

NORTH ATLANTIC HURRICANES AND TROPICAL DISTURBANCES OF 1947

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Viewed from the standpoint of property damage, with losses estimated at about \$135,000,000, the hurricane season of 1947 must be listed among the most destructive in the records of the Hurricane Warning Service, established in 1873. In a year of very severe hurricanes which passed over heavily populated coastal areas, the loss of only 53 lives in the United States sustained the annual record of less than 4 fatalities for each \$10,000,000 in property damage, a record which had been maintained for the 6 previous seasons. Casualties now number less than 3 percent of the proportional loss of 20 years ago; it is believed that a large contributing factor toward this reduction in casualties has been the maintenance of an adequate hurricane warning service and mass evacuations of the population from exposed and low-lying areas.

During the past season, 10 tropical storms were detected, 5 of which developed hurricane or near-hurricane-force winds. The most intense was that of September 10-19 (No. VI), which crossed the southern portion of the Florida Peninsula on the 17th, traversed the eastern Gulf of Mexico, and moved inland on the Louisiana and Mississippi coasts on the morning of the 19th, with the center passing directly over the business section of New Orleans. This hurricane took a toll of 51 lives in Florida, Louisiana, and Mississippi, with total property damage estimated at \$110,000,000.

On October 15 another severe hurricane (No. IX), moving on a westerly course, passed inland over the Georgia coast a short distance south of Savannah. When hurricane warnings were ordered, hundreds of persons were evacuated from the beaches. Since high tides along the Georgia and South Carolina coasts ranged from 12.0 feet above mean low tide at Savannah Beach, Ga., to 9.0 feet above at Charleston, S. C., these mass evacuations were largely responsible for the absence of fatalities along the beaches.

Of the three other severe North Atlantic tropical storms of 1947, only one reached the coast line of the United States. This August storm (No. III) moved inland over Galveston, Tex., accompanied by winds of near-hurricane force which wrought damage of about \$200,000.

For the entire season a record number of 159 official warnings and advisories were issued from the hurricane forecast centers of the Weather Bureau.

The following are reviews of all North Atlantic hurricanes and tropical disturbances that occurred during the 1947 season. A synopsis of the important features of these storms is given in Table 2; their tracks, numbered I to X, chronologically, are plotted on the Chart following this article.

I. *Minor tropical disturbance of July 31-August 1.*—A weak tropical disturbance formed in the southwest Gulf of Mexico on July 31, moved westward and then north-northwestward across the western Gulf of Mexico, and passed inland on the Gulf Coast a short distance south of Brownsville, Tex. The strongest wind reported was 44 m. p. h., at Port Isabel, Tex.

Heavy rains caused some damage to the cotton crop. Early estimates mentioned a loss of about \$2,000,000, but subsequent reports indicated that improved moisture conditions for ranges, late feed crops, citrus fruit, and

fall vegetables had more than offset damage to the cotton crop. Among the recorded heavy amounts of precipitation which fell in Texas during passage of this storm are: Corpus Christi, 3.28 inches; Raymondville, 9.78 inches; Falfurrias, 8.11 inches; and Brownsville, 4.41 inches. No loss of life or injury was reported.

II. *Hurricane of August 12-15.*—On August 12 a tropical storm formed over the northwestern Caribbean Sea, moved on a westerly course over the Yucatan Peninsula, and after developing hurricane force winds while passing over the southern Gulf of Mexico, moved inland on the Mexican east coast a short distance south of Tampico. On the morning of August 15, winds as high as 110 m. p. h. were reported in that city. There were 19 deaths from this hurricane, one in Tampico and 18 in the oil fields to the south.

III. *Tropical disturbance of August 18-27.*—This disturbance formed in an easterly wave that moved westward through the Florida Straits on August 18. By the morning of the 19th a circulation had formed some 150 miles west-southwest of Key West, Fla. During this stage of development the highest wind reported was about 45 m. p. h. in squalls at some points along the Florida Keys. The disturbance moved slowly westward to the middle Gulf, where on the 21st it was so weak that its path could not be followed with certainty. Subsequently, it redeveloped and moved into Texas in the vicinity of Galveston on the 24th, as a storm of small diameter accompanied by winds of near-hurricane force.

