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U. S. DEPARTMENT OF AGRICULTURE
WEATHER BUREAU

CLIMATOLOGICAL SERVICE

DISTRICT No. 9. COLORADO VALLEY

FREDERICK H. BRANDENBURG
DISTRICT EDITOR

REPORT FOR JANUARY, 1911

Prepared under direction of WILLIS L. MOORE, Chief U. S. Weather Bureau



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1911

CLIMATOLOGICAL DATA FOR JANUARY, 1911.

DISTRICT No. 9, COLORADO VALLEY.

FREDERICK H. BRANDENBURG, District Forecaster.

GENERAL SUMMARY.

The temperature conditions during January were much milder than the average, despite the severe and extensive cold snap that set in at the beginning of the month and lasted almost to the end of the first decade. The fall in temperature was gradual, not abrupt, as was the case on the east and opposite side of the Continental Divide, where it was first felt. The spreading of cold air from the eastern to the western slope does not occur very often, for most cold waves are too shallow to cross even the lower passes in the mountains. As invariably happens in such cases, there was a settling or slow movement of the cold from high to low elevations. The last two decades were unusually mild, except on the 22d and 23d in the mountain region of the northern part of the district, and rather unsettled, with an excess of cloudiness. Practically all the precipitation of the month occurred during this period, much of it being in the form of rain at high elevations. Precipitation was general on the 10th and 11th; another wet period, but more limited in area, was from the 15th to 17th. On the 21st precipitation was general, while in Arizona and New Mexico it continued until the 25th, when the area with precipitation shifted to the northern part of the district. Heavy precipitation in northern and central Arizona on the 10th and 11th caused a moderate freshet in the Salt, Verde, and Gila Rivers, delaying traffic for a few days. Water for irrigation is now plentiful in Arizona. In southwestern New Mexico the drought has been relieved, but the outlook for irrigation water has not been improved.

TEMPERATURE.

The mean of the 135 stations reporting temperature was 38.5°, or 4.5° above the normal. By subdivisions the means and departures were: Western Wyoming, 16.8°, +2.3°; western Colorado, 25.5°, +6.3°; eastern Utah, 31.2°, +7°; western New Mexico, 39°, +5.3°; Arizona, 48.2°, +3.2°; and southeastern Nevada, 42.9°. The highest monthly mean was 57.4°, at Silverbell, Ariz., and the lowest, 11.2°, at Corona, Colo.

Temperatures were below the normal throughout the district during the first four days, and in the central and northern parts until the 8th. From the 9th to the end of the month temperatures were above the normal in parts of the district. The excess was marked; especially in northern Arizona, eastern Utah, and western Colorado, the daily mean in these localities being generally more than 15° higher than the normal. By subdivisions the temperature extremes were: Western Wyoming, 51° and -33°; western Colorado, 62° and -37°; eastern Utah, 72° and -22°; western New Mexico, 80° and -33°;

Arizona, 84° and -16°; and southeastern Nevada, 77° and 9°.

PRECIPITATION.

The average precipitation for the 183 stations reporting was 1.89 inch, or 0.70 inch above the normal. By watersheds the means and departures were: Green, 1.63, +0.56; Grand, 2.02, +0.37; San Juan, 2.78, +0.98; Little Colorado, 1.27, +0.65; Gila, 1.91, +0.87; Mimbres, 1.24, +0.39; and Colorado proper, 1.86, +0.58 inch. The greatest monthly amount reported was 10.85 inches, at Ranch, Utah, and the least, 0.04 inch, at Hanksville, Utah.

The greatest monthly snowfall in each subdivision was: Wyoming, 5.8 inches; Colorado, 74.8 inches; Utah, 50 inches; New Mexico, 1.2 inch; Arizona, 4 inches. The average number of days with 0.01 inch or more of precipitation was 6.

MISCELLANEOUS.

The percentage of sunshine was much below the normal. Grand Junction reported 33, or 24 per cent below the normal; Durango 58, Flagstaff 57, Phoenix 61, and Yuma 64 per cent of the possible.

The mean relative humidity was higher than the normal. The values reported were: Grand Junction 77, Durango 74, Flagstaff 79, Phoenix 68, and Yuma 53 per cent.

