

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

## **CLIMATOLOGICAL DATA.**

## CALIFORNIA SECTION

EDWARD A. BEALS, METEOROLOGIST.

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## GENERAL SUMMARY.

The first half of December was abnormally warm and dry, and the latter half abnormally warm and wet. For the State as a whole the average precipitation was more than twice the normal for December, and practically all of this was received after the 16th. It was the wettest month since January, 1916, and it was the wettest December in 15 years. Though the precipitation was deficient in extreme northern California, it was excessive in the southern portion of the State. Abundant precipitation in the form of snow occurred in the Sierra Nevada Mountains, while torrential rains fell in the elevated portions of southern California. On Mount Wilson, Los Angeles County, altitude 5,704 feet, 11 inches of rain fell in 24 hours on the 18th-19th, and 23.03 inches fell in 6 days, the 18th-23d, inclusive. At Squirrel Inn, San Bernardino County, altitude 5,280 feet, 30.70 inches of rain fell in 11 days. Soil erosion, damaged roads and delayed transportation resulted from these rains, but there were no floods of consequence. Desiccating, northerly winds prevailed in central and southern California during the first week, and injured maturing citrus fruit in the latter region. Destructive winds caused considerable damage in central California on the 25th. At the close of the month the accumulated seasonal precipitation was far below normal in the northern portion of the State, it was about normal in the central portion, and it was two to three times the normal in the southern portion. There was a considerable amount of well-packed snow on the ground in the Sierra Nevada Mountains; in the Coast Range and in the elevated portions of southern California there was no snow except on the highest peaks.

The weather was favorable from an agricultural viewpoint. Much field work, such as pruning and spraying, was completed during the fine, dry weather of the first half of the month, but the soil was too dry for plowing. The generous rains of the latter half revived pastures and caused winter growing grains to come up to good stands. Because of the marked improvement in pastures and ranges caused by the timely rains, livestock and grazing cattle were in excellent condition at the close of the month. Citrus fruit sustained no damage of consequence from low temperatures, though killing frosts occurred frequently in portions of the State where vegetation was dormant. The harvesting of oranges was completed in northern and central California under favorable conditions, but picking in southern California was delayed by the heavy rains. The agricultural situation at the close of December was excellent, owing to the replenished supply of soil moisture, the refilled reservoirs and the satisfactory pack of snow in the Sierra Nevada Mountains.

A. H. P.

## PRESSURE.

The mean sea-level pressure, determined from the records of 11 regular Weather Bureau stations, was 30.07 inches. The highest was 30.63 inches at Eureka on the 2d; the lowest was 29.01 inches at Point Reyes on the 25th; the range for the State was 1.62 inches.

## TEMPERATURE

The monthly mean temperature for the State, as shown by the records of 98 stations, was  $49.0^{\circ}$ , which is  $2.3^{\circ}$  above normal.

The highest temperature,  $88^{\circ}$ , occurred at Ojai on the 10th; and the lowest,  $-2^{\circ}$ , occurred at Madeline on the 17th.

## **PRECIPITATION.**

The greatest monthly amount was 30.70 inches, at Squirrel Inn; and the least monthly amount was 0.10 inch, at Greenland Ranch.

The greatest amount in 24 hours was 11.00 inches at Mount Wilson on the 19th

## RELATIVE HUMIDITY, SUNSHINE AND CLOUDINESS.

| Stations.            | Relative humidity<br>Per cent. |        |       | Sunshine. |    |
|----------------------|--------------------------------|--------|-------|-----------|----|
|                      | 5 a.m.                         | 5 p.m. | Mean. |           |    |
| Eureka.....          | 86                             | 81     | 84    | 100       | 32 |
| Fresno.....          | 57                             | 66     | 61    | 154       | 52 |
| Independence.....    | 56                             | 46     | 51    | 164       | 56 |
| Los Angeles.....     | 69                             | 65     | 67    | 172       | 56 |
| Red Bluff.....       | 82                             | 63     | 72    | 125       | 48 |
| Sacramento.....      | 54                             | 72     | 78    | 152       | 52 |
| San Diego.....       | 70                             | 75     | 72    | 161       | 52 |
| San Francisco.....   | 86                             | 69     | 78    | 147       | 50 |
| San Jose.....        | 69                             | 69     | 69    | 142       | 48 |
| San Luis Obispo..... | 76                             | 61     | 68    | 159       | 52 |

#### WIND MOVEMENT.—(Miles.)

| Stations.            | Total mov.<br>for month. | Ave. hr.<br>velocity. | Maximum<br>velocity. | Direction. | Date | Prev.dir. |
|----------------------|--------------------------|-----------------------|----------------------|------------|------|-----------|
| Eureka.....          | 4,201                    | 5.6                   | 48                   | sw.        | 1    | se.       |
| Fresno.....          | 3,730                    | 5.0                   | 24                   | se.        | 20   | nw.       |
| Independence.....    | 4,551                    | 6.1                   | 40                   | se.        | 20   | nw.       |
| Los Angeles.....     | 4,930                    | 6.7                   | 43                   | ne.        | 3    | ne.       |
| Point Reyes.....     | 12,966                   | 17.4                  | 96                   | s.         | 25   | s.        |
| Red Bluff.....       | 4,018                    | 5.4                   | 36                   | se.        | 1    | nw.       |
| Sacramento.....      | 5,886                    | 7.9                   | 50                   | s.         | 25   | se.       |
| San Diego.....       | 4,746                    | 6.4                   | 40                   | s.         | 25   | 18.       |
| San Francisco.....   | 6,175                    | 8.3                   | 58                   | sw.        | 25   | se.       |
| San Jose.....        | 4,915                    | 6.6                   | 43                   | s.         | 25   | sp.       |
| San Luis Obispo..... | 3,080                    | 4.1                   | 26                   | se.        | 25   | s.        |

**COMPARATIVE DATA FOR DECEMBER**

| Year      | Mean<br>temp. | Ave.<br>precip. |
|-----------|---------------|-----------------|-----------|---------------|-----------------|-----------|---------------|-----------------|-----------|---------------|-----------------|
| 1897..... | 44.4          | 1.75            | 1904..... | 47.2          | 3.04            | 1911..... | 43.3          | 2.05            | 1918..... | 43.8          | 2.10            |
| 1898..... | 44.4          | 1.20            | 1905..... | 45.3          | 1.55            | 1912..... | 44.7          | 1.58            | 1919..... | 46.1          | 3.87            |
| 1899..... | 45.8          | 3.03            | 1906..... | 47.3          | 8.42            | 1913..... | 44.8          | 7.04            | 1920..... | 45.7          | 5.73            |
| 1900..... | 47.3          | 1.68            | 1907..... | 48.3          | 5.41            | 1914..... | 41.8          | 5.00            | 1921..... | 49.0          | 8.33            |
| 1901..... | 47.4          | 1.45            | 1908..... | 43.2          | 2.33            | 1915..... | 45.7          | 5.56            | .....     | .....         | .....           |
| 1902..... | 46.6          | 2.96            | 1909..... | 43.3          | 6.92            | 1916..... | 41.8          | 5.81            | .....     | .....         | .....           |
| 1903..... | 45.0          | 1.44            | 1910..... | 47.8          | 1.87            | 1917..... | 49.8          | 1.43            | .....     | .....         | .....           |

Daily evaporation (inches) and wind movement (miles) for December

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

## CLIMATOLOGICAL DATA: CALIFORNIA SECTION.

DECEMBER, 1921.

