Chapter 2

Historical Discussion of Florida Hurricanes

While Florida is often considered synonymous with sunshine and is frequently called the Sunshine State, mention of the state also brings to mind summer or fall tropical storms and hurricanes. These hurricanes move in a west to northwest direction through the Caribbean and Atlantic toward Florida's coast. From the year 1493 to 1870, the Caribbean area and Florida experienced nearly 400 hurricanes as reported by Professor E.B. Carrirot in 1900 in his classic study *West Indian Hurricanes*. Many Spanish galleons loaded with gold, silver and other treasure must have met a swift and untimely demise at the hand of a hurricane or tropical storm. As a result, today treasure hunting is an active and frequently profitable business in Florida.

In recent times, from 1871-1993, nearly 1000 tropical cyclones of tropical storm or hurricane intensity have occurred in the North Atlantic, Caribbean Sea, and Gulf of Mexico. Of this total, about 180 have reached Florida, with 75 of these known to have hurricane force winds (wind speed $\geq$ 74 mph) and 105 with tropical storm force winds (39 mph - 73 mph).

During the early 15-year period from 1871 to 1885, there were 30 tropical cyclones of unknown intensity (shown by the solid line on Plates 1 and 2). Historical data indicate that some of these were hurricanes. Because these hurricanes have not been officially documented, they are listed as total combined storms for the purposes of overall count of Florida hurricanes (Table 2).

In the last 122-year period, there were as many as 21 (in 1933) hurricanes and tropical storms during an individual year, and there were 28 years during which no tropical cyclones made landfall or their center passed immediately offshore of the Florida coastline (Fernandina Beach to Key West to Pensacola).

While early records are fragmentary and incomplete, the following is a discussion of the more formidable Florida hurricanes. For convenience and to provide readable hurricane tracks, the discussion examines hurricanes occurring within 30-year periods, divided into 10-year sections. When possible the Saffir/Simpson Scale (Table 1) describes the hurricane category for both past
hurricanes (before the scale was developed), and recent hurricanes.

**The Early Years, 1871-1900**

Starting in 1871, only a few years after the Civil War, tropical cyclone data became part of the historical inventory of the U.S. Signal Service and later the U.S. Department of Agriculture Weather Bureau which collected, archived and published these data. Relying on early works of authors, such as *West Indian Hurricanes* (Garriott, 1900), annual tropical cyclone tracks for the years 1871-1990 were later published in the NOAA Historical Climatology Series 6-2, *Tropical Cyclones of the North Atlantic, 1871-1986*. The yearly tracks were extracted from that NOAA publication and are presented here by 10-year periods.

Looking at the first 10 years of tropical cyclone tracks (Plate 1), the most striking feature is that only four tropical cyclones entered Florida's coast from the east, southeast, Atlantic, or Caribbean. In contrast, 17 tropical cyclones entered the west coast and panhandle region from the southwest, the northwestern Caribbean and Gulf of Mexico.

The periods from 1881-1890 (Plate 2) and 1891-1900 (Plate 3) show essentially the same pattern except that the concentration of northeasterly tracks shifts further to the south.

We shall see from an examination of the other plates that this pattern changed after the turn of the century. Principally all of the storms which entered the West Coast of Florida came from the northwestern Caribbean or the southern portion of the Gulf of Mexico. No real explanation can be found for this high frequency.

There are some contradictory events reported during these early years which deserve discussing. They pertain to the hurricanes of 1876, 1880, and 1885. In an interview published June 4, 1978, in the *Florida Today* newspaper, the then National Hurricane Center Director Dr. Neil Frank said:

In [August] 1871 the center of a hurricane slammed into Central

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1 Plates 1-3.
Florida near Cocoa Beach.... In [September/October] 1873 a major 
Hurricane exited Florida near Melbourne. ....In [August/September] 
1880 another major hurricane battered the coast south of Cocoa Beach.

