

Eight storms were identified as having occurred in 1885. Tracks for these storms are presented in Fig. 2.

Storm 1, 1885 (Aug. 7-15).

The following information was found in relation to this storm:

- 1) The disturbance developed prior to Aug. 8 between lat. 25 N. and 30 N., long. 60W. and 65 W. (Monthly Weather Review, Aug. 1885). Author's note: It was first detected near 25 degrees N., 60 degrees W.
- 2) Storm of Aug. 8, 1885. Bermuda (Tannehill, 1938).
- 3) Though the day of Aug. 8, 1885 is given by the U.S. Weather Bureau as that of a hurricane affecting Bermuda, there was no sign in the island of even a passing gale (Tucker, 1982). Author's note: This statement, which contradicts item 2), is supported by other items showing the hurricane to have passed a good distance to the east of Bermuda.
- 4) Beyond a heavy swell which was observed on Aug. 8-9, the hurricane does not appear to have affected Bermuda. The "Orinoco" reported that in making Bermuda in the morning of Aug. 9, the vessel experienced a very heavy swell from S.E. with storm appearance to the S.E. but no wind and barometer 29.97 inches (Monthly Weather Review, Aug. 1885).
- 5) Beaufort, S.C., Aug. 24. The steamship "Ravensdale", which just arrived from Bermuda, contradicts the reports of the wreck of the "Beaufort". The steamer sailed from Bermuda on Aug. 8, the day of the reported hurricane and wreck and one day before the "Ravensdale" arrived there (The New York Times, Aug. 25. 1885, p.4, col.7).
- 6) Brig "Lilian". Evening of Aug. 7 (in about lat. 30 N., long. 60 W.). Wind E.N.E. having shifted from S.E. with heavy S.E. and S.S.E. sea, barometer 29.70 inches. At 4 A.M. Aug. 8, the ship was running under bare poles, wind hauling gradually to N.; at around 8 A.M., in about lat. 28 58 N., long. 60 44 W., wind blowing a hurricane from N., barometer 29.20 inches; at noon, W.N.W. wind, moderating slightly (Monthly Weather Review, Aug. 1885).
- 7) Steamship "Picqua". Aug. 8, lat. 28 00 N., long. 58 04 W., barometer 30.14 inches, wind S. force 6 (Monthly Weather Review, Aug. 1885).
- 8) Bark "Tropic Bird", in about lat. 31 N., long. 60 W. The vessel had been moving W. until 8 A.M. Aug. 8, with wind gradually increasing to a gale and veering to E.S.E. to E. and back. Wind blowing a heavy E.S.E. gale and working into N.E.; at 12:30 P.M. it was blowing a hurricane, which continued until 3:30 P.M., when it died out to a calm, leaving a heavy swell running. At 4:30 P.M. it began again with wind from W.S.W., blowing at a furious rate until 8 P.M. The hurricane came on without any warning; the barometer did not begin to fall until 8 A.M. and, in 4 hours, fell from 30.00 to 29.20 inches (Monthly Weather Review, Aug. 1885). Author's note: The barometer reading of 29.20 inches apparently taken at noon Aug. 8 was not the lowest pressure that the "Tropic Bird" should have experienced. Such a pressure was not given, but Capt. James F. Avery of the vessel indicated that the storm was the heaviest that he ever experienced.
- 9) The bark "Ludwing Heyne" was towed to Bermuda on Aug. 15 disabled, having encountered a hurricane at lat. 31 N., long. 64 39 W. on Aug. 8 (Monthly Weather Review, Aug.

1885). Author's note: The longitude given seems to be in error. 10) Steamship "Hexham". Aug 8, began with fine weather and stationary barometer; noon position: lat. 34 43 N., long. 58 43 W.; after 8 P.M., the wind refreshed from E. with rain, continuing until midnight (Aug. 8-9); barometer 29.95 inches, wind continued with increasing force, with heavy rain, until 4 A.M. Aug. 9, when it was about E.N.E., barometer falling rapidly. At 6 A.M., the wind was N.E., blowing a furious gale; at 8 A.M., it was N., when it lulled considerably for about an hour, the barometer being then at the lowest point, 29.22 inches; afterward the wind gradually hauled to the left and suddenly refreshed up from W.N.W., increasing to a furious gale which lasted until the afternoon when it gradually lulled; position at noon Aug. 9: lat. 35 10 N., long. 61 43 W. (Monthly Weather Review, Aug. 1885). 11) Steamship "Wellfield" encountered a hurricane on Aug. 9; the lowest barometer (corrected) of 28.97 inches was observed at noon in lat. 35 N., long. 61 19 W.; the wind set in from E.N.E. and shifted to N.E., N. and N.W. (Monthly Weather Review, Aug. 1885). 12) Ship "Forest King", from Hull (England), encountered a violent hurricane on Aug. 9 in lat. 40 45 N., long. 55 30 W. The storm came up with scarcely any warning and continued with great fury for 8 hours. The wind first came from S.S.E. but soon veered to N.W. The captain said that this was the worst storm he had ever experienced (The New York Times, Aug. 25, 1885, p.8, col.1). Author's note: According to the information in other items, the "Forest King" should have experienced the storm mainly on Aug. 10 and not on Aug. 9. 13) According to newspaper reports, barks "Geo. Davis" and "Slieve Bloom", ship "Forest King" and schooner "Mattie W. Attwood", all between lat. 40 and 44 N., long. 53 and 55 W., experienced hurricane force winds, but the wind directions and barometric pressure were not stated (Monthly Weather Review, Aug. 1885). Author's note: The above information is not true at least as far as the "Forest King" is concerned. That ship reported a wind shift from S.S.E. to N.W. in item 12). 14) Steamship "Greece". At noon Aug. 9, the weather appeared threatening. The wind gradually increased from midnight Aug. 9-10 and at 6 A.M. Aug. 10 it was blowing a hurricane; soon after 6 A.M. the wind suddenly lulled for 10 minutes and then, backing from S.E. to N.W., it blew from that quarter with increased violence. The barometer reached its minimum, 29.11 inches, at 6 A.M. Aug. 10 in lat. 40 53 N., long. 56 29 W., indicating a decrease of pressure amounting to 1.10 inches during the storm (Monthly Weather Review, Aug. 1885). 15) Bark "Kings County". 4 A.M. Aug. 10, fresh S. breeze, overcast sky, barometer 29.80 inches; at 8 A.M., lat. 42 09 N., long. 56 00 W., strong gale with heavy swell from S.W., barometer had fallen to 28.80 inches; at 11 A.M., N.W. wind; at noon, terrific squalls of hurricane force, barometer had risen to 29.80 inches; at 1 P.M., N. wind, continuing until 8 P.M., when it decreased to a strong breeze (Monthly Weather Review, Aug. 1885). 16) Steamship "Polynesia" encountered a hurricane at 7 A.M. Aug. 10, ending at 8 P.M.; lowest barometer 29.18 inches was observed at 12:30 P.M. in lat. 42 14 N., long. 53 35 W.; wind set in from S.S.E., veering to S., S.W., W. and W.N.W.; severe thunder and lightning, with heavy rain, continued during the disturbance (Monthly Weather Review, Aug.