The lowest observed pressure, 992.2 mb. (29.30 inches), reported by the Galveston office, occurred at 4:45 p. m. There was little evidence of a storm tide until shortly before the approach of the center: the rise of 0.6 foot, from 3.4 to 4.0 feet, took place on August 24 between 3 and 4 p. m. The tide reading was recorded on the U. S. Engineer staff gage located at the entrance of Galveston Channel.

Total damage from the storm was estimated at \$200,000. In the city of Galveston it was confined mainly to roofs, signs, plate glass, and the interiors of dwellings, for the most part caused by wind-driven rain. In Galveston County, outside the city, property damage was estimated at \$150,000 and crop damage at \$32,500, of which \$25,000 was lost to the rice crop. One man was electrocuted in Galveston while trying to move a live wire that had fallen to the ground.

IV. *Tropical disturbance of August 21-22.*—On the afternoon of August 21, the center of a weak tropical disturbance was located by reconnaissance planes about 75 miles south-southeast of Burrwood, La. This center moved west-northwestward and passed inland on the Louisiana coast just west of Grand Isle. The strongest wind reported was 44 m. p. h., at Grand Isle.

V. *Minor tropical disturbance of September 7-8.*—During the afternoon of September 7 a small tropical storm formed over the northeast Gulf of Mexico. Moving northward, it passed over the Gulf coast between Mobile, Ala., and Biloxi, Miss., on the following afternoon. Gusts of 45 m. p. h. were reported at Mobile and 51 m. p. h. at Pensacola, Fla. Two ships went aground in Mobile Bay during the morning of September 8, but were refloated early in the afternoon. No other damage was reported.

VI. *Major hurricane of September 10-19.*—The first indication that a well-developed tropical storm had formed over the Atlantic came in a report from the S. S. *Arakaka*, radioed during the night of September 10 from a position near latitude 15° N., longitude 49° W. Prior to this, however, the Pan American Airways station at Dakar, F. W. A., had reported that a low pressure area had developed over French West Africa on September 2 and had moved westward across the coast line. Over the water this depression deepened, and on September 4 gave Dakar 3.36 inches of rain. This circulation was traced until it reached the Cape Verde Islands on September 5 but was subsequently lost through a lack of ship observations. Since an average progressive westward movement of about 17 m. p. h. for the next 5 days would have brought this disturbance near the storm position first reported by the *Arakaka*, it seems probable that the ship was reporting the same storm and that this great September hurricane had its genesis over western Africa.

OVER FLORIDA

From the time of the storm's detection on September 10, reconnaissance planes of the Army and Navy followed it on a west-northwesterly course until it reached a position east of Abaco Island in the Bahamas on the 15th. Here it came to a virtual standstill for about 24 hours and then moved west-southwestward over that island and on to the Florida east coast at Fort Lauderdale on the 17th. Hopetown, on Abaco Island, recorded a highest wind speed of 160 m. p. h. when the center passed near the observatory.

The highest wind recorded by a reliable instrument in Florida was 155 m. p. h., at Hillsboro Light near Pompano at 12:56 p. m. on the 17th, at which time the lowest reliable pressure reading of 947.2 mb. (27.97 inches) was also recorded. Winds of 100 m. p. h. or over were experienced generally along the Florida east coast from the northern portion of Miami to well north of Palm Beach, a distance of about 70 miles, while winds of hurricane force prevailed from approximately Cape Canaveral to Carysfort Reef Light, a distance of about 240 miles. The great expanse of coast subjected to hurricane force winds, from this storm that moved inland at right angles to the coast line, classes it as one of the great storms on record. It was fortunate that in Florida the most destructive portion of the storm passed inland between the large communities of Miami and Palm Beach. As it was, the less heavily populated area between Fort Lauderdale and Lake Worth bore the brunt of its violence. Pompano, Deerfield, Boca Raton, and Delray Beach were in the path of the strongest winds.

