

U. S. DEPARTMENT OF AGRICULTURE  
WEATHER BUREAU

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# CLIMATOLOGICAL SERVICE

DISTRICT No. 9. COLORADO VALLEY

FREDERICK H. BRANDENBURG  
DISTRICT EDITOR

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REPORT FOR JULY, 1911

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



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## CLIMATOLOGICAL DATA FOR JULY, 1911.

### DISTRICT No. 9, COLORADO VALLEY.

FREDERICK H. BRANDENBURG, District Editor.

Apart from western Wyoming, where the temperature and rainfall were close to the normal, the month in the basin of the Colorado was unusually cool, as well as the wettest July in a great many years; in Arizona it was the wettest of record. The persistence and regular distribution of the rainfall in Arizona and New Mexico were remarkable, and, while heavy downpours occurred in localities, the resulting damage was many times offset by benefits; this was especially true of the desert regions of Arizona and western New Mexico, where, at the close of the month, all water holes were full, and a luxuriant growth of grass covered the ranges. The persistency of rain in southwestern Colorado caused swollen streams in the San Juan Basin, and much damage was done to ranch property, besides causing a complete failure of the first crop of alfalfa and a deterioration in the condition of other field crops. The heavy rains of the 17th and 18th, on the watershed of Lightner Creek, northwest of Durango, caused the stream to overflow its banks, destroying some crops and washing out the bed of the railroad. In the adjoining county of San Juan, in New Mexico, heavy downpours caused freshets that damaged culverts and irrigation ditches in La Plata, San Juan, and Animas Valleys. On the 14th and 20th the San Juan River at Bloomfield, N. Mex., was the highest in 35 years.

#### TEMPERATURE.

The mean of the 143 stations reporting was 72.3°, or 2.8° below the normal. The mean for July, 1910, was 75.4°. By subdivisions the means and departures were: Western Wyoming, 59.2°, +0.4°; western Colorado, 61.8°, -3.1°; eastern Utah, 70.1°, -1.6°; western New Mexico, 70.9°, -2.5°; Arizona, 79.0°, -3.1°; and southeastern Nevada, 74.4°. The highest monthly mean was 93° at Parker, Ariz., and the lowest, 44.6°, at Corona, Colo. In the southern and central portions of the district the daily mean temperatures were below the normal nine-tenths of the month, and in the southwestern portion of Colorado there was only one day warmer than the normal. By subdivisions the extremes were: Western Wyoming, 88° at Eden and 27° at Daniel; western Colorado, 99° at Grand Valley and 26° at Fraser, Lay, and Pyramid; eastern Utah, 106° at Springdale and 24° at Scofield; western New Mexico, 101° at Deming and 40° at Aragon and Dulce; Arizona, 120° at Mohawk Summit and 28° at Flagstaff No. 2; southeastern Nevada, 104° and 43° at Caliente.

#### PRECIPITATION.

The average for the 194 stations reporting was 3.18 inches, or 1.40 inches above the normal, and 0.50 inch less than for August, 1909, the wettest summer month since the beginning of the records. The average for July, 1910, was 1.70 inches. The rainfall was unusually well distributed both geographically and throughout the

month, the last two days being the only days without rainfall over the greater part of the district. By watersheds the averages and departures were: Green, 1.03, ±0.00; Grand, 3.13, +1.20; San Juan, 5.09, +4.43; Little Colorado, 3.68, +2.10; Gila, 3.74, +1.65; Mimbres, 5.08, +2.98; and Colorado, proper, 1.60, +0.81 inch. The greatest monthly amount was 8.58 inches at Chromo, Colo., and the least monthly amount, 0.03 inch, at San Rafael, Utah. Monthly amounts in excess of 4 inches were recorded at 22 stations in Colorado, 11 in New Mexico, and 31 in Arizona. Daily falls of 2 inches or more were noted at 2 stations in New Mexico and 18 stations in Arizona. By subdivisions the greatest and least monthly amounts were: Western Wyoming, 0.25 at Eden and 0.13 at Daniel; western Colorado, 8.58 at Chromo, and 0.84 at Grand Junction; eastern Utah, 3.95 at Monticello and 0.03 at San Rafael; western New Mexico, 7.13 at Deming and 2.46 at Lordsburg; and Arizona, 8.35 at Intake and 0.22 at Parker.

