

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.
CHARLES F. MARVIN, Chief.

CLIMATOLOGICAL DATA.

CALIFORNIA SECTION

EDWARD A. BEALS, METEOROLOGIST.

Vol. XXV. SAN FRANCISCO, MARCH, 1921. No. 3

GENERAL SUMMARY.

March, 1921, was unusually warm in California, and the precipitation was deficient. It was the warmest March since 1910. While there were no periods of excessive heat, temperatures well into the eighties prevailed in southern California on several dates, and in the southeastern part of the State they exceeded ninety. The highest temperatures in all sections generally occurred during the opening days of the month and the lowest on the 19th and 20th.

Precipitation for the State as a whole averaged about 60 per cent of the normal. The heaviest amounts fell in the north coast, along the western slopes of the Sierra, and in the foothills and mountains of southern California. In the last named section extraordinarily heavy rains occurred on the 13th and 14th, some of the valley points, even, receiving enough on these two dates alone to bring their monthly total up to normal or above. The excess at such places, however, was more apparent than real, as the latter half of the month was almost rainless in those districts.

There were four periods of general rainfall, two of which occurred during the first half of the month and embraced both the northern and southern parts of the State. The other two did not extend to southern California. During one of these, that occurring on the 18th and 19th, the amounts were not important at any except mountain stations. Rainfall, however, visited nearly all sections north of the Tehachapi between the 21st and 24th, and on these dates at some places the largest single amounts of the month were recorded. These rainy periods were either attended or followed by windy weather nearly everywhere. The highest velocity, 97 miles from the northwest, was reached at Point Reyes on the Marin County coast, on the 25th.

The drought in southern California during the latter half of March made the situation agriculturally less favorable there than in the north where the precipitation occurred more opportunely. In the north green feed was plentiful, and meadows and alfalfa made excellent growth. Nearly all varieties of deciduous fruit bloomed heavily, suffering no harm from frost. Much plowing and planting were done, and garden truck thrived under the prevailing mild temperatures and abundant sunshine.

T. R.

PRESSURE.

The mean sea-level pressure, determined from the records of 10 regular Weather Bureau stations, was 30.04 inches. The highest was 30.40 inches at two stations on the 23rd; the lowest was 29.51 inches at Mt. Tamalpais on the 13th; the range for the State was .89 inch.

TEMPERATURE.

The monthly mean temperature for the State, as shown by the records of 99 stations was 53.9°, which is 2.1° above the normal.

The highest monthly mean was 68.0°, at Indio; and the lowest was 32.4°, at Summit.

The highest temperature, 97°, occurred at Greenland Ranch on the 31st; and the lowest, 8°, occurred at Fordyce Dam on the 19th. The range for the State was 89°.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 236 stations, was 2.86 inches, or 1.88 inches below the normal.

The greatest monthly amount was 9.08 inches, at Branscomb. No rain fell at Bagdad and Greenland Ranch.

The greatest amount in 24 hours was 4.74 inches at Mount Wilson on the 13th.

RELATIVE HUMIDITY, SUNSHINE AND CLOUDINESS.

Stations.	Relative humidity Per cent.			Sunshine.
	6 a.m.	5 p.m.	Mean.	
Eureka.....	89	80	84	122
Fresno.....	88	54	70	283
Independence.....	48	23	36	307
Los Angeles.....	83	64	74	.....
Mount Tamalpais.....	.....	80	.....	184
Red Bluff.....	83	52	63	233
Sacramento.....	91	66	74	243
San Diego.....	84	71	78	253
San Francisco.....	84	65	74	187
San Jose.....	.....	64	.....	173
San Luis Obispo.....	79	65	72	236

WIND MOVEMENT.—(Miles.)

Stations.	Total mov. for month	Ave. hr. velocity.	Maximum velocity.	Direction.	Date	Prev. dir.
Eureka.....	5,778	7.8	37	n.	26	n.
Fresno.....	4,881	6.6	28	n.w.	18	n.w.
Independence.....	5,299	7.1	34	w.	18	s.
Los Angeles.....	4,541	6.1	39	n.w.	25	s.w.
Mount Tamalpais.....	12,150	16.3	84	n.w.	25	n.w.
Point Reyes.....	14,105	19.0	97	n.w.	25	n.w.
Red Bluff.....	4,258	5.7	33	n.w.	26	s.e.
Sacramento.....	5,306	7.1	34	n.w.	26	s.e.
San Diego.....	5,265	7.1	24	w.	25	n.w.
San Francisco.....	6,037	8.1	32	n.	26	w.
San Jose.....	4,449	6.0	26	s.	13	s.e.
San Luis Obispo.....	3,488	4.7	20	w.	23	n.w.

COMPARATIVE DATA FOR MARCH.