Moving on a westward course across the State at about 10 m. p. h., the storm emerged into the Gulf of Mexico, with the center passing a short distance north of Naples at about 10 p. m. on the 17th. It had passed over swamplands of the Everglades and the Big Cypress, with little damage resulting. The section around Lake Okeechobee was swept by the highest winds, but the dikes held and there was no flooding directly from the Lake. Heavy rains of around 6 to 8 inches, coming on top of a completely saturated soil with some areas already partly flooded, resulted in extensive flooding of rich farm lands and pastures. The loss to crops, especially sugarcane, was estimated at several million dollars, and a considerable number of livestock were lost.

Reaching Florida's west coast communities, the storm retained much of its intensity. The strongest wind reported was observed at Sanibel Light, where gusts of 120 m. p. h. were recorded. At Fort Myers the highest wind

was estimated at 90 m. p. h., with gusts to 110 m. p. h. Heavy damage occurred along the west coast from Everglades City to Sarasota, with greatest damage in the Fort Myers-Punta Gorda area. Everglades City was inundated to a depth of 2 feet by tidewater which rose 5½ feet above normal. At Naples the lull was felt for an hour between 9 and 10 p. m. on the 17th, with the wind dropping to 12 m. p. h. at 9:45 p. m. North of Naples strong offshore winds resulted in below-normal tides.

For Florida, property damage and crop losses were estimated at slightly over \$31,000,000. Eleven persons were killed as a direct result of the storm, and six others died through related accidents and electrocutions. Among the dead were seven of the crew members of a Cuban fishing vessel, *Antonio Cerdado*, which foundered a short distance off Fort Myers.

OVER THE GULF

After leaving Florida the hurricane turned to a more northwesterly course over the Gulf of Mexico, and, increasing to about 18 m. p. h. in its progressive movement, swept on to the Mississippi and Louisiana coasts during the morning of September 19. By 5 a. m. winds of hurricane force (75 m. p. h. or over) were being felt over the Chandeleur Islands as far northward as Chandeleur Light. The highest tide, 14 feet above normal high tide, was recorded at Chandeleur Light.

Along the Mississippi coast, from Pearlinton to Pascagoula, winds reached hurricane force at about 6:30 a. m. of the 19th. Similar winds reached the eastern edge of metropolitan New Orleans at 7:30 a. m. and an hour later extended to the Moisant Airport, just west of the city. These coastal communities experienced the strongest winds of the storm and the greatest duration of hurricane force winds. From Pearlinton, which endured 5½ hours of these winds, an observer reported that at 3 p. m. he noticed that a south wind was carrying water back into the Pearl River. At 4 p. m. the bayous near Pearlinton and the Pearl River at Logtown were overflowing and inundating the land up to the floor level of the Logtown Post Office, with the river flowing upstream at a rate of about 15 m. p. h. Tides along the Mississippi coast rose to 12 feet at Biloxi, Bay St. Louis, and Gulfport, and to about 9 feet at Pascagoula and in the Lake Catherine-Chef Mentheur area.

OVER MISSISSIPPI AND LOUISIANA

The calm center, which passed directly over the business district of New Orleans and the city of Baton Rouge, was estimated to be about 25 miles in diameter as it passed over New Orleans. Moisant Airport was flooded to a depth of 2 feet, and during the height of the storm part of the roof of the Administration Building gave way, forcing employees to run to another building in the area. Baton Rouge was not seriously menaced by high winds until about noon, by which time the hurricane was dissipating rapidly. Hurricane force winds did not reach any section west of Melville, La., where the highest wind was estimated as 75 m. p. h., occurring between 3:30 and 4 p. m.

