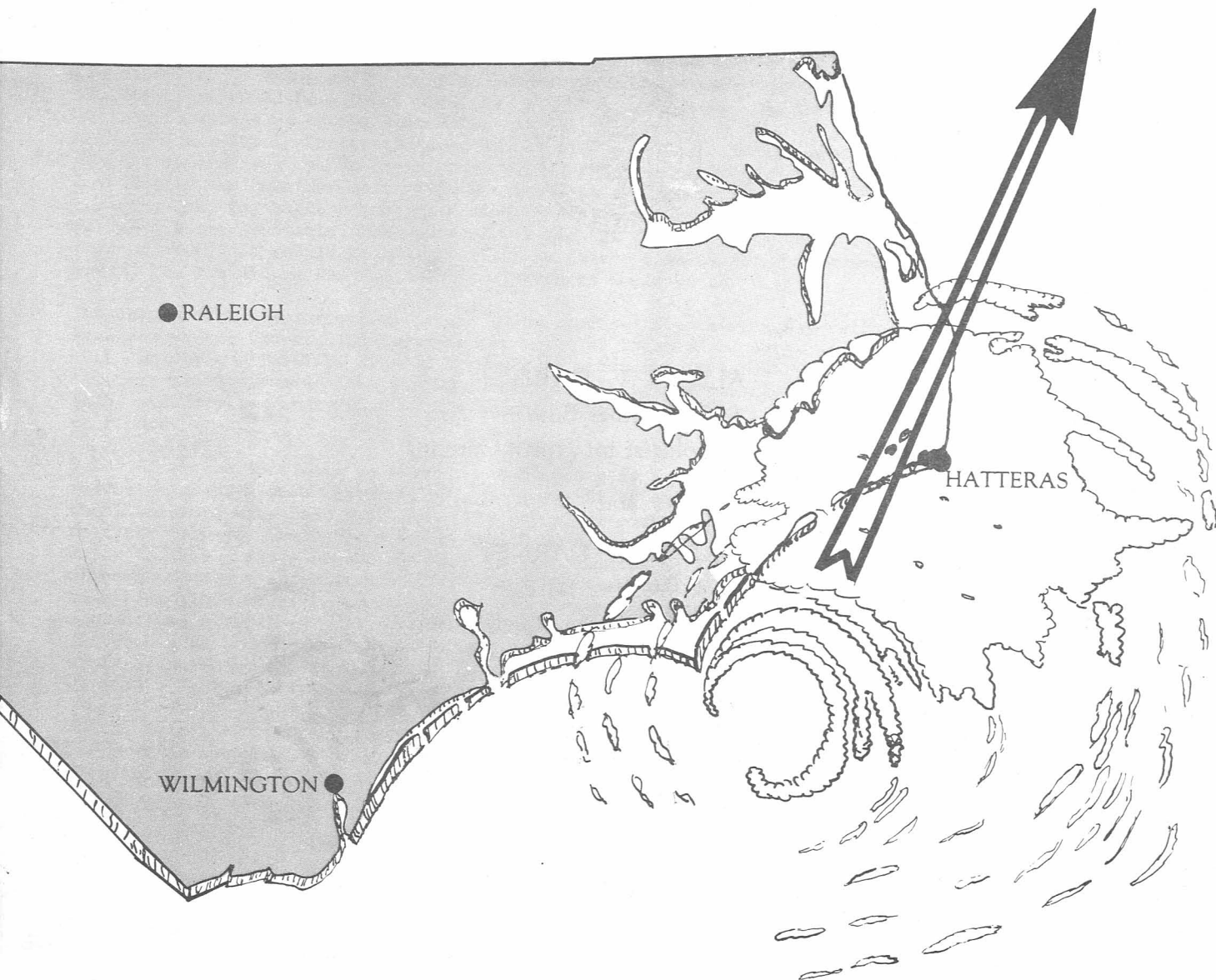


NORTH CAROLINA HURRICANES

A Descriptive Listing of Tropical Cyclones
Which Have Affected the State



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November 1962

NORTH CAROLINA HURRICANES

INTRODUCTION

This listing contains all tropical storms (known to the authors) which have struck North Carolina, had any appreciable effect on the state, or passed close enough offshore to have been a serious threat to the coastal area. The decision as to whether some early storms met these criteria for listing was made rather subjectively, since information as to both path and effects was at times scanty.

Where available, information on wind speed experienced in connection with the storm is given. Prior to about 1870, no actual measurements were made, so only such descriptive statements as could be gleaned from news accounts are given. All too often, these described the winds as having been the strongest in the memory of the oldest inhabitants, although in a few instances the wind was surely belittled. In the days of the Signal Corps weather service and the Weather Bureau until about 1940, the highest wind given for a storm was usually the "maximum velocity", which was an average over a five-minute period. In recent years, the highest sustained wind used by the Bureau is an average over a one-minute period. Where available, the speed of the highest instantaneous gusts is also given in this account. It should be kept in mind that where a value for "maximum velocity" is given, the one-minute average and the peak gusts would be far higher.

The length of the descriptions of the early storms listed herein may reflect either their severity or the amount of material which could be located--or both. Even in the early 20th Century availability of news accounts of storms varied greatly, and the likelihood of the occurrence of unrecorded significant storms increases greatly with time beyond about 1870. There were surely many storms in the 17th, 18th and 19th Centuries of which we found no record.

Dates of storms mentioned in previous known works as having affected North Carolina or nearby areas have been investigated, and a number of occurrences not previously listed in the literature have been included. The principal source of descriptive information prior to about 1910 was available files of North Carolina newspapers, none of which are complete prior to 1879. Early newspaper accounts were usually delayed, due to temporary breakdown of communications and disruption of travel by the rigors of the storm itself. There may have been times when the storm was no longer considered newsworthy by the time coastal accounts were received. In a number of cases, North Carolina newspapers carried lengthy dispatches of storm news from Savannah, Charleston, Norfolk and New York, with little or no information on the storm effects in this state; this may have been due to poor communications with immediate coastal regions, and especially with the Outer Banks.

In the description of early storms there are frequent references to Smithville; this is now the town of Southport. References are occasionally made to less prominent places the locations of which are now in doubt.

The following additional information on early hurricanes affecting North Carolina has come to the attention of the authors since the original publication went to press. For most of this information we are indebted to Dr. David Ludlum, who kindly allowed us access to his proofs of a forthcoming publication on Atlantic Coast hurricanes, which is planned as a Meteorological Monograph.

June 23 - 26, 1586

Sir Francis Drake arrived offshore at Roanoke Island, but "...there arose a great storm (which they said was extraordinary and very strange) and last three days together, and put our fleet in great danger."

August 31, 1587

"There arose such a tempest at northeast that our Admiral (Drake), then riding out of the harbor, was forced to cut his cables and put to sea, where he lay beating off and on six days before he could come to us again."

August 26, 1591

Roanoke Island was again beset by a severe storm. "For at this time the wind blew at northeast and direct into the harbor so great a gale that the sea broke extremely on the bar, and the tide went very forcibly at the entrance."

September 16 - 17, 1713

There are several accounts of a violent hurricane affecting Charleston and northward at this time, with the following remark indicating the storm's greatest violence may have struck the Cape Fear section: "ships were drove from their anchors far within land, particularly a sloop in North Carolina was drove three miles over marshes into the woods."

October 7 - 8, 1783

Available wind reports indicate that a hurricane center moved northward through eastern North Carolina, causing extreme damage in the Wilmington-Cape Fear area and as far west as Winston-Salem, where the storm "during the night assumed the proportions of a hurricane, damaging buildings, fences and blowing down many trees in the woods."

September 23 - 24, 1785

A hurricane center appears to have passed over Ocracoke Bar, causing a major break in the sand dunes and drowning a large number of cattle.

July 23 - 24, 1788

Widespread damage to the central coastal area of North Carolina was caused by a storm whose center apparently passed east and north of Cape Hatteras. One report indicates six vessels destroyed, eleven driven ashore, and two dismantled at Ocracoke Inlet; another report listed 22 out of 30 ships dismantled. Many vessels were stranded in the Pamlico Sound as the northwesterly gales forced the water out of the Sound.

September 4, 1834

A small hurricane came inland near the North Carolina-South Carolina line. Wilmington received the full brunt of the storm. Very heavy rains inland produced heavy flooding on the Cape Fear and Neuse rivers, and wind blew down trees in central North Carolina.

August 18 - 20, 1837

The following information from the press, mostly from the Wilmington Advertiser: "On the afternoon of Friday, the 18th, the wind shifted to the northeast...before midnight the storm increased....uprooted trees, streets washed into gullies, roads obstructed and bridges carried out....two new inlets are formed opposite M'Rae's, of Peden Sound."

"The community and neighboring country have suffered from a storm which we fear has been felt throughout the country. On Friday the 18th, easterly winds and heavy rain....during the night, northeasterly winds and very heavy rain. Before midnight the wind had become ruinous....Not a bridge standing between Wilmington and Waynesborough (now Goldsboro) except over Smith's Creek. A bridge three miles south of Washington, N. C., was swept away, as were most of the water mills in the area. A brig was driven ashore at Smithville."

"The gale was certainly the most violent we have ever witnessed and the quantity of water....greater than has ever been known."

"The storm was less severe at Charleston and Norfolk than at Wilmington. The Northeast (Cape Fear) River...has been four feet higher than ever known to be."

October 29, 1837

Another severe storm is listed for this month (in addition to Racer's), reported felt at Cape Hatteras on this date. There is no information on its force or damage.

August 28 - 30, 1839

A hurricane moved up the Atlantic Coastal waters, apparently passing just off-shore from Hatteras. Trees were blown down and bridges were out in the Elizabeth City area, and of 15 vessels at Ocracoke only three escaped damage. Winds of tremendous force were reported at Washington, N. C.

October 12, 1846

The Great Havana Hurricane of 1846, struck the Florida Keys with great violence and then moved up inland across central North Carolina. There is no information on damage in this State, but since the storm did extensive damage at Baltimore, Philadelphia and New York it may be presumed to have been destructive in some portions of North Carolina.

July 18, 1850

Dispatches from Wilmington and Elizabeth City spoke of a "tremendous storm" and "great damage".

NORTH CAROLINA HURRICANES
A LISTING AND DESCRIPTION OF TROPICAL CYCLONES
WHICH HAVE AFFECTED THE STATE

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SEVENTEENTH CENTURY

Accounts of seventeenth century storms are almost non-existent. There are, however, limited records of four severe storms, which were likely hurricanes. Oddly enough, all four known storms of the century occurred within a four year period.