## Climatological Data for December, 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, 0.1 inch or more. | Clear.                        | Partly cloudy. |     |              |                            |
| Antioch.....          | Contra Costa.....    | 46               | 42                       | 48.8                          | +0.5                       | 66       | †1    | 32                        | 12    | 32                    | 4.62   | +2.29                      | 1.70                  | 0                    | 11                               | 7                             | 1              | 23  | n.           | Antioch Ledger.            |
| Atascadero.....       | San Luis Obispo..... | 837              | 5                        | 45.0                          | -0.5                       | 68       | 10    | 19                        | 4     | 5                     | 7.32   | -2.04                      | 2.40                  | 0                    | 11                               | 14                            | 6              | 13  | se.          | Atascadero Estates, Inc.   |
| Bakersfield.....      | Kern.....            | 404              | 32                       | 51.2                          | +3.7                       | 71       | †12   | 41                        | 1     | 1.88                  | +1.19  | -0.42                      | 0                     | 13                   | 12                               | 6                             | 13             | nw. | Santa Fe Co. |                            |
| Barstow.....          | San Bernardino.....  | 2,105            | 18                       | 51                            | -5.0                       | 68       | †9    | 33                        | 3     | 41                    | 8.63   | -1.60                      | 2.92                  | 0                    | 11                               | 10                            | 12             | 9   | se.          | L. Tiernan.                |
| Berkeley.....         | Alameda.....         | 317              | 34                       | 51.6                          | +1.9                       | 68       | 31    | 39                        | †5    | 25                    | 8.48   | +4.05                      | 2.00                  | 0                    | 15                               | 8                             | 16             | 7   | s.           | State University.          |
| Blue Canon.....       | Placer.....          | 4,695            | 29                       | 39.4                          | +0.8                       | 60       | 5     | 25                        | 4     | 25                    | 16.13  | +7.07                      | 2.50                  | 79.0                 | 14                               | 14                            | 2              | 15  | s.           | Southern Pacific Co.       |
| Blythe.....           | Riverside.....       | 268              | 12                       | 55.4                          | -0.1                       | 78       | †2    | 30                        | †11   | 46                    | 1.66   | -0.03                      | 1.03                  | 0                    | 7                                | 17                            | 4              | 10  | sw.          | Palm Verde Water Co.       |
| Bonita.....           | San Diego.....       | 110              | 5                        | 57.0                          | -0.1                       | 78       | †9    | 33                        | 3     | 41                    | 8.63   | -1.60                      | 2.65                  | 2.5                  | 14                               | 10                            | 10             | 11  | w.           | R. M. Allen.               |
| Branscomb.....        | Mendocino.....       | 2,000            | 21                       | 44.6                          | +0.1                       | 67       | †3    | 26                        | 19    | 37                    | 11.38  | -0.54                      | 1.28                  | 0                    | 5                                | 5                             | 5              | 5   | n.           | A. J. Haun.                |
| Brawley.....          | Imperial.....        | -105             | 11                       | 54.4                          | -0.7                       | 77       | 19    | 31                        | †0    | 45                    | 2.18   | -0.83                      | 0                     | 0                    | 4                                | 13                            | 10             | 8   | se.          | M. D. Witter.              |
| Calexico.....         | Imperial.....        | 0                | 6                        | 53.4                          | +0.9                       | 81       | 19    | 33                        | †0    | 43                    | 1.66   | +1.29                      | .75                   | 0                    | 11                               | 13                            | 6              | 12  | s.           | U. S. Bureau Plant Ind.    |
| Chico.....            | Butte.....           | 189              | 51                       | 47.6                          | +0.1                       | 64       | 12    | 29                        | 16    | 30                    | 6.43   | +2.25                      | 1.28                  | 0                    | 10                               | 8                             | 14             | 9   | sw.          | Western Salt Works.        |
| Chula Vista.....      | San Diego.....       | 9                | 3                        | 57.6                          | -0.1                       | 77       | 5     | 38                        | 2     | 35                    | 8.26   | -0.05                      | 3.05                  | 0                    | 10                               | 15                            | 2              | 14  | n.           | Prof. F. P. Brackett.      |
| Claremont.....        | Los Angeles.....     | 1,200            | 29                       | 54.8                          | +2.4                       | 82       | 10    | 32                        | †8    | 47                    | 10.47  | +8.59                      | 2.88                  | 0                    | 13                               | 7                             | 10             | 14  | sw.          | John O. Ogle.              |
| Cloverdale.....       | Sonoma.....          | 240              | 19                       | 49.6                          | +1.6                       | 71       | 3     | 29                        | 19    | 37                    | 8.97   | +2.46                      | 2.27                  | 0                    | 12                               | 14                            | 0              | 17  | n.           | Southern Pacific Co.       |
| Colfax.....           | Placer.....          | 2,421            | 50                       | 47.4                          | +0.8                       | 78       | 11    | 32                        | †9    | 34                    | 11.44  | +3.41                      | 1.85                  | 6.0                  | 12                               | 15                            | 2              | 14  | sw.          | E. A. Houchins.            |
| Colusa.....           | Colusa.....          | 60               | 18                       | 48.0                          | +2.8                       | 68       | 1     | 30                        | †6    | 34                    | 4.97   | +1.69                      | 1.36                  | 0                    | 13                               | 12                            | 6              | 13  | se.          | Edwin T. Brink.            |
| Corona.....           | Riverside.....       | 615              | 1                        | 55.6                          | -0.1                       | 86       | 10    | 35                        | †7    | 48                    | 10.59  | -0.03                      | 2.35                  | 0                    | 11                               | 17                            | 0              | 14  | s.           | Thos. F. Peacock.          |
| Crescent City.....    | Del Norte.....       | 125              | 7                        | 45.9                          | -1.3                       | 65       | 16    | 28                        | 19    | 27                    | 10.02  | -2.05                      | 3.0                   | 0                    | 12                               | 10                            | 3              | 13  | n.           | Prof. S. H. Beckett.       |
| Davis.....            | Yolo.....            | 51               | 49                       | 46.8                          | -2.0                       | 63       | 3     | 28                        | 14    | 32                    | 4.39   | +1.16                      | 1.54                  | 0                    | 10                               | 12                            | 12             | 7   | sw.          | Dodge Land Co.             |
| Dodgeland.....        | Butte.....           | 160              | 2                        | 46.8                          | -0.1                       | 69       | 3     | 28                        | 7     | 34                    | 5.96   | -1.10                      | 0.03                  | 0                    | 13                               | 7                             | 10             | 14  | n.           | Eugene P. Kessler.         |
| El Cajon.....         | San Diego.....       | 482              | 22                       | 57.6                          | +3.5                       | 85       | †10   | 32                        | †7    | 51                    | 11.65  | +10.40                     | 4.10                  | 0                    | 9                                | 13                            | 9              | 10  | sw.          | W. L. Wilhite.             |
| Elsinore.....         | Riverside.....       | 1,300            | 55                       | 55.9                          | -0.2                       | 84       | 11    | 33                        | †7    | 51                    | 13.22  | +11.62                     | 2.60                  | 0                    | 10                               | 9                             | 11             | 11  | w.           | H. L. Harlow.              |
| Escondido—1.....      | San Diego.....       | 742              | 27                       | 56.9                          | +6.2                       | 82       | 12    | 36                        | †7    | 46                    | 11.32  | +9.97                      | 2.55                  | 0                    | 11                               | 11                            | 5              | 12  | se.          | U. S. Weather Bureau.      |
| EUREKA.....           | Humboldt.....        | 64               | 35                       | 48.4                          | +0.4                       | 65       | 4     | 36                        | 3     | 27                    | 4.48   | -2.77                      | 1.47                  | 0                    | 14                               | 6                             | 9              | 16  | s.           | Pacific Gas & Electric Co. |
| Folsom.....           | Sacramento.....      | 252              | 45                       | 48.9                          | +1.9                       | 64       | †4    | 33                        | †4    | 30                    | 6.06   | +1.86                      | 1.37                  | 0                    | 16                               | 8                             | 7              | 13  | sw.          | Fontana Land Co.           |
| Fontana.....          | San Bernardino.....  | 1,325            | 9                        | 54.0                          | -0.1                       | 79       | 10    | 31                        | †7    | 42                    | 13.76  | -0.19                      | 3.19                  | 0                    | 10                               | 15                            | 8              | 13  | sw.          | E. E. Roening.             |
| Fordyce Dam.....      | Nevada.....          | 6,500            | 27                       | 37.9                          | +9.5                       | 68       | 16    | 12                        | 25    | 47                    | 17.33  | +7.41                      | 2.15                  | 106.0                | 13                               | 10                            | 8              | 13  | n.           | C. R. Decious.             |
| Fort Bidwell.....     | Modoc.....           | 4,375            | 22                       | 33.6                          | +0.8                       | 57       | 1     | 3                         | 29    | 35                    | 2.76   | -29                        | .87                   | 22.0                 | 9                                | 9                             | 12             | 10  | sw.          | U. S. Weather Bureau.      |
| FRESNO.....           | Paso Robles—1.....   | 2,690            | 34                       | 50.4                          | +3.6                       | 66       | 27    | 31                        | 16    | 29                    | 3.47   | +1.94                      | 1.08                  | 0                    | 13                               | 14                            | 3              | 14  | pw.          | Mrs. L. M. Wentworth.      |
| Grass Valley.....     | Nevada.....          | -178             | 10                       | 57.1                          | -0.1                       | 79       | 21    | 30                        | †2    | 32                    | 18.59  | +5.38                      | 2.15                  | 13.0                 | 12                               | 12                            | 5              | 14  | sw.          | O. A. Denton.              |
| Greenland Ranch.....  | Iruyo.....           | 249              | 21                       | 44.6                          | +1.0                       | 65       | 27    | 26                        | 9     | 32                    | 3.09   | -1.15                      | .92                   | 0                    | 12                               | 8                             | 0              | 23  | n.           | Santa Fe Co.               |