In Mississippi and Louisiana it was estimated that 90 percent of the damage was caused by water. In Mississippi most of the severe water damage was limited to a section within two blocks of the water front. Homes there are built practically to the edge of the water, and there is no sea wall for protection. Minor flooding occurred in one section of New Orleans due to a break in the Industrial Canal levee, and more severe flooding occurred in Jefferson Parish because of breaks in the em-

TABLE 1.—*Meteorological data for hurricane of Sept. 10-19, 1947*

[All times eastern standard]

Station	Date of observation	Lowest pressure reported (inches) ¹	Time of lowest pressure	Maximum wind velocity for a 3-minute period	Time of maximum velocity	Maximum wind velocity for a 1-minute period	Time of extreme velocity	Velocity of extreme gust	Miscellaneous
Apalachicola, Fla.	19	29.69		SE 54	12:09 a.	SE 67	12:11 a.		6-ft. tide, 5 a. m.
Baton Rouge, La.	19	28.69	2:40 p.			SE 96	3:10 p.	120	In eye of the storm, 3 p. m.
Bay St. Louis, Miss.	19	29.10	11:30 a.	NE 100	10:00 a.				12-ft. tide, 11 a. m.
Biloxi, Miss.	19			E 90	10:00 a.				12-ft. tide, 11 a. m.
Carysfort Reef Light, Fla.	19	29.68	7:40 a.	NW 66	5:28 a.	SW 72	6:00 a.		3.94-ft. tide.
Daytona Beach, Fla.	17	29.29	1:45 p.	SW 68	2:25 p.	ENE 43	6:18 p.	60	
Everglades City, Fla.	17	28.81	7:45 p.	35	3:30 p.			60-65	Flooded, 2 ft.
Fort Lauderdale, Fla.	17	28.22	12 noon					S 127	1-hr. lull.
Fort Myers, Fla.	17	28.82	10:15 p.	85-90	10:15 p.	NNW 90		NNW 110	
Hillsboro Light, Fla.	17	27.97	11:25 a.	NW 121	9:57 a.	ENE 155	12:56 p.		No lull.
Hope Town, Bahamas	16	28.18	2:30 p.			NW 160			
Key West, Fla.	18	29.52							
Lakeland, Fla.	17	28.63		NE 34	7:57 p.	ENE 46	8:01 p.	ENE 75	
Melbourne, Fla.	17	29.71	2:25 p.			ESE 54	7:30 p.	85	
Miami, Fla.	17	28.72	12 noon	W 85	11:00 a.	SSW 90	2:00 p.		
Mobile, Ala.	19	29.54	5:20 a.	E 43		E 49		55-60	3.09-in. rain.
Moorehaven, Fla.	17	29.09	5:00 p.	NE 52	5:00 p.	NE 92	5:00 p.		5.62-in. rain.
Naples, Fla.	17	28.80	11:45 p.	NW 100	8:00 p.	NW 105	10:00 a.		Lull 9-10 p. m.
New Orleans, La.	19	28.81	10:47 a.					N 125	
Pensacola, Fla.	19	29.64	4:20 a.	SE 61	6:00 a.	SE 91	6:00 a.		4.8-ft. tide, 9 a. m.
Ponce de Leon Light, Fla.	18	29.85		E 66	12:05 a.	E 75	12:05 a.		
Sanibel Light, Fla.	18	28.67						S 120	Flooded, 3 ft.
Tampa, Fla.	18	29.53	3:30 a.	NE 34	3:12 a.	NE 38	3:12 a.		4.08-in. rain.
West Palm Beach, Fla.	17	29.02	10:30 a.			NNE 100		110	
Reported extremes		27.97		NW 121		NW 160			

¹ Reduced to sea level.

² Estimated.

NOTE.—Under column "velocity of extreme gust," where no direction is given, this direction was not reported.

bankment or overflowing in sections not protected by embankments.

The American Red Cross released a list of 34 fatalities for these two States: 22 deaths in Mississippi, 12 in Louisiana. On the Gulf coast, 1,642 homes were destroyed and upward of 25,000 others damaged.

A tabular listing of the lowest barometric pressures and highest wind velocities observed at selected stations in Florida, Mississippi, and Louisiana during this hurricane is contained in Table 1.