The average number of days with 0.01 inch or more precipitation was 4 in western Wyoming, 14 in western Colorado, 7 in eastern Utah, 12 in western New Mexico, 10 in Arizona, and 2 in southeastern Nevada; and for the district as a whole 11 days.

#### MISCELLANEOUS.

The sunshine was much below the average. Grand Junction reported 66, Durango 68, Flagstaff 55, Phoenix 74, and Yuma 85 per cent of the possible. In western Colorado the deficiency was about 11 per cent. In Arizona the deficiency ranged from 5 per cent at Yuma to 17 per cent at Flagstaff.

The relative humidity was unusually high for July in the central and southern parts of the district. Grand Junction reported 48, Durango 72, Flagstaff 73, Phoenix 53, and Yuma 51 per cent.

#### THE COLORADO RIVER.

The discharge of the Grand at Fruita was somewhat above the average of recent Julys; the highest stage, 9.2, was noted on the 7th, when the discharge was 23,200 second-feet. The lowest stage, 5.6 feet, occurred on the 31st. The discharge of the Green, which was not much affected by the rainfall, was somewhat below the average. The highest stage, 9.6 feet, occurred on the 1st, when the discharge was 20,100 second-feet. The San Juan carried an unusually large volume due to the heavy rainfall in southwestern Colorado and northwestern New Mexico. As a result of the downpours the river at Shiprock reached 13.2 feet on the 14th and 14.6 feet on the 20th, said to be the highest stages in 35 years. At Topock, on the trunk stream, the highest stage, 12 feet, occurred on the 1st, and the lowest, 6 feet, on the 17th-19th. At Yuma the average height was practically the same as the average for the last five years.

TABLE 1.—Climatological data for July, 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 overcast days), Sky, Prevailing wind direction, Observers.