1885). 17) Steamship "Elysia". Aug. 10, lat 44 07 N., long. 53 45 W. The gale set in from the E. at 6 A.M. and continued from that point until 2 P.M., when it fell light, and suddenly shifted to N.N.W. through N.E.; lowest barometer 29.02 inches; at 4 P.M., barometer began to rise and weather moderated (Monthly Weather Review, Aug. 1885). 18) Steamship "City of Chester", in lat. 45 35 N., long. 51 W., had barometer 29.30 inches at 5 P.M. Aug. 10, the wind shifting from S.E. to N.E. and blowing with the force of a whole gale (Monthly Weather Review, Aug. 1885). 19) Bark "Exile". Aug. 10, lat. 44 05 N., long. 49 40 W.; at 3 P.M., the gale commenced from S.S.W., barometer 29.62 inches; at 6 P.M., it was blowing in terrific gusts, barometer 29.42 inches; at 8 P.M., it moderated to a steady gale, wind veering to W. and W.N.W. (Monthly Weather Review, Aug. 1885). Author's note: The New York Times, Aug. 27, 1885, p.8, col.5, also published a report by the "Exile", adding that the heavy gale continued for 12 hours. 20) Steamship "Celtic". The storm began at S.E. in the morning of Aug. 11, increasing to force 7 at midday, and suddenly decreased to force 1 at 1 P.M. and increased to force 7 again at 2 P.M. During the lull, confused cross seas were encountered and the wind suddenly backed to N.; from noon to 2 P.M., the barometer reached its lowest point, 29.47 inches, in lat. 48 15 N., long. 43 10 W.; from this time the barometer rose and the wind gradually moderated (Monthly Weather Review, Aug. 1885). 21) During Aug. 12 to Aug. 14, the storm center continued northeastward, with pressures ranging from 29.30 to 29.40 inches. On Aug. 15, the disturbance appeared to have lost energy, with barometer rising to 29.65 inches and decreasing winds (Monthly Weather Review, Aug. 1885).

Most data contained in the items above supported the track for this storm which is shown in Neumann et al. (1993). However, some slight modifications in that track were introduced for Aug. 10 in order to better conform the storm movement with abundant maritime data available on that day (items 12 through 19). The author of this study estimated a new 7 A.M. Aug. 10 position based on these items, particularly in items 14) through 16), and such a position was near 42.0 degrees N., 56.0 degrees W., after taking into account that, at that longitude, the local time is about 1 hour later than E.S.T. With the exception of Aug. 10, all other 7 A.M. positions in Neumann et al. (1993) were accepted in the process of producing the author's track shown in Fig. 2.

The lowest pressure of 28.80 inches reported by the "Kings County" (item 15) suggests that Storm 1, 1885 was only a moderate hurricane in spite of the captains' statements contained in items 8) and 12).

Storm 2, 1885 (Aug. 21-28).

Abundant information was found about this storm: 1) Vessels to the eastward of the Bahamas do not appear to have noticed any indication of a hurricane on Aug. 22-23 (Monthly Weather Review, Aug. 1885). 2) According to Rev. Benito Vines, director of the Belen College Observatory of Havana, occasional indications of a cyclone, at a considerable distance to the eastward, were observed from there in the afternoon of Aug. 23 (Monthly Weather Review,