In reference to the 1880 hurricane that "battered the coast south 
of Cocoa Beach", this hurricane was classified in Richard W. Gray’s 
*Florida Hurricanes* (Revised Edition) as a Great Hurricane. 
According to his notes, it affected the Palm Beach—Lake Okeechobee 
section of Florida; nothing is said about Cocoa Beach, but Dunn and 
Miller in their book *Atlantic Hurricanes* published in 1964 said that 
the hurricane affected Vero Beach. However, the 1880 track as 
extracted from NOAA’s (1987) Historical Climatology Series 6-2, 
shows a hurricane entering the East Coast near Cocoa Beach. The 
area affected by this hurricane could not have been the Palm Beach— 
Lake Okeechobee section if the hurricane entered the Florida east 
coast from the east-south-east near Cocoa Beach. If, on the other 
hand, R. Gray is correct in his finding, then the 1880 hurricane track 
reported by NOAA has to be a considerable distance south of Cocoa 
Beach; this contention is amply supported by the hurricane track of 
August 26-31, 1880, reported by Garrett in 1900 in his book *West 
Indian Hurricanes* and by the August 1880 track published by Tanne-
hill in 1938 in his book.

In reference to the August 1885 hurricane, the track published by 
NOAA (1987) along the east coast may also be in error in that the 
published track is at least 20 miles offshore. According to B. Rabac’s (1986) book *The City of Cocoa Beach*:

The hurricane that hit in 1885 discouraged further settlement. 
The storm pushed the ocean waves over the barrier island (elevation 
10 feet), flooding out the homesteaders. The beach near the Canava-
eral Light House was severely eroded, prompting President 
Cleveland and the Congress to allot money for an effort to move the 
tower one mile west.

The fact that President Cleveland was in office from 1885-1888 
provides further support that this was the year of occurrence. It is 
certainly possible that the 1885 northerly tropical cyclone track 
shown over the ocean along the Florida East Coast on the NOAA 
(1987) track chart was slightly displaced (from the correct position), 
and that the eye of the hurricane actually passed Cocoa Beach. In
fact the report by Sugg, Pardue and Carrodus in 1971 shows the
1885 track passed the central East Coast.

The final controversy concerns the hurricane of 1876. Historical
information from G.W. Holmes in a letter to a friend in 1876 indi-
cates that the eye of a terrible hurricane passed over Eau Gallie (now
part of Melbourne) on the Indian River on a northerly course during
the early morning (no date or month was given) of 1876. Dr.
Holmes is quoted as follows:

The wind came from the east at over a hundred miles an hour
until about 3:30 AM. The vortex [the eye] came on us for about
four hours, during which not a leaf stirred. We began to look for
our boats when all at once with a tremendous roar the wind came
from the west, with equal violence in the early part of the night.

The quotation implies that the hurricane traveled north along the
Indian River or beaches. NOAA (1987) shows a northerly hurricane
track for the year 1876, about 30-40 miles east of the coast passing
Cape Canaveral during September 12-19, 1876. The 1876 hurricane
could easily have been off by 30 miles which brings the eye over
Melbourne, and makes the effect which Mr. Holmes quotes very
valid. In October 12-22, another hurricane exited near West Palm
Beach from the west. However, until hurricane tracks for 1876,
1880 and 1885 are officially modified by NOAA, they have to be ac-
cepted as given from NOAA's track book and shown in Plate 1.

Beginning with the year 1886, tropical storm and hurricane
tracks were published separately. In this report, they are presented
by dashed and solid lines with the year circled at the beginning of
each track (Plates 2 and 3). A solid line prior to 1886 indicates
either a tropical storm or hurricane. From 1886 on, a solid line
crossing the coast indicates a hurricane, and a dashed line indicates a
tropical storm. Beginning with the year 1899, tracks became more
detailed and categories were used to describe the relative magnitude
of hurricanes.

We conclude this section with quotations about two hurricanes
which entered Florida in 1898 and 1899.
Hurricane of October 2-3, 1898, Fernandina Beach

The damage to Fernandina and vicinity was very great. It is conservatively estimated at $500,000. Nothing escaped damage and a great deal was absolutely destroyed. Giant oaks were snapped off at the base, houses blown down, and vessels swept inland by an irresistible in-rush of water. The wind signal display man Major W.B.C. Duryee, who has resided in Fernandina more than thirty years, states that no previous storm was so severe (U.S. Weather Bureau, October 1898).

In 1898, Professor F.H. Bigelow provided this rather elegant description of a hurricane, published in the Yearbook of the Department of Agriculture for 1898.