VII. *Tropical disturbance of September 20-25.*—This disturbance developed in the eastern Caribbean south of Cuba on September 20 from an easterly wave. Moving northwestward, it crossed western Cuba during the night of the 21st without becoming a well-defined circulation, although it was preceded by an area of squalls with winds up to 40-50 m. p. h. for a distance of 200 miles or more to the northward. After it entered the Gulf of Mexico west of Havana, it slowly increased in intensity and thereafter had a fairly well-defined center as it moved up the Florida west coast and passed inland between Tampa and Cedar Keys, between 5 and 6 p. m. on the 23d. Winds of about 60 m. p. h. were reported along the west Florida coast from Sarasota northward to near Cedar Keys, and squalls of 40-60 m. p. h. were quite general over the entire peninsula.

The lowest pressures reported were 989.8 mb. (29.23 inches) at Cedar Keys and 989.5 mb. (29.22 inches) at Saint Leo, as the center passed inland between these two communities. Rainfall was heavy throughout the State and greatly aggravated the flood situation already existing from the earlier hurricane and previous rains. The storm lost force rapidly as it moved northeastward. It passed west of Jacksonville during the night of the 23d and on the following morning was located west of Savannah and Charleston. Its remnants moved off into the Atlantic between the North Carolina and the Virginia Capes on the morning of the 25th.

A series of small tornadoes occurred on the northern edge of this storm as it advanced northward over Florida. Two or three occurred in the west coast area around Tampa, one near Ocala, and four in and around Jacksonville. These tornadoes were small, short-lived, and did

not cause extensive damage. There was some damage along the beaches from Bradenton to Tarpon Springs and slight damage to power and communication lines. Total damage was estimated at \$100,000.

VIII. *Tropical disturbance of October 6-7.*—A moderate and partly developed easterly wave disturbance had its inception over the Bahama Islands and Florida Straits on October 6. It advanced northward and then northwestward and moved inland near Brunswick, Ga., during the night of October 6-7. Highest winds reported were Beaufort force 9 (47-54 m. p. h.) from ships off the Georgia coast during the afternoon of the 6th. The strongest wind along the coast was about 50 m. p. h. No damage was reported.

IX. *Severe hurricane of October 9-15.*—This storm was first noted as it developed on the intertropical convergence zone which had moved north of the Isthmus of Panama. On the 9th the storm was centered off the coast of Cape Gracias, Nicaragua. During the night of the 10th it crossed Cuba a short distance west of Havana as a moderate storm, with the strongest winds reported as gusts of 57 m. p. h., at Batista Field. After entering the Gulf of Mexico, and within a short period of 3 to 4 hours, the storm's winds rapidly increased to hurricane force. At Dry Tortugas the anemometer became inoperative at 12:30 p. m. on the 10th, while the instrument was registering 84 m. p. h., and the observer reported that higher winds were experienced during the hour following this reading. On the night of October 11-12 the hurricane passed over the extreme southern portion of the Florida Peninsula. Although at this stage the storm was accompanied by a small center of hurricane winds, there was little wind damage as it passed over swamplands from the time it entered the west coast north of Cape Sable until it reached the east coast communities between Miami and Palm Beach.

The Weather Bureau Office in downtown Miami recorded 62 m. p. h. for the fastest wind speed at 12:23 a. m., and a low pressure of 998.0 mb. (29.47 inches) as the center passed a short distance to the northwest. At the Airport Station, about 7 miles closer to the storm center, the lowest pressure recorded was 995.3 mb. (29.39 inches). In moving off the east coast into the Atlantic