Aug. 1885). 3) At Jacksonville and Key West, light N.E. winds had been reported for the 24 hours ending in the morning of Aug. 23 (Monthly Weather Review, Aug. 1885). 4) Schr. "E.B. Conwell" encountered a hurricane off the Florida Reefs. It began from the N.E. going around the compass and ending in a S.W. gale, which lasted 5 hours (Monthly Weather Review, Aug. 1885). 5) The steamship "City of Puebla" encountered the hurricane in the night of Aug. 23 in about lat. 25 N., long. 80 W. The gale began at N.N.W. and N.W. at about 8 P.M. increasing in force until midnight (Aug. 23-24) when it was blowing with hurricane force and the barometer had fallen to 29.60 inches; at 2 A.M. Aug. 24, barometer 29.28 inches, wind had shifted to W. and S.W., continuing to blow with hurricane force, accompanied by violent rain squalls, ship was hove to; 4 P.M., barometer 29.80 inches, fresh gale from S. (Monthly Weather Review, Aug. 1885). Author's note: The New York Times, Aug. 28, 1885, p.8, col.6, added that the "City of Puebla" had left Havana for New York and that the weather was good until Sunday afternoon (Aug. 23), gave a barometer reading of 29.20 inches instead of 29.28 inches at 2 A.M. Aug. 24, and stated that a terrific squall struck the vessel at 7:30 A.M., that the weather started to moderate at noon and that the vessel resumed her course at 1:30 P.M. Aug. 24 (Monthly Weather Review, Aug. 1885). 6) By midnight Aug. 23-24, the wind at Jacksonville was N.E. with a fall of 0.05 inches in the barometer, and the wind at Key West was N. with a barometer rise of 0.02 inches in 8 hours (Monthly Weather Review, Aug. 1885). 7) Charleston, Aug. 27. The steamship "Monticello" arrived from Jacksonville. She left Jacksonville at 3 A.M. Aug. 24 and reached Mayport 3 hours later. It was blowing a N.E. gale and docked there (The New York Times, Aug. 27, 1885, p.1, col.3). 8) Schr. "Florence and Lilian" encountered a hurricane in lat. 29 52 N., long. 80 25 W. on Aug. 24; lost sails, deckload and sustained damage to deck (Monthly Weather Review, Aug. 1885). 9) Jacksonville, Fl. The 7 A.M. (Aug. 24) reading of the barometer showed that a rapid fall had occurred during the night. The wind increased gradually to gale at 1 P.M.. At 2:25 P.M. up signals received. The wind blew a gale from the W. of from 28 to 40 mph from 1 to 6 P.M., after which it gradually moderated (Monthly Weather Review, Aug. 1885). Author's note: In a different section of this publication, it was stated that at 7 A.M. Aug 24 the wind speed at Jacksonville was 16 mph with light rain and an abnormal pressure fall of 0.15 inches. 10) Steamship "Alamo", from New York for Galveston. Passed Hatteras at 9:30 P.M. Aug. 23 (Sunday). Weather looking bad all day, commenced to meet a heavy S.W. swell which grew worse towards morning of Aug. 24, wind S. Wind and sea hauling to S.W.; at times sea swell from W.S.W. and wind blowing a good gale. No change Monday night (Aug. 24-25) and Tuesday (Aug. 25) until evening, when wind hauled to S.E. by S. Barometer fell to 29.83 inches on Aug. 24 (Monthly Weather Review, Aug. 1885). 11) Savannah, Aug. 24. Wind at 7 A.M. was light N.E. and by noon it had increased to N.E. 19 mph. Wind increased in force to 30 mph at midnight (Aug. 24-25); 4:30 A.M. Aug, 25, wind N.W. 56 mph. At Tybee, the wind was estimated at 75 mph (Monthly Weather Review, Aug. 1885). 12) Steamship "Louisiana" reported a hurricane with wind at S., veering to W. about the time of lowest barometer which

was (corrected) 28.83 inches in lat. 31.30 N., long. 80 30 W. at 1 A.M. Aug. 25 (Monthly Weather Review, Aug. 1885). 13) Charleston, S.C., Aug. 26. The most destructive storm ever known in this section visited Charleston and all the islands and counties along the coast yesterday morning (Aug. 25). The storm began at 5 A.M. and cautionary signals had been placed at 3 P.M. Aug. 24. At daylight, the wind was blowing from S.E. at 30 mph with frequent gusts to 50 mph. At 6 A.M. the wind had become pretty lively. The last recorded wind velocity (before the apparatus gave up) was 68 mph. At 6:30 A.M. the barometer was still falling and later reached its lowest value in 20 years. At 8 A.M. the rain began to fall in torrents (The New York Times, Aug. 27, 1885, p.1, col.3). 14) Hurricane of Aug. 24-25. 1885. Georgia and Carolinas. Greatest destruction in Charleston. Wind 98 mph at Smithville, N.C., estimated 125 mph after anemometer cups blew away (Tannehill, 1938). 15) Hurricane, Aug. 25, 1885. Coastal section of Georgia and Carolinas. Extreme, 21 killed in S.C. (Dunn and Miller, 1960). 16) Charleston, Aug. 27. Bark "Marianina" (from Italy to Port Royal) reported that 50 miles from Charleston was struck by a gale and lost mast, sails and rigging (The New York Times, Aug. 28, 1885, p.4, col.7). 17) Ship "Sarah Higgnett", which arrived from Iliolo, was caught in a hurricane on Aug. 25 in lat. 33 30 N., long. 72 30 W. The sky became overcast and the wind blew strongly. From this time the storm increased, the sea was very high, constantly breaking over her until 3 A.M. Aug. 26 when the hurricane was so violent that she was hove to (The New York Times, Sept. 2, 1885, p.2, col.7). 18) Jacksonville, Aug. 27. The steamer "City of Palatka", from Charleston, reported passing 20 or 30 large vessels totally dismantled, the result of the recent gale (The New York Times, Aug. 28, 1885, p.4, col.7). 19) During Aug. 25, all vessels between lat. 30 and 37 N. and between the U.S. coast and the 70 degrees W. meridian experienced gales, reaching at times hurricane force, from S.S.W., S.W. and S.E., with pressure ranging from 29.03 to 29.50 inches (Monthly Weather Review, Aug. 1885). 20) Smithville, N.C., Aug. 25. At 5:15 P.M. the wind had reached the terrific velocity of 98 mph when the anemometer was blown away; between 5:15 and 5:45 P.M. it is estimated the wind was blowing 125 mph (Monthly Weather Review, Aug. 1885). 21) Wilmington, Aug. 25. In the afternoon, gale from the S., accompanied by heavy rain; maximum velocity 52 mph (Monthly Weather Review, Aug. 1885). 22) Hatteras, Aug. 24-26. Thunderstorms, heavy rain, maximum wind velocity 52 mph (Monthly Weather Review, Aug. 1885). 23) Kittyhawk, N.C., Aug. 26. Northerly gale from 2:30 A.M. until 9:45 A.M.; at 4:10 A.M. a velocity of 50 mph was recorded (Monthly Weather Review, Aug. 1885). 24) Savannah, Ga., Aug. 31. Schr. "Emily E. Northam" brought 3 of the crew of the schooner "Gustie Wilson" which foundered off Hatteras in the hurricane of Aug. 26. She was struck by the gale on Tuesday night (Aug. 25). At 3 A.M. (Aug. 26) the wind was blowing at a rate of 70 mph. At 7 A.M. the crew abandoned the vessel which went down after 5 minutes. At noon the "Emily E. Northam" was sighted and it took 3 hours to rescue the crew because rough sea (The New York Times, Sept. 1, 1885, p.1, col.4). 25) At 1 A.M. Aug. 26, the steamship "Haytien Republic" reported that the wind, which at midnight Aug. 25 was blowing a