EXTRACTS FROM SECTION SNOWFALL BULLETINS.

Western Wyoming.—There is less snow than usual at the headwaters of the Green River. An average is reported from the Newfork district, but there is a decided deficiency in the Big Sandy district.

Western Colorado.—During January weather conditions were more favorable for the streams of the western than for the streams of the eastern slope. Over the greater part of the drainage area of the Yampa, White, Grand, Gunnison, and San Juan the precipitation during the month was in excess of the normal for January. For the Grand and Gunnison, each 25 inches on an average, the depth is about the same as a year ago, while for the Yampa and White there is a deficiency of 12 inches, and for the San Juan a deficiency of 10 inches.

Considerable drifting occurred. Although some very low temperatures were noted, high day temperatures were a feature, facilitating the settling of the snow. Rain, an unusual thing in Colorado in January even at low altitudes, was reported from a number of high-level stations.

Eastern Utah.—As a rule there was less snow on the watersheds of the Green and the Colorado than a year ago, and less than the average amount.

Western New Mexico.—Heavy rains fell over the upper watershed of the San Juan, melting the snow from the lower levels and causing high water. The lower reaches of the stream were without snowfall. Snow was generally lacking over the Gila, San Francisco, and Mimbres watersheds.

Arizona.—The snowfall during January was greatly deficient. The warm rains of the 10th and 11th caused a rapid melting of the snow covering between the 7,500 and 8,500 foot altitudes. Unless heavy snows fall by March 20, there will be a shortage of water during the summer months.

COLORADO RIVER SIPHON TUNNEL.

By L. N. JESUNOFSKY, Section Director.

It is probable that the Reclamation Service will begin the work of tunneling the Colorado River near Yuma, Ariz., within a short period. It is stated that the water problem, which has for such a long time delayed the breaking through the concrete wall of the Arizona shaft, has been satisfactorily adjusted. A last installment of concrete has been forced down and around the outside of the shaft to put an end to the water seeping through. When this hardens sufficiently, the shaft will be pumped dry, and everything will be in readiness for the work of tunneling.

As showing how close the reclamation engineers are to the tunneling point, it may be stated, with definiteness, that the frame or slide in which cages will run, to convey men and material to and from and to carry the rock taken out of the tunnel, has been placed in position.

At the present time, however, the shaft contains a great volume of water, purposely allowed therein, in

order that the latest additions of cement may properly harden. The pumps are idle, but when they are started it will require only a short time to remove the water.

COMPLETION OF THE ROOSEVELT DAM, SALT RIVER VALLEY, ARIZ.

By L. N. JESUNOFSKY, Section Director.

The Roosevelt Dam, a part of the Salt River irrigation project of Arizona, has been completed and will be officially opened on March 18 next. According to a statement issued by the United States Reclamation Service, the last stone was placed in position in the parapet walls late in January.

The dam is 234 feet high, 1,080 feet long, and is covered by a 20-foot roadway. The waters will be used to irrigate more than 200,000 acres of land near Phoenix, Ariz.

The recent snows and heavy rains have already put a large volume of water in this storage reservoir.

TABLE I.—Climatological data for January, 1911. District No. 9, Colorado Valley.

Table with columns: Stations, Counties, Elevation, Length of record, Temperature (Mean, Departure from normal, Highest, Date, Lowest, Date, Greatest daily range), Precipitation (Total, Departure from normal, Greatest in 24 hours, Total snowfall, Number of rainy days, Number of clear days, Number of partly cloudy days, Number of cloudy days), Sky, Prevailing wind direction, Observers.

DISTRICT No. 9. CLIMATOLOGICAL SUMMARY.

JANUARY, 1911.

TABLE 1.—Climatological data for January, 1911. District No. 9—Continued.