August 27, 1667

A great hurricane struck at least the northern portion of the Outer Banks.

September 6, 1667

A "dreadful" hurricane occurred in Virginia and, presumably, in parts of North Carolina. Twelve days of rain were reported in connection with the storm.

August 18, 1669

A hurricane was reported to have struck the northern Outer Banks.

August 6, 1670

The northern Outer Banks again felt the fury of a hurricane.

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A severe hurricane hit South Carolina on an unknown date in 1699. It probably also had some effects on North Carolina.

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EIGHTEENTH CENTURY

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Hurricanes struck in South Carolina, with unknown effects on North Carolina, on the following dates: September 16, 1700; September 16-17, 1713; August 28, 1722; August, 1728.

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August 18, 1750

Referred to in Colonial accounts as the "Great Storm of August 18, 1750", this terrible tempest among other damage wrecked or drove five ships of the Spanish Flota onto the North Carolina Coast.

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A letter from Governor Dobbs to the Earl of Loudoun, July 10, 1756, states, "Last Summer.... I found a violent storm about 5 years ago had carried away Beacon Island, which was near two miles long, and all the banks here in time may be lyable to the like fate...." Possibly this was the storm of August 18, 1750.

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September 1752

It appears that two severe hurricanes affected the Carolinas this month. Both had great intensity, at least at Charleston, S. C. One likely occurred on September 15, but it is uncertain whether the other occurred earlier or later. One of these storms destroyed the Onslow County seat, which was rebuilt in a new location. On the southern North Carolina coast in one of these storms "The wind blew so hard it stemmed the Gulf Stream in its northern course and threw it on the shores. At 9 o'clock the flood came rolling in with great impetuosity and in a short time the tide rose ten feet above the high water mark of the highest tide." This was presumably at or in the vicinity of Wilmington.

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The following storms, known to have caused damage in nearby areas, may have been felt to some degree in North Carolina: September, 1753; October, 1757; August 23, 1758; May 4, 1761; June 1, 1761.

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September 23, 1761

A hurricane of great intensity raked the coast of North Carolina, causing much damage both ashore and at sea. A new inlet cut at a place called the Haul-Over, between Cedar House and Bald Head, was eighteen feet deep at high water and nearly half a mile wide. This inlet remained open for more than one hundred years.

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A hurricane on the Virginia coast on September 11, 1766, may have also struck in North Carolina.

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September 6-7, 1769

Unprecedented tides and winds of terrible force attended this hurricane on the North Carolina coast. Information is available primarily for the New Bern area, where the Governor spoke of the "...calamities arising from the extreme violence of the late storm..." and the destruction of the banks of their two rivers. The tide was said to have risen 12 feet higher than ever before and the wind blew so that nothing could stand before it. Two-thirds of the "effects" of New Bern were destroyed; houses in town were undermined by water and floated away or collapsed. One entire street of houses was swept off with some of the inhabitants. Many thousands of trees were blown down. Many houses were said to have been blown down in the general area, including the Court House of Brunswick County.

Damage was probably general throughout at least the coastal area, for, in response to his request for aid to New Bern, the House of Representatives informed Governor Tryon: "But the calamities, losses and misfortunes occasioned thereby being general, we cannot...think of granting them (New Bern) assistance in preference to any other part of the Province...."

September 2, 1775

The Congress advanced forty shillings to each volunteer from Pasquotank County, N. C., because they were hard up to purchase corn and other provisions. "...the same being almost totally destroyed by a storm of the 2nd day of September last (1775), the notoriety of which this Congress being sensible of..."

August 10, 1777

One meteorological source lists a tropical storm or hurricane as having occurred in the Carolinas. No confirmation could be located.

assumed that this storm caused some damage in North Carolina.

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On August 27, 1813, and July 1, 1814, storms struck South Carolina with unknown effects on North Carolina.

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September 22, 1815

One of the early 19th century hurricanes which seriously affected New England, this storm was carefully tracked from accumulated information collected some time after its passage. The probable track is a typical recurring one from the Virgin Islands to just east of Hatteras, thence to Long Island and into New England. Available news accounts indicate considerable damage on the South Carolina coast, and it appears likely that the North Carolina Outer Banks were even more severely hit. Little information on that area is available, probably because the always limited communications and travel were curtailed for some time by the storm.

September 2-3, 1821

A fast moving hurricane which journeyed from just north of Puerto Rico on the 1st in a typical recurring path across North Carolina from Cape Lookout to Norfolk on the 3rd, causing considerable damage at Morehead City and very likely to all of the North Carolina coast north of there. It was "a tremendous storm" in Norfolk, causing much wind damage in town and to ships in the harbor. Its path took it to the New York City area where severe damage resulted as the tide rose thirteen feet in one hour.

August (date unknown), 1822

The center of this storm probably remained offshore and apparently there were no severe effects on the state.

September 27-28, 1822

Although news sources are replete with accounts of the damage in South Carolina, where this was a major disaster, little could be gleaned as to the storm's effects on North Carolina. However, it was felt at least as far inland as Raleigh, where violent wind accompanied torrential rains.

June 3-4, 1825

This early season hurricane spread destruction from Cuba to New England. In North Carolina, the tide rose six feet at New Bern and fourteen feet at Adam's Creek. More than 20 vessels were driven ashore at Ocracoke, 27 near Washington and a number at New Bern. Coastal plantations were inundated near the South River and there was much loss of crops and live-stock. There was considerable damage near the waterfront in New Bern.

November 17-18, 1825

The schooner Harvest was wrecked on the North Carolina coast, probably near Nags Head, and five or more persons lost in what may have been a late season hurricane.

July 30, 1827

A storm of unknown path or intensity perhaps had some effect on North Carolina on this date.

August 24-25, 1827

This hurricane from the Windward Islands struck the coast at Hatteras, breaking the Diamond Shoals Lightship loose from its moorings. Two of the ships crew were washed

overboard and drowned. The ship was driven southwestward by the storm across the shoals and all the way to Portsmouth, where she was grounded at night. Although she survived the rough journey without complete destruction, the lightship was never launched again, and treacherous Diamond Shoals was without a lightship for several years.

Severe both on and offshore, this storm caused damage at least from Charleston to Baltimore, including "...considerable mischief..." at and near Wilmington.

August 15 - 17, 1830

The first effects of this storm were felt on the North Carolina coast on the 15th, although it was severe at Charleston, S. C., on the 16th and at New York on the 17th. At New Bern, all vessels were blown from their moorings and many damaged. At Wilmington "...the water in the river rose, it is said, higher than known for 20 years" and there was much wind damage in town. The storm was "...terrible.." at Smithville.

Many vessels were driven ashore on the south coast. Recently constructed jetties, presumably near Wilmington or Smithville, were swept away.

In Edenton area, damage was mostly to crops.

October 9, 1837

A hurricane known as "Racer's Storm", whose history can be traced from near Jamaica across the Yucatan Peninsula to the Texas coast, thence back eastward across the Gulf States to the Atlantic, lay offshore near the North Carolina coast on October 9.

Off the North Carolina coast it destroyed the passenger steamboat Home, bound from New York to Charleston, with the loss of about 90 of its 130 passengers and crew. At least two other vessels were lost. The Home was wrecked at Ocracoke, the Cumberland at Core Bank, and the Enterprize at Bodie Island.

July 12 - 15, 1842

A very destructive hurricane swept the entire North Carolina coast, apparently with most force in the Ocracoke-Portsmouth area. Many ships are believed to have been lost and many persons drowned, but in most of these cases there is no record as to name of ships or persons. Many houses were wrecked and washed away, and many livestock on the Outer Banks were drowned.

For destruction affecting the inhabitants of the Banks, this is believed to have been one of the most severe storms of history.

August 24, 1842

A hurricane of similar severity to that of July struck about the same area, causing the known loss of three ships and eight persons. The brig Kilgore was wrecked at Currituck, the Pioneer at Ocracoke, and the Congress on Cape Hatteras.

September 7-8, 1846

A hurricane moving up from the south had apparently approached slowly, and the long north-easterly fetch had piled an unusual amount of water into the Sounds. Then, on September 7 at about 11 am, the wind shifted and came from the southwest, piling the waters onto the Banks and sweeping them back over into the Ocean. Thus were created the present Hatteras and Oregon Inlets, the former on the night of September 7 and the latter on September 8.

The schooner Mary Anna was lost off Hatteras on September 8.

August 24, 1850

A severe gale from this storm was reported in Wilmington, where the damage to the town itself was apparently slight. However, the railroad bridge over Quankey Creek was "...lifted and thrown down by the wind". Much corn was blown down.

The schooner H. Wescott was driven ashore in the gale at the entrance to Cape Fear. A pilot boat sank after colliding with a steamer in the gale near Smithville.

August 23 - 27, 1851

Having moved northward from Florida, this storm caused gales on at least the southern portion of the North Carolina Coast.

September 7, 1853

First detected in the Cape Verde Islands area on August 30, the path of this storm can be traced through September 11. After following a path toward the northwest through the tropical Atlantic, the center re-curved toward the north on the 6th near Latitude 30° north, passed off Cape Hatteras on the 7th, and then moved off toward the northeast.

Very heavy rains occurred in at least the southern coastal section of North Carolina and a brig was lost off Cape Hatteras on the 7th.

September 7 - 9, 1854

A very destructive hurricane swept the Atlantic Coast from Florida to New York. It caused much damage and gave extraordinarily high tides at Charleston on the 7th and was felt at Norfolk on the 9th. Presumably this storm raked the North Carolina coast principally on the 8th.

September 4 - 5, 1856

A "perfect tempest" accompanied this hurricane in the Wilmington area, where the wind blew hard from the north or northeast for about two days and then veered to south or southwest.

There was considerable damage to crops, especially rice. At that time Wrightsville Beach was said to have been one-half mile wide and covered with live oak trees. Water swept across Wrightsville, washing away most of the oaks (the remainder died within a few days)

and sweeping debris across the Sound onto the mainland. Breakers, it is told, beat on areas one-half mile inland from the Sound and at an elevation of 30 feet.

September 9-12, 1857

Newspaper accounts credit this hurricane with being one of the most violent in recent years and state that it was most severely felt near Cape Hatteras on the 9th and 10th and other parts of the North Carolina coast on the 11th and 12th. Several ships were lost. At Wilmington the storm was quite violent as was the case at New Bern, where the tide rose above the wharves and into the streets. Even though merchants moved their goods to upper store rooms, the height of the tide was such that barrels of turpentine and other goods drifted into the streets.