heavy gale from S.W, struck the ship in a heavy squall from S.S.W. to N.N.W. , lasting only a few minutes from any one direction; from 2 to 4 A.M., had very heavy squalls from W. with heavy rain, wind backing to S.W. after each squall; from 8 to 10 A.M. heavy squalls from N.W.; noon position: lat. 34 42 N., long. 74 05 W. (Monthly Weather Review, Aug. 1885). 26) Steamship "Fortunatus". Aug. 26, 2 A.M., wind moderate and at 7 A.M. it came out from N.E. and increased to a very heavy gale with very heavy sea from E.N.E.; at 8 A.M., barometer 29.01 inches; noon position at lat. 38 31 N., long. 73 20 W. (Monthly Weather Review, Aug. 1885). 27) Steamship "Louis Bucki". Aug. 26, 4 A.M., lat. 36 44 N., long. 74 50 W., had N. wind, remaining steady and blowing with hurricane force; from midnight (Aug. 25-26) to 4 A.M., the wind hauled twice around the compass from S.W. by the W. to N., and to S. by E. (Monthly Weather Review, Aug. 1885). 28) Steamship "City of Puebla", in about lat. 35 N., long. 75 W., had barometer falling from 29.80 to 29.60 inches, with wind hauling to N.N.W., blowing a gale with heavy rain; at 10 A.M. the weather began to moderate and the barometer rose (Monthly Weather Review, Aug. 1885). 29) Bark "Golden Fleece". Aug. 26, lat. 35 49 N., long. 72 22 W., was caught in a hurricane. The storm began before daybreak and raged with great fury for 6 hours (The New York Times, Sept. 2, 1885, p.2, col.7). 30) Bark "Johanne Marie" was caught in the storm on Aug. 26 in lat. 41 04 N., long. 66 20 W. (The New York Times, Sept. 2, 1885, p.2, col.7). 31) Bark "Karsten Langaard". Aug. 26, lat. 42 N., long. 61 W., had a heavy squall from E. veering to N., lasting 2 hours during which she lost and split sails (The New York Times, Sept. 7, 1885, p.6, col.5). 32) Ship "John Mann" brought the crew of schooner "Marie Henriette" (from Barbados for Montreal) which was abandoned in a sinking condition on Aug. 28 at lat. 39 40 N., long. 60 W. Capt. Loubett stated that on Aug. 26 the sky became overcast and the barometer fell. The wind increased in speed during the afternoon and early in the evening increased to a cyclone. The cyclone continued for several hours and the vessel was thrown on her beam ends and dismasted. On the morning of Aug. 28, there were 3 feet of water in the hold of the vessel (The New York Times, Sept. 10, 1885, p.8, col.2). 33) Bark "Harold" (from Dunkirk). Aug. 26, lat. 41 12 N., long. 62 32 W.. Sky became overcast and there was indication of an approaching hurricane. Vessel was kept on her course until late afternoon when, after several heavy squalls, the horizon became one mass of lightning. Shortly after 6 P.M. the topsail was blown out of the bolt ropes. In ten minutes the barometer went down from 29.40 to 28.30 inches. At 9 P.M. the barometer rose slightly. Then, with a final terrific gust, the cyclone abated (The New York Times, Sept. 10, 1885, p.8, col.2). 34) Ship "Fritz" arrived from Bremen and reported that on Aug. 26, in lat. 42 54 N., long. 58 W., was caught in a cyclone (The New York Times, Sept. 10, 1885, p.8, col.2). 35) During Aug. 27 the center moved rapidly northeastward, barometer as low as 28.80 inches (Monthly Weather Review, Aug. 1885). 36) On Aug. 28, the area of least pressure read 29.00 inches and was near lat. 50 N., long. 40 W. (Monthly Weather Review, Aug. 1885).