Table with columns: Stations, Counties, Elevation, Length of record, Temperature (Mean, Departure from normal, Highest, Date, Lowest, Date, Greatest daily range), Precipitation (Total, Departure from normal, Greatest in 24 hours, Total snowfall, Number of rainy days, Number of clear days, Number of partly cloudy days, Number of cloudy days), Sky, Prevailing wind direction, Observers. Rows include stations like Alma, Aztec, Benson, Bisbee, Bonita, Bowie, Buckeye, Camp Verde, Casa Grande, Casa Grande Ruins, Cave Creek, Chin Lee, Chilson's Mill, Clifton, Cline, Cochise, Columbia, Congress, Courtland, Dos Cabezas, Douglas, Dudleyville, Fairbank, Flagstaff, Flagstaff (1), Flagstaff (2), Florence, Fort Apache, Fort Huachuca, Fort Mohave, Gila Bend, Globe, Grand Canyon, Grand Canyon (1), Granite Reef Dam, Greer, Heber, Hereford, Holbrook, Indian Oasis, Intake, Jerome, Keams Canyon, Kingman, Lewis Springs, Maricopa, McNeal, Mesa, Mohawk Summit, Naco, Natural Bridge, Oraels, Osborn, Paradise, Parker, Pison, Phoenix, Phoenix (1), Phoenix (2), Pinal Ranch, Pinto, Prescott, Quartzsite, Redrock, Roosevelt, Sacaton, St. Johns, St. Michaels, Salome, San Carlos.

TABLE 1.—Climatological data for January, 1911. District No. 9—Continued.

