

## TROPICAL DISTURBANCES.

*Tropical storm, August 1-6.*—The center of this storm did not pass near any observing station and it was not encountered by any vessels navigating the Caribbean Sea and Gulf of Mexico. The cable reports of the 1st showed that a disturbance was evidently south of Bridgetown, Barbados. The disturbance moved west-northwest, passing to the south of Jamaica some time in the afternoon of the 3d.

It seems to have passed across the Yucutan Peninsula or possibly through the Yucutan channel Sunday afternoon, and was not again observed until Tuesday morning, when falling pressure and freshening winds from the southeast indicated that it was approaching the Gulf coast. Advices of the presence of a tropical storm had been previously given. It now remained, however, to determine the probable point of contact with the coast. At 1:30 p. m. the following advices were issued:

Hoist hurricane warning Louisiana and Texas coast from Galveston east. Disturbance probably strike the coast between Galveston and mouth Sabine River.

The hurricane struck the Louisiana coast a few miles east of Calcasieu Pass, or about 30 miles east of the mouth of the Sabine. The path is indicated on Chart III. The storm passed a little west of north through the parishes of Cameron, Calcasieu, and Beauregard, La., and thence into Newton County, Tex., near where the Gulf Coast Line Railroad crosses the Sabine River—a total distance of about 80 miles.

Following is a detailed account of the storm prepared by Assistant Forecaster R. A. Dyke, New Orleans, La.:

The first indications of the disturbance were the cirrus and cirrostratus clouds, recorded in observations in the early afternoon and evening of the 5th and the early morning of the 6th. At New Orleans, within the two hours following 7 a. m. on the 6th, lower clouds accumulated and the cirrus clouds were soon hidden from view.

The pressure distribution over the United States on the 5th was such as is usually accompanied by southeast winds at New Orleans, and southeast winds prevailed from 11 a. m. of the 5th to 2 p. m. of the 6th, after which the wind was from the south. The fact that the disturbance did not cause northeast or even east winds at New Orleans during any time while it was moving northwestward across the Gulf is one indication of its small diameter, for the general pressure conditions exercised only a weak influence on the direction of the wind. The wind velocity, when the storm was nearing the coast, did not exceed 34 miles an hour at Burrwood and 25 miles at New Orleans. The direction of the wind at Burrwood was very similar to the direction at New Orleans except that it was east at Burrwood at the 7 p. m. observation of the 5th.

The center of the storm reached the Louisiana coast a few miles west of the village of Creole, and east of Calcasieu Lake, in Cameron Parish. It moved in a straight line in a NNW direction, passing near or through Westlake, a town just west of the city of Lake Charles. Slightly west of De Quincy it crossed the Sabine River into Texas a few miles below Merryville, La. At this point the storm was probably diminishing, though still violent, as is shown by the destructive winds at Merryville. The length of this path is about 90 miles, and if we consider the respective shifts of the wind from east to southeast at the ends of the path, which occurred about five hours apart according to reports received, the approximate average rate of progress over this portion of the course of the storm was 18 miles per hour.

The area in which considerable destruction occurred was about 25 miles wide, and winds of great force lasted only two to three hours. The storm was about 100 miles in diameter, but approaching the outer edges the damage was slight or entirely absent.

Besides the wind record at Port Arthur, Tex., on the western edge of the storm, we have the partial record at Lake Charles, where the velocity increased on the 6th from 12 miles an hour at 8 a. m. to 24 miles at noon, 36 miles at 2 p. m., 48 miles at 2:30 p. m., and 80 miles an hour in the five-minute period terminating at 2:58 a. m., with an extreme velocity of at least 100 miles an hour. It was at this point that the anemometer was put out of service by the wind or flying débris.

We have not succeeded in obtaining reports of barometer readings within the hurricane.

Two reports of tides have been received. At Johnsons Bayou, 10 miles east of the mouth of Sabine Pass and 28 miles west of Calcasieu Lake, the tide was 2 feet and 5 inches above normal. At Morgan City the tide rose 3 feet. Between these points the tide was doubtless somewhat higher, especially along the coast in the eastern portion of Cameron Parish.

The distribution of rainfall was rather uniform, being in the neighborhood of 2 inches at most places within the storm area and slightly exceeding this just outside the storm area and near the coast. Very few reports of thunder and lightning were received and these were not from places close to the center of the storm. Many persons within the area of violent winds stated that there was no thunder or lightning.

Thirty-four deaths are reported as due to the storm and the number of persons injured is more than twice that number. Eleven deaths occurred at Lake Charles and three at Gerstner Field. The other deaths were in Cameron Parish and in small towns near the center of the storm.