| Hanford.....          | Kings.....           | 28               | 21                       | 46.4                          | -0.6                       | 77       | 30    | 29                        | 19    | 35                    | 9.85   | +2.82                      | 1.78                  | 0                    | 13                               | 11                            | 8              | 12  | se.          | Dr. F. J. Kinley.          |
| Healdsburg.....       | Sonoma.....          | 110              | 23                       | 46.4                          | -0.6                       | 68       | †10   | 29                        | 16    | 36                    | 6.18   | +1.21                      | 2.55                  | 0                    | 14                               | 10                            | 8              | 13  | w.           | Grangers' Union.           |
| Hollister.....        | San Benito.....      | 284              | 47                       | 49.2                          | -0.9                       | 68       | 22    | 29                        | 16    | 36                    | 3.71   | -1.69                      | .66                   | 0                    | 6                                | 16                            | 7              | 8   | nw.          | U. S. Weather Bureau.      |
| INDEPENDENCE.....     | Iruyo.....           | 3,957            | 23                       | 43.5                          | +1.9                       | 68       | 16    | 12                        | 25    | 47                    | 17.33  | +7.41                      | 2.15                  | 106.0                | 13                               | 10                            | 8              | 13  | sw.          | U. S. Bureau Plant Ind.    |
| Indio.....            | Riverside.....       | -20              | 43                       | 57.2                          | +0.6                       | 81       | 11    | 31                        | †7    | 49                    | 4.34   | +3.02                      | 1.62                  | 0                    | 5                                | 7                             | 9              | 15  | n.           | Pacific Gas & Electric Co. |
| Inskip.....           | Butte.....           | 4,475            | 14                       | 50.1                          | +4.7                       | 60       | †4    | 20                        | 19    | 20                    | 20.97  | +8.09                      | 3.21                  | 97.2                 | 14                               | 13                            | 14             | 14  | sw.          | Monolith Copper Mine.      |
| Kennett.....          | Shasta.....          | 730              | 9                        | 45.8                          | -0.1                       | 74       | 4     | 23                        | 16    | 40                    | 11.53  | +2.07                      | 1.70                  | 3.0                  | 12                               | 10                            | 3              | 12  | s.           | Wm. Schulz.                |
| La Porte.....         | Plumas.....          | 5,000            | 27                       | 32.4                          | -3.1                       | 45       | 6     | 18                        | 19    | 15                    | 14.45  | +3.52                      | 2.37                  | 65.6                 | 12                               | 15                            | 4              | 12  | sw.          | Frank McGee.               |
| Lemon Cove.....       | Tulare.....          | 600              | 26                       | 51.9                          | +4.2                       | 72       | 2     | 20                        | 18    | 30                    | 4.77   | +3.13                      | 1.30                  | 0                    | 9                                | 13                            | 10             | 8   | nw.          | Lick Observatory.          |
| Lick Observatory..... | Santa Clara.....     | 4,209            | 32                       | 45.2                          | +3.3                       | 68       | 11    | 25                        | 19    | 19                    | 7.51   | +1.20                      | 1.31                  | 0                    | 13                               | 11                            | 8              | 12  | sw.          | Basil Prior.               |
| Lindsay.....          | Tulare.....          | 384              | 7                        | 50.1                          | -0.1                       | 75       | 26    | 28                        | 16    | 40                    | 3.88   | -0.10                      | 1.10                  | 0                    | 12                               | 11                            | 2              | 12  | n.           | George D. West.            |
| Long Beach.....       | Los Angeles.....     | 50               | 1                        | 57.0                          | -0.1                       | 85       | 10    | 32                        | 15    | 52                    | 6.39   | -0.01                      | 1.55                  | 0                    | 10                               | 11                            | 14             | 6   | ne.          | U. S. Weather Bureau.      |
| Los ANGELES.....      | Los Angeles.....     | 293              | 44                       | 60.2                          | +3.7                       | 82       | 10    | 46                        | 23    | 28                    | 7.90   | +5.00                      | 2.28                  | 0                    | 10                               | 13                            | 6              | 12  | ne.          | McCloud River Lbr. Co.     |
| Los Angeles.....      | Siskiyou.....        | 3,270            | 11                       | 38.2                          | -0.1                       | 64       | †6    | 15                        | 19    | 37                    | 9.35   | -1.61                      | 1.23                  | 0                    | 14                               | 10                            | 7              | 14  | s.           | Southern Pacific Co.       |
| Marysville.....       | Yuba.....            | 67               | 50                       | 46.3                          | -3.1                       | 62       | 30    | 29                        | 29    | 36                    | 6.79   | +3.82                      | 1.81                  | 0                    | 9                                | 15                            | 3              | 13  | sw.          | Cooperative Date Garden.   |
| Mecca.....            | Riverside.....       | -185             | 15                       | 55.8                          | +3.1                       | 78       | †9    | 32                        | †0    | 45                    | 2.69   | +2.29                      | 1.46                  | 0                    | 8                                | 11                            | 5              | 15  | nw.          | Santa Fe Co.               |
| Merced.....           | Merced.....          | 173              | 47                       | 47.8                          | +0.5                       | 64       | 12    | 28                        | 16    | 34                    | 5.57   | +3.98                      | 1.32                  | 0                    | 12                               | 8                             | 7              | 16  | se.          | Mt. Tam. & M. W. Ry.       |
| Mount Tamalpais.....  | Marin.....           | 2,586            | 22                       | 46.0                          | -1.6                       | 61       | †10   | 33                        | 19    | 14                    | 8.45   | +4.55                      | 2.04                  | 0                    | 15                               | 8                             | 10             | 13  | sw.          | Solar Observatory.         |
| Mount Wilson.....     | Los Angeles.....     | 5,704            | 4                        | 46.6                          | -0.1                       | 69       | †9    | 22                        | 23    | 29                    | 29.49  | -0.11                      | 4.50                  | 0                    | 13                               | 5                             | 13             | 12  | n.           | State Hospital.            |
| Napa.....             | Napa.....            | 20               | 44                       | 50.6                          | +2.9                       | 69       | †4    | 30                        | †7    | 36                    | 5.66   | +1.51                      | 1.44                  | 0                    | 11                               | 16                            | 8              | 7   | w.           | Santa Fe Co.               |
| Needles.....          | San Bernardino.....  | 477              | 29                       | 53.4                          | +5.6                       | 72       | 19    | 39                        | 3     | 40                    | 9.36   | +1.67                      | 1.23                  | 0                    | 6                                | 17                            | 6              | 8   | sw.          | B. H. Preston.             |
| Nevada City.....      | Nevada.....          | 2,850            | 29                       | 41.4                          | -1.0                       | 64       | †3    | 24                        | 13    | 40                    | 12.80  | +2.82                      | 2.13                  | 10.0                 | 13                               | 5                             | 12             | 14  | nw.          | E. S. Wangenheim.          |
| Newman.....           | Stanislaus.....      | 91               | 32                       | 49.0                          | +1.0                       | 82       | †1    | 21                        | 17    | 55                    | 1.01   | -0.95                      | .55                   | 0                    | 3                                | 12                            | 1              | 18  | s.           | S. San Joaquin Irr. Dist.  |
| Oakdale (near).....   | Stanislaus.....      | 215              | 3                        | 47.4                          | -3.1                       | 70       | 1     | 27                        | 9     | 30                    | 4.42   | +2.21                      | 1.66                  | 0                    | 13                               | 9                             | 12             | 10  | sw.          | Chabot Observatory.        |
| Oakland.....          | Alameda.....         | 322              | 45                       | 50.4                          | +1.2                       | 63       | 3     | 39                        | 7     | 16                    | 6.07   | +2.21                      | 1.33                  | 0                    | 13                               | 9                             | 7              | 11  | n.           | W. H. Duncan.              |
| Ojai.....             | Ventura.....         | 900              | 15                       | 54.8                          | +2.9                       | 88       | 10    | 28                        | 7     | 57                    | 12.81  | +9.39                      | 3.32                  | 0                    | 10                               | 15                            | 5              | 11  | sw.          | U. S. Kee. Service.        |
| Orland.....           | Glenn.....           | 254              | 39                       | 47.7                          | -0.2                       | 65       | †1    | 28                        | 19    | 30                    | 4.37   | +1.35                      | 1.28                  | 0                    | 10                               | 13                            | 3              | 12  | n.           | William Noyer.             |
| Oroville (near).....  | Butte.....           | 250              | 37                       | 47.6                          | -0.2                       | 66       | 4     | 28                        | †16   | 39                    | 6.61   | +1.85                      | 1.98                  | 0                    | 13                               | 14                            | 5              | 12  | sw.          | Morris L. Jones.           |
| Padas.....            | Los Angeles.....     | 805              | 31                       | 51.5                          | +2.2                       | 82       | 10    | 36                        | †10   | 46                    | 12.46  | +9.82                      | 3.36                  | 0                    | 10                               | 14                            | 4              | 13  | sw.          | Mrs. A. Z. Campbell.       |
| Paso Robles—1.....    | Sonoran.....         | 800              | 34                       | 49.8                          | +5.6                       | 76       | 12    | 25                        | †7    | 47                    | 7.36   | +4.71                      | 1.96                  | 0                    | 10                               | 15                            | 6              | 12  | s.           | John Landis.               |
| Petaluma.....         | Sonoran.....         | 9                | 7                        | 53.5                          | -0.1                       | 74       | 3     | 37                        | †4    | 28                    | 6.51   | +1.58                      | 1.51                  | 0                    | 15                               | 14                            | 11             | 12  | se.          | E. E. Bailey.              |
| Placerville.....      | El Dorado.....       | 1,925            | 32                       | 40.2                          | -2.2                       | 63       | 11    | 22                        | 8     | 34                    | 9.3    |                            |                       |                      |                                  |                               |                |     |              |                            |