Year	Mean temp.	Ave. precip.	Year	Mean temp.	Ave. precip.	Year	Mean temp.	Ave. precip.	Year	Mean temp.	Ave. precip.
1898.....	48.8	0.66	1904.....	51.1	8.52	1910.....	54.7	2.43	1916.....	53.0	3.38
1899.....	51.2	6.10	1905.....	54.7	5.42	1911.....	52.7	6.02	1917.....	45.7	1.58
1900.....	55.7	2.38	1906.....	50.8	9.19	1912.....	48.6	5.17	1918.....	51.5	5.75
1901.....	53.0	1.01	1907.....	49.0	10.67	1913.....	49.6	2.06	1919.....	49.0	3.47
1902.....	49.7	3.39	1908.....	51.8	1.49	1914.....	55.0	1.16	1920.....	49.3	5.79
1903.....	50.9	5.80	1909.....	48.5	3.56	1915.....	53.1	2.33	1921.....	53.9	2.86

Daily evaporation (inches) and wind movement (miles) for March.

Stations.	Data.	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
Chula Vista**....	Evaporation.....	.073	.064	.074	.116	.132	.176	.179	.122	.132	.191	.166	.063	.096	.134	.141	.212	.201	.200	.183	.156	.139	.173	.183	.187	.225	.174	.263	.286	.231	.173	.183	5,028
Dodgeland*.....	Wind movement.....	.61	.53	.47	.89	.94	.142	.136	.65	.126	.119	.102	.121	.141	.76	.71	.106	.121	.214	.136	.94	.88	.94	.107	.91	.147	.101	.101	.93	.72	.104	.111	3,223
Oakdale (near)*.....	Evaporation.....	.111	.101	.052	.067	.083	.187	.074	.041	.064	.120	.172	.098	.204	.188	.038	.047	.005	.018	.150	.199	.156	.116	.099	.161	.139	8	1,309					
Tahoe**.....	Wind movement.....	.60	.45	.105	.65	.100	.60	.90	.60	.65	.95	.230	.100	.45	.33	.100	.60	.60	.140	.90	.100	.110	.50	.110	.125	.165	.50	.30	.45	.35	2,450		
	Evaporation.....	.060	.063	.122	.071	.010	.023	.113	.037	.035	.030	.019	.048	.061	.137	.114	.071	.058	.100	.301	.000	.091	.141	.139	.246	.125	.157	.120	.193				
	Wind movement.....	.64	.54	.62	.85	.38	.49	.60	.73	.93	.34	.81	.81	.95	.55	.66	.79	.67	.78	.71	.64	.54	f	f	.651	.62	.64	.43	.38	.51	.22	32	2,256

* Observations taken at 7 a. m.; ** at 8 a. m. f Included in the next following entry.

