HURRICANES OF 1953

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GENERAL SUMMARY

The hurricane season of 1953 was about normal in the number of storms, with a total of eight. Four reached the coast of the United States, but only two of them were of hurricane force and these were not particularly severe. This resulted in only one death and damage estimated at about $6,000,000. Hurricane Carol did $1,000,000 damages to fishing craft along the New England coast and caused some destruction in the Canadian Provinces of Nova Scotia and New Brunswick. Edna caused quite a lot of damage at Bermuda, but no dollar estimates have been received.

In addition to the wind damage, storm Hazel, that crossed southern Florida October 9, produced heavy rains which added to the flooded conditions in the river valleys of central and northeastern Florida, but it was not possible to separate damage by the storm rains from the floods already existing from previous rains. The overall flood damage, principally in the Peace, Kissimmee, and St. Johns River Valleys, has been estimated at between 9 and 10 million dollars. In the upper St. Johns Valley, the flood was the worst of record, and Hazel was responsible for the last foot or two of the rise.

Six of the storms, Barbara, Carol, Dolly, Edna, Florence, and Gail, were of hurricane force at some time in their courses, while Alice and Hazel were less than hurricane force, but there seemed to be a general lack of sustaining power, and none of the storms was outstandingly violent. Several gained hurricane force for a time only to lose it while at sea, without apparent reason. Carol developed the strongest wind (estimated about 130 knots) while passing north of the Leeward Islands and Puerto Rico, but began to weaken by the time it reached the latitude of Bermuda. Another feature of this season's storms was their rather pronounced meridional movement which can be seen from a glance at the track chart (fig. 1). This shows the predominantly northerly movement, or recurvature at rather low latitudes, and the lack of westward zonal movement, especially west of Longitude 60° W; hence, no storm reached the western Gulf of Mexico during the season.

The warning and advisory service was of a high order and all land areas affected had ample warnings of the approaching storms. This doubtless reduced damages and casualties by allowing time for evacuations and protective measures. The total of 111 advisory and warning bulletins issued by the forecast centers concerned is about the same as that issued in 1952, and represents another relatively light season.

THE INDIVIDUAL HURRICANES

Alice, May 25–June 6.—The first storm of the season developed rather earlier than usual and did not attain hurricane strength. During the latter part of May, a large cold Low aloft drifted northward from the vicinity of Panama. On May 25, when this Low was centered east of the Nicaraguan coast, a weak warm-core surface center formed. Moving with the larger cyclonic circulation aloft, the surface Low made a counterclockwise loop over the Cape Gracias area during the 26th to 28th and lost force. Emerging from the loop, the storm deepened as it moved northward and then on June 1–2 described another loop north of the western end of Cuba in another counterclockwise movement with the upper level circulation. During this second loop, aircraft estimated maximum winds at about 55 knots on June 1, but on the 2d and 3d the wind force dropped to 35–40 knots. Northward movement was resumed on June 4 and maximum development was reached on the 5th when aircraft estimated highest winds to be 60 to 65 knots in brief squalls northeast of the center near 29° N., 83° to 85° W. Central pressure at this time was about 997 mb. (29.44 inches). During the night of the 5th, the storm again lost force and when it moved inland a short distance west of Panama City, Fla., about noon of the 6th, strongest winds were around 35 to 40 knots. There was no damage of consequence in Florida.

This storm gave heavy flooding rains in western Cuba and unconfirmed press reports indicate there were several deaths from drowning. In Cuba, the rains broke a severe drought of nine months duration, and in Florida, the rains were beneficial in breaking a dry spell of much shorter length.

Barbara, August 12–15.—The second storm developed during the night of August 11 northeast of the Bahama Islands from a weak easterly wave that had moved westward over the Atlantic during several days preceding. On the morning of the 12th, reconnaissance aircraft located the center in the formative stages near 29° N., 76° W.; it was moving northward. Strongest winds were about 75 m. p. h. on the northeast side at this time, but the