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

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.							Precipitation, in inches.				Sky.				Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.		Prevailing wind direction.
<i>Arizona—Continued.</i>																				
Natural Bridge.....	Gila.....	4,990	22								6.83	+ 4.33	2.00	0	13	5	10	16	sw.	D. G. Goodfellow.
Oracle.....	Pinal.....	4,500	18																	W. H. Winters.
Osborn.....	Cochise.....	4,076	5								2.88		1.14	0	9	6	17	8	w.	Agent E. P. & S. W. Co.
Paradise.....	do.....	5,436	5	68.9	-	92	31	49	28	40	5.56		2.08	0	6	0	23	8	sw.	J. C. Hancock.
Parker.....	Yuma.....	5,345	17	83.0	- 0.9	118	15	70	11	42	0.32		0.15	0	2	6	6	1	w.	M. A. Israel, M. D.
Payson.....	Gila.....	5,550	3	69.8	- 4.4	90	31	59	31	45	4.32		2.32	0	12	6	6	23	c.	M. McDonald.
Phoenix.....	MariCopa.....	1,108	16	86.0	- 7.7	109	31	65	2	36	6.47		5.40	0	9	9	19	3	w.	U. S. Weather Bureau.
Phoenix <sup>1</sup> .....	do.....	1,092	20	85.5	-	110	31	64	2	45	6.13		4.91	0	7	13	12	6	w.	G. Acuff.
Phoenix <sup>2</sup> .....	do.....	1,189	2	86.6		110	30	67	17	38	5.26		2.10	0	6	16	9	6	sw.	Horne & Armstrong.
Pinal Ranch.....	Pinal.....	4,520	17								5.34		2.63	0	10	14	7	10	sw.	Iron & Craig.
Pinto.....	Apache.....	5,660	7								2.82		0.52	0	9	13	17	1	sw.	Mrs. C. F. Henning.
Prescott.....	Yavapai.....	5,320	44	69.6	- 3.9	95	6	51	23	43	3.76		1.02	0	11	8	9	14	sw.	J. W. Flinn, M. D.
Quartzsite.....	Yuma.....	800	3	91.8		115	31	69	23	45	2.09		1.00	0	6	15	13	3	sw.	W. E. Scott.
Redrock.....	Pinal.....	1,864	3	87.7		110	14†	64	1	40	0.73		0.25	0	5	5	26	0	w.	J. W. Crowell.
Roosevelt.....	Gila.....	2,175	7	85.0		104	31	67	22	31	5.18		1.76	0	10	7	17	7	sw.	U. S. Reclamation Service.
Sacaton.....	Pinal.....	1,280	4	86.0		109	14†	57	2	42	4.11		1.40	0	9	13	13	5	sw.	E. W. Hudson.
St. Johns.....	Apache.....	5,650	8	70.4		94	16	49	5	41	3.32		1.20	0	10	7	19	5	w.	A. Shreeve.
St. Michaels.....	do.....	6,950	24	66.8	- 2.4	93	29	46	31	43	4.17		2.10	0	16	4	18	9	sw.	Rev. A. Weber, O. F. M.
Salome.....	Yuma.....	1,875	4	82.8		107	31	56	16	49	1.39		0.47	0	7	8	18	5	sw.	Mrs. M. B. Swartz.
San Carlos.....	Gila.....	2,456	29	80.6	- 5.5	108	30	57	17†	51	2.99		1.23	0	5	3	24	4	sw.	F. S. Thomas.
San Simon.....	Cochise.....	3,609	27																	Agent Southern Pacific Co.
Seligman.....	Yavapai.....	5,219	6	72.3		98	9†	47	4	50	2.15		1.05	0	9	6	22	3	sw.	Lib. A. F. & S. F. R. R. Co.
Sentinel.....	MariCopa.....	685	12	89.8	- 5.0	114	14	66	22†	39	3.54		2.86	0	7	16	13	2	sw.	Agent Southern Pacific Co.
Silverbell.....	Pima.....	2,050	6	83.4		106	31	60	1†	29	3.64		2.25	0	6	7	16	8	sw.	Imperial Copper Co.
Snowflake.....	Navajo.....	5,044	1	70.0		92	9	52	31	38	5.89		1.50	0	13	3	19	9	sw.	W. J. Flake.
Springerville.....	Apache.....	6,832	1	64.0		84	8†	45	25	37	3.96		0.97	0	14	9	10	12	s.	U. S. Forest Service.
Supai.....	Cocoino.....	3,200	5	84.4		107	10	62	25	36	6.77		0.55	0	4	23	0	6	c.	A. H. Symons.
Tempe.....	MariCopa.....	1,165	7	85.6		109	31	67	2†	39	6.33		2.10	0	10	8	21	2	c.	F. H. Simmons.
Thatcher.....	Graham.....	2,800	8	80.0		103	30†	59	31	44	3.40		2.00	0	6	8	15	8	sw.	Prof. J. H. Larson.
Tombstone.....	Cochise.....	4,550	17	76.8	+ 1.5	101	30	58	1†	39	2.13		- 0.94	0	10	5	20	6	sw.	F. N. Walcott.
Truxton.....	Mohave.....	3,997	2	80.8		103	15†	62	4	36	0.77		0.15	0	10	9	17	5	s.	G. A. Dennis.
Tuba.....	Cocoino.....	4,500	12	74.0	- 3.6	95	9†	50	2	43	1.90		- 0.24	0	8	12	14	5	ne.	H. P. Marble.
Tucson.....	Pima.....	2,390	32	83.6	- 3.1	106	15†	49	3	44	1.57		- 0.53	0	8	0	29	2	nw.	University of Arizona.
Tucson (1).....	do.....	2,380	3	82.0		106	13†	61	28	42	2.16		0.72	0	10	5	22	4	nw.	J. M. Robe.
Tucson (2).....	do.....	2,526	12	83.5		106	30	64	3	42	1.43		0.50	0	15	8	6	17	w.	U. S. Coast & Geod. Surv.
Vail.....	do.....	3,421	12	83.0	- 2.7	104	31	60	26	41	2.59		+ 1.43	0	4	10	17	4	sw.	Agent Southern Pacific Co.
Wainut Grove.....	Yavapai.....	3,649	21								4.61		+ 2.75	0	13	6	19	6	sw.	J. O. Carter.
Wickenburg.....	MariCopa.....	2,072	13	85.4	- 0.3	108	12	60	16	42	3.40		+ 2.39	0	4	8	18	5	sw.	Agent S. F. P. & P. Ry.
Willcox.....	Cochise.....	4,164	29	72.4	- 9.4	100	31	40	10†	58	3.21		+ 1.42	0	5	16	9	6	s.	Agent Southern Pacific Co.
Williams.....	Cocoino.....	6,750	11	83.3	- 4.7	86	9	43	5	39	5.52		+ 2.59	0	19	6	17	8	sw.	E. J. Nordyke.
Winslow.....	Navajo.....	4,853	7																	J. F. Bauer.
Yuma.....	Yuma.....	141	32	90.2	- 0.7	115	31	69	4	41	0.42		+ 0.30	0	3	25	4	2	sw.	U. S. Weather Bureau.
Yuma.....	do.....	150	4	83.8		112	30	62	4	46	0.44		0.36	0	2	17	0	14	sw.	A. L. Crane.
<i>Nevada.</i>																				
Caliente.....	Lincoln.....	4,407	1	74.4		104	11†	43	31	49	1.09		0.58	0	2	17	8	6	se.	Salt Lake Route.
Logan.....	Clark.....	1,700	4																	R. M. Filcher.