Climatological Data for March, 1921.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahr.				Precipitation, in inches.				Number of days.			Prevailing direction of wind.	Observers.					
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Snowfall (unmelted).	Precipitation of one inch or more.	Clear.	Partly cloudy.	Cloudy.			
Antioch.....	Contra Costa.....	46	41	57.4	+3.0	77	8	37	42	35	0.88	-1.42	0.48	0	3	12	19	0	e. C. G. McDaniel.		
Atascadero.....	San Luis Obispo.....	837	4	48.6	-	72	28	30	119	40	2.90	0.72	0	0	7	11	13	nw.	Colony Holding Corp.		
Bakersfield.....	Kern.....	404	31	54.8	+1.7	85	2	33	26	38	0.27	-0.72	0.17	0	4	14	9	8	se.	Santa Fe Co.	
Barstow.....	San Bernardino.....	2,105	17	56.0	-1.8	82	3	31	27	40	0.77	+0.21	0.62	0	2	27	1	3	w.	E. L. White.	
Berkeley.....	Alameda.....	317	33	54.1	-0.2	76	28	42	119	30	1.71	-2.68	0.71	0	9	8	15	8	w.	State University.	
Blue Canon.....	Placer.....	4,695	21	47.2	+7.4	76	31	24	19	35	7.94	-3.38	2.25	14.0	0	9	12	10	9	se.	Southern Pacific Co.
Blythe.....	Riverside.....	268	11	67.0	-	94	11	42	26	47	0.29	0	0.15	0	2	24	6	1	.....	Palo Verde Water Co.
Bonita.....	San Diego.....	110	4	58.5	-	87	28	38	27	47	1.36	-3.66	0.53	0	4	13	10	8	w. sw.	R. M. Allen.	
Branscomb.....	Mendocino.....	2,000	20	47.6	+2.2	74	12	30	25	38	9.08	-	1.75	0	13	9	13	s.	A. J. Haun.		
Brawley.....	Imperial.....	-105	10	61.7	-	88	11	40	27	43	T.	-	0	0	0	1	17	13	1	w.	M. D. Witter.
Calexico.....	Imperial.....	0	15	66.2	+2.6	93	2	42	23	43	0.03	-	0.24	0.03	0	7	11	14	6	se.	H. M. Rouso.
Chico.....	Butte.....	189	50	54.5	-1.1	77	30	34	126	40	2.24	-0.96	0.71	0	9	13	2	16	.....	U. S. Bureau Plant Ind.
Chula Vista.....	San Diego.....	9	2	56.0	-	78	27	41	120	35	0.75	-	0.35	0	3	13	15	15	uw.	Western Salt Works.	
Claremont.....	Los Angeles.....	1,200	28	56.0	+2.1	85	17	35	20	42	7.10	+2.82	4.28	0	5	29	5	6	sw.	Prof. F. P. Brackett.	
Cloverdale.....	Sonoma.....	340	18	58.3	+2.8	80	28	37	27	38	3.15	-6.34	0.81	0	11	9	7	15	s.	John O. Ogle.	
Colfax.....	Placer.....	2,421	49	50.3	+1.2	75	2	19	32	32	6.58	-1.02	1.32	0	11	13	8	10	sw.	Southern Pacific Co.	
Colusa.....	Colusa.....	60	17	55.5	+2.4	78	28	41	19	35	1.20	-1.22	0.34	0	9	16	2	13	se.	E. A. Houchins.	
Corona.....	Riverside.....	615	6	59.0	-	87	16	37	20	43	1.81	-	1.15	0	7	11	14	6	nw.	Edwin T. Brink.	
Crescent City.....	Del Norte.....	125	6	50.0	+2.4	69	28	34	19	29	6.50	-	4.81	1.50	0	14	13	8	10	s.	Thos. E. Peacock.
Davis.....	Yolo.....	51	48	53.1	-3.1	77	30	32	19	35	1.24	-1.33	0.31	0	8	12	7	12	sw.	Prof. S. H. Beckett.	
Dodgeland.....	Butte.....	160	25	53.8	-	76	29	38	27	36	1.56	-	0.63	0	10	11	11	11	s.	Dodge Land Co.	
El Cajon.....	San Diego.....	482	21	57.6	-1.2	87	24	33	28	45	1.27	-1.44	0.47	0	6	19	8	4	sw.	Eugene P. Kessler.	
Elsinore.....	Riverside.....	1,300	4	58.2	-	89	2	31	19	45	1.52	-1.51	0.96	0	5	10	13	8	se.	W. L. Wilbrite.	
Escondido.....	San Diego.....	742	26	56.8	+1.3	85	28	36	27	44	1.83	-1.19	0.75	0	9	16	5	10	s.	H. L. Harlow.	
EUREKA.....	Humboldt.....	64	34	49.8	+1.8	63	16	30	20	19	3.04	-3.93	0.82	0	16	4	4	23	u.	U. S. Weather Bureau.	
Folsom.....	Sacramento.....	252	47	57.8	+3.0	78	2	42	19	28	3.43	-0.38	1.04	0	9	10	11	11	s.	Mrs. G. I. Marvin.	
Fontana.....	San Bernardino.....	1,325	8	56.4	-	84	17	20	41	32	3.82	-	1.40	0	7	21	3	7	sw.	Fontana Land Co.	
Fordyce Dam.....	Nevada.....	6,500	26	36.7	+5.6	69	31	8	19	44	6.20	-5.09	1.65	\$2.0	11	7	14	10	sw.	E. E. Roening.	
Fort Bidwell.....	Modoc.....	4,375	31	43.7	+4.3	68	3	24	27	37	1.06	-1.32	0.37	0	5	8	20	3	.....	C. R. Deocius.
FRESNO.....	Fresno.....	293	33	56.8	+1.9	82	2	39	20	33	1.05	-0.71	0.39	0	6	11	14	6	nw.	U. S. Weather Bureau.	
Grass Valley.....	Nevada.....	2,690	48	49.3	+1.1	74	2	31	19	26	6.27	-1.77	2.19	0	11	11	7	13	sw.	Mrs. L. M. Wentworth.	