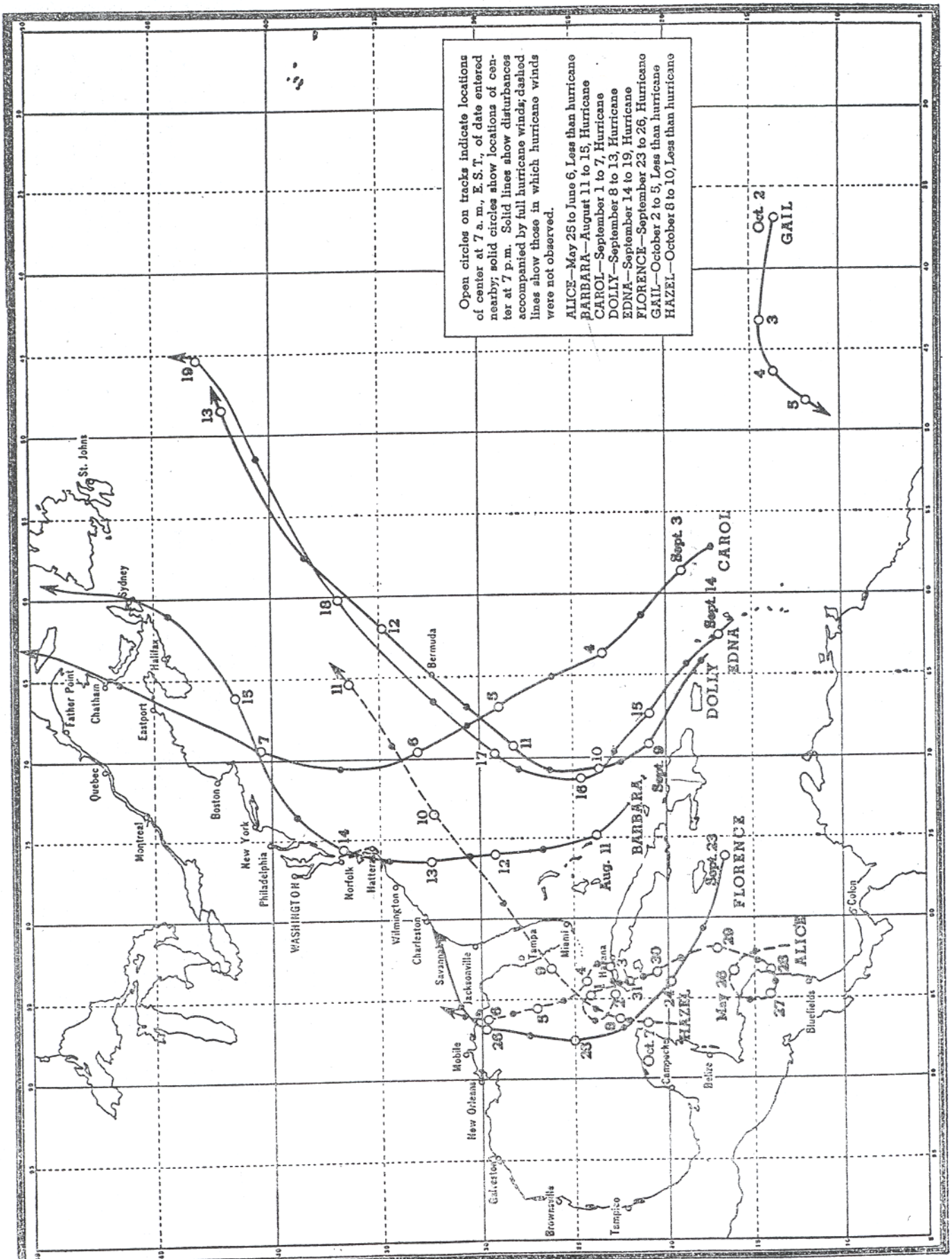

FIGURE 1.—Tracks of hurricanes which occurred during 1953.

southwest quadrant was weak and open. During the 12th and 13th, winds increased slowly in force and completed a circular organization; the strongest winds, estimated at slightly over 100 m. p. h., were observed by aircraft about 120 miles south of Cape Hatteras. The center passed over the North Carolina Capes section during the night of August 13 attended by winds of 90 to 100 m. p. h. and lowest pressure about 29.15 inches. One death and approximately $1,000,000 in property damage were reported. After leaving the North Carolina Capes, the center moved northeastward to the Canadian Maritime Provinces on the 15th. A detailed account of this storm has been given by James and Thomas [1].

Carol, September 1–7.—The wave from which Carol formed was traced from the coast of Africa, where it was first noted on August 28, and on the 29th it passed the Cape Verde Islands moving westward. Signs of development began to appear on August 31, and on September 1 confirmation that a hurricane had formed was received from the S. S. *Umatilla* which reported force 11 to 12 north-northeast winds, very high seas, and rapidly falling pressure at 14.3° N., 48.5° W. This storm became the most severe hurricane of the season during the next few days as it moved on a west-northwest course, with aircraft reporting 130+ knot winds and minimum pressure 930 mb. (27.45 inches) on September 3 and 4. By September 6, when the hurricane passed about midway between Cape Hatteras and Bermuda, there were signs of weakening, and thereafter it slowly lost force, but was still about hurricane strength when it passed over Nova Scotia and New Brunswick on the 7th.