The physical features of hurricanes are well understood. The approach of a hurricane is usually indicated by a long swell on the ocean, propagated to great distances and forewarning the observer by two or three days. A faint rise in the barometer occurred before the gradual fall, which becomes very pronounced at the center; fine wisps of cirrus clouds are seen, which surround the center to a distance of 200 miles: the air is calm and sultry, but this is gradually supplanted by a gentle breeze, and later the wind increases to a gale, the clouds become matted, the sea rough, rain falls, and the winds are gusty and dangerous as the vortex core comes on. Here is the indescribable tempest, dealing destruction, impressing the imagination with its wild exhibition of the forces of nature, the flashes of lightning, the torrents of rain, the cooler air, all the elements in an uproar, which indicate the close approach of the center. In the midst of this turmoil there is a sudden pause, the winds almost cease, the sky clears, the waves, however, rage in the great turbulence. This is the eye of the storm, the core of the vortex, and it is, perhaps, 20 miles in diameter, or one-thirtieth of the whole hurricane. The respite is brief and is soon followed by the abrupt renewal of the violent wind and rain, but now coming from the opposite direction, and the storm passes off with the features following each other in the reverse order. There is probably no feature of nature more interesting to study than a hurricane, though feelings of the observer may sometimes be diverted by thoughts of personal safety!
Hurricane of August 1, 1899, Carrabelle

After reaching the coast and maintaining very high velocities from the northeast backing to the North and West for 10 hours, the storm gradually abated leaving the town of Carrabelle a wreck.

The results to shipping were disastrous, 14 Barks (transport sail boats) and 40 vessels under 20 tons having been wrecked. The loss of life was amazingly small, the total being only six. The property loss, including vessels and cargo will amount to $500,000 (U.S. Weather Bureau, 1899).

The Second Thirty Years, 1901-1930

This thirty-year period had less tropical storm and hurricane activity than the preceding (1871-1900) period or the following thirty-year period (1931-1960). From 1901 to 1930, there was a combined total of 39 tropical storms and hurricanes as compared to 63 during the previous 30 years (1871-1900) and 51 for the following thirty years (1931-1960). Storms during this period came primarily from the southwest.

U.S. Weather Bureau records (1901-1930) show that there were 22 hurricanes during this period; specific hurricanes are listed in Table 4. With the availability of more factual data published in the Climatological Data bulletin since 1897, information now becomes more accurate and detailed, consisting of actual reports for those years.

Looking at the first 10-year segment (1901-1910), the Great Hurricane of October 1910 did a loop north of the western tip of Cuba (Gray, 1949), passed through Key West and entered the coast near Ft Myers, where a low pressure of 28.20 inches of mercury was reported. This was probably one of the most destructive hurricanes to hit Florida.

At Key West, there was a 15 foot storm tide and Sand Key reported 125 mile per hour winds. The U.S. Army and Marine Hospital Docks were swept away at Key West in this hurricane, but little other narrative information is available on this storm except that

\(^2\) Plates 4-6.
it made landfall near Cape Romano.

Actually, Key West, which is touted in stories and movies as a typical hurricane setting, is not all that hurricane-prone. The last encounter was 1987's Hurricane Floyd, about noon on the 12th of October. Highest winds were about 80 miles per hour and pressure was about 29.32 inches. Floyd's eye was reported at Key West, Marathon and Islamorada and was a weak category one storm. Before Floyd, it had been 21 years, all the way back to Hurricane Inez, since a hurricane had struck the Keys. In 1965, Hurricane Betsy sideswiped the "Conch Capital" as did Isbell, in 1964. These storms followed a 14-year lull during which the Keys were untouched by hurricanes. In 1950, Easy struck the Keys bringing to an end the area's 28 years of calm going back to 1919.

From 1871 to 1987, Key West was hit by 14 hurricanes or about 10% of the storms discussed here.

Other hurricanes during the 1901-1910 period were the hurricane of September 1906 which practically destroyed Pensacola and the hurricane of 1909. These two storms have good documentation which is worth further discussion.

**Hurricane of September 19-29, 1906, Mobile-Pensacola Area**

According to the 1906 U.S. Weather Bureau report this was a major storm.