the center passed directly over Hillsboro Lighthouse, near Pompano, where the calm center was experienced between 3:30 a. m. and 4:30 a. m. on the 12th. The strongest winds recorded were 86 m. p. h., averaged for 5 minutes, and 92 m. p. h. for the fastest mile of wind, both registered at 2:30 a. m. The lowest pressure, 991.2 mb. (29.27 inches), occurred at 2:45 a. m. Since this was the same area that had been raked by the great hurricane of the previous month, there was little left that could be damaged by the weaker winds of the second storm. However, the heavy rainfall associated with it, added to the dangerous flood conditions already existing over south Florida, resulted in the worst flood ever experienced in the section. Rainfall of from 5 to 13 inches with this hurricane was confined to south Florida from around the Lake Okeechobee area southward. At the Hialeah Water Plant rain was so intense that a recording gage registered 6 inches in 1 hour and 15 minutes, before the gage overflowed. At the Miami City Office, which was on the edge of the heavy rain area, 3.60 inches of rain fell in 1 hour, and 1.32 inches in 10 minutes. Such rains did not in themselves cause the flood but climaxed a very wet season for which total flood damage in the State was estimated at approximately \$20,000,000. The flooded area covered a good portion of 12 counties and lesser portions of others, extending from Osceola County southward to the lower end of the peninsula. Wind damage in Florida amounted to about \$75,000.

After leaving Florida the hurricane was followed by

aircraft as it moved on a northeastward course over the Atlantic, although insufficient observations during the night of October 13-14 made its movement uncertain during that time. A reconnaissance plane entered the storm area during the early hours of the 14th, and highest winds were estimated at 50 to 55 knots. During the afternoon the storm gained force, and when another plane flew into the center at about sunset, winds were estimated at 80 knots. Moving on a westward course, the center moved over Georgia at about 7 a. m. of the 15th, a short distance south of Savannah. The lowest pressure at Savannah was 973.9 mb. (28.76 inches) at 7 a. m., and the strongest wind was estimated at 85 m. p. h. at 6:59 a. m., with gusts estimated as high as 95 m. p. h. The area of hurricane winds was small, probably about 40 miles in width.

The city of Savannah and its vicinity experienced the worst part of the hurricane when the center passed inland about 15 miles to the south. Damage in the Savannah area was estimated at approximately \$2,000,000, while in all other areas of Georgia damage did not exceed \$500,000. Some structural damage occurred in Savannah, with many roofs damaged either by direct action of the wind or by falling trees. Window glass was extensively broken while signs, ventilators, chimney tops, awnings, and like objects were blown down. A small tornado was reported near Hinesville, Ga., in the storm area.

High tides along the Georgia and South Carolina coasts ranged from 12.0 feet above mean low tide at Savannah Beach, Ga., and Parris Island, S. C., to 9.0 feet at Charles-

TABLE 2.—North Atlantic hurricanes and tropical disturbances of 1947

[Number of storm in table corresponds to number of track on following Chart]