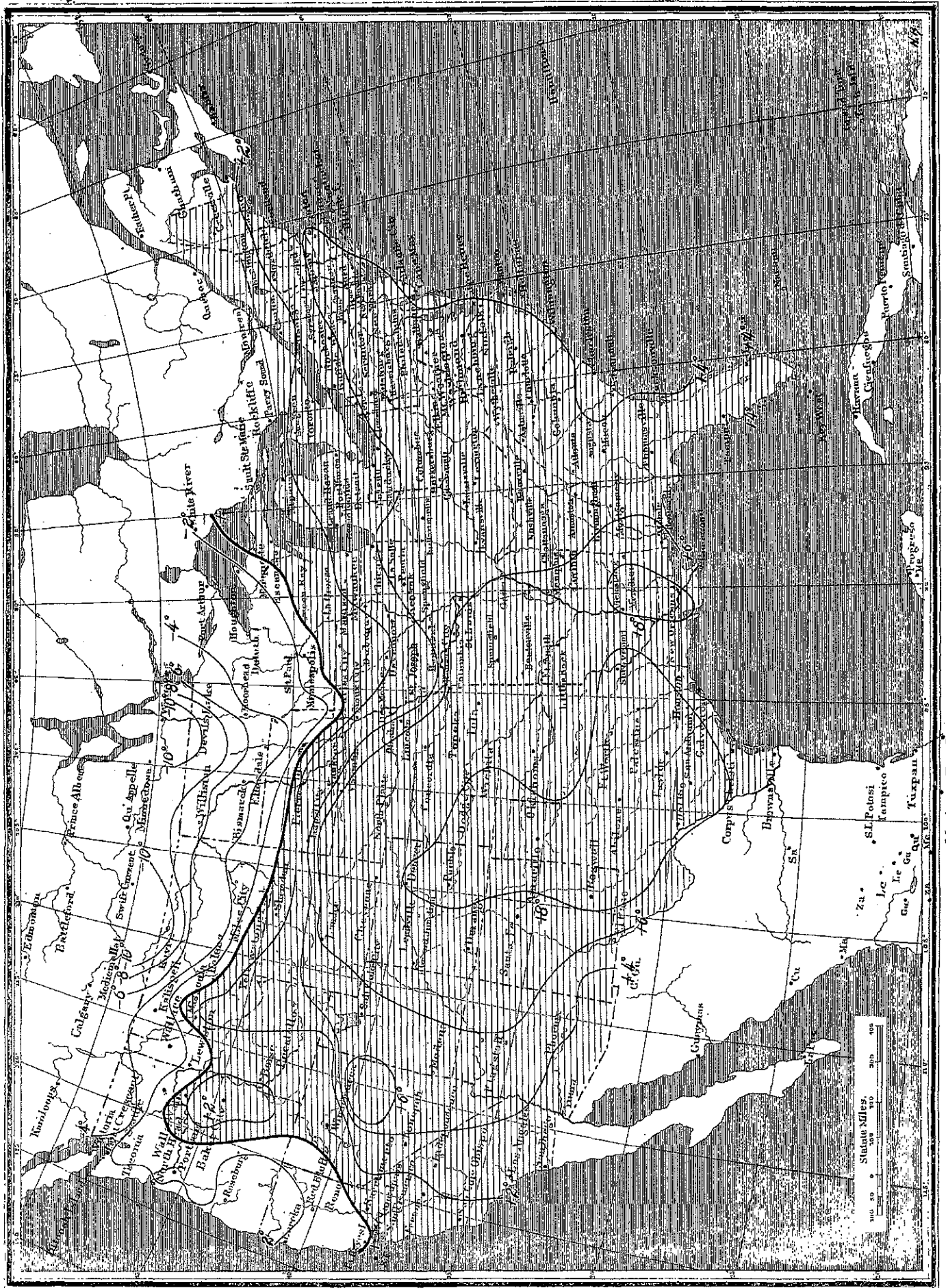
| Stations. | Counties. | Elevation, feet. | Length of record, years. | Temperature, in degrees Fahrenheit. | | | | | | Precipitation, in inches. | | | | | Sky. | | | Prevailing wind direction. | Observers. | |
|-----------------------|-----------|------------------|--------------------------|-------------------------------------|----------------------------|----------|-------|---------|-------|---------------------------|--------|----------------------------|-----------------------|----------------------------|---|-----------------------|--------------------------------|----------------------------|------------|--------------------------------|
| | | | | Mean. | Departure from the normal. | Highest. | Date. | Lowest. | Date. | Greatest daily range. | Total. | Departure from the normal. | Greatest in 24 hours. | Total snowfall, unmelting. | Number of rainy days, all inch or more. | Number of clear days. | Number of part-ly cloudy days. | | | Number of over-ly cloudy days. |
| <i>Arizona—Contd.</i> | | | | | | | | | | | | | | | | | | | | |
| San Simon | Cochise | 3,609 | 27 | 49.2 | + 4.6 | 79 | 30† | 24 | 1 | 40 | 1.27 | + 0.83 | 1.06 | 0.0 | 3 | 11 | 14 | 8 | sw. | Agent S. P. Co. |
| Seligman | Yavapai | 5,218 | | | | | | | | | | | | | | | | | | Lib., A. T. & S. F. R. R. Co. |
| Sentinel | Maricopa | 685 | 12 | 57.2 | + 2.3 | 80 | 10 | 28 | 3† | 38 | 1.04 | + 0.70 | 1.00 | 0.0 | 2 | 12 | 15 | 4 | se. | Agent S. P. Co. |
| Show Low | Navajo | 6,300 | | | | | | | | | | | | | | | | | | Miss Z. Hall. |
| Silverbell | Pima | 2,650 | 5 | 57.4 | | 78 | 31 | 28 | 3 | 27 | 1.09 | | 0.67 | 0.0 | 4 | 12 | 8 | 11 | n. | Imperial Copper Co. |
| Snowflake | Navajo | 5,644 | 1 | 37.9 | | 69 | 30 | — | 3 | 57 | 0.38 | | 0.17 | 0.0 | 4 | 10 | 13 | 8 | sw. | W. J. Flake. |
| Supai | Coconino | 3,200 | | | | | | | | | | | | | | | | | | A. H. Symons. |
| Tempe | Maricopa | 1,168 | 7 | 58.8 | | 77 | 31 | 22 | 4 | 46 | 1.52 | | 1.15 | 0.0 | 4 | 10 | 17 | 4 | nw. | F. H. Simmons. |
| Thatcher | Graham | 2,830 | 8 | 47.4 | | 30 | 31 | 12 | 4 | 47 | 1.13 | | 0.36 | 0.0 | 6 | 14 | 16 | 1 | | Prof. J. H. Larson. |