Dolly, September 8–13.—An easterly wave moved into the eastern Caribbean Sea on September 8 and caused heavy rainfall in the Virgin Islands and Puerto Rico, but it was the 9th before aircraft located a developing center in the wave near 21° N., 69° W. The center developed slowly and curved toward a northerly course during the 9th and 10th, reaching maximum development on the 10th when aircraft estimated top wind speed at near 100 knots. Thereafter the storm moved northeastward with waning force, passed over Bermuda the night of the 11th, where only gale winds were experienced, and thence moved rapidly northeastward over the Atlantic during the 12th and 13th beyond the range of reconnaissance aircraft. Little or no damage was caused at Bermuda. This was one of the season's storms that lost force rapidly without apparent cause, after attaining considerable intensity.

Edna, September 14–19.—Following closely behind Dolly, Edna began forming in a squally wave over and to the north of the Leeward Islands on September 14. On the morning of the 15th the center was first definitely located at about 20° N., 66° W. Thereafter the storm strengthened rapidly to a hurricane with strongest wind about 125 m. p. h. and followed a broad curve to north and northeast that very closely paralleled the course taken by Dolly a few days earlier. The center passed a short distance to the north of Bermuda during the evening of the 17th and gave winds in gusts up to 120 m. p. h. which caused considerable damage on the Island.

Florence, September 23–26.—The easterly wave from which Florence formed was traced from the Lesser Antilles westward through the Caribbean Sea on the 21st and 22d, but the first signs of the beginning of intensification were noted on September 23 about 100 miles southeast of Jamaica. At this time squalliness was observed to be increasing, but no definite center could be located until the forenoon of the 24th when the storm was approaching the Yucatan Channel. It increased to hurricane strength while passing through the Channel into the Gulf of Mexico during the afternoon, and reached its greatest force on the 25th as it curved northward. Aircraft estimated top winds of 110 to 120 knots, and lowest pressure was given at 968 mb. (28.65 inches) on the 25th, but it is thought that these estimates of wind may have been somewhat too high since nearby ship reports did not appear to confirm them. In any case, when the center reached the northwest Florida coast near midday of the 26th, the strongest wind reported was about 80 to 90 m. p. h. However, the center passed inland over a sparsely settled area between Ft. Walton and Panama City and winds might have been a little higher in this area where no measuring equipment is located. This may also account for the relatively light damage which was estimated at around $200,000 by the New Orleans Forecast Center. The Red Cross reported 421 houses damaged, but only 3 destroyed. There was also some crop damage from wind and heavy rain in a few counties of northwestern Florida and extreme southeastern Alabama, but the storm lost force rapidly after passing inland. There were no deaths or injuries, thanks to the excellent warning service which provided ample time for evacuation of coastal danger areas.

Gail, October 2–4.—The intensification of an easterly wave was noted on the morning of October 2 near 14° N., 37° W. and on the morning of the 3d, the *S. S. Thorbjorg* passed near the center 400 miles farther west. At 1200 GMT this vessel reported westerly winds at 44 knots and lowest pressure 29.12 inches with rough seas. Maximum winds were estimated at 75 to 80 m. p. h. at the time the ship passed near the center. This observation was made near 15.5° N., 43° W. No definite fixes were obtained thereafter.

Hazel, October 8–10.—The last storm of the season was born in the Yucatan Channel on October 8. It moved northeastward and increased to almost hurricane force by the time it moved into Florida just north of Ft. Myers about 1100 EST of the 9th. Winds up to 60 to 70 m. p. h. attended the storm's northeastward transit of Florida. It passed into the Atlantic near Vero Beach at about 1700 EST of the 9th. Damage was light to moderate, as would be expected from winds of only gale force, and totaled $250,000 or slightly more. One, and possibly two, small tornadoes occurred on the storm's leading edge as it crossed

Florida: one occurred at St. James City on Pine Island west of Ft. Myers and traced a path 3 or 4 miles in length destroying several houses; there were indications of another tornado near Okeechobee City where a hangar was badly damaged and an airplane wrecked. The lowest pressure, 987 mb. (29.15 inches), and also the strongest wind gusts, 80 m. p. h., were reported from Okeechobee City. After leaving Florida, the storm moved rapidly northeastward and lost force, becoming extra-tropical by the time it reached 35° N.

