

inches. Over the northern half of the Southern Peninsula of Michigan, in the Fox River Valley of Wisconsin, and over the Lake Superior sections, the precipitation was in excess of the normal, while throughout the southern and eastern portions of the district deficiencies amounting to between 1 and 2 inches were general.

There were four periods of widespread precipitation: 1st-3d, when snow fell in many localities; the 8th-11th, 15th-24th, and the 30th-31st. Throughout all these periods thunderstorms were frequent, and much damage occurred in localities. The showers over the eastern sections were generally light, but the electrical energy of many of the storms was quite severe, and several cases of loss of life were reported.

#### MISCELLANEOUS.

*Fog.*—Dense fog was comparatively frequent on western Lake Superior, occurring on 11 days at Duluth. It was also reported on 5 days at Marquette, 4 at Houghton, and 2 at Sault Ste. Marie. The distribution on Lakes Michigan and Huron was peculiarly local, dense fog occurring on 5 days at Escanaba and 4 at Milwaukee, while at Green Bay there was only 1 day, and at Chicago and Grand Haven dense fog did not occur during the entire month. Off Port Huron the fogs of the 1st, 9th, and 16th greatly impeded navigation, while no fog occurred at Detroit, and the dates of occurrence at Alpena were the 9th, 16th, 17th, and 21st. Lake Erie was entirely free from fog at its shore stations, except at the

extreme eastern end, where it was recorded on 5 days. On Lake Ontario somewhat similar conditions obtained, no fog occurring at Rochester, while 11 days with fog were noted at Oswego.

An aurora was observed at Canton on the 30th, and haze occurred at this station frequently during the first half of the month.

#### TORNADO NEAR HOWARD CITY, MICH.

By C. F. SCHNEIDER, Section Director, Grand Rapids, Mich.

A tornado of limited extent and duration occurred in the northwestern part of Montcalm County, Mich., about 1.30 p. m., May 22, 1911. The storm's greatest violence was felt on the farm of Mr. Sidney Reynolds, about 2 miles southeast of Howard City, where a barn, granary, and chicken house were destroyed and fruit trees and fences blown over.

The storm was of true tornadic type, having a funnel-shaped cloud that alternately raised and lowered as it progressed. Its direction of movement was from southwest to northeast and the path of greatest destruction was about 150 feet wide.

On the northwest side of the storm's path the trees fell toward the south, while on the opposite side they were blown toward the north, an evidence of the rotary winds that accompany the true tornado.

About half a mile farther on the funnel cloud again dipped to earth for a moment but did little damage.

No lives were lost, but two persons were slightly injured. The property loss amounted to about \$1,150.