| Tombstone | Cochise | 4,550 | 12 | 51.5 | + 3.9 | 82 | 31 | 15 | 3 | 37 | 0.97 | + 0.12 | 0.28 | 0.0 | 5 | 15 | 10 | 6 | | E. N. Walcott. |
| Truxton | Mohave | 4,197 | | | | | | | | | | | | | | | | | | G. F. Robertson. |
| Tuba | Coconino | 4,500 | 13 | 36.8 | + 3.5 | 63 | 29 | 0 | 3 | 33 | 0.87 | + 0.25 | 0.46 | 0.0 | 6 | 4 | 12 | 15 | no. | G. H. Kraus. |
| Tucson | Pima | 2,390 | 31 | 54.6 | + 4.7 | 83 | 31 | 18 | 4 | 50 | 1.31 | - 0.51 | 0.60 | 0.0 | 5 | 4 | 23 | 4 | nw. | University of Arizona. |
| Tucson (1) | do | 2,380 | | | | | | | | | | | | | | | | | | J. M. Robe. |
| Tucson (2) | do | | | | | | | | | | | | | | | | | | | U. S. Coast & Geod. Survey. |
| Vail | do | 3,421 | 13 | 50.7 | - 2.8 | 81 | 30 | 14 | 4 | 48 | 1.47 | + 0.86 | 0.62 | 0.0 | 4 | 15 | 12 | 4 | | Agent S. P. Co. |
| Walnut Grove | Yavapai | 3,649 | 19 | | | | | | | | 3.27 | + 1.95 | 1.66 | 0.0 | 6 | 18 | 8 | 5 | | J. O. Carter. |
| Wickenburg | Maricopa | 2,072 | 12 | 50.0 | + 3.9 | 71 | 21 | 18 | 3 | 44 | 2.30 | + 1.21 | 1.50 | 0.0 | 3 | 16 | 7 | 8 | s. | Agent S. F. P. & P. Ry. |
| Willcox | Cochise | 4,164 | 23 | 48.3 | + 6.0 | 76 | 17† | 12 | 3 | 56 | 1.35 | + 0.53 | 0.48 | 0.0 | 4 | 5 | 0 | 26 | s. | Agent S. P. Co. |
| Williams | Coconino | 6,750 | 9 | 36.6 | | 88 | 19 | 9 | 3 | 40 | 4.75 | | 1.20 | 2.2 | 7 | 15 | 14 | 2 | sw. | E. J. Nurdyke. |
| Winslow | Navajo | 4,853 | 6 | 42.4 | | 72 | 20 | | 4 | 52 | 0.84 | | 0.43 | 0.0 | 4 | 16 | 7 | 8 | | J. F. Bauer. |
| Yarnell | Yavapai | 4,700 | | | | | | | | | | | | | | | | | | E. L. Bartholomew. |
| Yuma | Yuma | 141 | 30 | 56.9 | + 2.2 | 80 | 30 | 27 | 3 | 41 | 0.42 | + 0.01 | 0.37 | 0.0 | 2 | 17 | 8 | 6 | n. | U. S. Weather Bureau. |
| Yuma (1) | do | 150 | 4 | 54.0 | | 77 | 31 | 22 | 2 | 45 | 0.43 | | 0.41 | 0.0 | 3 | 12 | 11 | 8 | n. | A. L. Crane. |
| <i>Nevada.</i> | | | | | | | | | | | | | | | | | | | | |
| Callente | Lincoln | 4,407 | 1 | 41.1 | | 62 | 30 | 9 | 3 | 46 | 0.22 | | 0.08 | | 4 | 26 | 2 | 3 | n. | Salt Lake Route. |
| Las Vegas | Clark | 2,033 | 3 | | | | | | | | | | | | | | | | | Do. |
| Logan | do | 1,700 | 4 | 44.7 | | 77 | 28 | 18 | 3 | 38 | 0.70 | | 0.27 | 0.0 | 4 | 9 | 4 | 18 | n. | R. M. Fitcher. |