The damage to property is roughly estimated at \$5,000,000. This includes damage at Lake Charles, Gerstner Field, and Sulphur, La., and to crops and standing timber; but it does not include losses from dwellings blown down in numerous villages, and live stock, possibly numbering a hundred, drowned in Cameron Parish. A mail and passenger steamboat was sunk in Prien Lake on the trip from Cameron to Lake Charles, but the passengers were saved and the boat can probably be refloated, as it sank in shallow water. Some indirect damage resulted from fires, fortunately not extensive, though causing the loss of a few very valuable properties. The greater part of the rice crop was not sufficiently advanced to suffer much damage, and was benefited by the needed rains. Where cotton and corn are grown there were considerable losses.

Summer time (75th meridian) is used in this report.

*Second tropical disturbance.*—The second tropical disturbance of the month passed Barbados, moving to the west, during the forenoon of the 22d. The maximum wind at Bridgetown was 48 miles from the southeast and the lowest pressure 29.84 inches. These data, however, are inconclusive as to the distance of the center from that point. During the next 72 hours reports from land stations merely indicated a disturbance over Central Caribbean region probably of little intensity. On Sunday morning, August 25, the observer at Kingston, Jamaica, reports: "Center passed south Jamaica moving west yesterday afternoon." Subsequent reports indicate that the disturbance, much diminished in intensity, passed inland over Honduras Sunday night and dissipated over that region during the next 48 hours. The weather over the western Caribbean was unsettled with low pressure for the remainder of the month.

Both disturbances moved with rather high speed, the average being perhaps slightly above 15 miles per hour. The average rate before recurving is about 12 miles per hour.

## NOTES ON HURRICANES OF 1918.

By C. A. DONNEL, Meteorologist.

[Dated: Weather Bureau, Washington, D. C., Jan. 28, 1919.]

As in the preceding year, storms of tropical origin, (so-called West Indian hurricanes) were fewer in number during 1918 than usual. One storm only attained characteristics entitling it to classification as a hurricane of the first rank in intensity. The paths of five disturbances, however, have been traced on Chart X of this issue of the MONTHLY WEATHER REVIEW.

*Storm of August 1-6.*—This was the most important tropical disturbance of the year. Five days after having been first noted near the island of Barbadoes it had crossed the Caribbean Sea and the Gulf of Mexico, reaching on the 6th the Gulf Coast of the United States about 30 miles east of the mouth of the Sabine River. In the REVIEW for August, 1918 (p. 379), appears a detailed account of this storm.

*Storm of August 22-25.*—First coming under observation in the vicinity of the Windward Islands on August 22, this storm during the succeeding 72 hours traversed a path only slightly north of due west across the central Caribbean Sea. On the 25th the disturbance reached the coast of British Honduras, whence it passed inland and probably dissipated. Like its immediate predecessor, this storm moved with great velocity for a tropical storm, the rate exceeding 15 miles an hour. It is reported that the S. S. *Mohegan* of the U. S. Aluminum Co., encountered this storm in latitude  $14^{\circ} 18'$  north, longitude  $66^{\circ} 15'$  west.

*Storm of September 3-7.*—The earliest report of the existence of this storm came from the Swedish S. S. *Texas* on September 3, the vessel then being some distance southeast of Bermuda, in latitude  $25^{\circ} 42'$  north, longitude  $59^{\circ} 43'$  west. Thence the storm advanced northwestward, passing to the west of Bermuda on the night of the 4th-5th. The storm recurved some distance out to sea from the coast of the United States, but crossed Nova Scotia on the night of the 6-7th, much diminished in intensity. The lowest reported pressure for this storm was 28.88 inches, at Hamilton, Bermuda, on the 4th.

*Storm of September 9-14.*—So far as is known, this disturbance did not attain violent character. It was first noted on the 9th near Barbadoes Island, and thence a track toward the northwest, across the eastern end of the Caribbean Sea, was taken. After crossing Haiti on the 12th, the path inclined to a more nearly northerly direction, and the storm at last disappeared on the 14th near the Great Abaco Island. In connection with this disturbance the Danish S. S. *Jungshoved* encountered a gale in latitude  $23^{\circ} 9'$ , longitude  $27^{\circ} 43'$ .

*Storm of September 26-28.*—The first evidences of this disturbance were present on September 26th in the extreme western portion of the Caribbean Sea, off the coast of British Honduras. On the morning of the 27th the storm was apparently in the Gulf of Mexico north of Yucatan. On the following day it had reached the northeastern Gulf, after having united with a disturbance from the interior of the United States. The storm did not progress farther than the Florida peninsula. In Pineallas County, Fla., and the near-by Gulf destructive winds occurred as a result of this storm, but no widespread damage was reported.