November 1-?, 1861

Seventy-five vessels, up to that time the largest fleet ever assembled under a U. S. commander, were scattered by a terrific gale encountered off Cape Hatteras. At least two vessels sank and at least seven men drowned; at least one vessel was wrecked and salvaged by Confederates. The strong winds associated with this storm apparently lasted several days.

August 18-22, 1871

The effects of this storm were prolonged, lasting in the southern coastal areas from the 18th until the 22nd. Very high tides began in the Wilmington area on the 18th and heavy rains and strong winds began on the 19th, lasting until the 22nd. The winds were most severe at Smithville on the night of the 19th (Saturday), rocking houses and throwing down large trees. Two little schooners were capsized and sunk near Smithville.

October 25, 1872

A storm moved out of the Gulf of Mexico directly across Florida at Jacksonville, thence back inland near Charleston and northward across North Carolina east of Raleigh. Winds of gale force occurred over a considerable area, and very heavy rains ranging from four to eight inches fell at Norfolk, Weldon and Tarboro.

September 19-20 and 23-24, 1873

Two storms of similar path passed in rapid succession through the coastal waters of North Carolina; both originated in the Gulf of Mexico, moved across Florida and passed near Cape Fear and Cape Hatteras. Neither seems to have had any direct severe effect on the state, but -- perhaps as a forerunner of the storm which passed near Cape Fear on the night of the 19-20th a severe squall with indications of tornadoes struck near Wilmington during the very early morning of the 19th. At Wrightsville Sound, where a "perfect hurricane" blew for an hour, it was the "severest ever experienced".

September 28, 1874

The center of this hurricane passed just east of Charleston and west of Wilmington and Norfolk. Highest winds (maximum velocity) at Wilmington Southeast 45 mph and Southwest 50 mph; at Cape Hatteras Southeast 75 mph. The destruction was very great in the Wilmington area, with large trees uprooted and carried a considerable distance. At places along Water Street the waves on the Cape Fear River were above the wharf. At Smithville the storm was reported very disastrous, with several houses blown down, the warehouses on the garrison wharf completely destroyed, and the Oceanhouse demolished. The Spanish barque "Arrina" was blown over in ten fathoms of water. Telegraph lines and several railroad bridges were destroyed, and the corner of the new Post Office blown down. The rice crop along the river was damaged 33 percent.

November 10, 1875

A tropical storm moved from the Gulf of Mexico, passing through an inland path from just west of Wilmington to Elizabeth City. Severe gales occurred on the Atlantic Coast. At

Wilmington the weather was "extremely bad". Heavy rains fell, causing a considerable rise in the Cape Fear River.

September 17, 1876

A severe hurricane struck the coast near the North Carolina-South Carolina line and followed a northward path similar to that of Hurricane Hazel in 1954. It was not, however, as destructive as Hazel, especially inland. The anemometers at Wilmington and Cape Lookout were disabled after indicating north 60 and southwest 73 mph respectively. The British bark "Excelsior" was driven ashore two miles below Wilmington. The military camp at New River was destroyed and two men drowned. At Wilmington, where the full fury of the storm struck very early in the morning, it was the most fearful in many years. Trees were uprooted, buildings were shaken and unroofed. A bridge on Market Street was washed away. Two box cars and a shed were said to have been driven uphill by the wind. Water rose "unprecedentedly" high in the sounds, "flooding everything in reach". Marsh hens were driven inland and many were killed with sticks; some took refuge in houses. There was great damage at Masonboro Sound, Wrightsville, Smithville and Brunswick. Many ships were lost. Captain C. C. Morse at Wrightsville lost 1400 terrapins.

September 29, 1877

Meteorological reports track this storm along a typical path considerably offshore from Wilmington to Hatteras; owing to slow rate of movement it was severely felt from Cape Lookout to Cape Henry, where steady northeast gales and high seas persisted. News accounts said that the path was similar to that of the storm of September 16-19, 1876. In the Wilmington area, heavy rains began on the morning of the 27th and continued at least until the 29th; the gales in this area blew with considerable severity on the night of the 28th. All roads in the area were flooded and streams greatly swollen.

October 3-4, 1877

Believed to have been the same storm observed over St. Vincent and Grenada on September 21, this long-lived and violent hurricane crossed the Gulf of Mexico and moved inland near New Orleans October 2. It moved northeastward across North Carolina just east of the mountains, causing a terrific storm in the vicinity of Albemarle Sound. The attendant floods carried away all bridges and wharves in that area, and seriously damaged crops remaining in fields. The steamship Magnolia foundered off Hatteras, and ships were wrecked all along the Atlantic coast northward to New England.

September 12, 1878

This hurricane moved almost due north from Florida Keys to Lake Erie. A great many ships were disabled and wrecked. The steamer City of New York reported the hurricane lasted 40 hours between Cape Hatteras and Charleston. Highest winds: Smithville, southeast 48 mph; Wilmington, southeast 30 mph; Sloop Point 65 mph; Cape Lookout, southeast 75 mph.

October 23, 1878

After crossing Cuba on the 21st and moving generally northward, this hurricane moved inland between Wilmington and Morehead City. The storm was very severe at sea, and struck the Outer Banks with full hurricane force; maximum winds of 100 miles per hour were recorded at Cape Lookout and 82 miles per hour at Portsmouth, both from southeast. On the coast of the mainland winds apparently were much lighter; the maximum registered at Smithville was 32 miles per hour from the east and at Wilmington 36 miles per hour from the northwest. The steamer City of Houston was lost on Frying Pan Shoals; a great many ships were damaged or lost in the storm all along the Atlantic coast.

August 18, 1879

A severe hurricane, charted from a position over the Bahamas on the 17th on a typical coastwise path to a position off Eastport, Maine, on the 19th. Although the center was plotted as passing inland near Wilmington and back out to sea near Norfolk, winds were highest at Cape Lookout. At 6 A.M. the anemometer cups there were blown away when

indicating 138 mph and the wind was afterward estimated to have reached 168 mph. Anemometers were also destroyed at Hatteras, Fort Macon, Kitty Hawk, Portsmouth and Cape Henry, with speeds estimated at 100 mph or more. A ship report indicated waves forty feet from trough to crest. This storm was perhaps most destructive in the Morehead City-Beaufort area, where damage is reported to have included two hotels destroyed, the Atlantic and Ocean View, and 1000 feet of railroad track torn up. All the wharves were washed away; the chimneys of most houses were blown away. One schooner is known to have been wrecked on Cape Hatteras; wrecks of others were said to have been in view from near Beaufort. On the Outer Banks, the storm caused great destruction at Diamond City, which was near Cape Lookout.

August 27, 1881

Although not of extraordinary intensity according to meteorological reports from North Carolina stations (maximum wind reported at Smithville east 50, at Fort Macon east 38 mph) this storm must have been of tremendous size and intensity at sea. It was reported from Morehead City that the skies were blackened with sea birds moving inland thirty hours in advance of the storm, and that the fish also retreated inland, passing up the Newport River in such numbers that they became so wedged in the following day "...that they could not move either up or down." This fishy story is from the Report of the Chief Signal Officer; the original source is not given.

Heavy losses of life and property were reported on the Georgia and South Carolina coast, and considerable damage along the southern part of North Carolina coast. The storm center moved inland near Savannah, where maximum winds of 60 mph were recorded, and continued as an identifiable low pressure area westward to Memphis and up the Mississippi River Valley into Canada.

September 9, 1881

The center of this severe hurricane moved northward across Wilmington-Wrightsville Beach area about 1 p.m., and proceeded slowly northward to near Norfolk and then northeastward out to sea. Maximum five minute wind recorded at Smithville northeast 60 mph. At Smithville it was reported as the most violent storm in 50 years, with the town "covered with fallen trees, scattered fences and the debris of demolished buildings". All pilot boats in the harbor were sunk, and loaded vessels driven ashore. At Wrightsville the tide "marked a height never before witnessed", water washed over the turnpike, carrying large quantities of earth out to sea and making the road impassable; some bath houses were washed away and others destroyed. The wind blew with extreme violence, shifting from easterly through south to westerly around noon "blowing with redoubled fury, crushing buildings and tearing up the largest trees". At Wilmington the wind recorder had been indicating a speed of 90 mph for four minutes when the anemometer wires broke. It was considered the most severe storm there since 1822 and 1838, and property damage was estimated at \$100,000 a considerable sum in those days.

September 11, 1883

First identified at Martinique on the 4th, this hurricane moved steadily on a curved path northwest, swinging north, and passed inland near Smithville on the 11th. Maximum winds at Smithville were from the southeast at 93 mph at 8:20 a.m. EST. Newspaper accounts stated that the wind blew at a speed of 81 mph for seven hours. Many fences and buildings of light construction were destroyed and trees were uprooted. Telegraph and telephone lines were blown down. Leaves on trees afterward looked as if frostbitten, due to the effect of salt spray. The damage at Smithville was reported at \$8,000 to \$10,000, but this evidently did not include many vessels which broke from their moorings and were driven ashore in the vicinity. The storm was reported very disastrous to vessels between Hatteras and Wilmington, with much wreckage drifting onto shore near Wilmington. The land on the western side of the Cape Fear River was reported "flooded by the immense body of water driven up the river". Considerable crop damage due to violent wind and rain was reported as far inland as Harnett County.

August 25, 1885

Discovered in the Bahamas on the 23rd, this severe hurricane moved inland near Savannah and passed across North Carolina just west of Wilmington and Hatteras. Maximum 5-minute winds of 98 mph were recorded at Smithville, 92 at Fort Macon, and 52 at Wilmington and Hatteras, all from southwest or south. At Smithville the anemometer was blown away at 5:15 p.m. with the 98 mph wind, and winds were estimated to have reached 125 mph during the next half hour. The damage at Smithville was estimated at over \$100,000, while that at Charleston, S. C., was estimated at \$1,690,000. The storm was severe in Wilmington and there was considerable damage to property at Morehead City. As a result of this destructive storm it was proposed that a weather reporting network be set up in the West Indies and Mexico.

October 12, 1885

A disturbance initially observed southwest of Florida on the morning of the 10th strengthened and moved slowly northward through that state, passing west of Jacksonville and Savannah, reaching southwestern Virginia about midnight of the 12th. Northeasterly to southeasterly gales resulted all along the North Carolina coast, giving maximum velocities from 44 to 56 mph. High tides at Smithville submerged the entire waterfront and flooded a few stores. At both Wilmington and Smithville, the tide was reported as the highest in ten years. Some flooding occurred in New Bern. A schooner was wrecked at Hatteras Inlet.

