

## SEVERE STORMS.

Aside from the high winds accompanying the low pressure areas over the Great Lakes and along the north Atlantic and north Pacific coasts there were few damaging high winds.

Near Port Arthur, Tex., a severe wind storm on the 26th caused the death of one person and damaged prop-

erty to the extent of about \$100,000; and on the same date high winds at Seattle and Tacoma caused local damage to shipping, electric wires, and plate-glass windows, and high winds on the same date along the Washington coast caused the loss of two vessels and most of their crews.

## STORMS AND WARNINGS—WEATHER AND CROPS.

## STORMS AND WEATHER WARNINGS.

EDWARD H. BOWIE, Supervising Forecaster.

[Washington, Dec. 30, 1920.]

## WASHINGTON FORECAST DISTRICT.

The month from a meteorological standpoint was one of great activity, and more than the usual number of warnings of destructive winds on the Great Lakes and the seacoasts and of cold-wave and special warnings were required and issued. Moreover, the usual forecasts of the general weather and temperature conditions for a week in advance were issued each Saturday morning and distributed through the press associations and from weather bureau stations.

As has been the usual practice, heretofore, a special forecast for election day, the first Tuesday in November, was issued. This forecast was made on Monday, the 1st, and given distribution through the press associations and also telegraphed to the chairmen of the national campaign committees and to the presidential candidates. The forecasts in this particular case were accurate in practically every detail and read as follows:

A disturbance of widespread influence is central this morning over Iowa and moving east-northeastward. It has been attended during the last 24 hours by general cloudiness and rains in the Gulf States, the Great Central Valleys, the region of the Great Lakes, New England, and New York; by rains and snows in the Plains States, Minnesota, northern Wisconsin, northern Michigan, extreme northeastern New York and Maine, and snows in the Rocky Mountain region. The snowfall was heavy in parts of South Dakota, Nebraska, and Wyoming. The western disturbance will advance east-northeastward and be attended by unsettled weather and rains Tuesday—election day—in the Atlantic States, the upper Ohio Valley, and the region of the Great Lakes, with some probability of snow in northern Michigan, Wisconsin, and Minnesota. The weather will be clearing and much colder Tuesday in the Gulf States, Tennessee, and the lower Ohio and central Mississippi Valleys. Fair, cool weather will prevail Tuesday over the Plains States, the Rocky Mountain States, and all far Western States.

Special forecasts of wind and weather were prepared and dispatched each day until the 18th for the guidance of the United States naval vessels *Beaver* and *Mallard* engaged on the salvage of the United States submarine *S-5* off Delaware Breakwater. On the 19th the United States *Beaver* radiographed: "Special daily weather reports to *Beaver* and *Mallard* may be discontinued; thanks for it." It was reported that salvage operations were suspended at this time and probably would not be resumed until the coming spring, when the weather conditions would be more quiet.

On November 16 the following telegram was received from the Rayston Water Power Co., Huntingdon, Pa.: "Could you hazard a rough guess as to total precipitation, Bedford County, Pa., Monday, Tuesday, Wednesday, and Thursday this week." It appears that the available water for running this plant was so low that the question presented itself of shutting down the plant or else using coal at a greatly increased cost of operation. At this time a storm was in the Southeastern States,

and it was forecast to move northward, so that assurance could be given that general rains were probable in the immediate future. The reply to this inquiry read: "Approximately 1 inch or more precipitation, including both rain and melted snow, in Bedford County Monday to Thursday." It is reported that the actual fall measured during this period was 1.25 inch.

Special flying forecasts were issued for Army and Navy aviators, and the usual daily forecasts of weather, wind at the surface and at flying levels, for the Army, Navy, and the Post Office Aerial Mail Service routes continued throughout the month.

## STORM WARNINGS ON THE GREAT LAKES.

Northeast storm warnings were continued on the 1st on Lake Superior, northern Lake Michigan, and northern Lake Huron, in connection with a disturbance that was central at noon of that day over northern Iowa, and the evening of the same day southwest storm warnings were ordered on southern Lake Michigan, southern Lake Huron, and Lake Erie. This disturbance advanced northeastward attended by rain and snow and strong winds and gales on the Great Lakes. The highest velocity reported was 68 miles per hour from the southwest, at Buffalo. At 10 p. m. of the 3d, southwest storm warnings were displayed on Lake Superior and at 10 a. m., on the 4th, the display was extended over Lakes Erie, Ontario, and northern and eastern Huron. The disturbance making necessary this display was central the night of the 3d near Winnipeg, and the night of the 4th, over Ontario, strong westerly winds and gales occurred as forecast.

On the 8th, at 10 p. m., when a storm was central over Minnesota, northwest storm warnings were displayed on the upper Lakes and the morning of the 9th southwest storm warnings were hoisted on the lower Lakes. The storm under consideration moved rapidly eastward across the Great Lakes attended by strong westerly winds and gales during the 9th.

Northwest storm warnings were ordered at 10 a. m. of the 11th on eastern and central Lake Superior and Lakes Michigan and Huron, and at 3 p. m. of the same day the display of northwest storm warnings was extended to Lake Erie. Strong northwest winds attended by snows occurred during the ensuing 24 hours on these Lakes.

A storm of marked intensity was central at noon of the 16th over South Carolina, and increasing in intensity and moving northward. It was expected to gain great intensity during its continued northward movement, and at 2 p. m. northeast storm warnings were ordered for Lakes Erie and Ontario and at 9:30 p. m. the display was extended west to Lake Huron. The storm acted as expected, and during the night of the 16th and during the 17th strong winds and snow occurred on these Lakes.