On the basis of information in some of the items above, a slight modification along the track shown in Neumann et al. (1993)

was introduced for Aug. 23. Based primarily on items 2) and 4), the author of this study estimated a 7 A.M. Aug. 23 position near 24.0 degrees N, 78.5 degrees W. which is about 80 miles to the S.S.E. of the corresponding one in Neumann et al. (1993). This was indeed the first position along the track in which the author of this study has a good confidence, since he did not have means to check the positions given in Neumann et al. (1993) for Aug. 21 and Aug. 22. For the period Aug. 24-25, the positions given in the above mentioned publication were found to be reasonable in the light of the content of items 5) through 21). However, the 7 A.M. Aug. 26 position in Neumann et al. (1993) was adjusted to the N.E. by about 70 miles to a new position near 36.5 degrees N., 72.7 degrees W. in order to fit better the information in items 22) through 29). Based on information in items 30) through 36), the track in Neumann et al. (1993) was extended to the latter part of Aug. 26 as well as to Aug. 27 and Aug. 28. The author of this study estimated a 7 A.M. position near 45.0 degrees N., 52.5 degrees W. for Aug. 27 on the basis of space-time continuity from information in items 33), 34) and 36), and a 7 A.M. position for Aug. 28 near 50.0 degrees N., 40.0 degrees W. based on information in item 36). The author's positions for Aug. 23 and for Aug. 26 through Aug. 28, as well as the positions given by Neumann et al. (1993) for the remaining days in the period Aug. 21-28, were used to prepare the author's track for Storm 2, 1885 which is displayed in Fig. 2.

According to information in items 14), 15) and 20), this storm was a major hurricane on the Carolina coast on Aug. 25 and the barometer reading as low as 28.30 inches reported by the "Harold" (item 33) also suggests major hurricane intensity at high latitude on Aug. 26.

Storm 3, 1885 (Aug. 29-31).

Quite limited information was found in relation to this storm: 1) The approach of the storm was indicated in the morning of Aug. 29 but the center could not be definitely placed until the morning of Aug. 30, when it was a little S.E. of New Orleans (Monthly Weather Review, Aug. 1885). 2) By the morning of Aug. 31 the center had moved northeastward and was N.N.W. of Jacksonville and S.W. of Savannah. By midnight the center had passed off the Carolina coast (Monthly Weather Review, Aug. 1885). Author's note: An attempt was made to document the storm off the U.S. east coast but the effort was not successful. 3) High winds with heavy rains prevailed in the South Atlantic and east Gulf states and the storm would have been thought quite severe if it had not been brought into such close contrast with its predecessor (Monthly Weather Review, Aug. 1885).

The track for Storm 3, 1885 shown in Neumann et al. (1993) was found to agree, in general, with the information above. Therefore, such a track was reproduced in Fig. 2.

There is no evidence that this storm attained hurricane status.

Storm 4, 1885 (Sept. 17-23).

The following information was found about this storm: 1) In

the morning of Sept. 18, the storm center was pretty definitely located S.E. of Indianola and N.E. of Rio Grande City, both in Texas (Monthly Weather Review, Sept. 1885). 2) At Indianola, quite a panic prevailed on Sept. 19. The wind attained a maximum velocity of 60 mph and 2.44 inches of rain fell during the day. The barometer was 0.21 inches below the normal. High tides were reported on Sept. 17, 18 and 19 (Monthly Weather Review, Sept. 1885). 3) Galveston, Sept. 18, mean daily barometer 29.952 inches, prevailing wind direction E., maximum velocity 30 mph, daily rainfall 2.26 inches. Sept. 19, mean daily barometer 29.874 inches, prevailing wind direction E., maximum velocity 34 mph, daily rainfall 3.39 inches. Sept. 20, mean daily barometer 29.854 inches (lowest pressure was 29.823 inches), prevailing wind direction N.E., maximum velocity 35 mph, daily rainfall 4.27 inches. For the period Sept. 15-20, total rainfall at Galveston was 16.53 inches. This storm was the most protracted and the greatest rainstorm in the record of the Galveston Signal Office or within the memory of any resident of the city. The bark "Orient", with all her crew, was lost at the entrance of the harbor on Sept. 18 (Monthly Weather Review, Sept. 1885). 4) The storm center moved slowly northeastward until the afternoon of Sept. 20 and in the next 24 hours it had passed easterly across northern Florida and southern Georgia. On Sept. 20 and 21, heavy rain fell at Smithville, N.C., Charleston, S.C., Savannah, Ga., Jacksonville, Fl. and New Orleans, La. (Monthly Weather Review, Sept. 1885). 5) During the night of Sept. 21 and during Sept. 22, the storm moved northeasterly along the coast (Monthly Weather Review, Sept. 1885). 6) At midnight Sept. 22-23, the center was S.E. of Block Island, R.I. where the barometer was 0.78 inches below normal and an abnormal fall of 0.80 inches occurred in 24 hours (Monthly Weather Review, Sept. 1885). 7) Brig "Erma" reported barometer 28.80 inches at 12:20 P.M. (it should read A.M.) Sept. 23, in lat. 42 N., long. 69 W. with a furious N.E. gale, in which sails were blown away and the vessel sustained considerable damage (Monthly Weather Review, Sept. 1885). 8) Steamship "Suevia", at 1 A.M. Sept. 23, in lat. 41 N., long. 70 W., had barometer down to 28.74 inches with a strong gale from N.W. for half an hour, when it decreased to a moderate gale and the barometer began to rise slowly (Monthly Weather Review, Sept. 1885). 9) On the morning of Sept. 23, the center was near Eastport, Me., where the barometer was 1.29 below normal (Monthly Weather Review, Sept. 1885). Author's note: Actually, the publication above stated that this center near Eastport was the result of the merging of the storm center with a second low pressure area over the northeastern U.S. 10) Steamship "Camden", sailing in the Gulf of St. Lawrence. Sept. 23, noon, position: 10 miles N.N.E. of Bird Rocks, barometer (aneroid, error unknown) 29.70 inches, wind S.E. force 10 with furious squalls of rain; 4 P.M., barometer 29.41 inches, wind occasionally falling light, same weather; 8 P.M., wind blowing with great fury; 9 P.M., lowest barometer 29.15 inches, after which the wind and sea began to moderate.; midnight (Sept. 23-24), barometer 29.31 inches, wind veering to S., foggy; 8 A.M. Sept. 24, St. Paul Island sighted, barometer 29.52 inches, wind hauling to S.W. (Monthly Weather Review, Sept. 1885).