Storm	Date	Area where first reported	Coast lines crossed	Highest wind speed reported	Lowest pressure reported ¹	Place of dissipation	Intensity	Remarks
I	July 31-Aug. 1	Southwestern Gulf of Mexico.	Texas and Mexico.	44 m.p.h. at Fort Isabel, Tex.	1,001.7 mb. (29.58 inches) at Brownsville, Tex.	Extreme southern portion of Texas.	Minor disturbance.	Damage to cotton crop caused by heavy rains estimated at \$2,000,000. 19 persons lost their lives in the vicinity of Tampico, Mexico.
II	Aug. 12-15	Northwestern Caribbean Sea, about 180 miles northwest of Swan Island.	Yucatan and Mexico.	110 m.p.h. at Tampico, Mexico.	No data.	Interior of Vera Cruz.	Hurricane.	
III	Aug. 18-27	Florida Straits.	Texas.	72 m.p.h. at Galveston, Tex.	992.2 mb. (29.30 inches) at Galveston, Tex.	Interior of Texas.	Near hurricane intensity along latter portion of track.	Total damage estimated at about \$77,500. 1 person killed in Galveston as a result of contact with live wire.
IV	Aug. 21-22	North-central Gulf of Mexico.	Louisiana.	44 m.p.h. at Grand Isle, La.	No data.	Southern Louisiana.	Minor disturbance.	No loss of life or property damage reported.
V	Sept. 7-8	Northeast Gulf of Mexico.	Alabama and Mississippi.	Gusts to 51 m.p.h. reported at Pensacola, Fla.	1,005.8 mb. (29.70 inches) at Mobile, Ala.	Interior of Mississippi.	do.	Two ships went aground in Mobile Bay but were later refloated.
VI	Sept. 10-19	Near latitude 15° N., longitude 49° W.	Florida, Louisiana, and Mississippi.	160 m.p.h. from the northwest at Hope-town, Bahama Islands.	947.2 mb. (27.97 inches) at Hillsboro Light, Fla.	Mississippi valley.	Major hurricane.	Most severe hurricane of the season. A total of 51 lives lost: 17 in Florida, 12 in Louisiana, and 22 in Mississippi. Total damage estimated at about \$110,000,000.
VII	Sept. 20-23	Caribbean Sea south of Cuba.	Cuba and Florida.	Winds of about 60 m.p.h. were reported along the Florida west coast from Sarasota northward to near Cedar Keys.	989.5 mb. (29.22 inches) at Saint Leo, Fla.	Atlantic Ocean off the Virginia Capes.	Not of hurricane intensity.	Heavy rains accompanying this storm aggravated a flood situation which existed in Florida as a result of the recent hurricane.
VIII	Oct. 6-7	Bahama Islands and Florida Straits.	Georgia.	Beaufort force 9 (47-54 m.p.h.) from ships off the Georgia Coast.	No data.	Georgia coastal area.	do.	Strongest wind on the coast about 60 m.p.h. No damage reported.
IX	Oct. 9-15	Southwestern Caribbean Sea.	Cuba, Florida, and Georgia.	Gusts of 95 m.p.h. estimated at Savannah, Ga.	973.9 mb. (28.76 inches) at Savannah, Ga.	Eastern Georgia.	Severe hurricane.	Damage in Georgia and the Carolinas estimated at about \$3,000,000. Heavy to excessive rains, associated with this hurricane in Florida, climaxed a very wet season for which total damage from flooding in the State has been estimated at approximately \$20,000,000. 1 man killed in Charleston by a falling tree.
X	Oct. 16-20	North of the Virgin Islands.	None.	In excess of 100 m.p.h. at Bermuda.	No data.	North Atlantic Ocean.	Hurricane.	No loss of life or damage reported.