Greenland Ranch.....	Inyo.....	-178	9	64.8	-	97	31	40	40	49	0.00	-	0.00	0	0	27	0	4	.....	O. A. Denton.
HFORD.....	Kings.....	249	20	57.4	+3.1	84	2	38	18	36	0.97	-	0.98	0	0	6	19	9	12	se.	Santa Fe Co.
Headsburg.....	Sonoma.....	110	27	54.0	+1.9	81	25	36	27	42	3.23	-	3.64	1.23	0	8	6	11	14	sw.	Dr. F. J. Kinley.
Hollister.....	San Benito.....	284	46	54.4	-0.1	77	25	35	20	39	0.98	-1.40	0.22	0	8	17	4	10	w.	Grangers' Union.	
INDEPENDENCE.....	Inyo.....	3,957	24	52.4	+2.8	77	17	27	23	37	0.06	-0.44	0.04	0	2	18	10	3	se.	U. S. Weather Bureau.	
Indio.....	Riverside.....	-20	42	68.0	-	92	17	42	27	46	0.05	-0.26	0.05	0	1	20	9	2	.....	U. S. Bureau Plant Ind.
Inskip.....	Butte.....	4,975	13	42.0	+1.6	64	28	26	19	24	8.07	-4.34	2.22	0	12	7	5	19	sw.	Pacific Gas & Electric Co.	
Kennett.....	Shasta.....	730	8	54.8	-	85	30	36	18	41	8.57	+0.53	2.42	0	10	17	0	14	sw.	Mammoth Copper Mine.	
La Porte.....	Plumas.....	5,000	26	37.2	+2.0	63	28	22	19	35	4.03	-9.15	2.11	20.5	11	10	5	15	sw.	O. A. Denton.	
Lemon Cove.....	Tulare.....	600	25	56.4	+0.2	82	31	33	20	33	1.33	-2.08	0.60	0	0	5	17	8	6	nw.	T. E. Bence.
Lick Observatory.....	Santa Clara.....	4,209	31	44.3	+3.3	69	2	28	18	26	2.84	-2.85	0.67	T.	11	15	5	11	n.	Lick Observatory.	
Lindsay.....	Tulare.....	384	6	56.6	-	83	2	35	19	42	1.02	-	0.43	0	5	10	17	4	w.	Basil Prior.	
Long Beach.....	Los Angeles.....	50	50	57.2	-	88	27	39	20	46	3.76	-	2.18	0	5	15	9	7	w.	George D. West.	
LOS ANGELES.....	Los Angeles.....	293	43	59.4	+2.5	83	29	44	21	44	2.75	-0.25	2.25	0	6	13	8	10	sw.	U. S. Weather Bureau.	
McCloud.....	Siskiyou.....	3,270	10	43.4	-	72	31	23	26	38	6.20	-	1.60	7.5	8	10	7	4	sw.	McCloud River Lbr. Co.	
Marysville.....	Yuba.....	67	49	55.4	-3.0	76	30	39	28	35	3.43	-	0.62	1.00	0	8	11	7	13	s.	Southern Pacific Co.
Mecca.....	Riverside.....	-185	14	66.8	+4.2	83	29	40	40	49	2.77	-0.01	0.34	0.01	0	1	21	7	3	se.	Cooperative Date Garden.
Mered....	Merced.....	173	46	56.0	+1.0	77	31	35	20	31	1.37	-0.40	0.50	0	6	15	9	7	nw.	Santa Fe Co.	
Mt. TAMALPAIS.....	Marin.....	2,375	21	47.4	+0.3	68	11	34	22	35	1.99	-3.18	0.61	0	7	11	5	20	sw.	U. S. Weather Bureau.	
Mount Wilson.....	Los Angeles.....	5,704	31	47.0	-	73	17	27	23	38	8.77	-	4.74	T.	5	15	9	7	s.	Solar Observatory.	
Napa.....	Napa.....	20	43	54.6	+2.0	78	28	36	20	45	1.55	-	2.15	0.56	0	6	11	11	9	se.	State Hospital.
Needles.....	San Bernardino.....	477	28	67.0	+3.2	91	11	41	21	44	0.14	-0.27	0.12	0	2	1	11	11	11	Santa Fe Co.
Nevada City.....	Nevada.....	2,850	28	48.0	+3.2	77	2	27	26	40	6.13	-2.37	2.20	0	10	7	13	11	sw.	B. H. Preston.	
Newman.....	Stanislaus.....	91	31	54.4	-1.3	79	3	32	21	39	3.01	-1.11	0.37	0	6	12	13	12	sw.	E. S. Wangenheim.	
Oakdale (near).....	Stanislaus.....	215	2	53.1	+1.3	77	29	35	21	36	0.69	-2.12	0.16	0	7	16	13	12	sw.	S. San Joaquin Irr. Dist.	
Oakland.....	Alameda.....	322	44	52.8	-0.2	68	28	43	15	20	1.80	-2.30	0.55	0	9	8	14	3	sw.	Chabot Observatory.	
Ojai.....	Ventura.....	900	14	55.5	+0.8	85	1	31	28	46	3.00	-1.91	1.87	0	7	18	10	3	sw.	W. H. Duncan.	
Orland.....	Glen....	254	38	54.8	-0.9	78	30	39	19	32	1.74	-0.98	0.46	0	10	12	12	7	s.	William Noyer.	
Oroville (near).....	Butte.....	250	36	54.6	+0.3	77	29	34	20	35	2.88	-1.15	0.92	0	7	13	7	11	sw.	Morris S. Jones.	
Pasadena.....	Los Angeles.....	805	30	57.0	+2.6	83	17	39	20	41	2.85	+0.04	2.28	0	9	9	14	8	sw.	Mrs. A. Z. Campbell.	
Petaluma.....	Sonoma.....	800	33	54.0	+2.4	80	29	33	19	40	2.85	-0.38	0.67	0	8	18	10	10	w.	John Landis.	
Placerville.....	El Dorado.....	1,925	31	50.7	+2.3	73	2	30	27	35	5.03	-1.49	0.54	0	8	11	2	18	w.	O. E. Bailey.	
POINT REYES.....	Marin.....	498	20	54.4	-	66	27	44	11	19	1.89	-1.86	0.66	0	10	6	5	20	sw.	U. S. Weather Bureau.	
Pomona.....	Los Angeles.....	857	6	56.7	-	86	2														