The information contained in the items above was found to

support, in general, the track for Storm 4, 1885 which is displayed in Neumann et al. (1993). Therefore, the author of this study did not propose any modification to such a track and reproduced it in Fig. 2.

Barometer readings of 28.80 and 28.74 inches reported by the "Erma" (item 7) and the "Suevia" (item 8) suggest that this storm attained full hurricane intensity.

Storm 5, 1885 (Sept. 18-21).

The following information was found in relation to this storm:

1) Steamship "Sirius" (from Rio de Janeiro for New York). Sept. 18, 6 P.M., wind backed from N.N.E. to N.N.W., strong and squally with heavy irregular sea; 10 P.M., lat. 17 33 N., long. 56 04 W., lowest barometer (aneroid, corrected) 29.50 inches; midnight (Sept. 18-19), wind increasing to a strong gale with heavy squalls from N.W.; 6 A.M. Sept. 19, moderate S.S.W. gale, with high, irregular sea and nothing visible above 200 yards from the ship but white mist which continued until the disturbance was past; morning of Sept. 20, strong gale and high sea with furious squalls and continuous heavy rain; 2 P.M. Sept. 20, gale moderating; 8 P.M., wind lulled, followed by sudden and violent gusts from W. to S.S.E.; midnight (Sept. 20-21), strong S.S.E. gale and heavy rain, ship laboring heavily and shipping immense quantities of water; 8 P.M. Sept. 21 (no position given), blowing a hurricane with heavy rain, barometer 29.70 inches, high, irregular sea from S.W., S.S.E. and S.E., weather thick and misty, and continuing without abatement until midnight (Sept. 21-22) when it settled down to a moderate gale from S.E. to E. (Monthly Weather Review, Sept. 1885). 2) Steamship "Flamborough". Sept. 18, while passing out by Sombrero (Windward Islands), experienced strong E.N.E. trades and a very heavy S.E. sea, which continued until Sept. 23 (Monthly Weather Review, Sept. 1885). Author's note: The island of Sombrero is not in the Windward Islands; Sombrero is the northernmost of the Leeward Islands and is located at lat. 18 37 N., long. 63 26 W. 3) Ship "Tsernogora", in lat. 26 10 N., long. 63 10 W., had barometer (aneroid, error unknown) 29.98 inches, wind N. 80 degrees E. force 5, with heavy rain showers and heavy, rolling sea from S.E.; the barometer had steadily fallen from 30.17 inches on Sept. 17 at lat. 20 08 N., long. 56 05 W., the wind also having shifted from S.E. to N.E. (Monthly Weather Review, Sept. 1885). Author's note: The barometer readings are probably too high. 4) Steamship "Orinoco", at Bermuda, reported that on Sept. 20 a very heavy sea from S.E. began to roll on the beach and continued until the evening of Sept. 22 (Monthly Weather Review, Sept. 1885).

According to the description in item 1), the "Sirius" was following the storm for about 3 days but, although the narrative of the weather events was extremely useful in determining that fact, the ship gave no positions after having offered only one at 10 P.M. Sept. 18, making it impossible to locate the storm center even with poor accuracy as the vessel and the storm progressed in time. Similarly, the description of the alleged drop in pressure reported by the "Tsernogora" (item 3), from a position near 20 degrees N., 56 degrees W. on Sept. 17 to a position near 26 degrees N., 63

degrees W. on an unknown day, suggested that the storm was getting closer to the vessel as time went on, but was not useful in determining any storm position. Therefore, as the content of items 2) and 4) was not suitable for tracking purposes either, the author of this study ran into difficulties in checking the track for Storm 5, 1885 given in Neumann et al. (1993). Under these circumstances, he decided to accept their track and to reproduce it in Fig. 2.

Information contained in the items above suggests that the storm attained full hurricane status.

Storm 6, 1885 (Sept. 24- Oct. 2).