June 19-20, 1886

Although it struck land in northwest Florida, this hurricane retained much force as it moved northeastward just east of the North Carolina Mountains, causing heavy rains and widespread squally weather throughout the State. "Dangerous winds" were reported offshore; the highest recorded on land was 40 mph from northeast at Kitty Hawk.

June 30 - July 1, 1886

Being quite similar to the previous case, this hurricane retained considerable strength as it moved over land from northwest Florida to North Carolina, this time through the Piedmont. Heavy rains and gales occurred. A maximum wind of 47 miles per hour from the northeast was recorded at Fort Macon on June 30, and of 42 miles per hour from southeast at Kitty Hawk on July 1.

August 20, 1887

Damage was heavy from this severe hurricane which was first spotted several hundred miles northeast of Puerto Rico on the 16th, then moved rapidly along practically the classic path, passing east of Hatteras on the 20th. Maximum five-minute wind was 82 mph at Hatteras. The storm was said to have been severe in the Pamlico Sound area, where many vessels were lost and houses blown down. News dispatches concerning this storm ranged from a flippant "We had an elegant breeze last night. Some extreme southern friends became excited. Others thought the breeze superb" (from Morehead City) to (two days later) "The storm of Saturday did great damage to the coast". The anemometer blew away at Kitty Hawk, where the observer stated that the fury of the storm was indescribable. As was usually the case when a hurricane struck or passed nearby, the Outer Banks telegraph line was damaged, so that little or no information came from that area for at least several days.

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Another storm followed nearly the same path a few days later, but lay somewhat farther offshore and so had much less effect on land areas.

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October 20, 1887

This hurricane which moved inland on the Gulf coast near New Orleans swept across Georgia and the Carolinas and then out to sea. Damage in North Carolina, if any, was likely slight.

October 31, 1887

Increasing in intensity after crossing the Florida Peninsula from the Gulf of Mexico on the 29th, this storm moved northeastward at some distance off the Atlantic Coast, "accompanied by heavy gales, especially on the coasts of North Carolina and Virginia". The wind reached a velocity of 70 mph at Kitty Hawk, with heavy rain; telegraph poles were blown down on the Outer Banks.

October 11, 1888

A hurricane first noted in the eastern Gulf of Mexico on the 10th moved rather rapidly northeastward, crossing North Carolina just west of a Wilmington-Norfolk line. In spite of the inland path, the storm produced a maximum 5-minute wind of 60 miles per hour at Wilmington on the 11th, and was "attended during the 11th and 12th by destructive hurricanes over the adjacent ocean".

November 25, 1888

A disturbance moved with increasing force from several hundred miles eastnortheast of Puerto Rico on the 17th to the Bahamas on the 22nd, then turned northeastward and passed off Hatteras at a distance of one or two hundred miles on the 25th. In spite of the distance offshore, the maximum 5-minute wind at Hatteras was 66 mph on the 25th, and at Norfolk 50 mph on the 26th. Some damage was reported to shipping off the North Carolina coast, and at Norfolk high tides were reported as flooding the lower part of the city, with very destructive winds, telegraph lines blown down, and vessels blown from moorings.

September 9-12, 1889

Believed to have originated about September 1 to the east of the Windward Islands, the center of this hurricane was near Puerto Rico on the 5th and moved to a position off the Virginia Capes about the 10th, where it stagnated for several days. Most of the force of the storm was felt from Virginia to New York, where it was very destructive, but gales and unusually high tides and swells were reported along the northern half of the North Carolina coast. At Nags Head the storm was said to have been severe but no great damage was done except for the cutting of a new (or re-opening of an old) inlet. Communications lines to Hatteras were down.

September 24, 1889

A hurricane moved inland on the Gulf coast the 22nd and passed northeastward across western North Carolina the 24th. This must have been a very large storm, as it caused southeasterly gales along the south Atlantic Coast. Cautionary signals were ordered at Wilmington, and a steamer arriving there reported very rough weather off Frying Pan Shoals. Winds (presumably at Frying Pan) are reported to have blown from southsoutheast at 70 mph between 7 and 8 a.m. the 24th.

June 16th, 1893

After crossing northern Florida from the Gulf of Mexico, the center of this hurricane skirted the coast of Georgia and the Carolinas, passing out to sea again near or north of Hatteras. Winds at Southport reached a maximum velocity of 55 mph from the south. Damage was apparently light.

August 23, 1893

A hurricane advanced over the southern Atlantic to the West Indies and passed to the east of Hatteras on the 23d, causing wind velocities of 70 mph from the northeast at Kitty Hawk and 60 mph from the north at Hatteras. No damage of consequence was reported.

August 27 - 29, 1893

Skirting the east coast of Florida and moving inland between Jacksonville and Savannah, this hurricane passed about over Charlotte and then curved to the northeast. There was

much destruction in the south Atlantic states. Wind velocities reached 72 mph from the south at Southport on the 28th and 50 mph from the south at Kitty Hawk on the 28th and 29th. Newspaper accounts stated the velocity was 72 mph from the south at Wilmington.

A number of ships were lost at sea off the North Carolina coast and several were wrecked on the coast in the Cape Fear area. Wrightsville Beach was generally evacuated. At Kernersville, "A terrific cyclone struck here at five o'clock this morning (the 28th). A hundred houses were wrecked and a woman killed. Many were injured. Factories, stores and residences were unroofed and some were blown away." At Oxford a large brick warehouse was wrecked. These storms were probably tornadoes spawned in the fringes of the hurricane. At Wilmington, "The river tide was the highest ever known here. All the wharves being submerged....a number of vessels were wrecked on the coast." Rainfall totaling three to eight inches accompanied the hurricane over practically the entire state, with amounts up to five inches in 24 hours.

October 13, 1893

The hurricane which passed northward across North Carolina on October 13, 1893, was similar to Hurricane Hazel of 1954, except that the path was a little more to the west and the damage not quite as severe. Crossing the South Carolina coast somewhat north of Charleston, the storm center moved directly northward, its eye passing nearly over Raleigh.

The highest reported wind in North Carolina was 94 miles per hour at Southport. In the Wilmington area, the tide and overflow of water were reported as the highest known to date, being 16 inches above the high water mark of 1853. Damage to the Wilmington waterfront was estimated at \$150,000. Great destruction was reported to forests, crops and property, and to shipping. Two children were crushed when a tree fell on a house in Sampson County.

October 22, 1893

First spotted north of the Bahamas on the 21st, this storm of less than hurricane force moved rather rapidly northward, passing inland somewhat west of Hatteras on the afternoon of the 22nd. The highest reported wind was 54 mph from the northeast on the 22nd at Kitty Hawk.

September 27 - 28, 1894

Moving in a sweeping curve across San Domingo (now the Dominican Republic), Haiti and Cuba, the hurricane center went briefly out to sea again after crossing Florida; struck the coast between Savannah and Charleston; moved northeastward just a short distance inland through South Carolina and southeastern North Carolina, entering the ocean again a few miles north of Hatteras. Maximum 5 minute wind velocities reached 60 miles per hour at Kitty Hawk and 54 mph at Southport from the southeast on the 27th. Schooners were reported wrecked in the Ocracoke and Cape Fear areas.

October 9-10, 1894

First noted off the coast of Panama and Columbia on the 1st and having crossed the coast of northwest Florida on the 8th, this hurricane then moved northeastward, passing across eastern North Carolina on the 9th. Although it had been over land for a few days, it retained sufficient strength to cause winds with maximum velocities of 58 mph, southeast, at Kitty Hawk on the 9th and 60 mph, southwest, at Hatteras and 58 mph, southwest, at Kitty Hawk on the 10th.

September 21-24, 1897

Although there is some doubt as to its path, the center of this tropical storm probably passed near Hatteras. Highest reported wind 50 mph (maximum, 5-minute velocity) at Hatteras. According to ship reports the storm was very intense a short distance offshore. High winds and high water were reported at New Bern.

October 20, 1897

A rapidly moving storm of tropical origin passed northeastward just off Hatteras on this date, causing maximum winds of 44 miles per hour at Hatteras and 60 miles per hour at Cape Henry, Virginia. Rains of from one to seven inches fell on the North Carolina Coastal Plain, with the heaviest amounts on the immediate coast.

October 24 - 26, 1897

Moving northeastward and well off the coast, this storm seemed to offer little threat to North Carolina on the 24th; then it took a turn toward the northwest, brushed Hatteras, and moved northward to a position off the Virginia Capes. Then, perhaps not content with its brief visit to North Carolina, the storm apparently turned a complete loop out in the ocean during the 25th and moved westward onto the coast a little north of Hatteras by the morning of the 26th. It briefly visited the Coastal Plain and then took another turn to the east and moved out to sea. At Cape Charles, a "full-fledged hurricane" was reported; tides were said to be several inches higher than ever before at Norfolk. Highest wind reported was 60 mph (5-minute average) at Kitty Hawk. Tides were high and rains very heavy.

October 2, 1898

Although the hurricane center moved inland on the Georgia coast, it caused a heavy surf far enough north to wash across Carolina Beach, destroying some property there.

August 16 - 18, 1899

The hurricane which moved slowly northward across the Outer Banks in the vicinity of Hatteras during August 16 - 18 was one of the most severe on record for that area.

After causing tremendous destruction and loss of life in Puerto Rico, the storm moved northward in a curving path off the south Atlantic coast. Approaching Hatteras, its forward movement slowed considerably, while at the same time it increased in strength.

By early morning of the 17th, the wind was blowing from the northeast 70 mph at Hatteras; by early afternoon it had reached 93 mph, with extreme velocities of 120 to 140 mph. The anemometer then blew away; stronger winds probably occurred. The Weather Bureau Observer at Hatteras reported that "the entire island" was covered with water to a depth of 4 to 10 feet; there were not more than four houses in which the tide did not rise to a depth of 1 to 4 feet. All fishing piers and equipment were destroyed; all bridges were swept away; a great proportion of homes on the island were damaged. About ten vessels, including a large steamship, were wrecked. There was much destruction at Diamond City, which was located in the vicinity of Cape Lookout.

Flooding of much of the coastal areas and strong winds and heavy rains inland as far as Raleigh did great damage to crops.

It was reported that it was impossible to estimate the damage in dollars and cents. A number of lives were lost, the estimate being slightly under 25.

October 30 - 31, 1899

Following almost exactly the same path as that taken by Hazel 55 years later, the hurricane which struck the North Carolina Coast on the morning of October 31, 1899, caused great destruction and damage.

