

the normal quantity. Several other States have been almost as unfortunate as these two.

The western half of the country received more nearly its normal precipitation during August, in fact from Nevada and northern Arizona northeastward to the middle Missouri Valley there was more than normal, particularly in southern, central, and western Wyoming and southeastern Idaho. In Wyoming it was considerably the wettest August of record.

The western districts near the Canadian boundary mainly had less rain than normal, and the same was true of the southern half of the Plains of New Mexico, save the western part, and of nearly all of Texas, especially the southern part.

SUNSHINE AND RELATIVE HUMIDITY

Much sunshine prevailed during the month throughout the country except in northeastern New England, a small area in the central Great Plains, and the northern

Pacific area, where less than 40 per cent of the possible was observed. However, in portions of the upper lake region, the western portions of Kansas, Oklahoma, and Texas, and from western Texas to the Pacific, except a small area in southwestern California, most localities received more than 70 per cent of sunshine, while southwestern Arizona and the eastern and central portions of California received from 81 to 94 per cent of the possible amount for the month.

The extreme droughty conditions that prevailed over the country as a whole are reflected by the humidity percentages, which, over much of the country are found to be below the normal, the deficiencies ranging up to as great as 25 per cent in some sections of the Southeast. On the other hand, the humidity percentages were above the normal in portions of northern New England, the central Great Plains and the Rocky Mountain and Plateau regions, where the severe droughty conditions did not prevail.

SEVERE LOCAL STORMS, AUGUST, 1930

[The table herewith contains such data as have been received concerning severe local storms that occurred during the month. A more complete statement will appear in the Annual Report of the Chief of Bureau]

Place	Date	Time	Width of path, yards <sup>1</sup>	Loss of life	Value of property destroyed	Character of storm	Remarks	Authority
Ipswich to Aberdeen, S. Dak.	1	3:30 p. m.			\$13,000	Wind and hail	Buildings damaged or wrecked; crops ruined	Official, U. S. Weather Bureau.
Antreville (near), Calhoun Falls and Abbeville, S. C.	1	10:30 p. m.	2 mi.		35,000	Hail	Crops and other property on 3,000 acres damaged.	Do.
Crown Point, N. Mex.	1					Severe electrical and hail.	Character of damage not reported.	Do.
Woodruff, S. C.	1				4,000	Hail	Crops damaged.	Do.
Durand, Wis.	2	11:30 a. m.	6 mi.		4,000	Hail and rain	Many windows broken; roofs damaged; crops injured; main streets flooded.	Do.
Huron, S. Dak.	2	4:50 p. m.	50		3,000	Wind	Buildings damaged.	Do.
Beadle County, S. Dak.	3	6-7 p. m.			12,000	Wind and hail	Buildings and crops damaged over small area.	Do.
Castleford to Buhl, Idaho.	3				25,000	Electrical and hail	Houses and auto burned; severe crop damage.	Do.
Morrison, Colo.	4	12:30 p. m.	2 mi.		7,000	Hail	Crops, roofs, and auto tops considerably damaged.	Do.
Parker, Colo.	4	5 p. m.	1-2 mi.			do.	Character of damage not reported.	Do.