**Daily Precipitation for December, 1921.**

| Stations.                  | Drainage-basin.           | 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. |
| Antioch . . . . .          | San Joaquin . . . . .     |               |     |   |   |   |   |   |   |   |    |    |    |    |    | .09 |     | .03 |     | .23 | .49 | .11 | .21 | .75 | .27 | .36 |    | .12 | .01 |      | 4.6 |    |        |
| Atascadero . . . . .       | Coast . . . . .           |               |     |   |   |   |   |   |   |   |    |    |    |    |    | .05 | .30 | .01 | .24 | .32 | .25 | .06 | .81 | .60 | .90 | .63 |    | .04 |     | 7.3  |     |    |        |
| Bakersfield . . . . .      | San Joaquin . . . . .     | .02           |     |   |   |   |   |   |   |   |    |    |    |    |    | .05 | .30 | .21 | .42 | .20 | .28 | .10 |     | .24 | .03 | .01 |    | .01 |     | 1.80 |     |    |        |
| Barstow . . . . .          | Desert . . . . .          |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Berkeley . . . . .         | Coast . . . . .           | .25           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Blue Canon . . . . .       | Sacramento . . . . .      | .50           | .79 |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Blythe . . . . .           | Colorado . . . . .        |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Bonita . . . . .           | Coast . . . . .           |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Branscomb . . . . .        | do . . . . .              | 1.92          | .10 |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Brawley . . . . .          | Imperial Valley . . . . . |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Calexico . . . . .         | do . . . . .              |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Chico . . . . .            | Sacramento . . . . .      | .06           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Chula Vista . . . . .      | Coast . . . . .           |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Claremont . . . . .        | do . . . . .              |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Cloverdale . . . . .       | do . . . . .              |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Colfax . . . . .           | Sacramento . . . . .      | .66           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Colusa . . . . .           | do . . . . .              |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Corona . . . . .           | Coast . . . . .           |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Crescent City . . . . .    | do . . . . .              | 1.50          |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Davis . . . . .            | Sacramento . . . . .      |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Dodeland . . . . .         | do . . . . .              | .01           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| El Cajon . . . . .         | Coast . . . . .           |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Elsinore . . . . .         | do . . . . .              |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Escondido-1 . . . . .      | do . . . . .              |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| EUREKA *** . . . . .       | Folsom . . . . .          | .43           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Fontana . . . . .          | do . . . . .              |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Fordyce Dam . . . . .      | Sacramento . . . . .      | 2.15          | .55 |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Fort Bidwell . . . . .     | Mountain Lakes . . . . .  | .33           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| FRESNO*** . . . . .        | San Joaquin . . . . .     | .08           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Grass Valley . . . . .     | Greenland Ranch . . . . . | .72           | .15 |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Hanford . . . . .          | San Joaquin . . . . .     | .01           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Healdsburg . . . . .       | do . . . . .              | .11           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Hollister . . . . .        | do . . . . .              | .01           | .03 |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| INDEPENDENCE*** . . . . .  | Owens . . . . .           |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Indio . . . . .            | Coachella Val . . . . .   |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Inskip . . . . .           | Sacramento . . . . .      | .95           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Kennett . . . . .          | do . . . . .              | .15           | .38 |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| La Porte . . . . .         | do . . . . .              | .75           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Lemon Cove . . . . .       | San Joaquin . . . . .     | .18           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Lick Observatory . . . . . | do . . . . .              | .37           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Lindsay . . . . .          | San Joaquin . . . . .     | .10           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Long Beach . . . . .       | do . . . . .              |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| LOS ANGELES*** . . . . .   | do . . . . .              |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| McCloud . . . . .          | Sacramento . . . . .      | 1.02          |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Marysville . . . . .       | do . . . . .              |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Mecca . . . . .            | Coachella Val . . . . .   |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Merced . . . . .           | San Joaquin . . . . .     | .11           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Mount Tamalpais . . . . .  | do . . . . .              | .47           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Mount Wilson . . . . .     | do . . . . .              | .22           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Needles . . . . .          | Colorado . . . . .        |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Nevada City . . . . .      | Sacramento . . . . .      | .69           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Newman . . . . .           | do . . . . .              |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Oakdale (near) . . . . .   | do . . . . .              | .17           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| OAKLAND . . . . .          | do . . . . .              |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Ojai . . . . .             | do . . . . .              |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Orlando . . . . .          | Sacramento . . . . .      |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Pasadena . . . . .         | do . . . . .              | .07           | .02 |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Paso Robles-1 . . . . .    | do . . . . .              |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Petaluma . . . . .         | do . . . . .              | .13           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Placerville . . . . .      | Sacramento . . . . .      | .80           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| POINT REYES*** . . . . .   | do . . . . .              | .08           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Pomona . . . . .           | do . . . . .              |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Porterville . . . . .      | San Joaquin . . . . .     | .27           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| R.D. BLEFF*** . . . . .    | Sacramento . . . . .      | .06           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Redding . . . . .          | do . . . . .              |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Redlands . . . . .         | do . . . . .              |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Rocklin . . . . .          | do . . . . .              |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| SACRAMENTO*** . . . . .    | T. . . . .                | 1.12          |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| Salinas . . . . .          | do . . . . .              |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| San Bernardo . . . . .     | Coast . . . . .           | .02           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| SAN DIEGO*** . . . . .     | T. . . . .                |               |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |
| SAN FRANCISCO*** . . . . . | T. . . . .                | .10           |     |   |   |   |   |   |   |   |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |    |     |     |      |     |    |        |

