

Severe local storms.

(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.	Loss of life.	Value of property destroyed.	Character of storm.	Remarks.	Authority.
Seattle and western Washington.	13		Yards.	11		Landslides and rain.	No property damage reported.	Washington Herald (Washington, D. C.).
Pittsburgh, Pa.	17					Wind and rain.	Much damage caused to wires, plate glass, etc. Traffic and electric light and power operations interfered with.	Official, United States Weather Bureau.
Greenwood, S. C., and vicinity.	17	p. m.				Wind.	One person injured and some buildings and trees damaged.	Greenville News (Greenville, S. C.).
Milwaukee, Wis., and vicinity.	17					Wind and snow.	Lake traffic delayed and telephone service interfered with. Several accidents reported.	Journal (Milwaukee, Wis.).
Alpena, Mich.	17-18					Ice.	All overhead wire systems impaired, forest trees bent to ground. Ice covering on ground so great and continued so long that small game and birds were deprived of food.	Official, United States Weather Bureau.
New York (central and western sections, especially Buffalo).	17-18			2	\$1,500,000	Wind.	Severe damage to shipping. Dwellings on lake front, docks and piers destroyed. Boats stranded, telephone and telegraph lines impaired, electric light and car service badly crippled. Houses and barns unroofed. Numerous persons injured.	New York Herald (New York, N. Y.).
Wellsboro, Pa.	18	a. m.				do.	General damage done.	Wellsboro, Pa.
New York City, N. Y. (The Bronx).	18					do.	Severe general damage.	New York Tribune (New York, N. Y.).
Sunbury, Pa. (Northumberland and adjoining counties).	18				30,000	do.	Heavy damage to lines of communication; roofs and trees suffered.	Herald (New York, N. Y.).
Linden, N. J.	18					do.	Two houses damaged; sheds and garages destroyed; 3 persons injured.	The World (New York, N. Y.).
Lone Pine, La.	19			1		do.	School house and 3 dwellings destroyed, other buildings damaged; several injured.	Post (Chicago, Ill.).
Illinois (central portion).	22-23				150,000	Ice.	Much damage to overhead electrical systems.	Official, United States Weather Bureau.
Tennessee (near Phelan, Tipton County).	23				20,000	Tornado.	Considerable property damaged; 2 injured.	Do.
Arkansas (near Clarkedale).	23	p. m.	186	6	150,000	do.	Number of buildings wrecked, gin, warehouses, residences, etc.; 15 persons seriously injured.	Do.
Northeastern Louisiana (Union and Morehouse Parishes).	24	12:30 a. m.	200	2	60,000	do.	Nearly all buildings in Spencer destroyed, 20 box cars demolished, timber damaged; many persons injured.	Do.
California (central and southern portion).	18-27			4	2,500,000	Wind and rain.	Property damaged, communication disrupted, bridges washed away, vessels blown from moorings, considerable havoc caused along coast.	Post (Washington, D. C.).
Helena, Mont., and vicinity.	30	a. m.				Wind.	Minor damage.	Record-Herald (Helena, Mont.).
Butte, Mont.	30	1:30 a. m.				do.	General damage done.	Do.
Milwaukee, Wis.	30-31					do.	Caused considerable damage and seriously interfered with lake shipping.	Official, United States Weather Bureau.

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STORMS AND WEATHER WARNINGS.

WASHINGTON FORECAST DISTRICT.

*Storm warnings.*—A disturbance of marked intensity was central over eastern Iowa at 8 p. m. of the 1st, moving rapidly northeastward, and northwest storm warnings were ordered displayed at 10 p. m. on Lakes Superior and Michigan and southwest warnings on Lakes Huron, Erie, and Ontario. The next morning warnings were displayed on the Atlantic coast from Jacksonville, Fla., to Eastport, Me. These warnings were well verified on the Great Lakes and at a number of coast stations.

The next storm warnings were issued for the Atlantic coast from Cape Hatteras to Boston, Mass., at 1:30 p. m. of the 4th, when a disturbance was central over North Carolina and increasing rapidly in intensity.

On the evening of the 9th southwest storm warnings were displayed on Lakes Erie and Ontario in connection with a disturbance that was moving rapidly eastward over the northern Lake region.

At 8 a. m. of the 17th a disturbance of considerable intensity was central over southern Lake Michigan, moving east-northeastward, with a strong area of high pressure to the eastward. Southwest storm warnings were displayed at 11 a. m. on the Atlantic coast from Cape Hatteras to Eastport, Me., and on the east Gulf coast from Bay St. Louis, Miss., to Cedar Keys, Fla. Advisory warnings were also sent to open ports on Lake Michigan and forecasts of gales were included in the forecasts for States bordering on the Great Lakes. All warnings were fully verified. This storm increased greatly in intensity

as it advanced over the Lake region and it was attended by strong gales, the wind velocity at Buffalo, N. Y., reaching 96 miles an hour from the southwest, equaling the highest ever before recorded (Dec. 23, 1920), and continuing extremely high for a much longer period than ever before. During the three hours from 9 a. m. to noon of the 18th, 268 miles were recorded, or an average velocity of 89.3 miles per hour, and from 5 a. m. to 5 p. m., 907 miles, or an average of 75.6 miles per hour. Property damage in Buffalo and vicinity due to this storm is estimated at from \$1,000,000 to \$1,500,000. Of the 62 vessels loaded with grain which were anchored beneath the break wall 27 were torn from their moorings and swept on to the beach and it is probable that a greater number of vessels would have been torn loose and damaged had it not been for the timely warnings disseminated from the Buffalo Office of the Weather Bureau. The Buffalo Commercial of December 19 says in an editorial:

It is unlikely that there has been in years a storm of such sustained fury. That there was no greater damage to shipping is due, of course, to the fact that there was ample warning given by the Weather Bureau.

A disturbance that developed over the Lake region on the 20th moved rapidly eastward to the lower St. Lawrence Valley with a marked increase in intensity, and it was followed during the 21st by a decided increase in pressure and gales along the Middle Atlantic and North Atlantic coasts, for which warnings were issued on the morning of the 21st. Another storm of somewhat similar character was central over the lower St. Lawrence Valley on the morning of the 29th and northwest storm warnings were ordered for the Atlantic coast from Cape Hatteras