Daily Precipitation for March, 1921.

Stations.	Watersheds.	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		
Antioch	San Joaquin		T. . . . .	.09 . . . . .	.22 . . . . .	.04 . . . . .					.10 . . . . .	.30																						0.88
Atascadero	Coast						T.	T. . . . .				.17 . . . . .	.03 . . . . .	.04	T.																			2.90
Bakersfield	San Joaquin																																	0.27
Barstow	Desert																																	0.77
Berkeley	Coast																																	1.71
Blue Canon	Sacramento																																	7.94
Blythe	Colorado																																	0.29
Bonita	Coast																																	1.36
Branscomb	Imperial Valley																																	9.08
Brawley	do																																	T.
Calexico	do																																	0.03
Chico	Sacramento																																	2.24
Chula Vista	Coast																																	0.75
Claremont	do																																	7.10
Cloverdale	do																																	3.15
Colfax	Sacramento																																	6.58
Colusa	do																																	1.20
Corona	Coast																																	1.81
Crescent City	do																																	6.50
Davis	Sacramento																																	1.24
Dodgeland	do																																	1.56
El Cajon	Coast																																	1.27
Elsinore	do																																	1.52
Escondido—1	do																																	1.83
EUREKA***	do																																	3.04
Folsom	Sacramento																																	3.43
Fontana	Coast																																	3.82
Fordyce Dam	do																																	6.20
Fort Bidwell	Mountain Lakes																																	1.06
FRESNO***	San Joaquin																																	1.05
Grass Valley	Sacramento																																	6.27
Greenland Ranch	do																																	0.00
Hanford	San Joaquin																																	0.97
Healdsburg	Coast																																	3.28
Hollister	do																																	0.98
INDEPENDENCE**	Owens																																	0.06
Indio	Coachella Val																																	0.05
Inskip	Sacramento																																	8.07
Kennett	do																																	8.87
Le Porte	do																																	4.03
Lemon Cove	San Joaquin																																	1.33
Lick Observatory	Coast																																	2.84
Lindsay	San Joaquin																																	1.02
Long Beach	Coast																																	3.76
LOS ANGELES**	do																																	2.75
McCloud	Sacramento																																	6.20
Marysville	do																																	3.43
Mecca	Coachella Val																																	0.01
Merced	San Joaquin																																	1.37
MT. TAMALPAIS***	Coast																																	1.99
Mount Wilson	do																																	8.77
Napa	T.																																	1.55
Needles	Colorado																																	0.14
Nevada City	T.																																	6.13
Newman	San Joaquin																																	1.01
Oakdale (near)	do																																	0.69
Oakland	Coast																																	1.80
Ojai	do																																	3.00
Orland	Sacramento																																	1.74
Oroville (near)	do																																	2.88
Pasadena	Coast																																	3.72
Paso Robles—1	T.																																	

Daily Temperature for March, 1921.