Loganville Wis. (near)	4				8,000	Electrical	Barn and other small buildings wrecked.	The Wisconsin State Journal (Madison, Wis.).
Westlake to Kooskia, Idaho.	4					Hail and wind	300,000 bushels of grain ruined.	Official, U. S. Weather Bureau.
Marble Falls, Tex.	5	4:30 p. m.	1,320		25,000	Tornado	Roof of factory destroyed.	Do.
Scandia (near) to Rydal (near), Kans.	5	6 p. m.	2,500		10,000	Hail	About 1,000 acres of corn badly damaged; path 5 miles long.	Do.
Tatum and Minden, Tex.	5	6:30 p. m.	880		3,000	Wind	Some damage to buildings and crops.	Do.
Dubuque, Iowa	5				7,000	Wind, rain and electrical.	Several residences and barns fired by lightning.	Do.
Aberdeen, S. Dak.	6	4:45 p. m.			3,000	Wind	Overhead wires damaged.	Do.
Monroe County, Iowa	6	5:30 and 7 p. m.			3,200	Two wind and hail storms.	No details reported.	Do.
Wayne and Jasper Counties, Iowa.	6	5:30 and 6:30 p. m.			6,500	Two wind storms.	do.	Do.
Polk County, Iowa.	6	6 p. m.			8,200	Wind and hail.	do.	Do.
East Hartford Conn., and vicinity.	7	P. m.				Rain, hail and wind.	Chief damage to tobacco and fruit.	Hartford Courant (Conn.)
Monetta, S. C.	8				1,000	Wind squall	Barn wrecked; a mule and two cows killed.	Official, U. S. Weather Bureau.
Mount Carroll, Ill., and vicinity.	9	11-11:30 a. m.	830-1,760		2,500	Hail	Chief damage to crops, roofs, and glass; trees blown down; path 18 miles long.	Do.
Athens, Ill.	9	3 p. m.			3,000	Wind	Buildings damaged; corn flattened.	Do.
Beardstown, Ill.	9	4 p. m.				Wind and hail.	Crops, gardens, and roofs damaged.	Do.
Joliet, Ill.	9	do.			20,000	Wind and rain	Wire services impaired; several houses unroofed.	Official, U. S. Weather Bureau.
Lyons, Nebr. (2 miles south).	9	6 p. m.	1,760		75,000	Hail	Severe crop loss; path 10 miles long.	Do.
Louisville, Ky., and vicinity.	9	8 p. m.		1	50,000	Wind and severe thunderstorm.	Heavy property damage in the city; a number of planes damaged at Bowman Field; several persons injured.	Do.
Chester, S. C. (near)	9	9:30 p. m.			4,000	Electrical	Large barn struck; contents and 5 mules burned.	Do.
Fort Wayne, Ind.	9				1,500	Wind	Trees blown down; telephone and traction service impaired.	Do.
Greensboro, N. C.	9		2 mi.			Thunderstorm and wind.	Trees broken; crops beaten; streets flooded; path 5 miles long.	Do.
Clinton, Scott, Grundy, Jackson, Linn, Montgomery, Page, and Woodbury Counties, Iowa.	9	P. m.			28,000	Wind and hail	Crops and other property damaged.	Do.
La Salle, De Pue, and Princeton, Ill., and vicinity.	9			2		Wind	Trees down; corn flattened; roofs and signs damaged; electric services interrupted; boat capsized.	Do.
Royal Center, Ind., and vicinity.	9					do.	Fruit trees injured; buildings and crops damaged.	Do.
Vincennes, Ind.	9				1,000	do.	Wires and trees damaged.	Do.
Cowpens, S. C.	10	P. m.			15,000	Electrical	Power house struck.	Do.
Hicksville to Riverhead, Long Island, N. Y.	10				17,000	Rain, wind, and probably small tornado.	Much injury to crops, buildings, and trees; planes damaged; tornado near Hicksville.	Do.
Providence, R. I.	10	A. m.			8,400	Thunderstorm	Buildings damaged.	Do.
Oktaha, Okla., (5 miles southeast).	11	4 p. m.	440		2,500	Hail	Chief damage to crops; path ¾ mile long.	Do.