Except as otherwise indicated observations are generally made late in the afternoon, near sunset, and precipitation recorded is for the 24 hours ending at the time of observation. \*\*\* Regular Weather Bureau station; precipitation is for the 24-hour period, midnight to midnight.  
||| Precipitation measured in the morning; amount then recorded is for the preceding 24 hours. \* Precipitation included in the next following measurement. Separate dates of fall not recorded. T., trace, or less than 0.01 inch.

## Daily Temperature for December, 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.....    | Maximum..... | 70 | 60 | 60 | 68 | 69 | 63 | 70 | 61 | 62 | 66 | 70 | 71 | 66 | 67 | 66 | 66 | 61 | 56 | 57 | 66 | 64 | 62 | 67 | 71 | 66 | 61   | 53   | 56   | 56   | 63.5 |      |      |      |      |
|                     | Minimum..... | 52 | 45 | 31 | 29 | 30 | 30 | 29 | 30 | 31 | 30 | 30 | 31 | 30 | 30 | 30 | 30 | 40 | 40 | 43 | 43 | 48 | 45 | 41 | 47 | 51 | 49   | 48   | 48   | 45   | 48   | 39.0 |      |      |      |
| Calexico.....       | Maximum..... | 70 | 68 | 60 | 68 | 68 | 63 | 52 | 72 | 71 | 62 | 75 | 74 | 68 | 74 | 70 | 75 | 55 | 48 | 81 | 80 | 74 | 66 | 63 | 49 | 52 | 49   | 67   | 68   | 74   | 69   | 65.9 |      |      |      |
|                     | Minimum..... | 41 | 42 | 43 | 45 | 40 | 45 | 36 | 35 | 36 | 33 | 33 | 34 | 35 | 38 | 40 | 38 | 35 | 36 | 38 | 48 | 51 | 49 | 45 | 40 | 40 | 41   | 41   | 42   | 42   | 48   | 50   | 49.9 |      |      |
| Chico.....          | Maximum..... | 63 | 57 | 62 | 60 | 63 | 59 | 60 | 59 | 61 | 55 | 60 | 64 | 61 | 60 | 57 | 59 | 55 | 49 | 51 | 54 | 51 | 47 | 49 | 51 | 54 | 57   | 56   | 56   | 59   | 58   | 53   | 63   | 58   | 40.9 |
|                     | Minimum..... | 55 | 35 | 34 | 34 | 34 | 34 | 32 | 35 | 32 | 34 | 34 | 34 | 37 | 34 | 30 | 34 | 29 | 30 | 32 | 36 | 38 | 44 | 39 | 43 | 44 | 45   | 49   | 43   | 38   | 42   | 48   | 42   | 38.2 |      |
| Escondido.....      | Maximum..... | 68 | 67 | 73 | 76 | 67 | 69 | 76 | 81 | 82 | 79 | 68 | 72 | 71 | 72 | 69 | 64 | 58 | 58 | 55 | 57 | 64 | 56 | 56 | 61 | 60 | 73   | 80   | 75   | 76   | 69   | 63.3 |      |      |      |
|                     | Minimum..... | 42 | 42 | 40 | 53 | 45 | 39 | 36 | 40 | 36 | 38 | 40 | 36 | 41 | 43 | 38 | 38 | 40 | 51 | 52 | 57 | 52 | 51 | 39 | 41 | 47 | 46   | 55   | 49   | 49   | 51   | 52   | 44.5 |      |      |
| Eureka.....         | Maximum..... | 59 | 52 | 63 | 65 | 57 | 52 | 56 | 58 | 56 | 57 | 59 | 58 | 52 | 55 | 51 | 47 | 47 | 46 | 48 | 51 | 47 | 58 | 49 | 53 | 54 | 56   | 56   | 57   | 57   | 51   | 54.5 |      |      |      |
|                     | Minimum..... | 47 | 39 | 36 | 42 | 40 | 42 | 45 | 46 | 45 | 45 | 45 | 44 | 44 | 42 | 44 | 37 | 38 | 41 | 38 | 40 | 42 | 41 | 41 | 42 | 44 | 43   | 45   | 39   | 45   | 49   | 43.2 |      |      |      |
| Fresno.....         | Maximum..... | 62 | 55 | 57 | 61 | 60 | 61 | 59 | 60 | 60 | 65 | 66 | 63 | 64 | 59 | 56 | 55 | 52 | 52 | 54 | 58 | 63 | 62 | 66 | 59 | 58 | 56   | 56   | 56   | 59.0 |      |      |      |      |      |
|                     | Minimum..... | 51 | 41 | 36 | 37 | 35 | 35 | 36 | 34 | 33 | 38 | 37 | 38 | 37 | 35 | 31 | 42 | 45 | 43 | 49 | 47 | 44 | 42 | 48 | 48 | 51 | 54   | 47   | 45   | 50   | 51   | 41.9 |      |      |      |
| Independence.....   | Maximum..... | 66 | 52 | 50 | 62 | 64 | 61 | 58 | 60 | 58 | 61 | 64 | 61 | 59 | 58 | 46 | 41 | 52 | 54 | 53 | 45 | 48 | 42 | 46 | 50 | 57 | 46   | 54   | 64.7 |      |      |      |      |      |      |
|                     | Minimum..... | 33 | 37 | 34 | 33 | 35 | 32 | 31 | 32 | 24 | 24 | 30 | 27 | 31 | 29 | 32 | 26 | 36 | 30 | 37 | 33 | 28 | 36 | 33 | 38 | 37 | 35   | 34   | 36   | 35   | 32.4 |      |      |      |      |
| Los Angeles.....    | Maximum..... | 63 | 69 | 68 | 73 | 74 | 76 | 66 | 65 | 80 | 82 | 79 | 75 | 71 | 72 | 66 | 60 | 62 | 58 | 57 | 59 | 61 | 69 | 73 | 74 | 74 | 67.9 |      |      |      |      |      |      |      |      |
|                     | Minimum..... | 51 | 50 | 53 | 53 | 51 | 46 | 58 | 56 | 51 | 53 | 50 | 52 | 48 | 48 | 52 | 50 | 56 | 53 | 49 | 46 | 48 | 51 | 56 | 57 | 60 | 60   | 52   | 52.4 |      |      |      |      |      |      |
| Merced.....         | Maximum..... | 63 | 55 | 59 | 60 | 55 | 63 | 55 | 55 | 55 | 63 | 64 | 61 | 60 | 53 | 54 | 53 | 51 | 55 | 58 | 53 | 52 | 54 | 53 | 59 | 51 | 57.2 |      |      |      |      |      |      |      |      |
|                     | Minimum..... | 49 | 43 | 35 | 30 | 30 | 28 | 28 | 31 | 32 | 29 | 30 | 30 | 30 | 30 | 30 | 32 | 46 | 42 | 49 | 46 | 42 | 40 | 43 | 49 | 51 | 49   | 50   | 38.3 |      |      |      |      |      |      |
| Oakland.....        | Maximum..... | 58 | 57 | 63 | 58 | 55 | 56 | 50 | 52 | 57 | 59 | 58 | 61 | 53 | 48 | 51 | 56 | 52 | 53 | 49 | 49 | 54 | 55 | 57 | 56 | 53 | 60   | 61   | 54.9 |      |      |      |      |      |      |
|                     | Minimum..... | 54 | 44 | 47 | 45 | 43 | 42 | 39 | 45 | 42 | 44 | 45 | 47 | 43 | 44 | 45 | 43 | 47 | 45 | 42 | 49 | 46 | 44 | 45 | 52 | 50 | 51   | 54   | 46.0 |      |      |      |      |      |      |
| Orland.....         | Maximum..... | 65 | 60 | 64 | 61 | 62 | 61 | 60 | 62 | 55 | 58 | 63 | 65 | 58 | 60 | 56 | 48 | 48 | 56 | 52 | 49 | 48 | 51 | 55 | 56 | 53 | 62   | 62   | 57.3 |      |      |      |      |      |      |
|                     | Minimum..... | 50 | 39 | 43 | 37 | 34 | 31 | 31 | 35 | 32 | 35 | 32 | 36 | 35 | 32 | 34 | 33 | 39 | 39 | 30 | 28 | 36 | 36 | 40 | 41 | 42 | 44   | 47   | 41   | 46   | 49   | 38.1 |      |      |      |
| Oroville.....       | Maximum..... | 59 | 63 | 57 | 66 | 60 | 59 | 58 | 58 | 53 | 56 | 59 | 62 | 53 | 56 | 57 | 49 | 49 | 54 | 54 | 50 | 47 | 50 | 54 | 57 | 57 | 50   | 54   | 57.0 |      |      |      |      |      |      |
