

section of the district has been but little, if any, less serious than that of the extreme east. The conditions of these sections are instanced by the following extracts from the reports of Weather Bureau officials:

The average precipitation for the section (New York) was below normal every month this year, except February and August, and, as nearly all of August was comparatively dry, it will be seen that the section has undergone the exceptional experience of practically six months of deficient rainfall. During this period streams have fallen to extremely low stages or dried up altogether, and crops and pastures have in some cases been nearly ruined.—*Mr. Wilford M. Wilson, Section Director, Ithaca, N. Y.*

Navigation on Lake Champlain has been seriously impeded during the month by low water. On the 1st the Champlain Transportation Co. discontinued its stop at Adams Landing, and on the 26th the landing at St. Albans Bay was eliminated from their schedule, on account of the low water. On the 9th the water level of the lake was 0.85 foot above low-water mark, and, notwithstanding copious rainfall during the last half of the month, the level continued falling until the 27th. Since that date it has been stationary at 0.60 foot above low-water mark.—*Mr. John K. Hooper, Local Forecaster, Burlington, Vt.*

MISCELLANEOUS.

Severe storms.—While, as stated previously, the number of thunderstorms was greater than usual for August, comparatively few were of exceptional severity with regard to wind and lightning. A few cases of loss of life and damage to property by lightning were reported, but the latter was in most instances merely nominal. In several localities in the extreme eastern portion of the district some damage occurred as a result of flooding of cellars and basements and the washing out of roads and streets, as a result of the excessive rainfall accompanying the heavier storms. On the afternoon of August 18 a local storm of true tornadic type, but of very small size, occurred in the vicinity of Canton, N. Y., a description of which, by the official in charge of the local office of the Weather Bureau at that place, is given separate setting.

Fog.—The month was, as a rule, quite free from fog. At Duluth, Minn., and at Oswego, N. Y., dense fog occurred on seven days, but elsewhere throughout the district there was comparatively little, except over the St. Clair River, where navigation was greatly impeded by its occurrence on the 3d, 4th, 5th, 14th, and 26th.

Aurora.—An aurora was observed at Escanaba, Mich., on the evening of August 23.

TORNADO NEAR CANTON, N. Y.

By Mr. W. J. BENNETT, Local Forecaster.

From the Weather Bureau office at Canton, N. Y., were observed at about 3.20 p. m., August 18, two very large clouds in the north, dark gray in color, almost black, with a streak of light-gray cloud between. This streak soon assumed a funnel shape. It is uncertain whether the actual beginning of the tornado was observed, or whether at this time the intervening cloud masses broke away and rendered it visible from Canton. The people in the vicinity of the place where it struck the earth say that it occurred a little earlier—shortly after 3 p. m. The funnel-shaped cloud, as viewed from Canton, soon became quite distinct, with several filaments of partially developed columns near by, and from the top of the funnel appeared to rise masses of frothy, white cloud. It appeared to revolve rapidly, in a counter-clockwise direction, and its lower part became greatly elongated, dipping down toward the earth. At times parts of it seemed to break off and drift toward the earth, appearing in the distance like little white threads. At no time while under observation did the tornado cloud appear to reach, unbroken, from the clouds to the earth. The funnel had grown considerably

thinner by 3.35 p. m., and it finally disappeared about 3.40 p. m. While under observation it drifted slowly from the north-northeast toward the northeast. It was constantly changing its shape and twisting from side to side, but its motion of progression appeared to be slow. No lightning appeared to come from the funnel cloud itself, but from the dark masses of cloud on all sides lightning was frequent and vivid. The color of the funnel was light gray.

At Canton the temperature dropped about 10° in 20 minutes, about the time the tornado was under observation. A slight fall (0.02 inch), followed by an equal rise in the atmospheric pressure, occurred at the same time. The highest wind velocity was 22 miles per hour from the west at 3.45 p. m. The wind was from the west until 4 p. m., changing then to the north, and to the northwest at 4.20 p. m. A slight sprinkle of rain fell from 4.03 to 4.05 p. m., and light rain began again at 4.15 p. m., becoming heavier between 6 and 8 p. m. In all 0.38 inch was recorded at the Canton station, but no hail fell. Much heavier rain is reported as having occurred at Ogdensburg, 19 miles to the west-northwest, between 3 and 4 p. m.