The rainfall associated with Hazel added to the flood conditions existing from previous rains in several of the river valleys of Florida, as well as some of the Everglades area. The overall flood damage is estimated at 9 to 10 million dollars, but it is not possible to separate the flood damage caused by Hazel from that caused by the other rains. The upper St. Johns River reached the highest stage ever known, exceeding by 1½ feet the previous record and covering 6 miles of the highway between Melbourne and Kissimmee.

REFERENCE

1. R. P. James and C. F. Thomas, "Hurricane Barbara, 1953," *Monthly Weather Review*, vol. 81, No. 8, August 1953, pp. 255–265.

HURRICANE BARBARA, 1953

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INTRODUCTION

The second hurricane of the 1953 season, "Barbara", developed during the night of August 11 a short distance northeast of the Bahama Islands from an easterly wave that had been under observation by the Miami Hurricane Forecast Office for several days. On the morning of the 12th, aerial reconnaissance located the center still in the formative stage near 29° N., 76° W. The storm moved on a northerly course until it crossed the North Carolina coastline the night of August 13. Then it began to curve slowly to the north-northeast, re-entering the Atlantic the morning of the 14th. It passed south of New England and Nova Scotia, and thence into Laborador (fig. 1). In comparison to earlier tropical storm tracks, as reproduced by Tannehill [1], Barbara's track was almost identical to that of the storm of September 10–16, 1933; both had their eastward movement blocked near Newfoundland and were deflected northward. Although Hurricane Barbara was not an outstandingly destructive storm, it presents good material for the study of several ideas on steering.

DEVELOPMENT

The wave in the easterlies from which Barbara developed was weak on the surface as it moved across the West Indies toward Cuba, although some squally weather did accompany it. The charts at 700 and 500 mb. show good continuity of the wave which crossed San Juan, Puerto Rico about 1500 GMT, August 8. The 700-mb. chart for 1500 GMT, August 10 (fig. 2) showed the first definite indication of a closed circulation over eastern Cuba. The pilot balloon report 12 hours earlier from Guantanamo Bay, Cuba showed light west-northwesterly winds to the termination of the run at 6,000 feet which suggested a closed circulation at that time. This Low aloft deepened slightly and moved northward to a position just east of Eleuthera Island in the Bahamas at 1500 GMT, August 11 with the closed circulation extending to the 500-mb. level. It wasn't until the afternoon of the 11th that a definite Low could be noted on the surface chart. On the morning of the 12th the first reconnaissance into the suspicious area estimated winds near 75 m. p. h. on the northeast side of the center and observed that the southwest side was undeveloped—fewer clouds, less wind, and no complete wall of clouds around the "eye". As it moved northward on the 12th and 13th the storm increased slowly in intensity. A central sea level pressure of 29.15 inches and winds slightly above 100 m. p. h. were reported a short time before the storm passed inland.

STEERING

As noted earlier, the Low at 700 mb. was moving northward on the 10th and 11th. Because of the poorly defined circulation aloft at this time it was difficult to determine the steering level until about 0300 GMT of the 12th. According to information supplied by the Miami Forecast Office, 30,000 ft. seemed to be the best level from which to compute steering at that time. By 1500 GMT of the 13th, winds at 40,000 ft. (the 200-mb. level) were steering the storm (fig. 3). The contours at that time very closely paralleled the track for the succeeding 24 hours, crossing the coast east of Cherry Point, N. C. and continuing out into the Atlantic again near the Virginia-North Carolina border. Figure 4, the 200-mb. chart for 0300 GMT, August 15, again shows close similarity between the track of the storm and the contours, allowing for some eastward movement of the ridge at 65° W. This ridge, over eastern Hudson Bay in figure 3, intensified and moved eastward to merge with the High already off the east coast. Movement continued to a position east of Newfoundland where the ridge contributed toward blocking the eastward movement of Barbara. The trough which developed southeast of the Hudson Bay Low and extended into the Maritime Provinces on the 16th (fig. 5) changed the direction of flow at the steering level from southwest through south to southeast over the storm. This was another factor accounting for the movement of the storm northward into Laborador.

Investigation of the warm-tongue steering suggested by Simpson [2] gives good results for this storm. Simpson says that the analysis of temperature fields in the intermediate layer between 700 and 500 mb. reveals that a tongue of warmer, lighter air is associated with the moving tropical cyclone and that the major axis of this tongue of warm air is parallel to the instantaneous direction of storm movement. Further, that a good lag correlation exists between the present orientation of the warm tongue and the future path of the storm.