|                     | Minimum..... | 53 | 38 | 37 | 33 | 35 | 36 | 35 | 35 | 37 | 34 | 36 | 39 | 37 | 31 | 31 | 28 | 28 | 26 | 37 | 37 | 40 | 40 | 45 | 45 | 43 | 40   | 41   | 45   | 43   | 38.2 |      |      |      |      |
| Pasadena.....       | Maximum..... | 58 | 67 | 68 | 72 | 75 | 79 | 66 | 68 | 79 | 82 | 79 | 75 | 75 | 76 | 78 | 73 | 73 | 58 | 59 | 61 | 55 | 58 | 57 | 66 | 73 | 74   | 74   | 67.9 |      |      |      |      |      |      |
|                     | Minimum..... | 45 | 43 | 46 | 38 | 37 | 37 | 40 | 41 | 45 | 41 | 36 | 37 | 36 | 38 | 40 | 40 | 37 | 39 | 49 | 56 | 52 | 45 | 49 | 45 | 43 | 46   | 44   | 46   | 46   | 44.6 |      |      |      |      |
| Paso Robles.....    | Maximum..... | 69 | 61 | 64 | 70 | 69 | 69 | 70 | 67 | 70 | 70 | 74 | 76 | 70 | 69 | 66 | 65 | 57 | 59 | 51 | 55 | 55 | 54 | 57 | 56 | 63 | 62   | 62   | 63.0 |      |      |      |      |      |      |
|                     | Minimum..... | 49 | 41 | 30 | 26 | 27 | 25 | 33 | 35 | 29 | 27 | 29 | 29 | 27 | 29 | 29 | 26 | 30 | 35 | 38 | 39 | 40 | 44 | 39 | 41 | 39 | 44   | 44   | 46   | 46   | 36.6 |      |      |      |      |
| Point Reyes.....    | Maximum..... | 59 | 63 | 57 | 66 | 60 | 59 | 58 | 58 | 53 | 56 | 59 | 62 | 53 | 56 | 57 | 49 | 49 | 54 | 54 | 50 | 47 | 50 | 54 | 57 | 57 | 50   | 54   | 57.0 |      |      |      |      |      |      |
|                     | Minimum..... | 53 | 38 | 37 | 33 | 35 | 36 | 35 | 35 | 37 | 34 | 36 | 39 | 37 | 31 | 31 | 28 | 28 | 26 | 37 | 37 | 40 | 40 | 45 | 45 | 43 | 40   | 41   | 43   | 43   | 38.2 |      |      |      |      |
| Pomona.....         | Maximum..... | 60 | 66 | 67 | 71 | 75 | 79 | 67 | 70 | 78 | 82 | 78 | 75 | 74 | 71 | 72 | 72 | 58 | 61 | 55 | 57 | 53 | 59 | 59 | 66 | 73 | 74   | 67.4 |      |      |      |      |      |      |      |
|                     | Minimum..... | 39 | 44 | 38 | 47 | 31 | 33 | 34 | 34 | 32 | 29 | 25 | 29 | 31 | 31 | 34 | 33 | 42 | 48 | 55 | 58 | 51 | 48 | 36 | 38 | 47 | 47   | 52   | 48   | 49   | 41.2 |      |      |      |      |
| Porterville.....    | Maximum..... | 64 | 54 | 57 | 63 | 64 | 63 | 63 | 63 | 63 | 67 | 66 | 66 | 64 | 61 | 54 | 57 | 57 | 54 | 62 | 64 | 64 | 68 | 68 | 68 | 69 | 61   | 57   | 62.1 |      |      |      |      |      |      |
|                     | Minimum..... | 52 | 41 | 33 | 32 | 31 | 31 | 31 | 31 | 32 | 31 | 32 | 31 | 31 | 31 | 31 | 35 | 41 | 45 | 45 | 46 | 45 | 38 | 48 | 49 | 51 | 51   | 49   | 46   | 39.3 |      |      |      |      |      |
| Red Bluff.....      | Maximum..... | 51 | 42 | 48 | 40 | 36 | 33 | 34 | 34 | 36 | 34 | 34 | 40 | 38 | 34 | 35 | 35 | 31 | 31 | 28 | 34 | 36 | 39 | 40 | 40 | 42 | 47   | 46   | 44.8 |      |      |      |      |      |      |
|                     | Minimum..... | 61 | 65 | 63 | 69 | 72 | 70 | 76 | 73 | 76 | 78 | 78 | 73 | 79 | 71 | 71 | 56 | 56 | 57 | 47 | 52 | 55 | 58 | 55 | 56 | 56 | 67   | 66   | 62.2 |      |      |      |      |      |      |
| Redlands.....       | Maximum..... | 49 | 44 | 46 | 50 | 47 | 46 | 45 | 46 | 47 | 46 | 45 | 50 | 51 | 46 | 46 | 47 | 46 | 47 | 46 | 47 | 46 | 47 | 46 | 47 | 46 | 47   | 46   | 47   | 42.7 |      |      |      |      |      |
|                     | Minimum..... | 60 | 56 | 63 | 59 | 60 | 57 | 55 | 57 | 56 | 57 | 59 | 60 | 60 | 64 | 59 | 52 | 50 | 52 | 52 | 54 | 55 | 56 | 56 | 52 | 52 | 55   | 55   | 56   | 55.6 |      |      |      |      |      |
| Sacramento.....     | Maximum..... | 48 | 41 | 45 | 35 | 36 | 38 | 41 | 34 | 32 | 34 | 46 | 34 | 38 | 34 | 38 | 33 | 39 | 43 | 48 | 46 | 43 | 48 | 46 | 44 | 49 | 44   | 49   | 50   | 42.0 |      |      |      |      |      |
|                     | Minimum..... | 66 | 70 | 65 | 68 | 78 | 76 | 70 | 77 | 79 | 86 | 85 | 84 | 80 | 77 | 76 | 81 | 74 | 70 | 63 | 60 | 59 | 58 | 57 | 57 | 57 | 60   | 68   | 71   | 70.2 |      |      |      |      |      |
| San Bernardino..... | Maximum..... | 51 | 48 | 50 | 55 | 42 | 42 | 30 | 29 | 33 | 33 | 31 | 31 | 33 | 47 | 35 | 33 | 38 | 48 | 54 | 55 | 52 | 52 | 53 | 53 | 49 | 47   | 49   | 43.1 |      |      |      |      |      |      |
|                     | Minimum..... | 63 | 65 | 68 | 70 | 75 | 75 | 69 | 63 | 66 | 67 | 68 | 67 | 66 | 63 | 68 | 66 | 63 | 68 | 69 | 65 | 66 | 63 | 67 | 67 | 66 | 64   | 64   | 64.4 |      |      |      |      |      |      |
| San Diego.....      | Maximum..... | 51 | 41 | 50 | 50 | 48 | 46 | 47 | 49 | 53 | 48 | 49 | 45 | 48 | 49 | 48 | 49 | 45 | 48 | 54 | 59 | 55 | 56 | 56 | 58 | 58 | 58   | 58   | 52.2 |      |      |      |      |      |      |
|                     | Minimum..... | 63 | 60 | 66 | 63 | 58 | 60 | 54 | 54 | 58 | 60 | 59 | 51 | 52 | 53 | 55 | 52 | 55 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56   | 57   | 51.7 |      |      |      |      |      |      |
| San Francisco.....  | Maximum..... | 52 | 48 | 53 | 48 | 47 | 46 | 45 | 46 | 47 | 47 | 48 | 45 | 45 | 47 | 47 | 47 | 47 | 48 | 45 | 45 | 46 | 45 | 46 | 45 | 46 | 45   | 46   | 48.1 |      |      |      |      |      |      |
|                     | Minimum..... | 67 | 62 | 64 | 60 | 61 | 54 | 53 | 50 | 62 | 68 | 61 | 64 | 48 | 63 | 53 | 51 | 55 | 57 | 57 | 55 | 62 | 62 | 68 | 55 | 56 | 56   | 56   | 56   | 59.1 |      |      |      |      |      |
| San Jose.....       | Maximum..... | 51 | 43 | 40 | 34 | 32 | 32 | 32 | 33 | 34 | 34 | 32 | 33 | 39 | 34 | 38 | 38 | 38 | 45 | 45 | 41 | 43 | 48 | 46 | 43 | 42 | 48   | 45   | 41.1 |      |      |      |      |      |      |
|                     | Minimum..... | 69 | 44 | 70 | 74 | 71 | 75 | 62 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |      |      |      |      |      |      |      |      |      |