This was the most terrific storm in the history of Pensacola, or since the Village of Pensacola on Santa Rosa Island was swept away 170 years ago .... During the height of the storm, the water rose 8 1/2 feet above normal high water mark, being the highest known. The entire water front property was inundated; train service in and out of the city was completely paralysed ... Muskogee Wharf, belonging to the L&N Railroad Co., was broken in two in the middle, and the tracks on either side of the Main Creek were washed away [including thirty-eight coal cars] ... The greatest havoc was wrought along east Main Street, the south side of which has been completely washed away. The total damage from this hurricane will be three to four million dollars (equivalent to $80-100 million in 1990).
This hurricane made actual landfall in Alabama but affected Pensacola; because of this storm 164 people lost their lives.

Other storm notes by the U.S. Weather Bureau for the hurricane of September 1906 are from St. Andrews, Washington County.

On the 26th, a tidal wave swept this place; the water was higher than any time during the past 19 years, and every wharf in St. Andrews was completely destroyed.

A report from Apalachicola, Franklin County:

On the 27th, the wind blew a gale from the southeast, and on the 28th, it increased to a hurricane velocity. The amount of rainfall was 10.12 inches.

And from Galt, Santa Rosa County:

The storm of the 26-28th was the worst ever known in this section; on the 26th, the tide rose 14 feet. Two lives were lost here.

**Hurricane of October 6-13, 1909, Sand Key**

Tannehill (1938) provides the following discussion of the October 1909 hurricane that struck Sand Key and resulted in 15 deaths:

The hurricane of October 1909, was one of exceptional intensity. It recurved over the extreme southern tip of Florida, at which time it had attained tremendous force.

The Weather Bureau had a station at Sand Key, Florida which was abandoned at 8:30 a.m., and supplies and instruments were carried to the lighthouse. The wind was then 75 miles an hour; shortly thereafter, the anemometer cups were carried away and the wind was estimated at 100 miles an hour. All the trees were blown down and at 9:35 a.m. heavy seas swept over the island. At 10:30 a.m., the Weather Bureau building went over and was swept out to sea. The lowest barometer reading was 28.36 inches. At Key West the barometer fell to 28.50 inches and the extreme wind velocity was 94 miles. Property damage there amounted to $1,000,000 [equivalent to $20 million in 1990]. About four
hundred buildings collapsed.

During the second 10-year segment (1911-1920), there were four hurricanes including one Great hurricane which deserves mentioning. Three of these, all with winds over 100 miles per hour, affected the Pensacola area again like the hurricane of September 1906.

The Hurricane of July 1916, Mobile-Pensacola Area

The U.S. Weather Bureau (July 1916) reported that:

. . . . at 1 PM, a 92 mile per hour gale occurred with severe puffs from the southeast. The duration of the gale was extraordinary, and the total damage to the crops and the property will easily total $1,000,000 [equivalent to $20 million in 1990] for the section.

This hurricane made landfall in Mississippi where four lives were lost.

The Hurricane of October 1916, Pensacola

The barometric pressure in this storm was 28.76 inches at Pensacola.

The wind instrument tower at the Weather Bureau Office blew down at 10:14 AM, after registering an extreme rate of 120 miles per hour at 10:13 AM. Oak trees that withstood the July storm were uprooted; about 200 trees throughout the city were blown down (U.S. Weather Bureau, October 1916).

The Hurricane of September 1917, Pensacola-Valparaiso Area

This was a very severe storm, doing much damage on the coast and to crops. The lowest barometer reading, 28.51 inches, was a record for the Pensacola Station. The highest wind velocity during the storm was 103 miles an hour with an extreme rate of 125 miles
an hour from the southeast (U.S. Weather Bureau, September 1917).

The Great Hurricane of September, 1919, Key West

The following citation for the Great Hurricane of September 1919 was taken from NOAA (1987).

The storm that passed over Key West on September 9 and 10 was, without question, the most violent of any recorded at this station. Property loss is estimated at 2 million (equivalent to 40 million dollars in 1990). In the terrific gusts that prevailed during the height of the storm, staunch brick structures had walls blown out, and large vessels which had been firmly secured, were torn from their moorings and blown on the banks (U.S. Weather Bureau, September 1919).

Lowest barometric pressure was 27.51 inches of mercury at Dry Tortugas with 300 lives lost in Key West where winds were 110 miles per hour. According to a recent NOAA report by Hebert, Jarrell, and Mayfield (1992) this storm ranked third among the most intense hurricanes to strike the United States this century until hurricane Andrew took over that ranking in August of 1992.