<sup>a</sup>, <sup>b</sup>, <sup>c</sup>, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.  
 \*\* Temperature extremes are from observed readings of the dry bulb; means are computed from observed readings.  
 † Also on other dates.  
 T. Precipitation is less than 0.01 inch rain or melted snow.

TABLE 2.—Daily precipitation for July, 1911. District No. 9, Colorado Valley.

Table with columns for Stations, Watershed, Day of month (1-31), and Total. Rows include Wyoming stations (Daniel, Eden, Green River, Merna, Pinedale, Willow Creek Cabin) and Colorado stations (Ashcroft, Bed Rock, Breckenridge, Buford, Cascade, Cedaredge, Chromo, Cochetopa, Collbran, Columbine, Columbine Ranch, Corona, Cortez, Craig, Crawford, Deltah, Dillon, Durango, Eureka, Fraser, Fruita, Gladstone, Glenwood Springs, Grand Junction, Grandlake, Grand Valley, Gunnison, Horsefly, Ironton, Lake City, Lay, Mancos, Marble, Marshall Pass, Meeker, Montrose, Nast, Pagoda, Pagosa Springs, Palisades, Paonia, Parshall, Parkin, Pyramid, Rangely, Redcliff, Rico, Rifle, River Portal, Sapinero, Shoshone, Silverton, Spruce Lodge, Steamboat Springs, Tacoma, Telluride, Terminal Dam, Terrill's Ranch, Uncompahgre Plateau, Yampa) and Utah stations (Aneth, Bluff, Castle Dale, Cisco, Dragon, Duchesne, Elkhorn, Emery, Escalante, Fort Duchesne, Fruitland, Grayson, Green River, Hanksville, Hite, Kanab, La Sal, Loa, Manila, Moab, Monticello, Mud Lake, New Harmony, Orderville, Pine Valley, Price, Ranch).

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

Table with columns: Stations, Watershed, Day of month (1-31), Total. Rows include stations from Utah (St. George, San Rafael, etc.), New Mexico (Alma, Aragon, Aztec, etc.), and Arizona (Allaires Ranch, Alpine, Benson, etc.).