The thickness charts of the 700- to 500-mb. layer for

August 13–16 were analyzed for every 50 feet, and some of the results are given in figures 6, 7, and 8. With the storm about 150 miles south of Cape Hatteras at 1500 GMT, August 13 (fig. 6), a line paralleling the warm tongue, but through the storm center, would give an expected track crossing Cape Hatteras then curving northeastward and passing about 60 miles south of Nantucket. Reference to the actual track of the storm which is reproduced on the chart shows a close similarity between the two tracks for 40 hours in advance. Figure 7, 24 hours later, shows the same relationship maintained between the two tracks, although they are now closer together. The thickness chart for 0300 GMT of the 16th (fig. 8) shows a sharp warm tongue across Sable Island and into the Davis Straits—a very good indication of the northward track taken by the storm after this time.

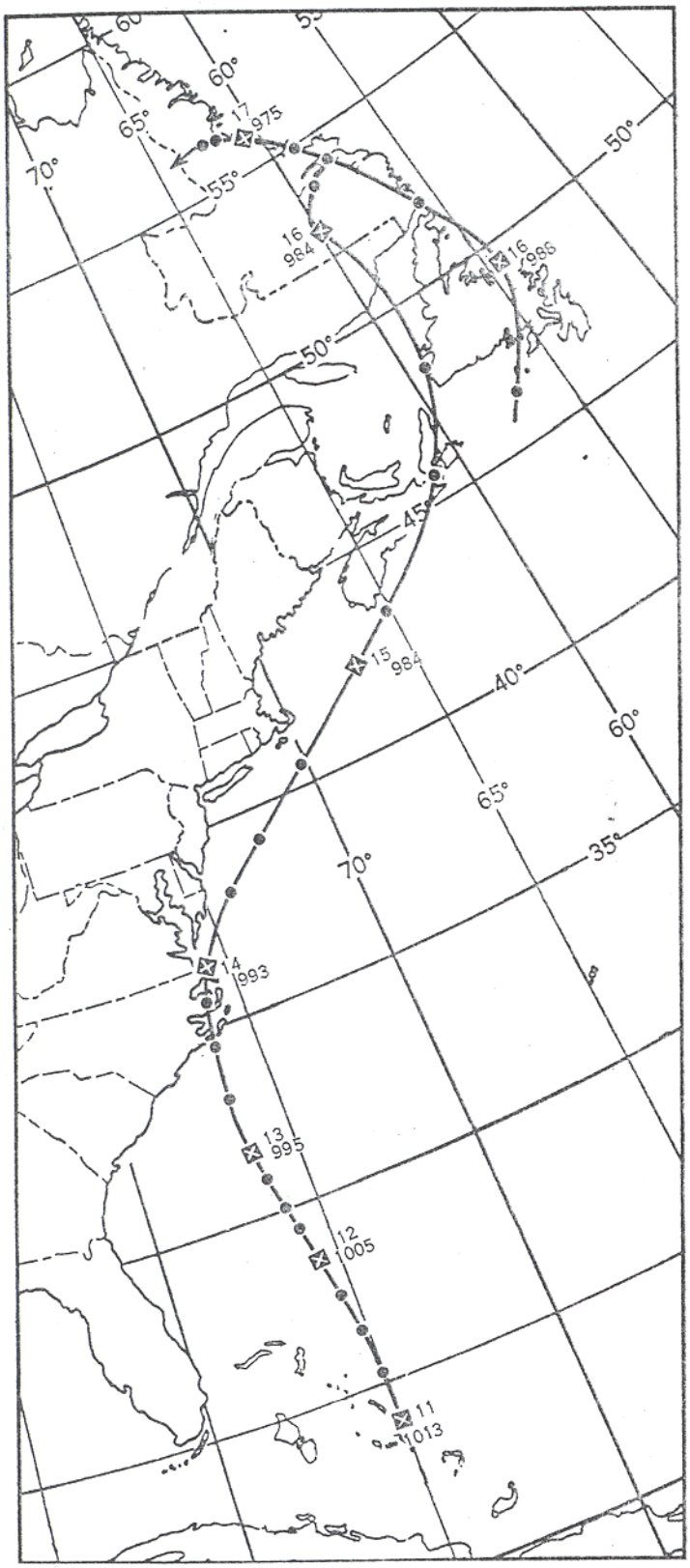

FIGURE 1.—Track of Hurricane Barbara and associated cyclogenesis near Newfoundland. The 1230 GMT positions are indicated by an "X". Circles indicate intermediate 6-hour positions. Plotted number groups are date and sea level pressure.