## SNOWFALL IN THE MOUNTAINS.

During the autumn months of 1921 the snowfall in the mountains of California was light. From 12 to 18 inches of snow fell in October in the highest portions of the Sierra Nevada Mountains, but was soon melted. The snowfall during November was also light, and was limited to the Sierra Nevada, the highest portions of which were covered at the close of the month.

There was little precipitation anywhere in California during the first half of December, but heavy rain and snow fell after the 16th of the month. More than 100 inches of snow fell at the 7,000-foot level in the Sierra Nevada, and greater amounts fell at higher elevations. At Glacier Point, in the Yosemite National Park, altitude 7,000 feet, the snowfall during one week, December 18-24, inclusive, measured 108 inches. Though little moisture was lost through evaporation, rising temperatures and warm rains caused the snow to melt. While the snow on the ground in the high Sierra Nevada at the end of December was not deep, it was well packed, and its water content was high.

In the Siskiyou Mountains and in the Coast Range snowfall was moderately heavy during the latter half of December. However, warm rains during the last week caused rapid melting, and little snow remained at the close of the month.

In southern California precipitation was extremely heavy during the latter half of the month. Only a small portion of the precipitation was in the form of snow, however, and the snowfall was limited to the higher elevations. Except on the highest peaks, there was little snow on the ground in the mountains of southern California at the close of December.

A.H.P.

## COMPARATIVE SNOWFALL DATA FOR DECEMBER.

(Amount on the Ground.)

|           | FORDYCE DAM. |       |            | SUMMIT. |       |            | TAMARACK. |       |            |
|-----------|--------------|-------|------------|---------|-------|------------|-----------|-------|------------|
|           | 1st.         | 15th. | End of mo. | 1st.    | 15th. | End of mo. | 1st.      | 15th. | End of mo. |
| 1906..... | 2            | 60    | 60         | 5       | 70    | 46         | 55        | 101   | 125        |
| 1907..... | 0            | 30    | 72         | 0       | 42    | 87         | 0         | 39    | 74         |
| 1908..... | 11           | 27    | 21         | 24      | 32    | 21         | 29        | 43    | 32         |
| 1909..... | 2            | 25    | 43         | 2       | 24    | 45         | 26        | 52    | 65         |
| 1910..... | 5            | 2     | 0          | 7       | 4     | 4          | 8         | 21    | 24         |
| 1911..... | 4            | 1     | 44         | 1       | 2     | 56         | 3         | 5     | 45         |
| 1912..... | 6            | 22    | 30         | T.      | 14    | 19         | 3         | 29    | 42         |
| 1913..... | 35           | 35    | 60         | 31      | 24    | 80         | 35        | 41    | 110        |
| 1914..... | 8            | 40    | 31         | 12      | 46    | 26         | 10        | 31    | 27         |
| 1915..... | 9            | 57    | 45         | 6       | 67    | 40         | 3         | 67    | 48         |
| 1916..... | 15           | 42    | 74         | 14      | 16    | 77         | 7         | 32    | 86         |
| 1917..... | 4            | 0     | 0          | 6       | 0     | 0          | 16        | 8     | 8          |
| 1918..... | 17           | 23    | 23         | 20      | 17    | 16         | 17        | 27    | 32         |
| 1919..... | 18           | 50    | 35         | 34      | 52    | 37         | 36        | 48    | 29         |
| 1920..... | 13           | 55    | 54         | 18      | 66    | 67         | 29        | 83    | 85         |
| 1921..... | 0            | 0     | 47         | 0       | 0     | 56         | 7         | 0     | 75         |

