>Mariposa County.</i>					
Glacier Point.....	.....	36	.....	22	48
Yosemite.....	3,945	18	- 3	0	0
<i>Tulare County.</i>					
Hot Springs.....	3,300	T.	- 3	0	0
Springville.....	4,000	4	-16	0	0
<i>Tuolumne County.</i>					
Hetch Hetchy.....	3,665	5	- 7	0	0
Lake Eleanor.....	4,700	22	- 6	0	T.
Mountains of Southern California.					
Cuyamaca.....	4,677	2	- 9	0	0
Julian.....	4,222	4	.....	0	0
Mount Wilson.....	5,704	3	.....	T.	0
Nellie.....	5,350	4	.....	T.	0
Seven Oaks.....	5,000	8	- 5	0	0
Squirrel Inn.....	5,280	4	.....	0	0