After forming in the Caribbean Sea on the 28th, the storm moved northward, passing over Cuba and then up to the Carolina coast. The point where the center crossed the coast is unknown, but from the behavior of the winds at coastal and inland points and from the fact that tides were very high at Wrightsville Beach and northward, the center probably hit the coast somewhere below Wrightsville, then moved northward across the state, very likely passing somewhat east of Raleigh.

Highest wind reported was 72 mph (sustained 5-minute velocity) at Kitty Hawk, but sustained

winds of 40 mph were reported inland to the center of the state. At Wrightsville Beach, water was reported as 8 feet above normal high tide and 2 feet higher than in the August hurricane "or ever before"; water came over the wharves in Wilmington and flooded some streets; there was much flooding and damage in New Bern, Morehead and Beaufort. At Southport, it was "the worst storm ever." One steamer was wrecked on the coast and ten smaller vessels were driven ashore. Inland, many trees were uprooted.

One person was reported killed and damage was conservatively estimated as more than \$200,000.

TWENTIETH CENTURY

October 13, 1900

A disturbance of less than hurricane strength passed northward across Florida, entering the Atlantic again near Jacksonville. It struck land again on the North Carolina coast near Hatteras. There are no records of damage or unusually strong winds in the State.

July 11, 1901

Although not severe in the Caribbean area where it formed, this hurricane strengthened rapidly as it moved northward off the south Atlantic coast. When it reached the latitude of North Carolina, it abruptly changed course, turned toward the west and moved inland.

No record of damages. Highest wind (maximum velocity) was 62 mph from the west at Hatteras.

September 15, 1903

The origin and intensity of this storm is somewhat obscure, but it probably advanced northwestward from the subtropical ocean south of Bermuda. Recurving near latitude 35°N, the center passed east of Hatteras. Winds on the 15th reached maximum velocities of 60 mph, northwest, at Hatteras and 72 mph, east, at Kitty Hawk. News dispatches in North Carolina papers stated that the storm was disastrous in Florida and very bad in Delaware. Lack of damage reports from North Carolina may have been due to failure of communication on the Outer Banks, which frequently occurred during storms.

September 14, 1904

Having formed over the tropical Atlantic ocean, this hurricane gathered force north of the West Indies and moved northwestward, passed inland somewhere between Charleston, S. C., and the North Carolina border, crossed the eastern section of the state and re-entered the ocean near Norfolk, Virginia. Maximum velocity reported in North Carolina was southwest 51 mph at Hatteras. Wind and rain did considerable damage to crops in eastern and central North Carolina. Apparently the storm gained additional strength as it moved northward along the Middle Atlantic Coast, where winds were reported as high as 100 mph. Severe storms or "cyclones" were reported at Mt. Olive, Faison and Durham along with considerable damage and one death. These may have been tornadoes in the general hurricane circulation. Trains were halted by high water on the Neuse River.

November 13, 1904

The Caribbean Sea was the spawning ground for this hurricane, which formed on the 9th, increased in intensity and moved northward. The center passed near Cape Hatteras on the morning of the 13th, causing high winds and tides and heavy precipitation. Heavy seas pushed onshore by the storm swept away the Life-Saving station at New Inlet, drowning four of the men stationed there. Four lives were lost in the wreck of the Schooner Missouri near Washington, N. C.; two schooners were wrecked near Cape Fear. Several persons drowned on Hatteras Island when their fishing lodge was washed away. Eight men drowned when a yacht foundered in one of the sounds. The storm was reported to be very severe at Fort Caswell. Hatteras reported the strongest wind in the storm, a maximum velocity of 68 mph from the southwest. Cold air from the north was pulled into the western portion of the general storm circulation, causing an early snowstorm over much of the state.

September 17, 1906

There was considerable damage to shipping along the coast from Charleston to Wilmington. As this hurricane approached the coast from the east-southeast, the center moved inland probably a little south of Myrtle Beach, S. C. Winds reached maximum velocities of 50 mph, northeast, at Wilmington on the 17th, and 50 mph, north, at Cape Henry, Virginia, on the 16th. Cottages, a hotel and other property was damaged at Wrightsville as breakers swept across the island and sound and rolled "high up on the mainland". The trolley car trestle to Wrightsville gave way. There was some damage at Southport and Carolina Beach.

July 30, 1908

After skirting the east coast of Florida, and moving northeastward in a curved path off the coasts of Georgia and the Carolinas, the center of this hurricane passed somewhat east of Hatteras. Highest reported wind (maximum velocity) was 58 mph at Hatteras, but apparently the storm piled-up considerable water on the North Carolina coast to the south of Hatteras. This, combined with torrential downpours (10.73 in 72 hours at New Bern and 9 inches at Kinston) caused much flooding in the eastern counties. Wind-driven water covered Wrightsville Beach (which had been evacuated) and destroyed considerable property. Damage was "immense", but no injuries or fatalities were recorded. At New Bern, this was "the worst storm in history". This "great storm" raged over all of eastern North Carolina and the extensive flooding brought all forms of travel to a standstill.

August 31 - September 1, 1908

The storm center was apparently close to Hatteras on the morning of September 1, having approached from the south. It was reported to have caused abnormally high tide at Wrightsville Beach. No sustained winds of more than 50 mph were reported. Flooding on the lower Cape Fear at this time, due to heavy rainfall several days earlier and probably aggravated by the storm tides, was "by far the worst flooding in history".

October 19 - 20, 1910

A hurricane of considerable intensity when it struck Cuba and crossed the Florida Peninsula in mid-October retained sufficient force as it passed northeastward off the Carolina coast to cause unusually high tides in the Wilmington area. The maximum wind was only 24 mph there, but seas caused some damage on the beaches, including the partial destruction of a steel pier.

September 3, 1913

After moving from a location northeast of the Bahama Islands to off the North Carolina coast, this severe hurricane turned toward the west and moved inland between Hatteras and Beaufort early on September 3, passing south of Raleigh that afternoon. Highest wind reported was southeast 74 mph (maximum velocity) at Hatteras.

There was great damage to property and crops over the eastern portion of the state, especially the Pamlico Sound area, due to high water from the sound. The greatest losses were in the vicinity of Washington and New Bern, where wind-driven water was said to have risen 10 feet above previous high water marks. Large railroad bridges at Washington and New Bern were washed away. Communication lines were downed over a large area; for a time it was feared that all people on Ocracoke had perished. Crops suffered severely, with considerable wind and rain damage as far west as Durham. At Goldsboro the storm was "the worst in history"; it was very severe in Tarboro, Wilson, Farmville and Durham.

Five lives were lost; property damage was estimated at \$3,000,000.

July 14 - 16, 1916

The known history of this hurricane is brief and its known path short; it was northeast of the Bahama Islands on July 12, and is charted as having moved directly northwestward, across the South Carolina coast on the 14th and into the North Carolina mountains on the 15th. It exhausted itself in the mountains, causing the heaviest rainfalls of record.

The greatest amount recorded was at Altapass, where 22.22 inches fell in the 24 hours ending 2 p.m. the 16th. This was at the time the greatest 24-hour amount known for the entire United States. Landslides occurred in the mountains, killing several persons; crops, highways, bridges and railroads suffered great damage. A maximum wind of 60 mph from the east was recorded at Charlotte on the 14th. No damage of consequence occurred on the North Carolina coast.

July 19, 1916

Northward movement from the Windward Islands took this hurricane some distance off Hatteras on the 19th, causing maximum winds from the north at 50 mph. The effects of the storm on the North Carolina coast were minor.

September 22, 1920

Of obscure origin, but apparently approaching from the southeast, this was a hurricane of small diameter as it crossed the North Carolina coast during the night of the 22nd, probably passing inland between Wilmington and Morehead City. Winds were said to have reached 72 mph at the mouth of the Cape Fear, carrying the lightship several miles west of the position where it was anchored. A steamship off the coast estimated the wind at 90 mph.

A house was blown off its foundation and demolished in Wilmington, perhaps by a small tornado spawned by the larger storm. Similar small severe windstorms were reported in Pitt County, where 1 person was killed and many injured and a number of buildings wrecked.

August 25, 1924

North Carolina felt strong fringe effects of this hurricane, which moved rapidly north-northeastward from the Bahamas and passed just east of Hatteras during the evening of the 25th. The highest reported winds were at Hatteras, where a maximum velocity of 74 mph from the northwest was recorded. Damage to the coast was apparently light, but two drownings were reported. Ocracoke was partially inundated by the high water.

December 2, 1925

The path of this hurricane took it from the Caribbean Sea, across southern Florida and then north-northeastward along the coast to North Carolina, where it moved inland between Wilmington and Hatteras about 6 p.m. on December 2. After passing through the northern coastal counties, the storm center moved out to sea again near Cape Henry, Virginia. Hatteras reported a maximum velocity of 62 mph from the west. Damage was considered to be slight. It is rare for a true hurricane to occur so late in the year.

September 18 - 19, 1928

Although this severe hurricane caused much destruction and more than 1800 fatalities as it moved northward through Florida, it lost much of its wind force as it passed through coastal Georgia and South Carolina and into eastern North Carolina. However, it caused very heavy rains in North Carolina. Resulting floods were severe and the highest on record on at least parts of the Cape Fear River. At Fayetteville, where the bankful stage is 35 feet, the river reached a height of 64.7 feet; at Elizabethtown, the river rose to 41.3 feet compared to a bankful stage of 20 feet. Flooding at Lumberton was "the worst in history". Many highways were closed due to flooding and washouts of roads and bridges.

October 1 - 2, 1929

Following a prolonged and erratic journey which included slow westward movement through the Bahamas and the Florida Straits, this hurricane turned northwestward and struck land near Panama City, Florida, late on September 30th, from which point it recurved toward the northeast. As was the case in the previous year, the storm weakened greatly in wind force as it moved over land, coming into North Carolina from the southwest, causing very heavy rains and severe floods. Stages on the Cape Fear were almost as high as the record set the previous year. At Fayetteville, the river rose 41 feet in a 24-hour period. Rainfall was "record-breaking" and caused thousands of dollars damage to roads, crops and businesses.

North Carolina "floundered in flood".

September 12, 1930

The "Santo Domingo Hurricane", so called from its passage directly across that city early in its path, swept through Haiti and along the entire length of Cuba; the storm then turned northeastward and passed across the Florida Peninsula, its center moving through the off-shore waters of the North Carolina coast on September 12. Maximum winds at Hatteras were from north at 60 miles per hour, and two ships off Diamond Shoals reported hurricane force winds. Scattered minor wind damage was reported from Atlantic Beach to Hatteras.

