

SEVERE LOCAL STORMS, OCTOBER, 1929

[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 ¹	Loss of life	Value of property destroyed	Character of storm	Remarks	Authority
Blackville, S. C.	1			1	\$3,500	Tornado	Considerable damage to property over short path; 4 persons injured.	Official, U. S. Weather Bureau.
Atlantic Coast States (central and southern). Oswego, N. Y., and vicinity.	1-2					Wind and rain	Heavy damage to crops and property in path of tropical hurricane.	Do.
St. Johns River, Fla. (near mouth). Beckham County, Okla. (northwestern). Clinton, Tex. (near)	2-3					Wind	Lake-front property and telephone and light wires damaged.	Do.
	10				25,000	High winds	British schooner blown ashore, with some damage to vessel.	Do.
	11	4:30 p. m.	3,520		35,000	Hail	Considerable damage to crops and other property over path 10 miles long.	Do.
	15	2-3 p. m.	3 mi.			do	Young crops destroyed; roofs, windows, and auto tops damaged; path 5 miles.	Do.
Pennsylvania (central)	21-22	4-10 p. m.				Wind and rain	Shamokin Airport damaged; wire service of all kinds impaired; trees uprooted; crops injured.	Do.
Lake Huron and Lake St. Clair (shores of).	21-23			1		Wind	4 large boats driven ashore, some in bad shape, with cargoes total loss; much damage to water-front property.	Do.
Lake Michigan (southern shores of).	22-24			46		do	Several million dollars' damage to lake-front property and shipping; car ferry Milwaukee sunk, causing considerable loss of life.	Do.
Illinois (northern) and Wisconsin (eastern).	28-29			10		do	Steamship Wisconsin foundered, causing loss of life; heavy damage to parks, buildings, and other property on lake front.	Do.
Anderson, Tex. (near) Houston, Tex. (vicinity of)	30		50		5,000	Tornado Series of tornadic storms.	Schoolhouse wrecked. Some damage to property; 4 persons injured.	Do. Do.
Rylie and Elam, Tex. (near).	30	4-5 p. m.				Wind and hail	Several homes damaged; a number of outbuildings wrecked.	Do.

¹ Mi. signifies miles instead of yards. 627.41 (73)

RIVERS AND FLOODS

By R. E. SPENCER

Excepting the few slight rises of the 22-24th, all floods in October were more or less direct results of the tropical storm which crossed the extreme southeastern United States and moved northward along the Atlantic seaboard during the first few days of the month. This storm is fully described elsewhere in this review. The resultant rains were practically continuous from September 20 to October 1 in the South Atlantic and East Gulf sections, and during the first two days of October in the Middle and North Atlantic States and the extreme eastern Ohio Valley, with a distinct division, in the Southeast, into two periods, both of which culminated in extremely heavy falls—one on September 26-27 and the other on September 30-October 1.

These two rain periods, the fall in either of which would have been sufficient to produce floods in the rivers of the Southeastern States, were especially effective in combination—the first having brought many of the streams to flood stage in late September and the second, following while they were still high, causing serious overflows.

Most conspicuous among these was the flood, or double flood, in the Savannah River at and below Augusta, Ga. In his report on the first portion of this disastrous rise Mr. E. D. Emigh, the official in charge of the Weather Bureau office at Augusta, pays particular attention to the amount and distribution of the rainfall. He computes the average depth over the Savannah River drainage area (7,294 square miles) for the 34-hour period ending at 8 a. m. September 27, as 8.84 inches and points out that by far the greater part of the rain fell in the central and lower portions of the basin. This meant, of course, that the comparative lightness of rain in the upper basin must have been balanced by a corresponding excess in the middle and lower parts; and the result was that while river stages in the upper basin (specifically at Carlton, Ga., and Calhoun Falls, S. C.) were not extraordinarily high, the river in the central and lower portions reached the highest stages of record.

A suggestion of the rapidity and magnitude of this rise is given in the following extract of Mr. Emigh's report:

At Augusta on the evening of September 25 the Savannah River was at a 10-foot stage, with a discharge of approximately 10,000 cubic feet per second. In 24 hours there was an increase in stage to 33.1 feet and a discharge of 100,000 cubic feet per second. At the end of 48 hours the river, at a crest of 46.3 feet, was carrying thirty-seven times as much water as at the outset and was discharging 370,000 cubic feet per second—the greatest discharge ever known to have passed the city. Warnings of the approach of the flood were of course distributed by every available means, and while considerable nervousness was inevitable there was a fairly general local assurance that the levee could be depended upon to protect the city. This confidence was justified, for the main portion of the levee proved adequate both in capacity and stability to withstand the test. About 3 miles below the city, however, a breach occurred. Fortunately, the break did not attain great width until after the river had fallen considerably from the crest stage. The situation was somewhat relieved by the city engineers, who opened the outlet gates at the mouth of Butlers Creek, and by two breaches in the levee near the Butlers Creek gates. Backwater, however, overflowed much farm land and flowed into the lower sections of the city to a depth of 2 to 4 feet. Since the houses in the area affected were built well above the ground in prelevee days, no great harm was done. Ample warning of the approach of the backwater had been given by the city engineers and disseminated by them, by the newspapers, and by the Weather Bureau office.

In the second portion of this flood (crest 45.1 at midnight of October 2) the rainfall distribution over the Savannah River Basin was more regular and somewhat less heavy than in late September. A comparative table of amounts follows, the stations being arranged in the order of their distances from Augusta:

	34 hours ending 8 a. m. Sept. 27	30 hours ending 6 p. m. Oct. 2
Augusta, Ga.	7.78	9.98
Double Branches, Ga.	14.51	9.80
Edgefield, S. C.	7.84	8.26
Warrenton, Ga.	9.16	6.75
Greenwood, S. C.	9.83	9.02
Washington, Ga.	14.49	9.68
Calhoun Falls, S. C.	9.48	8.30
Carlton, Ga.	7.67	7.12
Gillsville, Ga.	5.95	8.15
Anderson, S. C.	5.50	5.83
Toccoa, Ga.	5.03	4.30
Average	8.84	7.93

The lowest stage reached at Augusta following the crest of 46.3 feet on September 27, was 21 feet late on the