TABLE 2.—Daily precipitation for January, 1911. District No. 9—Continued.

| Stations. | River basins. | Day of month. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Total. | | |
|-------------------|---------------------------|---------------|---|---|---|---|---|---|---|---|------|------|-----|-----|-----|-----|-----|-----|-----|----|-----|----|----|-----|-----|-----|-----|-----|----|-----|-----|-----|--------|------|------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | | | |
| Arizona—Contd. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| St. Johns..... | Little Colo- rado..... | T. | | | | | | | | | .14 | .06 | .07 | | .08 | | | | | | | | | .06 | | .04 | | | | | | | | .45 | |
| St. Michaels..... | do..... | .06 | | | | | | | | | .82 | .68 | T. | .08 | | .05 | | .08 | | | | T. | | T. | | .10 | | | | | | | | 1.87 | |
| Salome..... | Colorado..... | | | | | | | | | | .61 | .23 | | | | | | | | | .21 | T. | | | | | | | | | | .08 | 1.13 | | |
| San Carlos..... | Gila..... | | | | | | | | | | 1.04 | .71 | .16 | .03 | | | | | | | | | | .05 | | .09 | .35 | | | | | | | 2.42 | |
| San Simon..... | do..... | | | | | | | | | | 1.06 | .15 | .06 | | | | | | | | | | | | | | .09 | .35 | | | | | | 1.27 | |
| Seligman..... | Verde..... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sentinel..... | Gila..... | | | | | | | | | | 1.00 | .04 | | | | | | | | | | | | | | | | | | | | | | 1.04 | |
| Sho Low..... | Little Colo- rado..... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Silverball..... | Santa Cruz..... | | | | | | | | | | .67 | .05 | T. | .08 | | | | | | | | | | | | | | | | | | | | 1.09 | |
| Snowflake..... | Little Colo- rado..... | | | | | | | | | | T. | T. | .10 | .17 | T. | | | | | | | | | .03 | | T. | .34 | | | | | | | .38 | |
| Supai..... | Colorado..... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tempe..... | Salt..... | | | | | | | | | | T. | 1.15 | .07 | .20 | .10 | | | | | | | | T. | | | | | | | | | | | 1.52 | |
| Thatcher..... | Gila..... | | | | | | | | | | .36 | .36 | | .05 | | | | | .02 | | | | | .15 | | | | .20 | | | | | | 1.13 | |
| Tombstone..... | San Pedro..... | | | | | | | | | | .12 | .26 | .16 | | | | | | | | | | | .28 | .15 | | | | | | | | | .97 | |
| Truxton..... | Colorado..... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tuba..... | Little Colo- rado..... | | | | | | | | | | .46 | | | | | | .03 | .20 | T. | | | | | .04 | | .12 | .02 | | | | | | | | .87 |
| Tucson..... | Santa Cruz..... | | | | | | | | | | .60 | .37 | .04 | T. | | | | | | | | | | | T. | .10 | T. | .20 | | | | | | 1.31 | |
| Tucson (1)..... | do..... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tucson (2)..... | do..... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Vall..... | do..... | | | | | | | | | | .62 | .55 | .02 | | | | | | | | | | | | .28 | | | | | | | | | | 1.47 |
| Walnut Grove..... | Hasayampa..... | | | | | | | | | | 1.66 | .74 | | | | | | | | | | | | .07 | | .55 | .10 | | | | | | | .15 | 3.27 |
| Wickenburg..... | do..... | | | | | | | | | | 1.50 | .50 | | | | | | | | | | | | | | | .30 | | | | | | | | 2.30 |
| Willcox..... | Desert..... | | | | | | | | | | .48 | | .30 | .37 | | | | | | | | | | | | .20 | | | | | | | | 1.35 | |
| Williams..... | Colorado..... | | | | | | | | | | 1.20 | .68 | .30 | .37 | | | | | | | | | | .70 | | .92 | .13 | | | .40 | | .00 | | 4.75 | |
| Winslow..... | Little Colo- rado..... | | | | | | | | | | .42 | .20 | | | | | .06 | T. | | | | | | | | .16 | | | | | | | | .84 | |
| Yarnell..... | Hasayampa..... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Yuma..... | Colorado..... | | | | | | | | | | T. | .37 | | | | | | | | | | | | | | | T. | | | | | | | .05 | .42 |
| Yuma (1)..... | do..... | | | | | | | | | | .41 | | | | | | | | | | | | | | | | .01 | | | | | | | .01 | .43 |
| Nevada..... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Caliente..... | do..... | | | | | | | | | | .08 | | | | | | | | | | | | | | | .02 | .06 | .06 | | | | | | | .22 |
| Las Vegas..... | do..... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Logan..... | do..... | | | | | | | | | | | .27 | | | | | | .15 | | | | | | | T. | | T. | .06 | | | .22 | | | | 0.70 |

Departure of the Mean Temperature from the Normal, January, 1911.