During the last ten years of the period from 1901-1930, there were six interesting hurricanes, including two Great Hurricanes which could be considered equivalent to category 4 hurricanes, according to the Saffir-Simpson Scale; some descriptions of these storms are briefly either quoted or described here.

The Hurricane of October 20, 1921, Tarpon Springs

Great damage resulted at Tampa and adjacent sections from the combined effects of high winds and storm tides. The tide at Tampa was 10.5 feet, the highest since 1848. Eggmond and Sanibel Island were practically covered by water (U.S. Weather Bureau, October 1921).

Barometric pressure was 28.17 inches at Tarpon Springs and
winds were more than 100 miles per hour.

Only one hurricane and one tropical storm were recorded for Florida in 1925. The storm that came ashore near Tampa on November 30 was significant from a statistical standpoint—it was the latest any storm had hit the U.S. during hurricane season.

The Hurricane of July 26-28, 1926 Indian River

The center was near Palm Beach on the morning of the 27th, then north-northwestward. The high winds and seas sweeping before them boats, docks, boat houses and other marine property on the ocean front as well as that on the Indian River. Trees were uprooted, including citrus trees; houses were unroofed or otherwise damaged. The observer at Merritt Island remarks that there was a tremendous wave (this on the Indian River) and with the high wind all boats, docks, and other property from the river front were swept ashore ... (U.S. Weather Bureau, July 1926).

The Great Miami Hurricane of September 11-27, 1926\(^3\)

From the viewpoint of property loss, low barometric pressure, and maximum wind velocities at Miami, the hurricane of September, 1926, stands unchallenged in the meteorological records of the Weather Bureau, save only in respect to the loss of life at Galveston during the hurricane of 1900. The storm waters of the Atlantic united with the waters of Biscayne Bay and swept westward into the City of Miami......This was the most severe storm that ever visited this city. The extreme velocity was registered at 7:26 AM. The average velocity for the 20th was 76.2 miles an hour. Never before have hurricane winds been recorded for so long a time and never has the wind maintained a velocity of 100 miles for more than an hour (U.S. Weather Bureau, September 1926).

Winds and barometric pressure of this storm were 138 miles per hour and 27.61 inches of mercury, respectively.

The following excerpts are from copies of letters kindly donated

\(^3\) See Figures 1-3.
The weather bureau broadcasted that a hurricane of great intensity was headed for the east coast, but that around Jupiter would be the center of the storm, but Miami got it.

About midnight, the wind was blowing a gale and the electric lights went out; everything in darkness.

When we got candles lighted, [we] found the water pouring through the ceilings on the rear half of the house so we knew the roofing was off.

With daylight Saturday came a lull in the wind for about 45 minutes. A good many [people] didn’t know it was the center of the storm and so were fooled. Mrs. Moran (a friend at who’s house they were staying) says the worst is yet to come but it will come from another direction. Sure enough the puffs soon began coming, but from the south east. Before that it was from the north east.

We all huddled in the dining room and kitchen until it was over, expecting every moment to feel and see the house going to pieces, at least, the front caving in as it rocked and swayed as the gusts struck.

We nailed the doors, watched as the screens and awnings go. Said we had done all we could do and left the rest with God.

The fury of the storm was terrible. It made such a peculiar muffled roaring sound in the air above. There are about 18,000 homes, either completely demolished or roofs torn off. About 5,000 injured and a good many more dead than the papers give, I believe. Probably a good many from the boats will never be found.

It’s some mess to have all ones bedding blankets, clothing and bureau contents soaked at the same time.

The Hurricane of August 7-8, 1928, Indian River

Damage to property was heaviest from South Brevard to St. Lucie Counties... substantial houses were unroofed and frail ones were razed. Highways were flooded and badly washed. Many
bridges were undermined requiring replacement. Many citrus trees were uprooted, the loss of fruit estimated at 1,000,000 boxes. Large oaks, sentinels of a century, were uprooted (U.S. Weather Bureau, 1928).