August 22 - 23, 1933

This hurricane originated well to the east of the Windward Islands and after a long journey over the Atlantic Ocean it crossed the North Carolina coast moving from the southeast. The center passed almost directly over Cape Hatteras, where the maximum wind velocity was 64 mph. There was "great damage" in northeastern North Carolina, due to "severe gales and high tides, largely the latter". Many localities were swept by "the worst gale in years". Tides rose seven feet above normal in Norfolk. There was considerable crop damage as far inland as Granville County. Storm damage was estimated at \$250,000.

September 15 - 16, 1933

A hurricane which formed near the Leeward Islands on the 10th moved northwest and then northward, increasing in intensity and striking the coast a little west of Hatteras about 8 a.m. on the 16th. The maximum wind velocity at Hatteras was 76 mph, estimated because a portion of the anemometer had blown away. Winds were estimated up to 125 mph in New Bern and Beaufort. Damage was heavy from a short distance south of New Bern to the Virginia line. Wind and high water did great damage at New Bern, where water reached a height of 3 to 4 feet in some streets, said to be about 2 feet higher than the previous record which occurred in September, 1913. Old residents in Beaufort said the storm was the worst they had ever experienced. Up to 13 inches of rain fell on the Outer Banks.

At least 21 lives were lost and damage totaled at \$3,000,000. High winds and waves and piling up of water in Pamlico and Albemarle Sounds, caused the deaths and left hundreds without food or shelter. It was reported that in several coastal towns hardly a building was left standing.

September 8, 1934

This hurricane moved up from the south and passed over or slightly east of Cape Hatteras, causing a maximum wind velocity of 65 mph at Hatteras. There was no known loss of life; and damage was apparently slight. Rains of up to 10 inches fell in the Beaufort area.

September 18, 1936

This was one of the most severe hurricanes on record at Hatteras, where it caused an average 5-minute wind speed of 80 mph, with gusts much higher. Ninety mph was reported at Manteo. Since the storm center passed over or slightly east of Hatteras, damage was confined principally to the northern half of the coast and was estimated at \$25,000 to roads and bridges and \$30,000 to buildings and piers. Damage to crops was heavy. The highway from Currituck to Norfolk was washed out. There was some damage in Elizabeth City. Tides were very high at Manteo and Hatteras. About 35 feet of beach was cut away at Nags Head.

September 21, 1938

"The Great New England Hurricane of 1938" passed northward a short distance off Hatteras on September 21, causing maximum winds from northwest at 61 mph. Heavy rains fell on eastern North Carolina from the 16th through 21st, and gales, rough seas and high tides affected the northern coast as the hurricane passed.

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Another low pressure storm following one of the typical hurricane paths from Yucatan across Florida and passing up the Carolina Coasts on September 29 was apparently not of great intensity nor of clearly tropical character. A similar storm followed a nearly similar path in late October, passing just inland of Hatteras on the 24th.

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August 11 - 17, 1940

A severe hurricane which drove inland at Savannah the 11th drifted in a horseshoe pattern over the North Carolina mountains and back out to sea north of Hatteras the 17th. The winds gradually subsided but torrential rains fell for several days over North Carolina, causing one of the most serious general river flood situations in the history of the State. Wind damage was negligible in North Carolina.

August 1, 1944

A hurricane formed east of the Bahamas on July 30, then moved northwestward over open water until it struck the North Carolina coast in the vicinity of Southport about 8 p.m. on August 1.

The storm was of small diameter. At Oak Island, where the wind indicator failed, the wind reached an estimated 80 mph; Wilmington reported an extreme one-minute velocity of 52 mph with gusts to 72 mph.

Damage at Carolina Beach was extensive and was due mainly to the unusually high tide and heavy seas washing the beach and battering to pieces or undermining many dwellings and business places; two fishing piers were demolished. Damage at Wrightsville Beach was less extensive, but two piers were partially wrecked and many roofs damaged. Thousands fled to Wilmington to escape the danger. In Wilmington, many roofs and windows were damaged and power and communication lines downed. In Brunswick, New Hanover, Pender and Onslow Counties damage to corn was estimated at 35%, tobacco 15% and cotton 10%. Total damage was estimated at \$2,000,000. Several persons were injured but there were no fatalities; more than 10,000 people were evacuated from beach areas in advance of the storm.

September 14, 1944

The "Great Atlantic Hurricane" of September 1944 caused destruction to 900 miles of the Atlantic coast from Hatteras northward. Moving up from the south, the center of the hurricane passed--fortunately--a short distance east of Hatteras, causing a wind velocity of 110 mph (extreme, estimated) and the lowest barometric pressure on record at that locality to that date. Cape Henry, Virginia reported a wind velocity of 134 mph (extreme) with gusts estimated to 150 mph.

Because the center passed slightly east of Hatteras, damage to the south coast was slight, but the central and northern coastal areas suffered a loss of 108 buildings destroyed and about 675 damaged, amounting to an estimated \$450,000. Crops losses were estimated at \$1,000,000. There was heavy damage in Elizabeth City and the Nags Head area. Damage to property and crops west of the 77th meridian was negligible. One person was killed in North Carolina; 4 were injured.

The Coast Guard cutters Jackson and Bedloe capsized and sank while protecting a Liberty Ship torpedoed off the North Carolina coast.

October 20, 1944

The third tropical storm to affect North Carolina in 1944 was of minor intensity; maximum winds at Wilmington were from the south at 37 mph when the storm center passed just west of there. It moved directly across the Coastal Plain to Norfolk, causing up to four inches of rain but little wind damage.

June 25, 1945

After weakening as it passed across Florida from the Gulf of Mexico, this hurricane regained strength when it reached the Atlantic, but weakened again as it struck the North Carolina coast very near to Hatteras about midnight on June 25. The maximum wind was 52 mph from the northwest at Hatteras, with gusts to 70 mph reported from Oak Island. Rains of near eight inches fell in the southern coastal areas; 8.24 inches fell in 18 hours at Wilmington. Wrightsville Beach and Carolina Beach were evacuated. Most coastal communication lines were down. No deaths or injuries were reported.

September 17, 1945

This severe hurricane, first noted in the Leeward Islands on September 11, passed from south to north through Florida, then northward through the central sections of South and North Carolina on the 17th. Although the force of the storm had diminished greatly before reaching North Carolina, it produced torrential rains of as much as 8 inches in the state. Having been preceded by a 3 to 5 day period of heavy rains, the hurricane's precipitation fell on ground already saturated and most of it ran off into the streams. Rivers in the eastern half of North Carolina, already in flood from the preceding rains, attained major flood proportions, with the Cape Fear reaching the highest levels of record. Moncure reached 39.0 feet on the 18th (flood stage 20 feet); Fayetteville 68.9 feet on the 21st (flood stage 35 feet); and Elizabethtown 43.2 feet on the 23rd (flood stage 20 feet).

Loss of life was reported as "small", but economic losses "very large". Large areas of crop lands were flooded; water reached the eaves of many dwellings in the lower Cape Fear Basin; small dams broke in Richmond County, resulting in flash floods of exceptional height.

July 6, 1946

A small tropical disturbance moved north-northeastward along the coast of South Carolina during July 5, and passed inland over North Carolina near Wilmington early on the 6th. Winds up to 66 mph were reported at Elizabeth City, but highest winds were only 50 to 60 mph at Carolina and Wrightsville Beaches. This storm caused heavy rains in the coastal areas, ranging up to 7.84 inches at Manteo. This storm gained greater strength after moving northeastward out of North Carolina.

No deaths or injuries resulted; damages were slight at Wilmington and the beach areas.

August 12 - 15, 1947

After striking southern Florida on August 11, this hurricane moved northeastward to a point well off the South Carolina coast, then took a sharp turn to the west striking the coast near Savannah, Georgia. Although the center remained well to the south of North Carolina throughout its entire life, as it headed toward Georgia wind driven seas caused water to pile up along coastal South Carolina and the southern portion of the North Carolina coast. Lowlands along the North Carolina coast were flooded, waters pushed up the mouth of the Cape Fear River surged into the streets of Wilmington; waterfront homes in Morehead City were evacuated. Rains of up to 7 inches fell in a 3-day period at Hatteras and along the southeastern slopes of the mountains in southwestern North Carolina.

No deaths or injuries resulted in North Carolina; damages apparently were light.

August 24, 1949

A hurricane which formed about 300 miles north of Puerto Rico on the 21st moved first toward the west-northwest, then curved northward, passing directly over Diamond Shoals Lightship, off Cape Hatteras, on the 24th, then turned northeastward and out to sea.

The wind reached 73 mph at Hatteras and rains of up to 4 inches fell in that area, but there were almost no effects a few miles inland. An estimated \$50,000 damage to property resulted, mostly in and near Buxton. Thousands of trees were broken in Buxton woods. Two deaths were attributed to the storm.

August 28, 1949

The remnant of a hurricane which did great damage in Florida the night of August 26 passed across North Carolina from Charlotte to Winston-Salem on the 28th. Winds in this State were generally of barely gale force, but several small tornadoes developed in the Eastern Piedmont section of North Carolina, destroying many farm buildings and a few homes. Rain-fall of amounts up to six inches fell in connection with the decaying hurricane, causing some of the heaviest river flooding in several years.

1950 and 1951

In each of these years tropical storms passed northward at some distance off Hatteras, having only slight effect on the North Carolina coast.

August 31, 1952 - ABLE

No hurricane had any serious wind effect on North Carolina in 1952. Hurricane Able entered the South Carolina coast on August 30 and passed through central North Carolina with greatly diminished force on the 31st, causing rains up to about 6 inches in the Piedmont and western Coastal Plain. This resulted in considerable flooding of streams and an estimated \$50,000 in damages, mostly to highway bridge approaches.

August 13, 1953 - BARBARA

Hurricane Barbara formed northeast of the Bahama Islands on August 11, increased in force and moved northward to a position east of Florida on the 12th and struck the coast of North Carolina between Morehead City and Ocracoke about 10:00 p.m. on the 13th. After sweeping northward along the Outer Banks to near the Virginia line, the storm took a northeasterly course out to sea. Highest reported winds were gusts to 90 mph at Hatteras and Nags Head. Torrential rains fell, ranging from 6 or more inches on the coast down to a mere sprinkle 100 miles inland.

Property damage was estimated at \$100,000, mostly to coastal dwellings of poorer construction. Crop damage was an estimated \$1,000,000, mostly to corn blown down in fields.

One death was attributed to the storm, a man having been swept from a pier at Wrightsville Beach and presumably drowned; there were two injuries.