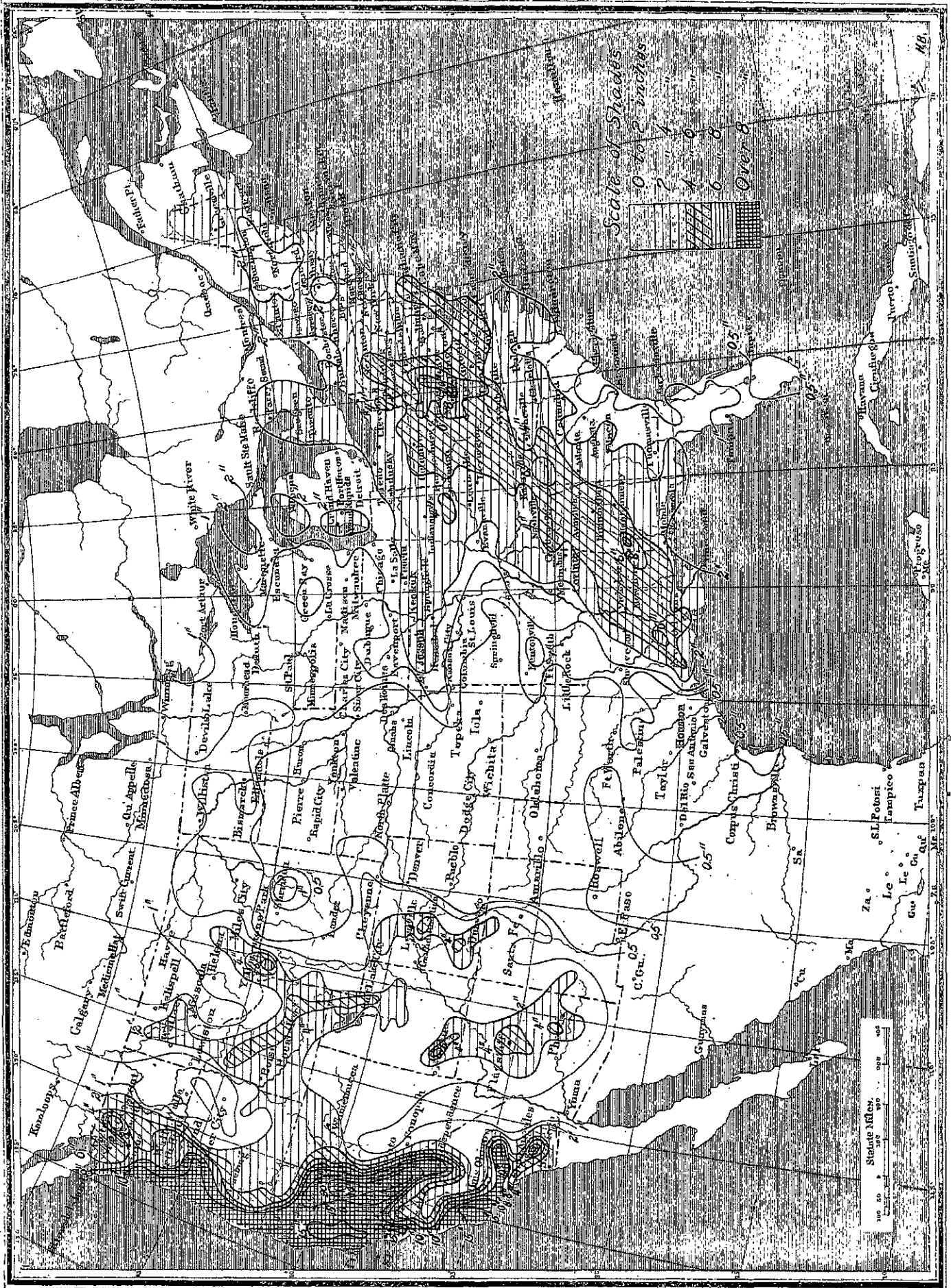
Barkerville



Mexico Vera Cruz

Total Precipitation, January, 1911.

Barreville



Mexico Vera Cruz