Stations.	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	Mean.
Bakersfield.....	75	85	78	74	72	70	68	65	74	66	65	75	73	71	73	77	78	58	71	65	70	65	66	76	80	70	83	83	72.1			
.....| Minimum.....	46	47	48	52	46	46	44	43	45	48	51	50	50	48	44	46	51	41	37	44	44	37	39	49	33	38	43	39	45	44.8		
Calexico.....	88	93	86	85	79	74	76	79	80	79	74	79	69	78	88	91	92	71	78	85	80	90	81	78	76	84	88	90	82.0			
.....| Minimum.....	45	50	51	54	59	56	52	45	47	53	44	51	55	45	53	41	53	57	51	46	53	42	47	62	56	42	48	54	52	50.5		
Chico.....	69	73	70	63	66	60	67	68	66	57	54	65	69	65	63	63	65	65	65	65	65	65	65	65	72	76	74	77	75	65.4		
.....| Minimum.....	43	44	42	51	52	40	47	45	41	44	46	47	50	44	50	43	51	42	40	40	45	43	45	46	40	34	36	43	41	47	43.7	
Escondido.....	74	63	67	66	65	62	58	65	61	59	59	67	70	79	83	84	84	60	67	71	68	70	80	85	82	76	76	75	68.9			
.....| Minimum.....	45	42	50	41	46	48	47	50	48	44	47	49	52	52	44	46	48	48	46	37	37	39	40	42	40	45	36	43	45	42	50	44.8
Eureka.....	53	58	53	55	59	52	51	50	49	52	54	58	51	54	63	61	54	52	55	55	54	56	50	51	59	59	52	54	52	54.1		
.....| Minimum.....	46	45	50	50	50	47	45	47	46	46	45	43	48	44	44	50	44	43	40	43	46	44	46	44	46	44	46	44	46	45.6		
Fresno.....	72	82	65	66	69	62	60	61	62	63	62	66	65	69	74	64	61	66	68	66	64	68	64	63	73	77	76	78	80	67.4		
.....| Minimum.....	48	54	50	52	51	48	42	43	40	47	41	52	47	46	40	47	41	45	42	41	46	47	48	47	49	52	46	43	46.3			
Independence.....	76	76	74	63	65	55	61	66	63	66	63	56	61	60	64	74	77	74	54	62	65	64	62	72	75	75	75	75	66.2			
.....| Minimum.....	51	43	44	39	37	39	33	35	35	38	35	48	38	36	38	42	47	37	34	38	27	35	43	37	34	39	41	38	36	38.6		
Los Angeles.....	66	60	64	66	64	60	62	63	59	59	57	65	70	88	83	62	66	67	62	67	79	72	69	78	81	83	72	78	78	67.6		
.....| Minimum.....	44	50	51	49	50	52	51	50	49	49	52	52	50	55	59	53	50	48	50	51	45	55	52	49	53	56	53	51	51.1			
Merced.....	71	76	63	66	62	62	56	62	61	63	63	68	64	69	71	71	61	64	66	59	63	68	64	65	71	73	73	75	77	66.5		
Mount Tamalpais.....	68	68	45	46	46	51	47	44	48	43	44	47	46	50	52	63	60	48	49	47	44	43	49	55	54	57	61	62	65	59.5		
.....| Minimum.....	58	43	42	43	44	42	38	40	39	37	37	41	41	41	43	45	44	38	34	38	37	37	47	52	58	59	56	54	42.3			
Oakland.....	66	54	53	58	57	53	52	57	46	54	58	58	56	64	69	53	54	54	54	51	59	62	64	64	66	56	56	58	58.1			
.....| Minimum.....	47	52	51	49	52	50	48	45	49	48	46	49	46	49	44	44	43	43	45	45	46	48	47	45	47	47	45	47	47.6			
Orland.....	71	70	67	63	64	66	61	66	67	62	58	64	63	68	65	63	60	51	59	63	57	64	72	77	78	78	78	65.0				
.....| Minimum.....	50	47	46	49	50	43	44	44	44	41	44	45	47	47	48	42	42	40	41	45	45	48	41	41	45	46	44	44.5				
Oroville.....	68	67	77	73	64	68	64	64	67	59	55	60	66	66	62	70	70	63	64	65	58	61	73	77	77	77	77	65.8				
Paso Robles.....	78	78	59	61	69	62	62	63	56	57	62	65	69	72	79	65	62	64	65	64	67	60	68	66	72	76	80	79	73	66.9		
.....| Minimum.....	42	47	47	44	48	47	43	36	42	43	44	46	48	38	42	45	43	36	40	40	35	38	40	37	40	41	39	41	41.1			
Point Reyes.....	52	64	50	52	54	52	51	52	52	50	53	53	53	55	58	54	51	50	50	55	55	52	53	66	65	65	65	65	54.1			
.....| Minimum.....	46	49	47	48	47	48	46	45	44	46	48	48	46	47	48	48	46	48	46	48	46	47	48	47	46	44	46	46.7				
Pomona.....	80	65	65	70	69	65	61	62	67	55	62	57	56	70	73	81	85	64	64	70	72	61	72	78	78	83	86	80	76	70.5		
Porterville.....	42	49	50	37	47	45	46	45	42	49	48	48	52	49	49	41	42	43	40	33	39	37	38	36	34	34	39	51	42.9			
Red Bluff.....	77	70	69	60	63	66	64	71	67	60	52	53	56	63	62	70	65	61	63	60	52	53	65	65	65	65	65	65	64.9			
Redlands.....	52	50	47	50	46	47	43	48	48	46	46	46	46	48	48	46	46	46	44	45	44	45	46	47	47	47	47	47	47.0			
.....| Minimum.....	87	76	67	65	62	60	57	58	55	54	54	57	59	55	67	71	81	86	70	63	69	70	61	71	84	74	80	82	77	77	69.5	
Sacramento.....	43	40	45	41	46	48	45	48	44	44	47	47	46	48	48	46	46	47	46	47	46	47	46	47	46	47	46	44	44.1			
.....| Minimum.....	67	75	62	61	63	65	55	58	53	54	54	58	62	63	62	63	62	61	61	66	65	63	69	72	72	76	76	76	68.4			
San Bernardino.....	91	78	69	70	66	62	60	60	58	60	60	57	71	75	85	90	73	73	71	74	64	75	73	76	73	76	73	76	72.1			
.....| Minimum.....	40	44	50	42	50	50	44	47	47	42	48	49	47	40	40	41	41	39	44	44	45	45	46	47	47	47	47	47	43.5			
San Diego.....	58	56	63	64	63	62	62	62	61	62	59	60	59	65	66	66	71	71	60	59	65	62	61	61	68	65	62	63	63.5			
.....| Minimum.....	51	53	51	49	52	54	53	53	54	52	52	55	53	53	50	51	55	53	51	55	52	49	48	47	48	46	47	46	47	51.5		
San Francisco.....	69	57	57	58	55	55	55	55	59	53	59	59	52	59	57	61	57	50	58	57	64	63	65	65	68	73	73	66	60.4			
.....| Minimum.....	48	51	50	52	50	47	49	50	47	49	51	50	49	50	50	50	47	47	47	47	49	49	51	47	47	48	47	48.7				
San Jose.....	68	75	59	63	63	63	58	60	60	56	56	64	64	66	65	70	64	62	62	69	61	60	68	64	67	73	75	74	64.7			
.....| Minimum.....	45	48	48	43	51	48	47	47	49	50	48	49	50	46	48	43	45	46	44	40	41	39	44	41	37	41	42	43	44.8			
San Luis Obispo.....	82	58	63	61	64	61	58	61	55	61	56	58	62	67	72	78	74	61	59	64	60	75	67	72	82	80	69	68.5				
.....| Minimum.....	50	46	49	49	51	50	46	43	47	49	50	51	46	44	44	45	52	45	42	45	47	42	44	44	46	46	46.6					
Santa Barbara.....	48	50	52	49	45	46	41	44	44	42	52	51	55	45	46	42	47	48	54	44	43	42	38	51	40	44	55	53	46.6			
.....| Minimum.....	72	72	58	59	59	64	62	60	52	55	56	57	65	58	70	63	61	65	54	54	65	67	70	72	72	74	64.0					
Santa Rosa.....	41	44	46	45	50	41	35	41	44	47	45	48	48	41	42	38	41	44	38	36	41	35	41	33	45	38	39	41	41.7			
Stockton.....	67	75	60	63	62	6																										