EXTRATROPICAL CYCLOGENESIS

Under the influence of the steering at 200 mb. and the north-south orientation of the warm tongue in the 700-500-mb. layer, the storm turned northward over eastern Nova Scotia, passing just to the west of Newfoundland. It was at this time, 0630 GMT, August 16, that cyclogenesis took place to the southeast of Barbara. Hourly surface maps were plotted for the Nova Scotia-Newfoundland area to follow the formation of this new center, and a

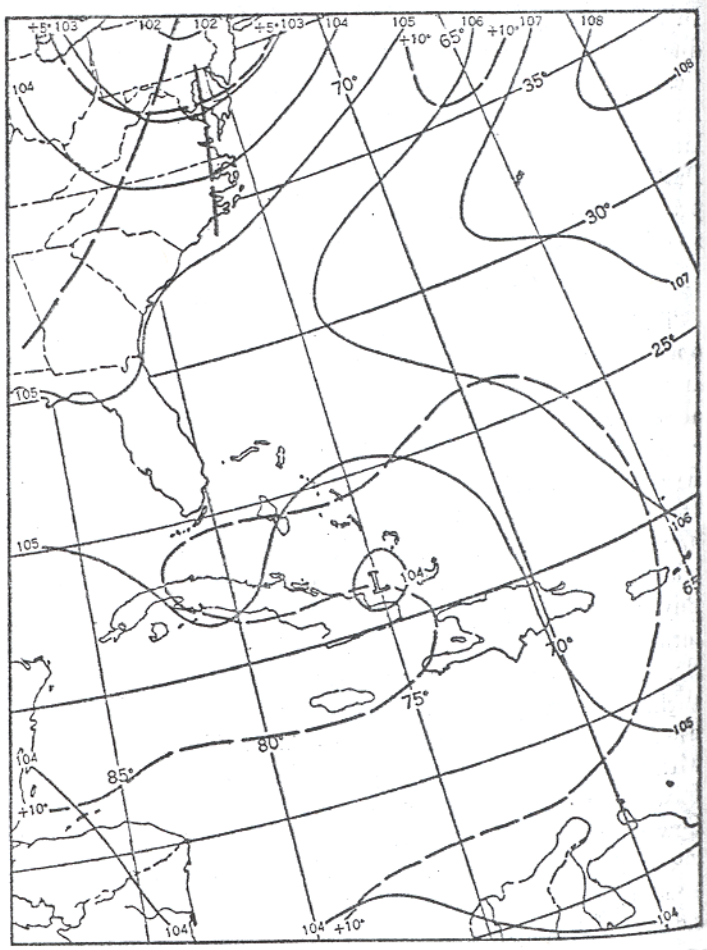

FIGURE 2.—700-mb. chart for 1500 GMT, August 10, 1953. Solid lines are contours labeled in hundreds of geopotential feet. Dashed lines are isotherms drawn for every 5° C. The Low near eastern Cuba is the first closed circulation noted in connection with Hurricane Barbara at any level.