The following information was found in connection with this storm: 1) The storm appeared to have been central S. of Mobile, Al., at midnight Sept. 24-25 (Monthly Weather Review, Sept. 1885). 2) Mobile, Sept. 30. Schr. "Curtis Ackerly", which had left here for Trinidad on Sept. 22, ran into the cyclone of Sept. 25 when 150 miles off Mobile. The storm, although brief, was the severest the captain ever encountered (The New York Times, Oct. 1, 1885, p.1, col.6). 3) On the morning of Sept. 26, a severe storm was in progress on the coast, with strong N.E. winds at Mobile, Pensacola and New Orleans and heavy rains reported at those places during the night (Monthly Weather Review, Sept. 1885). 4) New Orleans, Sept. 27. The storm passed away last night and, although the water in the lake is very high and a considerable part of the rear of the city is still flooded, the worst is over and the waters will subside under the influence of good weather (The New York Times, Sept. 28, 1885, p.1, col.2). 5) Storm of Sept. 24-30, 1885. Gulf, Louisiana (Tannehill, 1938). 6) The center seems to have remained nearly stationary until the morning of Sept. 28. By the morning of Sept. 29, the center was between Pensacola and Cedar Keys. Fresh E. winds and heavy rain were reported on the South Atlantic and E. Gulf coasts (Monthly Weather Review, Sept. 1885). 7) Sept. 25-28, 1885, minor storm on Gulf coast; Sept. 28-30, near St. Joe, Fl., minimal storm (Dunn and Miller, 1960). 8) On the morning of Sept. 30, the center was near Jacksonville, Fl. and by midnight (Sept. 30- Oct. 1) it had passed easterly off the coast nearly over Jacksonville (Monthly Weather Review, Sept. 1885). 9) On the morning of Oct. 1, the center apparently was to the S.E. of Charleston, the wind increasing to hurricane force at sea towards the evening of that day (Monthly Weather Review, Oct. 1885). 10) Steamship "Lone Star". 7 P.M. Oct. 1, lat. 32 17 N., long. 77 45 W., barometer 29.64 inches, wind N. to N.E. hurricane force 10. At 10 P.M., the wind had moderated to a fresh gale, although a heavy cross-sea was still running (Monthly Weather Review, Oct. 1885). 11) On Oct. 2 the center was near Cape Hatteras and moderate to strong E. gales prevailed there and at other coast stations and also at sea (Monthly Weather Review, Oct. 1885). 12) Steamship "Claribel" reported a fresh to strong gale from E., suddenly shifting to S. at about 9 A.M. Oct. 2 in lat. 35 20 N., long. 73 40 W. (Monthly Weather Review, Oct. 1885).

It was found that the content of the items above supported, in general, the track for this storm shown in Neumann et al. (1993) and, therefore, the author of this study adopted such a track and

reproduced it in Fig. 2.

According to item 10), Storm 6, 1885 seemed to have briefly attained minimal hurricane intensity in the evening of Oct. 1 while off the Carolina coast. The storm might have also attained hurricane status in the Gulf of Mexico as suggested in item 2).

Storm 7, 1885 (Sept. 26-29).

The following information was found in relation to this storm: 1) Bark "Mistletoe". Sept. 28, noon (Greenwich time), lat. 42 30 N., long. 60 20 W., barometer (aneroid, corrected) 29.95 inches, wind N.E. force 9, every appearance of a heavy storm; at midnight Sept. 28-29 (ship's time) wind commenced to gradually haul to the northward. The ship was ran until 8 A.M. (ship's time), the wind being then N.W. by N., with very high and cross sea. The barometer fell to 29.11 inches, the wind blowing with hurricane force and accompanied by torrents of rain; at noon (ship's time), the wind gradually hauling to W. At noon (Greenwich time), lat. 39 32 N., long. 62 15 W. (Monthly Weather Review, Sept. 1885). Author's note: The New York Times, Oct. 5, 1885, p.2, col.4) also published that the "Mistletoe" encountered this cyclone and added that the vessel was coming to New York from Dunkirk. 2) Steamship "Warwick". Strong S.E. gale on Sept. 28, increasing to a whole gale from N.E. by evening of Sept. 29, with very heavy sea from S.E. The lowest barometer was 29.77 inches at 8 A.M. Sept. 29 in lat. 41 55 N., long. 62 W., the wind shifting to N.E. about the time of lowest barometer (Monthly Weather Review, Sept. 1885).

The information in items 1) and 2) was useful in checking the 7 A.M. Sept. 29 position in Neumann et al. (1993) which was found to be satisfactory. However, the track in Neumann et al. (1993) prior to Sept. 29 could not be checked because of the lack of suitable information. Under this circumstance, the entire track in the above mentioned publication was accepted as such and reproduced in Fig. 2.

Information in item 1) suggested that Storm 7, 1885 was a hurricane on Sept. 29.

Storm 8, 1855 (Oct. 8-13).

The following information was found in connection with this storm: 1) When first observed, the storm was central to the S.W. of Florida on the morning of Oct. 10, although the reports from that region indicated that it had its origin to the S. or S.E. of Cuba (Monthly Weather Review, Oct. 1885). Author's note: If this were the case, the storm should have been extremely weak in Cuba because neither Sarasola (1928) nor Martinez-Fortun (1942) mentioned this storm in their catalogs of tropical cyclones which affected Cuba. 2) The system moved slowly northward over Florida and was well defined as a cyclone on the morning of Oct. 11 (Monthly Weather Review, Oct. 1885). 3) Cedar Keys, Fl.: The barometer fell rapidly on Oct. 10 with brisk N.E. winds and light rain which continued on Oct. 11; 12:30 P.M. Oct. 11, wind veered to S.E. and increased in force, reaching 48 mph with barometer 29.19 inches at 4:30 P.M.; at 5 P.M., barometer 29.24 inches and wind had decreased to 24 mph;