T. means trace.

| Snowfall Data. [In inches.]                        |                          |                         |                            |                            |                              |       |       |
|--|--------------------------|-------------------------|----------------------------|----------------------------|------------------------------|-------|-------|
| DRAINAGE-BASIN, COUNTY, STATION.                   | Eleva-<br>tion,<br>feet. | Total<br>snow-<br>fall. | Compr'd<br>with<br>normal. | Am't on<br>ground<br>15th. | Am't on<br>ground<br>end mo. |       |       |
| <b>Klamath Drainage-Basin.</b>                     |                          |                         |                            |                            |                              |       |       |
| Siskiyou County.<br>Yreka.....                     | 2,625                    | 4                       | .....                      | 0                          | 0                            |       |       |
| <b>Mountain Lakes.</b>                             |                          |                         |                            |                            |                              |       |       |
| Alpine County.<br>Markleeville.....                | 5,525                    | 36                      | .....                      | 0                          | 8                            |       |       |
| Tamarack.....                                      | 8,000                    | 98                      | .....                      | 0                          | 75                           |       |       |
| Twin Lakes.....                                    | 7,970                    | .....                   | .....                      | .....                      | .....                        |       |       |
| Inyo County.<br>Bishop Creek.....                  | 8,390                    | 10                      | -18                        | 0                          | 4                            |       |       |
| Independence.....                                  | 3,907                    | 0                       | .....                      | 0                          | 0                            |       |       |
| Lassen County.<br>Madeline.....                    | 5,270                    | 12                      | + 1                        | 0                          | 3                            |       |       |
| Litchfield.....                                    | 4,000                    | 12                      | .....                      | 0                          | 2                            |       |       |
| Westwood.....                                      | 4,500                    | 69                      | .....                      | 0                          | 16                           |       |       |
| Modoc County.<br>Cederville.....                   | 4,675                    | 14                      | + 3                        | 0                          | 2                            |       |       |
| Fort Bidwell.....                                  | 4,375                    | 22                      | .....                      | 0                          | 8                            |       |       |
| Nevada County.<br>Grass Valley.....                | 2,690                    | 13                      | .....                      | 0                          | 0                            |       |       |
| Nevada City.....                                   | 2,850                    | 10                      | + 7                        | 0                          | 0                            |       |       |
| North Bloomfield.....                              | 3,214                    | 18                      | +11                        | 0                          | 0                            |       |       |
| Placer County.<br>Tahoe.....                       | 6,230                    | 74                      | +51                        | 0                          | 34                           |       |       |
| Mono County.<br>Shields Ranch.....                 | 3,500                    | 42                      | .....                      | 0                          | 15                           |       |       |
| <b>Sacramento Drainage-Basin.</b>                  |                          |                         |                            |                            |                              |       |       |
| Butte County.<br>De Sabla.....                     | 2,500                    | 24                      | +14                        | 0                          | 7                            |       |       |
| Inskip.....  | 4,975                    | 97                      | +56                        | 0                          | 38                           |       |       |
| West Branch.....                                   | 3,216                    | 38                      | +17                        | 0                          | 11                           |       |       |
| Nevada County.<br>Deer Creek.....                  | 3,700                    | 50                      | +27                        | 0                          | 14                           |       |       |
| Fordyce Dam.....                                   | 6,500                    | 106                     | +53                        | 0                          | 47                           |       |       |
| Lake Spaulding.....                                | 4,600                    | 94                      | +40                        | 0                          | 29                           |       |       |
| Placer County.<br>Blue Canon.....                  | 4,695                    | 79                      | +50                        | 0                          | 26                           |       |       |
| Emigrant Gap.....                                  | 5,230                    | 80                      | +41                        | 0                          | 32                           |       |       |
| Summit.....  | 7,017                    | 100                     | +28                        | 0                          | 56                           |       |       |
| Plumas County.<br>Canon Dam.....                   | 4,570                    | 48                      | .....                      | 0                          | 26                           |       |       |
| Chester.....                                       | 4,550                    | 70                      | +41                        | 0                          | 26                           |       |       |
| La Porte.....                                      | 5,000                    | 66                      | +29                        | 0                          | 38                           |       |       |
| Portola.....                                       | 4,832                    | 58                      | .....                      | 0                          | 16                           |       |       |
| Quincy.....  | 3,400                    | 34                      | +24                        | 0                          | 10                           |       |       |
| Sierra County.<br>Downieville.....                 | 3,150                    | 28                      | +11                        | 0                          | 6                            |       |       |
| Sierraville.....                                   | 5,000                    | 27                      | + 9                        | 0                          | 0                            |       |       |
| Siskiyou County.<br>McCloud.....                   | 3,270                    | 55                      | +26                        | 0                          | 11                           |       |       |
| Sisson.....  | 3,555                    | 51                      | +27                        | 0                          | 9                            |       |       |
| Yuba County.<br>CAMPTONVILLE.....                  | 3,500                    | 36                      | +23                        | 0                          | 2                            |       |       |
| <b>San Joaquin Drainage-Basin.</b>                 |                          |                         |                            |                            |                              |       |       |
| Calaveras County.<br>Calaveras Ranger Station..... | 3,400                    | .....                   | .....                      | .....                      | .....                        | ..... | ..... |
| Fresno County.<br>Camp Seven.....                  | 6,980                    | 95                      | .....                      | 0                          | 44                           |       |       |
| Cascada.....                                       | 4,900                    | 34                      | .....                      | 0                          | 0                            |       |       |
| Dinkey Meadow.....                                 | 5,600                    | 80                      | .....                      | 0                          | 48                           |       |       |
| Hume.....  | 5,300                    | .....                   | .....                      | .....                      | .....                        |       |       |
| Huntington Lake.....                               | 6,950                    | 90                      | .....                      | 0                          | 51                           |       |       |
| Hobblers Camp.....                                 | 8,200                    | 114                     | .....                      | 0                          | 85                           |       |       |
| Kings River, North Fork.....                       | 6,100                    | 101                     | .....                      | 0                          | 44                           |       |       |
| Kern County.<br>Glenville.....                     | 3,800                    | T.                      | - 7                        | 0                          | 0                            |       |       |
| Mariposa County.<br>Dudley's.....                  | 3,000                    | 13                      | .....                      | 0                          | 0                            |       |       |
| Glacier Point.....                                 | 7,000                    | 118                     | .....                      | 0                          | 84                           |       |       |
| Yosemite.....                                      | 3,945                    | 69                      | +52                        | 0                          | 18                           |       |       |
| Tulare County.<br>Giant Forest.....                | 6,400                    | 66                      | .....                      | 0                          | 20                           |       |       |
| Hot Springs.....                                   | 3,300                    | 0                       | - 2                        | 0                          | 0                            |       |       |
| Springville.....                                   | 4,000                    | 10                      | - 2                        | 0                          | 0                            |       |       |
| Tuolumne County.<br>Hetch Hetchy.....              | 3,665                    | 36                      | +29                        | 0                          | 4                            |       |       |
| Lake Eleanor.....                                  | 4,700                    | 72                      | +48                        | 0                          | 12                           |       |       |
| <b>Mountains of Southern California.</b>           |                          |                         |                            |                            |                              |       |       |
| Cuyamaca.....                                      | 4,677                    | 0                       | - 2                        | 0                          | 0                            |       |       |
| Julian.....  | 4,222                    | 0                       | .....                      | 0                          | 0                            |       |       |
| Mount Wilson.....                                  | 5,704                    | 4                       | .....                      | 0                          | 0                            |       |       |
| Nellie.....  | 5,350                    | 3                       | .....                      | 0                          | 0                            |       |       |
| Seven Oaks.....                                    | 5,000                    | 10                      | - 2                        | 0                          | 0                            |       |       |
| Squirrel Inn.....                                  | 5,280                    | 0                       | -11                        | 0                          | 0                            |       |       |