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

Stations.	Watershed.	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				
<i>Arizona—Contd.</i>																																					
Phoenix (2)	Salt.	2.10	1.96															.49		.20		.26					.25								5.26		
Final Ranch	Gila.	.82	1.49	.25		.08		.11										.37									.40								5.34		
Pinto	Little Colorado.	.49	.08		T.					.25	.35	.52	T.	.35											T.	.33	.20				.25				2.82		
Prescott	Hassayampa	.65	.58	.13			T.	T.						T.	T.			T.	T.	1.02		1.10	.40	.08	.12		.15	.20	.33						3.76		
Quartzsite	Colorado	.02	.06															.22			1.00	.47	.32												2.09		
Redrock	Santa Cruz	.19	T.								T.	T.	T.	T.	T.			.25				.02	.06			T.	.21								0.73		
Roosevelt	Salt.	1.76	.22						.64	.14								.19				.62	.31	.30			.29	.71							5.18		
Sacaton	Gila.	1.40	.30					.15									.64	.45	.15	.08			.75						.79						4.11		
St. Johns	Little Colorado.	.11	.22	.15	.16									.65			.18			1.20	.30	.10	.25												3.32		
St. Michaels	do.	.60	.40	.05	T.	.14	T.				.05	.15	.20		T.		.05		.30	1.40	.05	T.		.05	.05	.45	.08	.15							4.17		
Salome	Colorado	.11									.06	.08					.31			.47		.33	.03												1.39		
San Carlos	Gila.	.32	.51					.08									.85			1.23	T.	T.														2.99	
San Simon	do.																	.06	.12		1.05	.14			.55	T.	.06	.03	.04							2.15	
Seligman	Verde.	.10															.06	.12		1.05	.14			.55	T.	.06	.03	.04								2.15	
Sentinel	Gila.	.42	.08									.01	.01						.01	.48			2.53													3.54	
Silverbell	Santa Cruz	2.25	.20					.05									T.	.34										.55	T.							3.64	
Snowflake	Little Colorado.	.87	.73	.35		T.	.76	T.					T.	.03	1.50	T.		T.	.34	.63	1.04	T.	T.			T.	.03	.02	.09	.10					5.89		
Springerville	do.	.14							.08	T.	.68	.28	.07		.97	.04		.69	.27			.20	.16			.04	.29	.05							3.96		
Supai	Colorado												.10					.55								.01	.11									0.77	
Tempe	Salt.	2.02	2.10	.05			.04												.73		.07	.32	.83				.01	.11	.02	.15					6.33		
Thatcher	Gila.	.45			.35								.30					2.00																		3.40	
Tombstone	San Pedro.	T.				.15	.02	.32	.68	.05	.53			.14				.19				.02	.63				.10								2.13		
Truxton	Colorado	.01									.10				.05	T.	.03		.15	.09	T.	.08	T.	.05	T.	.11	.10							T.	0.77		
Tuba	Little Colorado.		T.	.08	T.			.21						T.	.22		.19		.52			.40					.24									1.90	
Tucson	Santa Cruz	.52	.18				T.				T.	.05	T.		T.	.12	T.	.21				.16						.09	.24							1.57	
Tucson (1)	do.	.70	.07								.09	.05			.02			.14				.10					.02	.72	.25							2.16	
Tucson (2)	do.	.51	.06				T.	T.			T.	T.	.06					.12			.17	.01	T.				.16	.34								1.43	
Vail	do.									.32								.80				.57						.90								2.59	
Walnut Grove	Hassayampa	.45	.25														.02	.01	1.18	1.00	.18		.38		.61	.02	1.20	.80	.10						4.61		
Wickenburg	do.	1.25	.60														1.20					.35						.80								3.40	
Willcox	Desert									.31				.05			1.04				.36						1.45									3.21	
Williams	Colorado	.24	.03	.40	.05	T.	.06	.28			T.	.16	.14	.33	T.			.92	.64	.08	1.30	.25	.15		.18	.17	.03								5.52		
Winslow	Little Colorado.																																				
Yuma	Colorado	.04															.01	T.	.37					T.												0.42	
Yuma (1)	do.	.08																.36																		0.44	
<i>Nevada.</i>																																					
Caliente	Colorado																																				1.09
Logan	do.																																				

\* Precipitation included in that of the next measurement.  
 † Separate dates of falls not recorded.  
 ‡ Precipitation for the 24 hours ending on the morning when it is measured.  
 T. Precipitation is less than 0.01 inch rain or melted snow.



TABLE 3.—Maximum and minimum temperatures at selected stations for July, 1911. District No. 9, Colorado Valley.