SNOWFALL IN THE MOUNTAINS.

During March, 1921, the snowfall in the mountains was much less than in the preceding month. The snow is well packed and the water content is large and it is melting slowly. At the end of the month the amount on the ground, as compared with the average for the past 15 years, was 100 per cent at Fordyce Dam, elevation 6,500 feet, and 82 per cent at Summit, elevation 7,017 feet. These stations are in the Sacramento watershed. At Tamarack, Alpine County, elevation about 8,000 feet, there was 64 per cent of the average for the last 15 years, and at Huntington Lake, in the San Joaquin drainage area, elevation 6,950 feet, there was 83 per cent of the average for the last 6 years.

The greatest monthly amount was 41 inches at Camp Seven, in Fresno County, at an elevation of 6,980 feet. No snow of consequence fell in the Klamath watershed or in the mountains of southern California, and practically none fell in Sacramento and San Joaquin watersheds below an elevation of 3,000 feet.

The depth of snow on the ground at the end of March, as compared with the amount at the end of the preceding month of February, ranged from 78 per cent at Huntington Lake to 98 per cent at Fordyce Dam.

Owing to the deficiency of snow during February and March the outlook for water for hydroelectric purposes and for late irrigation is not so good as was expected earlier in the season. This is especially true for the San Joaquin Valley and in southern California where the greatest conservation possible will have to be exercised to provide enough water for necessary purposes during the coming summer. In the Sacramento watershed the snow now on the ground is but little under the normal amount, and a repetition of last year's condition is not to be expected.

E. A. B.

COMPARATIVE SNOWFALL DATA FOR MARCH.

(Amount on the Ground.)