August 30, 1954 - CAROL

After forming near the northeastern Bahama Islands on August 26, hurricane Carol drifted very slowly northward for several days. It then began an accelerating north-northeast movement and passed just to the east of Cape Hatteras about 9 or 10 p.m. on the 30th. The North Carolina coastal areas were thus on the weaker side (the west) of the storm; highest wind speeds on land were gusts to 55 mph at Wilmington, 65 mph at Cherry Point and 90 to 100 mph at Cape Hatteras.

The effect of hurricane Carol on the North Carolina coast was not severe and the property damage at any given locality was light. Over the length of the coast, however, damage totaled an estimated quarter of a million dollars. Crop damage resulted mostly from corn and soybeans being blown down in fields. Property damage consisted mostly of fishing piers and roofs and television antennas in the coastal areas. About 1000 feet of paved highway was undermined on the Outer Banks by high tides.

There was no loss of life in North Carolina, but great destruction and 60 deaths resulted in the New England states where Carol struck on the 31st.

September 10, 1954 - EDNA

Hurricane Edna followed a similar but slightly more eastward path than that of Carol. The center passed about 60 miles east of Cape Hatteras early in the night of September 10. Highest winds were around 75 mph in gusts on the Outer Banks.

The damage to North Carolina from Edna was minor but widespread in the coastal areas. Television aeriels, roofs and piers were damaged along most of the coastline; a section of the Outer Banks highway was washed out; the corn crop was damaged 2 to 3% over a large area. Total property damage was estimated at \$75,000, crop damage at \$40,000. There were no deaths due to Edna in North Carolina, but as was the case with Carol, New England suffered severely when this hurricane hit that section on the 11th.

October 15, 1954 - HAZEL

Hurricane Hazel, the most destructive storm in the history of North Carolina, left death and devastation in its wake from Haiti to southeastern Canada. Following are excerpts from the official report of the Raleigh Weather Bureau Office concerning this storm.

"The storm center entered the North Carolina coast at a point almost exactly coincident with the South Carolina line with a central pressure of somewhat lower than 28 inches of mercury at about 10 a.m. From there it moved northward in a slightly curved path that took the center east of Whiteville and Clinton, west of Goldsboro, Wilson and Nashville, and across the Virginia line in or near Warren County, N. C., at about 2:30 p.m., the lowest pressure having risen to about 28.50. The center was apparently quite large, since 'eye' characteristics were reported from points ten to fifteen miles on either side of the path just described.

"Wind-driven tides devastated the immediate ocean front from the South Carolina line to Cape Lookout. All traces of civilization on that portion of the immediate waterfront between the state line and Cape Fear were practically annihilated. Grass-covered dunes some 10 to 20 feet high along and behind which beach homes had been built in a continuous line five miles long simply disappeared, dunes, houses and all. The paved roadway along which the houses were built was partially washed away, partially buried beneath several feet of sand. The greater part of the material from which the houses had been built was washed from one to two hundred yards back into the edge of the low-lying woods which cover the leeward side of the islands. Some of this material is identifiable as having been parts of houses, but the greater portion of it is ground to unrecognizable splinters and bits of masonry. Of the 357 buildings which existed on Long Beach, 352 were totally destroyed and the other five damaged. Similar conditions prevail on Holden Beach, Ocean Isle, Robinson Beach and Colonial Beach. In most cases it is impossible to tell where the buildings stood. Where grassy dunes stood, there is now only flat, white, sandy beach.

"Northeastward up the coast from Cape Fear to Cape Lookout the degree of devastation is not as great, but ocean front property is damaged an average of perhaps fifty percent along the entire stretch. North of Cape Lookout, beach damage is relatively light. Tidewater rose into the lower lying portions of cities along the broadmouthed rivers emptying on the coast; considerable damage was done to residential and business property in Washington, and some lesser flooding occurred in New Bern and Elizabeth City. Inland, out of reach of the rising waters, a tremendous area of North Carolina received heavy damage from high winds. An estimated one-third of all buildings east of the 80th meridian received some damage. Roofs were the most widely hit, with damage ranging from one loose shingle or a bent TV aerial to the entire frame and cover lifted off. Radio towers, outdoor theaters and sign-boards were overturned, twisted, or otherwise damaged.

"It is impossible to evaluate the loss of timber and shade trees. In the city of Raleigh alone, an average of two or three trees fell per block. Remarkably few fell on houses, but those few did real destruction. A dozen other cities in the eastern two-thirds of the State fared similarly, while few old country estates with orderly arrangements of oaks or elms escaped the loss of one or more. In the forests the damage is variable, but its total is tremendous. In the worst places, hundreds of trees per mile can be counted simply in driving along the highway; most of these are uprooted and thrown flat to the ground, but many were blown down by a straight-line windstorm, while in others small-scale tornadic action is apparent. Most of the latter that we have actually seen is in the area around Goldsboro, where young pine forests are dotted with fifty-foot swaths where every tree is twisted off at ten to twenty feet above the ground.

"At least ten stations in North Carolina reported the highest 24-hour rainfall amounts of record in connection with 'Hazel'. These record amounts ranged from around six and a half

inches at Burlington, High Point and Lexington up to 9.72 inches at Carthage, located in the Sandhills section of the southern Piedmont. The U. S. Geological Survey reports that their special rain gage at Robbins, several miles north of Carthage, measured 11.25 inches. This gage is not a part of the Weather Bureau cooperative network. Rainfall in the eastern half of the storm was astonishingly light, several stations reporting less than an inch. There are few wind records available for comparison. Wilmington, which has moved to a new location within the past few years, reports a top gust of 98 mph, fastest mile 82mph, and maximum five minutes 61 mph, all from the southeast, at 10:42 a.m. The previous fastest mile at Wilmington is listed at 65 mph. At Raleigh-Durham wind speeds are indicated only by dial; this was watched closely during the height of the storm, and gusts to 90 mph were observed. Estimates based on observation of the dial give a highest one-minute speed of 73 mph and a maximum five-minute speed of 62 mph. All these maxima were from WNW, and occurred between 1:30 and 1:35 p.m. The previous fastest mile on record in Raleigh was 66 mph, and the maximum five minute speed 56 mph. Winds during Hazel were estimated as high as 120 mph in gusts by observers in Goldsboro, Kinston and Faison. No barometric low pressure records are known to have been broken.

"There are nineteen known dead in North Carolina because of the hurricane; most of them were at or near the beach, but two or three were inland, dying from electrocution, falls, or falling objects. An estimated 200 persons were injured. Property damage estimates are still on an unofficial basis, and vary. An Associated Press survey of the beaches indicates \$36 millions damage on the North Carolina beach area. The wide coverage of wind damage inland is born out by the fact that thirty North Carolina counties report damage to school buildings. We believe that the total inland crop and property damage in North Carolina is close to \$100 millions."

August 12, 1955 - CONNIE

Hurricane Connie moved northward onto the North Carolina coast very close to Cape Lookout about 8:30 a.m. on August 12. The storm center passed northward through the coastal counties, passing just east of Oriental, Belhaven, Plymouth and Elizabeth City and crossing the Virginia line near Norfolk about midnight.

For several days Connie had traveled a sluggish path which, combined with the large-scale wind pattern over the North Atlantic, piled up a wall of high water along the coast of North Carolina. The slow movement of the storm through the state aggravated the situation and thousands of acres of farm land were flooded, as well as low lying residential areas around the sounds. The prolonged pounding of high waves against the coast caused tremendous beach erosion estimated to have been worse than that caused by Hazel in 1954. Tides on the immediate coast from Southport to Nags Head were reported at about 7 feet above normal, while the water of the sounds and near the mouths of the rivers rose an estimated 5 to 8 feet above normal.

While the hurricane was still out at sea, a tornado struck at Penderlea on the evening of August 10, destroying 5 buildings and injuring one person. Highest winds directly associated with Connie when the storm reached North Carolina were barely of full hurricane force, the highest reliable report being northeast 72 miles per hour with gusts to 83 miles per hour at Wilmington.

This storm brought torrential rains, which ranged from around 12 inches near Morehead City down to 1 to 2 inches in the eastern Piedmont.

No deaths or injuries were directly attributable to this storm in North Carolina.

Hurricane Diane followed so closely after Connie that it was impossible to assess damage due to each storm. The official estimate of losses from the two hurricanes was 80 million dollars, including 60 millions in crops (and salt water damage to crop lands) and 20 millions in beach and other property damage.

August 17, 1955 - DIANE

Even before the damage from hurricane Connie could be properly estimated, hurricane Diane struck North Carolina.

Hurricane Diane entered the coast near Carolina Beach about 6:00 a.m. on August 17. The storm center then followed a nearly straight course northnorthwestward across Wilmington, passed west of Clinton and Raleigh, directly across Durham and thence to the Virginia line slightly west of Danville, leaving the state about 6:30 p.m.

The highest wind reported was northeast 74 miles per hour at Wilmington Airport. Structural damage due to wind alone was rather light, but crops previously windblown in Connie were further damaged as far west as near Raleigh.

Tides in connection with Diane were in general more severe than those with Connie, both on the ocean and in the sounds and rivers. Tides ranged from 5 to 9 feet above mean low water on the beaches and estimated 5 to 9 feet above normal in parts of the sounds and the rivers emptying into the sounds. Water was 3 feet above floor level in the business district of Belhaven, while water was "waist-deep" in parts of Washington and New Bern.

Beach erosion caused by Diane was severe. Thousands of acres of farmland were again flooded with salt water. One thousand people were evacuated from low lying sections of towns on the sounds and adjoining rivers.

Heavy rains fell near the path of the storm center, amounting generally to 4 to 8 inches during the period August 15 - 18.

No deaths or injuries were officially attributed to hurricane Diane in North Carolina.

Since Diane followed Connie so closely, it was impossible to assess damage due to the individual storms. For damage estimates on the two storms, see the report on Connie, above.

September 19, 1955 - IONE

The center of Hurricane Ione entered the North Carolina coast from the south near Salter Path, about 10 miles west of Morehead City, about 5:00 a.m. on September 19. Moving slowly and somewhat erratically northward, the center passed a little west of Cherry Point, Oriental and Belhaven, then curved to the northeast, passing to the southeast of Elizabeth City and leaving our coast near the Virginia line very early on the 20th.

When Ione entered North Carolina, its highest winds were a little over 100 miles per hour in gusts. The storm weakened steadily as it passed through the state; highest winds were near 70 miles per hour when it again passed out to sea. The highest sustained (one-minute) wind speed was northnortheast 75 miles per hour at Cherry Point, with gusts to 107 miles per hour.