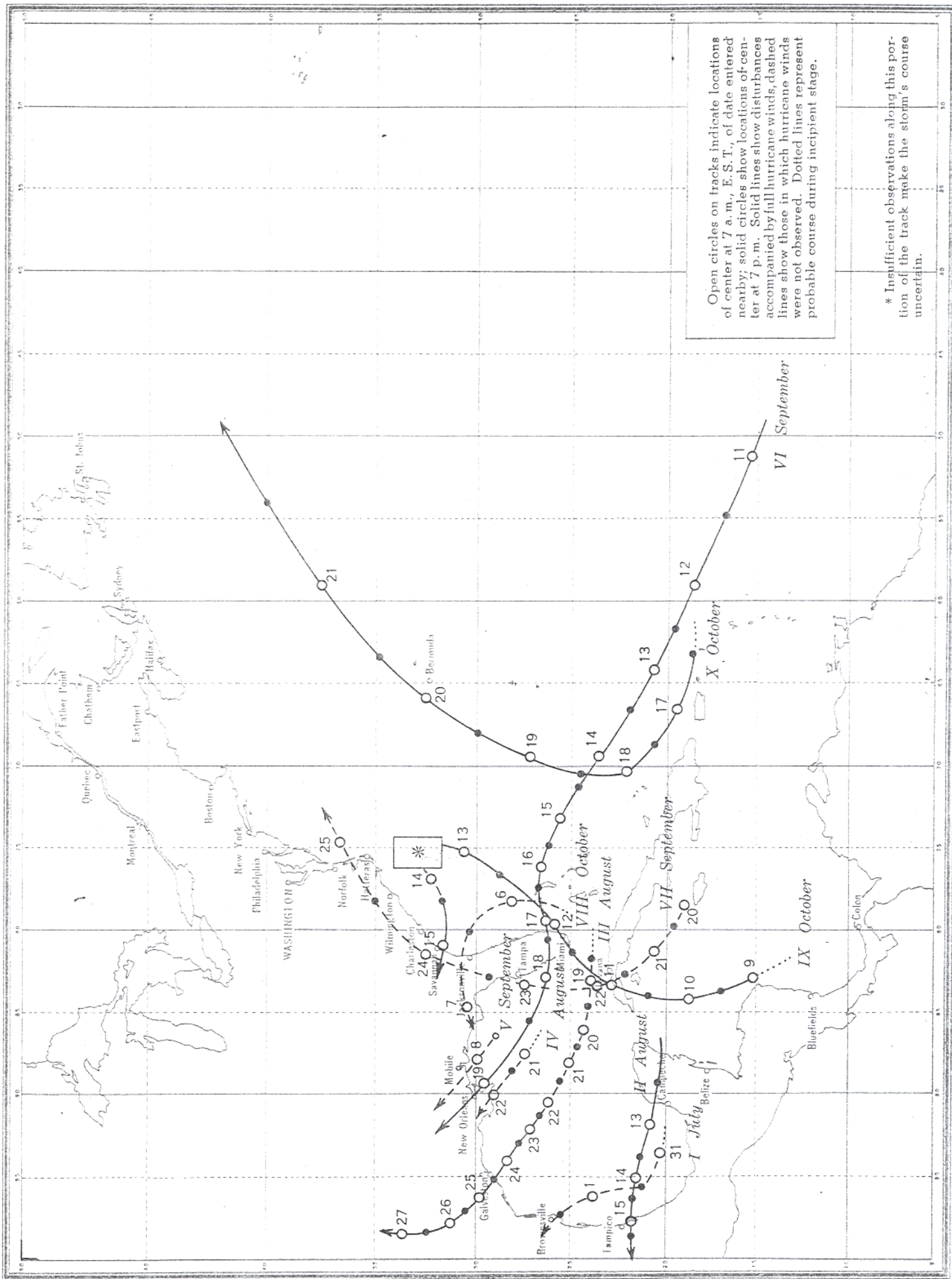
¹ Pressure reduced to sea level.

ton, S. C., and 9.6 feet at St. Simons Island, near Brunswick, Ga. The lower portions of Charleston were flooded to a depth of about 1 foot, while low-lying beaches and islands in the area also suffered considerable damage. Salt-water flooding damaged the rice crop. Some small communities as far north as Cape Hatteras were partly or wholly inundated by tides. The only death reported in connection with this hurricane during its entire history was at Charleston, S. C., where a man was killed by a falling tree.

X. *Hurricane of October 16-20.*—The last storm of the season was first noted east of the Leeward Islands as an

easterly wave. This wave developed into a closed circulation on the 16th north of the Virgin Islands and moved on a broad curving path over the Atlantic. It reached hurricane intensity during the night of the 17th when it was some distance northeast of Turks Island. Its curving path brought the center to a point slightly west of Bermuda, where during the forenoon of the 20th winds in excess of 100 m. p. h. were reported. A report from the Danish S. S. *Astra* indicated that winds of Beaufort force 11 (64-75 m. p. h.) and a low barometric pressure of 958.4 mb. (28.30 inches) were experienced near the center of this storm as far north as latitude 42.5° N.

Tracks of North Atlantic Hurricanes and Tropical Disturbances of 1947



Open circles on tracks indicate locations of center at 7 a. m., E. S. T., of date entered nearby; solid circles show locations of center at 7 p. m. Solid lines show disturbances accompanied by full hurricane winds, dashed lines show those in which hurricane winds were not observed. Dotted lines represent probable course during incipient stage.

* Insufficient observations along this portion of the track make the storm's course uncertain.