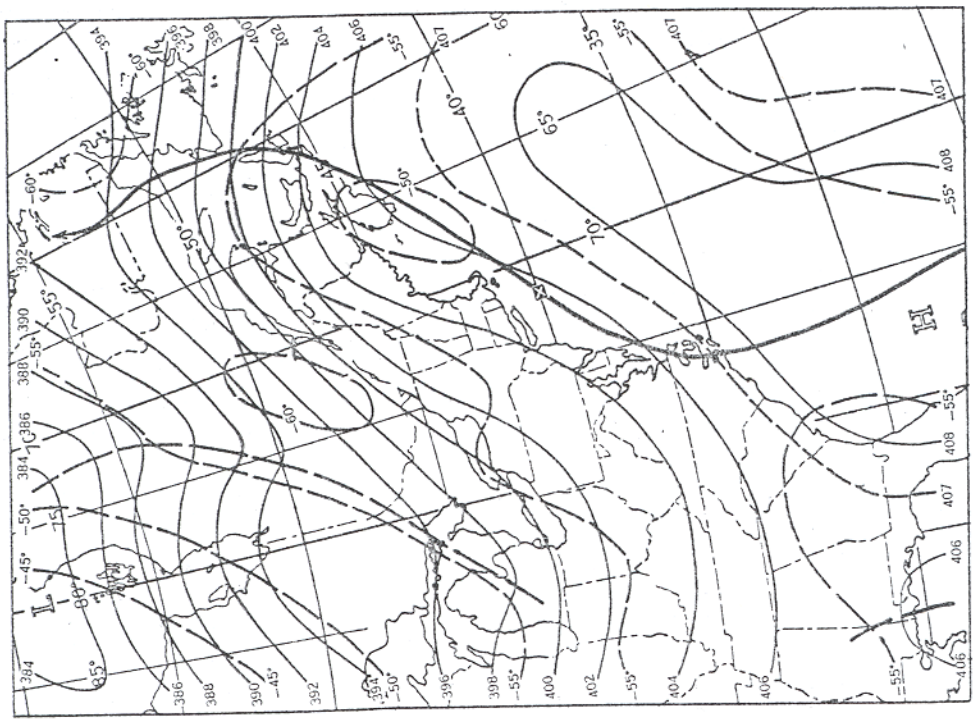

FIGURE 4.—200-mb. chart for 0300 GMT, August 15, 1953.

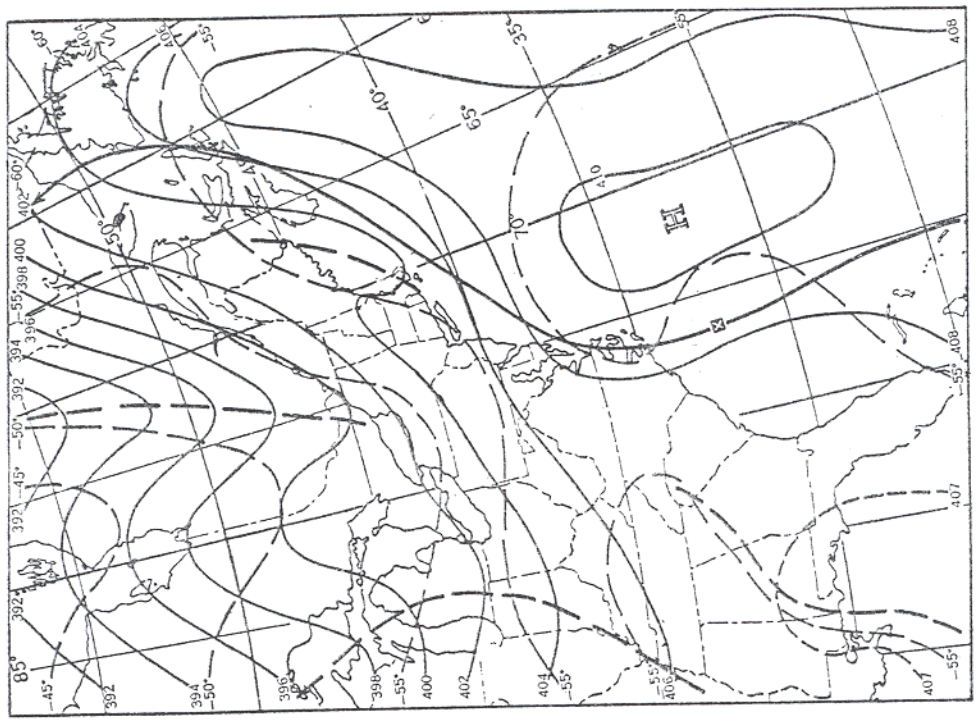

FIGURE 3.—200-mb. chart for 1500 GMT, August 13, 1953. Solid lines are contours labeled in hundreds of geopotential feet. Light dashed lines are isotherms drawn for every 5° C. Heavy dashed lines are troughs. Heavy solid line is the track of Barbara with map-time surface position of the storm indicated by an "X".