<sup>1</sup>"Mi." signifies miles instead of yards.

## Severe local storms, August, 1930—Continued

Place	Date	Time	Width of path, yards <sup>1</sup>	Loss of life	Value of property destroyed	Character of storm	Remarks	Authority
Springfield, Ill.	13				\$11,000	Severe electrical and wind.	Considerable damage by fires; minor injury to trees and wires by wind.	Official, U. S. Weather Bureau.
Dillon, Mont., and vicinity.	14					Hail.	Crops damaged.	Do.
Brooklyn, Wis.	15	3 p. m.	880		1,500	do.	do.	Do.
Byron, Nebr.	15	5:10 p. m.	1,760		17,500	do.	Considerable damage to crops in places; path 10 miles long.	Do.
Hamburg, Pa.	15				20,000	Hail and several electrical storms.	Barn wrecked; all crops damaged.	Do.
Connecticut and Massachusetts (parts of).	16			5	1,500,000	Wind, hail, electrical, and cloudburst.	Damage chiefly to tobacco; livestock killed; goods in cellars damaged.	Hartford Courant (Conn.).
Clatonia, Nebr.	18	10:30 a. m.	1,320		2,000	Tornado and hail.	Barn wrecked; crops damaged; path 1.5 miles.	Official, U. S. Weather Bureau.
Tullos, La. (near)	18	3 p. m.	440		3,000	Wind.	Oil derricks damaged; path ¼ mile long.	Do.
Levy, N. Mex. (near)	18	3-3:30 p. m.	1,760			Hail.	Character of damage not reported.	Do.
Garland, Mont.	18					do.	Much alfalfa seed destroyed.	Do.
Wymore, Nebr.	19	10 a. m.	4 mi.		10,000	do.	Crops damaged in places.	Do.
Leesville, La.	19	3-3:30 p. m.	5 mi.		6,000	Hail and wind.	Chief damage to crops; path 20 miles long.	Do.
Arthur, Nebr. (5 miles east)	19	4 p. m.	440		25	Small tornado.	Minor crop injury; path ½ mile long.	Do.
Mineral Wells, Tex. (near)	19	do.	1,760		1,200	Wind.	Buildings damaged.	Do.
Ville Platte, La. (5 miles east)	19	do.	50		500	Probably tornado.	Cotton and small buildings damaged; path 1 mile long.	Do.
Larned to Belpre, Kans.	19	5-6 p. m.	2,500		75,000	Hail.	Much damage to glass, roofs, and autos; crops badly cut.	Do.
Wauneta, Nebr.	19	do.	1,760		8,000	do.	Crop damage 35 per cent in places; path 7 miles long.	Do.
McCook, Nebr.	19	7:45 p. m.	2 mi.		20,000	do.	Crops damaged; roofs pierced; path 20 miles long.	Do.
Greensburg to Wilmore, Kans.	19	11:30 p. m.	do.			Hail and wind.	Crops almost total loss in some localities; path 15 miles long.	Do.
Filley, Nebr.	19		3 mi.		3,000	Hail.	Considerable crop injury over small areas; path 7 miles.	Do.
Superior, Nebr. to Glasco, Kans.	19		10 mi.			Violent wind and probably small tornado.	Trees, wires, and small buildings blown down; probably small tornado near Jamestown.	Do.
Geary, Okla.	20	2:30 a. m.	3 mi.		14,000	Wind.	Chief damage to crops; path 9 miles long.	Do.
Barnston, Nebr.	20	10 a. m.	2,640		9,000	Hail.	Considerable crop damage in places; windows broken; some poultry killed; path 6 miles long.	Do.
Dane County, Wis. (eastern).	20	2-3 p. m.	880-1,760		100,000	do.	Crops, especially tobacco, severely damaged; path 10 miles long.	Do.
Billings, Mont.	20	5-5:30 p. m.				do.	10,000 acres of beets, beans, small grains, and alfalfa severely damaged.	Do.
Bon Homme County, S. Dak.	21	7 a. m.			25,000	Wind and hail.	Buildings damaged and crops ruined in scattered areas.	Do.
Madison (northern), Pierce and Knox Counties, Nebr.	21	7-9 a. m.			10,000	Hail.	Crops considerably damaged in small areas.	Do.
Bruning, Nebr. (3 miles north).	21	1-2 p. m.	5 mi.		12,000	do.	Damage to property light to heavy in places; path 35 miles long.	Do.
Monument, Colo.	21		2 mi.		10,000	do.	Crops damaged; windows broken.	Do.
Osmond, Nebr.	21		do.		20,000	do.	Crops damaged 5 to 10 per cent in places.	Do.
Cotton and Jefferson Counties, Okla.	22	3 p. m.			375,000	Hail and wind.	Heavy crop loss; much poultry and some livestock killed; 4 residences destroyed and 3 damaged.	Do.
Harmon County, Okla.	22	7 p. m.			15,000	Hail.	Chief damage to crops.	Do.
New York City, N. Y., and vicinity.	23	A. m.				Wind, rain, and electrical.	Cellars flooded; traffic halted; wires and trees broken; boats torn loose; some loss of life.	Do.
Gordon, Nebr.	23	3 p. m.	1,760		10,000	Hail and rain.	Crops damaged in small areas; some damage by flooding.	Do.
Harriet and Wall, Tex.	24	7 p. m.	880		55,000	Tornado.	Crops and buildings destroyed.	Do.
Nolan, N. Mex. (near)	27	3-3:30 p. m.	2 mi.			Hail.	Crops damaged about 40 per cent; path 2 miles long.	Do.
Alexandria, Nebr. (2 miles west).	28	4:30 p. m.	3 mi.		50,000	do.	Serious crop damage in places; some roofs ruined; path 30 miles long.	Do.
Cedar Bluffs to Jennings, Kans.	28	6-6:30 p. m.	1-4 mi.		40,000	do.	Chief damage to corn; path 20 miles long.	Do.
Colmor, N. Mex. (near)	29	1:15-1:45 p. m.				do.	Considerable damage to corn and beans.	Do.
Fillmore, Thayer, Jefferson, and Gage Counties, Nebr.	30	1-5 p. m.	30 mi.		28,700	do.	Crops damaged in scattered areas; path 70 miles.	Do.
Table Rock, Nebr.	30	4-5 p. m.	2 mi.			do.	Crops damaged.	Do.

## RIVERS AND FLOODS

By R. E. SPENCER

Except for unimportant rises in the Canadian River at Logan, N. Mex., and in the Colorado at Parker, Ariz., and for the high (artificial) stage of the Trinity River at Dallas, Tex., no flood stages were reached in the important rivers of the United States during August. No damage is reported in the above three cases.

In the Rocky Mountain region, and especially in Utah, considerable destruction was done by local floods resulting from so-called "cloudburst" rains. The Utah floods are discussed at length in an article by Mr. J. Cecil Alter, official in charge of the Weather Bureau office at Salt Lake City, appearing elsewhere in this REVIEW, and the following references to those in other Western States are based upon newspaper reports:

At Pocatello, Idaho, on August 9: Streets and private (residence) property in the western section of the city covered with mud and rock from adjacent mountain slope.