The Deadly Great Lake Okeechobee Hurricane of September 6-20, 1928

This category 4 storm tracked across Lake Okeechobee's northern shore, causing the shallow waters to reach heights of more than 15 feet. This surge was forced southward, causing terrible flooding in the lowlands at the lake's south end. This area was farmed primarily by migrant workers. Thousands of migrant farmers died as water rushed over the area. After the storm, the Red Cross counted 1,836 dead, but still more bodies and skeletons were discovered in later years. The barometric pressure was measured at 27.43 inches. To prevent future similar disasters, dikes were built around the lake by the U.S. Army Corps of Engineers. The 1928 storm caused $25 million (equivalent to $300 million in 1990 dollars) in damage.

From the Hebert et al. (1992) report this hurricane ranked second among the deadliest hurricanes to strike the U.S., and was ranked fourth among the most intense hurricanes to strike the U.S. But this storm falls to fifth place, as far as intensity, after Hurricane Andrew, which struck south Florida in August 1992 with a low barometric pressure of 27.23 inches.

The Hurricane of September 28, 1929, Key Largo

Tannchill (1938) provides the following account of this hurricane striking the Keys.

The center passed over Key Largo on the 28th, barometer about 28 inches and wind estimated at 150 miles an hour. There was a ten-minute lull as the center passed. At Long Key the barometer was 28.18 inches. At the Everglades, the wind was esti-

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4 See Figures 4-5.
mated at 100 miles an hour, barometer 28.95 inches. The storm reached Panama City on the 30th, barometer 28.80 inches.

Although there was enormous damage at Nassau in the Bahamas and many lives were lost there, its course in Florida was such that damage probably did not exceed $500,000 ($6 million in 1990 dollars) and only three lives were lost. The population had been thoroughly warned by the Weather Bureau and there had been ample time for all possible precautions.

The Third Thirty Years, 1931-1960\(^5\)

This thirty-year period had more storm activity than the previous thirty-year period (i.e., 51 total storms compared to 39). There were 21 hurricanes, almost the same as reported for the previous period. However, tropical storms numbered 30 as compared to 17 for the previous thirty years, which accounts for the high number of total storms.

The temporal distribution of hurricanes from 1931-1960 is interesting. While there were few hurricanes from 1931-40 (six) and 1951-1960 (three), there were 12 hurricanes for the 10-year period 1941-1950 alone. This made the 1941-1950 segment the most destructive and costliest period to that date in terms of equivalent dollar value since records were kept for the state. Yet ten years later, in 1960, one single hurricane, Donna, a Category 4, was even more costly and destructive than all the storms occurring in the total 10 year period from 1941-1950 (Hebert et al., 1992).

Looking at the first 10 years (1931-1940), out of a total of 6 hurricanes, there were two Category 3 storms and one Category 5 hurricane in 1935 which was one of the only two Category 5 hurricanes to ever hit the U.S. coast with that intensity - the other was Hurricane Camille which struck Mississippi in 1969. Hurricane Allen, which struck Texas in 1980, reached Category 5 intensity three times during its path but weakened to Category 3 at landfall (Hebert et al., 1992).

\(^5\) See Plates 7-9.
The Major Hurricane of September 1933, Jupiter

In July and September 1933, two hurricanes entered the east coast of Florida within a short distance of each other. The second of these two, which occurred on Labor Day, deserves review.

There was much property damage on the east coast from Vero Beach to Palm Beach; a few houses were totally demolished, quite a number blown off their blocks. More than the equivalent of 4 million boxes of citrus were blown from the trees statewide. The property loss in Indian River, St. Lucie, and Palm Beach Counties probably was about 2 million dollars ($25 million in 1990) (U.S. Weather Bureau, September 1933).

In addition to the above report, an elderly citizen from Ft. Pierce recalls that the 1933 storm was the most devastating in the history of Ft. Pierce (Yanaros, 1986).

In 1935, two hurricanes visited southern Florida. The first was the Great Labor Day Hurricane of September 1935 and the other was the October 30th through November 8th, storm called the Yankee Hurricane because it came in from a northeasterly course and struck the extreme south Florida coast and the west coast.

The Great Labor Day Hurricane was the most violent in the history of Florida and the United States. It was the only Category 5 storm ever to strike Florida; its central barometric pressure of 26.35 inches of mercury was the lowest ever recorded at that time in the western hemisphere. (As of 1988, Hurricane Gilbert, which did not affect Florida, has the record 26.22 inches of mercury for the lowest barometric pressure in the western hemisphere).

The following excerpts from the 1935 storm are quoted from Mr. Gray’s 1949 paper entitled Florida Hurricanes.