	FORDYCE DAM.			SUMMIT.			TAMARACK.		
	1st.	15th.	End of mo.	1st.	15th.	End of mo.	1st.	15th.	End of mo.
1907.....	98	119	154	104	191	262	101	210	348
1908.....	105	87	75	116	130	60	131	126	84
1909.....	131	116	126	201	196	191	259	255	253
1910.....	72	58	71	65	38	68	101	82	90
1911.....	128	154	124	222	276	138	443	440	338
1912.....	45	80	67	26	81	53	44	79	62
1913.....	80	72	82	52	42	50	115	103	107
1914.....	130	113	108	178	140	121	271	255	258
1915.....	133	117	100	182	153	119	185	161	143
1916.....	165	148	133	151	189	120	192	179	160
1917.....	114	114	110	128	143	114	152	153	125
1918.....	127	106	82	102	114	78	116	120	100
1919.....	122	135	103	142	147	109	144	140	102
1920.....	54	30	67	53	62	60	56	57	87
1921.....	108	102	99	102	99	91	117	102	100

T. means trace.

Snowfall Data. [In inches.]

WATERSHED, COUNTY, STATION.	Eleva- tion, feet.	Total snow- fall.	Compr'd with normal.	Am't on ground 15th.	Am't on ground end mo
Klamath Watershed.					
Siskiyou County. Yreka.....	2,625	0	.....	0	0
Trinity County. Hayfork.....	2,300	0	.....	0	0
Ruth.....	2,925	1	.....	0	0
Weaverville.....	2,162	0	.....	0	0
Mountain Lakes.					
Alpine County. Markleeville.....	5,525	3	.....	0	0
Tamarack.....	8,000	25	-71	102	100
Iayo County. Bishop Creek.....	8,390	17	-10	10	0
Independence.....	3,907	0	.....	0	0
Lassen County. Madeline.....	5,270	11	.....	0	0
Standish.....	4,000	.....	.....	.....	.....
Modoc County. Alturas.....	4,400	.....	.....	.....	.....
Cederville.....	4,675	0	-14	0	0
Fort Bidwell.....	4,375	.....	.....	.....	.....
Nevada County. Grass Valley.....	2,600	0	.....	0	0
Nevada City.....	2,850	0	-9	0	0
North Bloomfield.....	3,214	0	-16	0	0
Placer County. Tahoe.....	6,230	6	.....	29	21
Mono County. Shields Ranch.....	3,500	T.	.....	0	0
Sacramento Watershed.					
Butte County. De Sabla.....	2,500	0	-13	0	0
Inskip.....	4,975	20	-28	78	72
West Branch.....	3,216	0	-18	0	0
Nevada County. Deer Creek.....	3,700	3	-29	0	0
Fordyce Dam.....	6,500	32	-54	102	99
Lake Spaulding.....	4,600	13	-54	4	3
Placer County. Blue Canon.....	4,695	14	-40	0	0
Emigrant Gap.....	5,230	22	-32	21	0
Summit.....	7,017	27	-20	99	91
Plumas County. Canon Dam.....	4,570	21	.....	20	15
Chester.....	4,550	17	-9	29	20
La Porte.....	5,000	20	-41	48	41
Portola.....	4,832	4	.....	0	0
Quincy.....	3,400	8	-12	0	0
Sierra County. Downieville.....	3,150	4	-- 5	0	0
Sierraville.....	5,000	4	-10	0	0
Siskiyou County. McCloud.....	3,270	7	-9	10	T.
Sisson.....	3,555	17	-5	0	0
Yuba County. Camp Crystal.....	3,500	1	-14	0	0
San Joaquin Watershed.					
Calaveras County. Calaveras Ranger Station.....	3,400	.....	.....	.....	.....
Fresno County. Camp Seven.....	6,980	41	.....	.54	45
Cascada.....	4,900	3	.....	0	0
Hunne.....	5,300	.....	.....	60	45
Huntington Lake.....	6,950	34	.....	.....	.....
Kern County. Glenville.....	3,300	0	-4	0	0
Mariposa County. Dudley's.....	3,000	1	.....	0	0
Glacier Point.....	7,000	19	.....	55	37
Yosemite.....	3,945	4	-16	0	0
Tulare County. Hot Springs.....	3,300	0	-- 4	0	0
Springville.....	4,000	T.	-14	0	0
Tuolumne County. Hetch Hetchy.....	3,665	0	-9	0	0
Lake Eleanor.....	4,700	8	-28	0	0
Mountains of Southern California.					
Cuyamaca.....	4,677	1	-9	0	0
Julian.....	4,222	T.	.....	0	0
Mount Wilson.....	5,704	T.	.....	0	0
Nellie.....	5,350	1	.....	0	0
Seven Oaks.....	5,000	3	-- 7	0	0
Squirrel Inn.....	5,280	2	-9	0	0