the high winds caused the tide to rise to an unusual height, the highest wharves were submerged and many of the principal streets flooded (Monthly Weather Review, Oct. 1885). 4) Sandford, Fl.: During the morning of Oct. 11, the wind veered to S. and the barometer continued to fall until 3 P.M. when it read 29.50 inches; maximum wind velocity was 36 mph at 4:30 P.M. Oct. 11 (Monthly Weather Review, Oct. 1885). 5) Jacksonville, Fl.: At 11 A.M. Oct. 11, the wind had veered to E. and began to increase in force; later, the wind veered to S. and S.W. increasing to a gale which continued until 5:30 A.M. Oct. 12; lowest barometer was 29.42 inches at 11 P.M. Oct. 11; highest wind velocities were 36 mph, from N.E. at 1:55 A.M. Oct. 11 and from S. at 11:15 P.M. the same day (Monthly Weather Review, Oct. 1885). 6) Savannah, Ga.: During the morning of Oct. 11 the barometer fell slowly, but in the afternoon and during the night it fell rapidly, the lowest reading of 29.49 inches occurring at 1 A.M. Oct. 12 and remaining stationary until 7 A.M.; at the time of minimum pressure, the wind shifted to S. and decreased from 32 to 15 mph (Monthly Weather Review, Oct. 1885). 7) Smithville, N.C. High S.E. winds began at midnight Oct. 11-12 and continued, at intervals, until 1 P.M. Oct. 12; the maximum velocity of 44 mph occurred at 7:30 A.M. (Monthly Weather Review, Oct. 1885). 8) Ft. Macon, N.C. S.E. gale from 7:10 P.M. Oct. 11 to 6:30 A.M. Oct. 12; maximum velocity 56 mph (Monthly Weather Review, Oct. 1885). 9) Kittyhawk, N.C. Gale began at 3 P.M. Oct. 12 and continued to about midnight Oct. 12-13, maximum velocity S.E. 53 mph at 6:20 P.M. Oct. 12 (Monthly Weather Review, Oct. 1885). 10) Washington, 12:35 A.M. Oct. 12. For the Middle Atlantic States, increasing cloudiness and rain with generally N.E. winds becoming dangerous and variable on the coast, nearly stationary temperatures, lower barometer (The New York Times, Oct. 12, 1885, p.5, col.5). 11) Cape Henry, Va. Severe storm from early morning Oct. 12 until 2 A.M. Oct. 11, maximum wind velocity 48 mph, lowest barometer 29.65 inches (Monthly Weather Review, Oct. 1885). 12) Norfolk, Va. High N.E. winds prevailed from noon Oct. 12 to past midnight Oct. 12-13 (Monthly Weather Review, Oct. 1885). 13) Cape Henlopen, Del. Storm prevailed on Oct. 12 and during the night of Oct. 12-13 (Monthly Weather Review, Oct. 1885). 14) Barnegat City, N.J. Maximum wind velocity S.E. 48 mph at 9 A.M. Oct. 13 (Monthly Weather Review, Oct. 1885). 15) Sandy Hook, N.J. Heavy E. gale blowing at a rate of 50-60 mph with heavy rain prevailed from 6 A.M. to 3:10 P.M. Oct. 13 (Monthly Weather Review, Oct. 1885). 16) On the way past the Carolinas and Cape Hatteras, the storm lashed itself with fury. However, a cyclone from the lake region joined and together the two made a triumphant entrance to New York. With them came a large amount of rain which fell yesterday. At 3 P.M., 1.57 inches had fell since 4 A.M. At sunrise the wind was blowing at 20 mph and at 10:30 A.M. had increased to 35 mph. At Sandy Hook the wind reached 55 mph (The New York Times, Oct. 14, 1885, p.2, col.3). 17) Oswego N.Y. The storm began at 2:50 A.M. and continued until 8:10 P.M. Oct. 13, maximum velocity was 42 mph at 9:45 A.M.; the storm caused considerable damage in this vicinity (Monthly Weather Review, Oct. 1885). Author's note: It is very likely that these weather conditions were primarily associated with the area of low pressure over the lake region and not with the

storm itself. 18) New Haven, Conn. High N.E. winds prevailed on Oct. 13, causing the tides to rise to an unusual height (Monthly Weather Review, Oct. 1885).

Due to an apparent contradiction of information in item 1) and its corresponding author's note, the author of this study is skeptical about the track for this storm shown by Neumann et al. (1993) prior to Oct. 10 and even about the 7 A.M. Oct. 10 position indicated in that publication. The author believes that, because the storm was not recorded in Cuba, it is likely that the portion of the track in Neumann et al. (1993) for the period Oct. 8-10 is in error. However, he could not produce a solid evidence against it and, therefore, has kept it unchanged and used it in preparing the track shown in Fig. 2. On the other hand, there is a good reason to believe that the 7 A.M. Oct. 11 position right over the west coast of Florida was in error because it did not agree with the meteorological events described as having occurred at Cedar Keys on that day (item 3). In order to conform with the content of item 3), the author of this study proposed a new 7 A.M. Oct. 11 position near 27.3 degrees N., 84.0 degrees W. which is about 125 miles to the S.W. of the one displayed in Neumann et al. (1993). 7 A.M. positions for Oct. 12 and Oct. 13 in the above publication were kept unchanged because, in general, they were found to agree with information in items 5) through 18). These positions were also used in preparing the track shown in Fig. 2.

There is no indication that Storm 8, 1885 had attained hurricane intensity.