No anemometer reading of the wind was obtained, but the gradient formula gives 200-250 miles per hour and the engineer’s estimate by stress formula is in substantial agreement ... the path of destruction was less than 40 miles in width. More than 400 people were killed, most by drowning. The tracks of the Flagler Railroad were washed from the Long Key viaduct at an elevation of 30 feet above mean low water. A survey by the U.S. Engineers some time after the storm indicated that the tide level never reached the rails.
there, but the hurricane surge superimposed on the tide probably assisted in carrying the tracks away.

(Maximum storm surge with Hurricane Camille was 24.2 feet).

In 1938 Tannehill described a tragic event of the storm.

A rescue train that was sent to remove World War I veterans and residents from the Florida Keys, on September 2, 1935, was swept from the tracks by the hurricane and the storm wave. 6

The following 10-Year period, 1941-1950, was the most devastating in Florida's history since records were kept. Out of 12 hurricanes, 11 of these took place between 1944 and 1950. In this relatively short period there was one category 4 in 1947, and six category 3 hurricanes, one each in 1944, 1945, 1948, 1949, and two in 1950; a Category 1 storm struck Ft. Myers on the west coast in 1946. All are discussed here.

The following is a quotation describing the 1944 storm, taken from U.S. Weather Bureau in their report of October 1944.

Dangerous winds extended fully 200 miles to the right or east of the center, about 100 miles to the left or west, thus affecting the entire peninsula of Florida. [Even at Dry Tortugas, barometric pressure was 28.02 inches of mercury.] Winds of hurricane force velocity surrounded the central core, with gusts up to 100 mph at Tampa and Orlando. Tides were high from Sarasota southward on the Gulf and from Melbourne northward on the Atlantic, Naples, and Jacksonville Beach both reported 12 foot tides. Citrus loss was over 21 million boxes (average harvest was 80 million). Throughout the state there was damage to telephone, telegraph and power lines, trees, roofs, chimneys, signs, and radio towers. Of the interior cities, Orlando seems to have suffered the most damage, being estimated at over one million dollars.

The next hurricane of importance entered the coast in September 1945 at Homestead, curving northward right up through the center of

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6 See Figures 6 and 7.
Florida. During the course of the storm, it decreased in windspeed, but maintained itself as one with minimal hurricane force. It also remained over land to exit near Jacksonville Beach. The tragic event with this storm was the destruction at Richmond, Florida, of the three Navy blimp hangars which were used as evacuation shelters for 25 Navy blimps, 183 military planes, 153 civilian planes and 150 automobiles. The three great hangars were torn to pieces at the height of the storm, and then caught fire and burned with all their contents; the total loss was estimated at 35 million dollars (U.S. Weather Bureau, September 1945).

Then came the Category 4 hurricane of September 17, 1947, clocking the highest recorded windspeed, except for Hurricane Andrew in 1992, in Florida’s history with a 1-minute maximum windspeed of 155 miles per hour, recorded from a reliable instrument at the Hillsboro (Pompano Beach) light station. The following describes this exceptionally strong hurricane (U.S. Weather Bureau, September 1947).

Hurricane force winds were experienced along the Florida East Coast from about Cape Canaveral to Carysfort Reef Light (south of Miami), a distance of about 240 miles, while winds of 100 miles per hour, or over, were felt from the northern portion of Miami to well north of Palm Beach, or about 70 miles. This classifies this hurricane as one of the great storms of recent years.

This September 1947 storm had a barometric pressure of 27.97 inches of mercury at Hillsboro, with tides at Clewiston and Moore Haven of 21.6 feet and 20.9 feet, respectively. This storm was nearly as bad as the 1928 hurricane at the lake. Fifty-one people died.

During October 9-16, a hurricane came across western Cuba into southwest Florida, northeast into the Atlantic around Palm Beach. It was a Category 1 and was seeded for the first time. It split in two in the Atlantic and the worst part hit Savannah, Georgia.

Two hurricanes occurred in 1948. The first one ran from 18 September to 25 September and was classified as a Category 3. The system started just west of Jamaica and moved west to northwest then north over western Cuba into the Florida Straits. It struck Florida near Everglades City in the 10,000 islands, then moved northeast through Florida to emerge into the Atlantic near Jupiter. A tornado