Structural damage due to wind alone was rare, although many roof shingles were blown off and television antennas damaged, mostly in the eastern half of the Coastal Plain. The principal damage was due to water. Since the approach of hurricane Connie on August 10, North Carolina had been repeatedly drenched with heavy rains. More than 30 inches fell on the wettest portions of the state between the 10th and the approach of Ione; the additional 16 inches that fell on those same areas in connection with Ione brought 45-day rainfall totals up to figures without precedent in North Carolina weather history. In the 41-day period, August 11 through September 20, the cooperative weather substation at Hofmann Forest (6 miles southwest of Maysville) received a total of 48.90 inches of rain.

Approximately one-third of the unprecedented amount of rain fell in about 30 hours with hurricane Ione. At the same time, prolonged easterly winds drove tide water onto the beaches and into the sounds and their estuaries to a height of 3 to 10 feet above normal. The result was inundation of the greatest area of eastern North Carolina even known to have been flooded. At New Bern, the depth of water was the greatest of record, being about 10½ feet above mean low water, with 40 city blocks flooded. Thousands of acres of farmland were flooded; thousands of homes were invaded by water to depths ranging up to 4 feet; several hundred homes were washed away.

A total of 7 deaths in North Carolina were attributed to Ione, 5 from drowning and 2 from automobile accidents brought on by flood water. Injuries from the storm were negligible.

Estimates of property damage from hurricane Ione were:

| | |
|----------------------|--------------|
| Agricultural losses | \$46,000,000 |
| Public Utilities | 1,000,000 |
| Highways and Bridges | 1,000,000 |
| Beach Property | 10,000,000 |
| Other Property | 30,000,000 |
| TOTAL | \$88,000,000 |

September 26 - 27, 1956 - FLOSSY

Originating near Yucatan and moving northward across the Gulf of Mexico, Flossy was of considerably less than hurricane force when she reached North Carolina on September 26, having crossed northwest Florida, Georgia and South Carolina on the way from the Gulf. Peak wind gusts in central and eastern North Carolina were 45 to 60 miles per hour from northeasterly, tapering off westward to 20 miles per hour in the mountains. Rain was the most important feature of the storm in North Carolina, and this fell heaviest in the western half of the State. Coming after two months of dry weather, the rain was largely beneficial. Tides did not exceed about five feet, and no damage was reported from minor flooding which occurred on the Outer Banks. Crops in fields in eastern North Carolina were blown about, with some loss in quality and possibly some reduction in yield.

September 27, 1958 - HELENE

Helene was one of the fiercest hurricanes of recent history as it passed just off the North Carolina coast from Wilmington to Hatteras; fortunately, the eye of the storm remained offshore at all times. Even so, the highest winds of record were recorded at Wilmington, with peak gust at 135 miles per hour and fastest mile 85 miles per hour. There was some beach erosion due to seas and tides, but this was minimized by the passage of the storm at the time of astronomical low tide. Highest tides on the ocean beaches were generally estimated at three to five feet above normal. Tides were higher on the southern edge of the Pamlico Sound, where a sudden rise following the wind shift as the storm center passed brought the tides to 7 or 8 feet above normal. Structural and crop damage, due almost entirely to the high winds, was estimated at \$11 millions. A few houses on the coast were completely destroyed, but most structural damage was to roofs.

September 30, 1959 - GRACIE

Hurricane Gracie entered the South Carolina coast south of Charleston, crossed the North Carolina line west of Charlotte just after midnight on the morning of September 30, and moved rapidly northward across the State in a few hours. Tides reached two to five feet above normal on the southern coast of North Carolina on the 29th. Storm rainfall was light on the coast, but ranged upward to eight or nine inches at a few places in the mountains.

July 29, 1960 - BRENDA

The center of tropical storm Brenda moved into North Carolina at about 5 p.m. July 29 at the junction of the North Carolina-South Carolina line with the Atlantic Coast, moving north-eastward out of the State near Norfolk, about midnight. Heaviest rain was 7.50 inches at Wilson, N. C. There were gusts to 62 mph at New Topsail Beach. Little damage.

September 11, 1960 - DONNA

One of the most destructive storms in United States history, Hurricane Donna affected the entire length of the Atlantic coast from Florida to Maine. In North Carolina the center passed inland over the coast between Wilmington and Morehead City. Tides of 6 to 8 feet above normal, combined with high winds, caused severe damage at many points. Maximum winds were of hurricane force, with Wilmington reporting a peak gust of 97 mph. The storm center moved northward along a path slightly east of a line Wilmington to Norfolk, during the night of the 11th. Wind gusts were in excess of 100 mph and tides four to eight feet above normal. Coastal communities suffered heavy structural damage from Wilmington to Nags Head, with considerable beach erosion. The corn crop was badly blown from the coast to fifty miles inland; some trees were down and there was scattered damage to houses for about the same distance. One person was electrocuted, three drowned, two crushed by falling trees

and two killed in a traffic accident in which weather was a factor; an estimated 100 persons were injured sufficiently to require medical attention. Two tornadoes were observed in connection with Donna in North Carolina, one in Bladen County, one in Sampson. Estimated damages were well up in the millions.

September 20, 1961 - ESTHER

The eye of Hurricane Esther remained well off the North Carolina coast throughout its northward course, being more than 100 miles from the nearest point on the Outer Banks at its closest approach on September 20. At this distance, the western side of the storm was rather dry, and rainfall in North Carolina was light. Winds were in no case destructive over any North Carolina land area, and no deaths, injuries or serious property damage have been attributed to the storm.

Tides on the North Carolina coast at the height of the storm ranged one to five feet above normal, mostly around three feet. Some flooding of the Outer Banks highway and some minor beach erosion resulted from these tides and accompanying seas. Lowest sea level pressure reported at a land station was 29.48 inches at Cape Hatteras at 4:00 a.m. September 20; highest winds at Hatteras were 36 miles per hour from the north at 4:56 a.m. September 20. Sustained winds of 36 miles per hour were also reported from Nags Head, with gusts to 58 mph. These were from the northwest at 12:10 p.m. on the 20th.

August 28, 1962 - ALMA

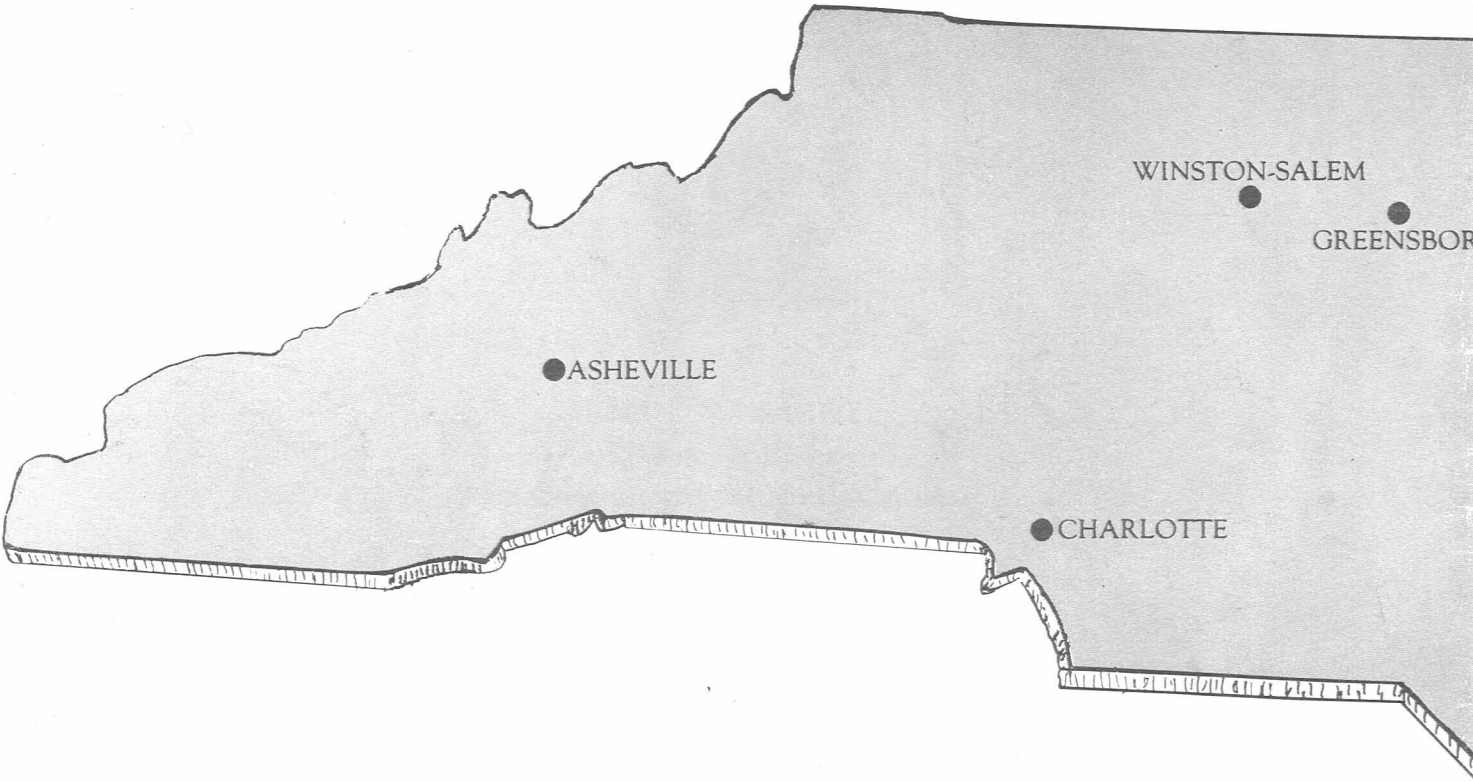
Alma, a tropical storm of considerably less than hurricane strength, moved in a typical northeastward path across northeastern North Carolina, its center passing from near Atlantic Beach to Nags Head in about three hours. Highest wind gusts recorded were from northnortheast at 53 miles per hour at Nags Head. No deaths or injuries were reported, and only minor property damage.

October 18 - 19, 1962 - ELLA

Although the center of Hurricane Ella never came within 200 miles of the North Carolina coast, near gale winds and pounding seas affected the coast for two days. The large size of the storm, the fact that it stood nearly stationary for more than two days, and the presence of high pressure over inland areas to the north caused persistent northeasterly winds occasionally up to gale force, above normal tides, and rough seas. Damage was almost entirely confined to beach erosion.

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