The tornado was reported as having done some damage out on the Bucks Bridge Road, about 4 miles from Canton, and on the afternoon of the 19th the writer drove out to investigate. No one had been injured, and it was found that the actual damage was slight, but many interesting things were learned about the storm.

The tornado was first seen from the James Coakley farm, near the northeastern boundary of Canton Township, about halfway between Canton and Bucks Bridge in a direction a little west of north. It passed southward through a cornfield, tearing up a few stalks and carrying them up into the air, but its path was narrow and the damage slight. On the edge of the cornfield it picked up some stacks of grain and tossed them about. The storm passed on, moving now toward the southeast, and tore off the top of a haystack, carrying the hay no great distance, but depositing it in the direction of its advance. It then crossed the road, broke off the top of an apple tree, and came within 75 feet of the Coakley residence. The only effect upon the house was to draw the soot and fire out of the kitchen stove and chimney. The soot and wood embers were drawn up in a column, which united with the funnel cloud.

The storm passed on to a shed to the south of the house, and tore off all the roofing paper from the roof. Bits of the paper were found nearly half a mile away, in the direction of the storm's advance and several hundred feet to the right and left of its path. Near the shed was a pile of boards, which seemed to be directly in the storm's path. These were taken up high into the air and spread over a pasture to a distance of 500 feet, many being broken in the fall. About 50 feet of the pasture fence was carried away, the rails going up in the air quite a distance.

Through the pasture and the fields the tornado moved in a southeastward direction, but left little or no trace, the ground being bare. Approaching the house of H. E. Eggleston, it curved toward the east and toward the house, tearing away a section of fence about 75 feet long in the rear of the house. The rails were carried into the air to a height estimated at 100 feet, and some of them were so large and heavy that a man could hardly lift one. A tree 10 or 15 feet to the south of a shed in the rear of the house was torn up with some of its roots, carried up higher than the house, and dropped between the house and the shed. The storm passed very near the house,

and then curved sharply to the south, twisting off a large apple tree not more than 75 feet distant. It jumped a rail fence to the south of the house without injuring it, and descended into an adjoining cornfield, where the effect of the storm was very interesting.

The corn was prostrated for a distance of about 200 feet, nearly the entire length of the field and for a width of about 60 feet. It was reported that some of the stalks were twisted off and carried high into the air, but most of them were simply prostrated. The direction in which the stalks lay proved conclusively the rotary nature of the storm and showed the direction of the rotation. In the center of the storm track the stalks lay at right angles to the direction of the storm's advance, their tops pointing toward the right. On the left they lay mostly in the same direction as in the center, but on the extreme left some were inclined backward. On the right of the center the stalks were parallel to the storm's path, pointing forward, and on the extreme right they were inclined inward, or toward the left.

Leaving the cornfield the tornado passed over the road, from Canton to Bucks Bridge, but did not touch ground again as far as can be learned, and disappeared, moving toward the southeast.

The noise accompanying the storm is reported as a loud whistling or whirling, rather than a roaring noise. The funnel where it touched the ground was very small, only

a few feet in diameter, but its apparent path, as shown by the cornfield and by demolished fences, was much wider. This is explained by the fact that it switched from side to side rapidly, while moving forward rather slowly. As near to the funnel as 100 feet the wind was light and did no damage. Some of the débris, however, was driven with great force against the Eggleston house, breaking holes in the clapboarding.

At the Coakley place the passage of the funnel was followed in about 10 minutes by hail, lasting about 5 minutes, and after an interval of about 10 minutes a second fall of hail occurred. Some of the hailstones were of rather large size, ranging from that of peas to that of robin's eggs, but no great amount of hail fell. No hail fell in the immediate vicinity of the Eggleston place.

The storm was first observed from the Coakley place a little after 3 p. m., and passed thence to the Eggleston place, a distance of about a third of a mile, in about 20 minutes. The tornado cloud from first to final observation did not last much over half an hour, and the extreme length of its path of destruction was less than a mile.

No great amount of rain fell in the immediate vicinity of the tornado, probably not more than a quarter of an inch in all.

This tornado was a very small one, and did little damage; but as such storms are very rare in this part of the country, it seemed to deserve special attention.