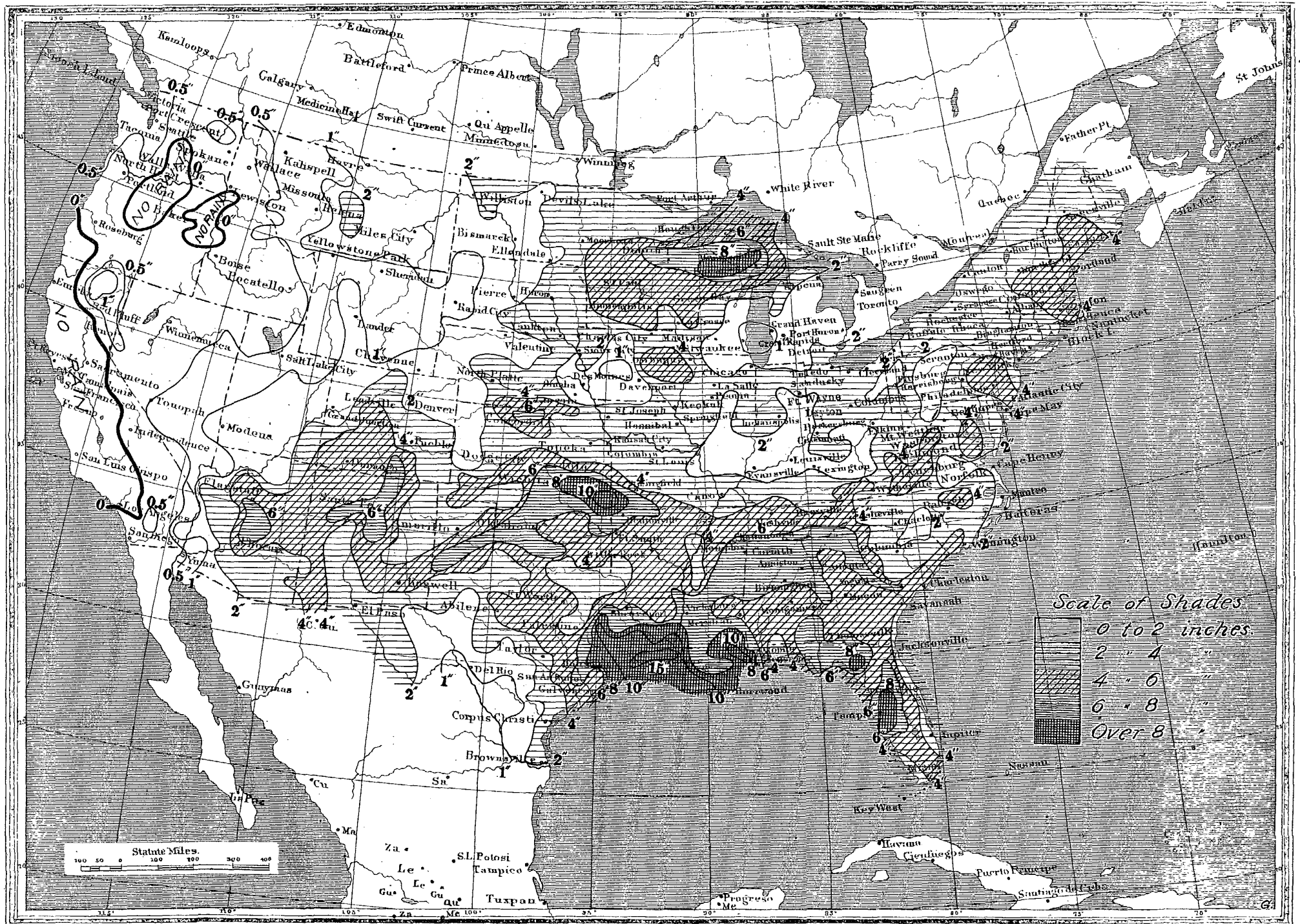
Table with 4 columns of stations: Wyoming (Daniel, Green River), Colorado (Durango, Grand Junction, Gunnison, Meeker, Steamboat Springs), Utah (Emery, Fort Duchesne, Hite, Moab, St. George), and New Mexico (Bloomfield, Fort Bayard). Rows list dates from 1 to 31 and means for each station.

Table for Arizona with columns for stations: Bisbee, Flagstaff, Fort Apache, Grand Canyon, Parker, Phoenix, Prescott, St. Michaels, San Carps, Tucson, Yuma, and Logan, Nev. Rows list dates from 1 to 31 and means for each station.

a, b, c, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record. § Data are from standard instruments not supplied by the U. S. Weather Bureau. §§ Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

•Barkerville

# Total Precipitation, July, 1911.



*Scale of Shades*  
0 to 2 inches.  
2 " 4 "  
4 " 6 "  
6 " 8 "  
Over 8 "

State Miles.  
0 50 100 150 200

Mexico Vera Cruz