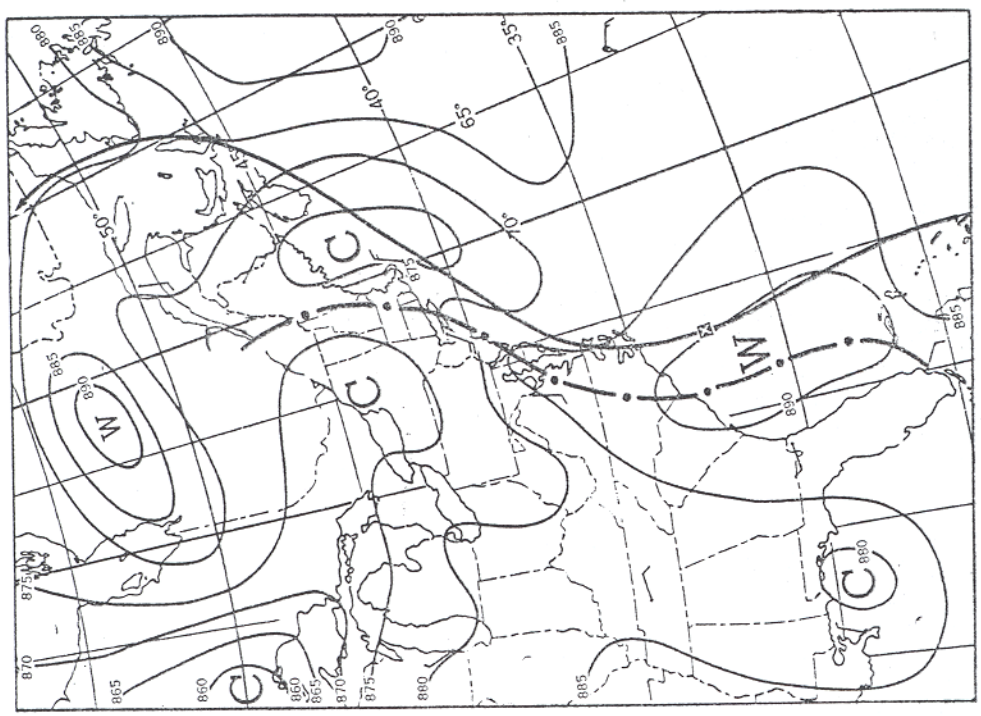

FIGURE 6.—700-500-mb. thickness chart for 1500 GMT, August 13, 1953. Thickness lines at 50-ft. intervals are labeled in tens of geopotential feet. Winds are thermal winds for the layer. Dash-dot line is axis of warm tongue. Heavy solid line is the track of Barbara with map-time surface position of the storm indicated by an "X". Notice the parallelism of the warm tongue and the surface track.

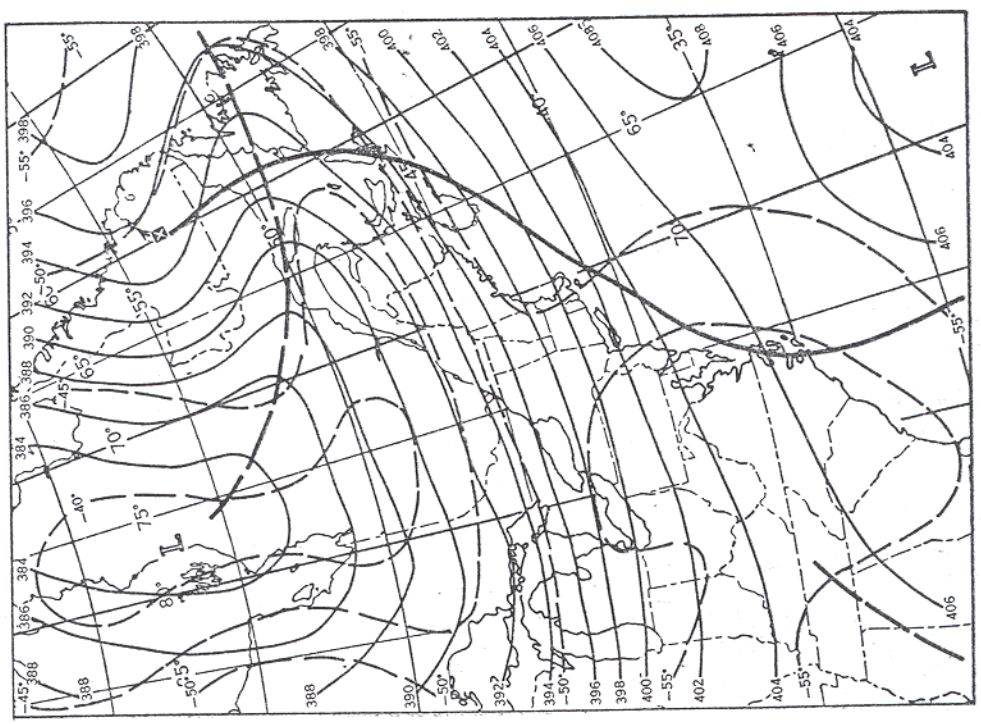

FIGURE 5.—200-mb. chart for 1500 GMT, August 16, 1953. Notice the sharp trough over the Maritime Provinces which has changed the flow just north of Newfoundland from northwesterly (fig. 4) to southwesterly.

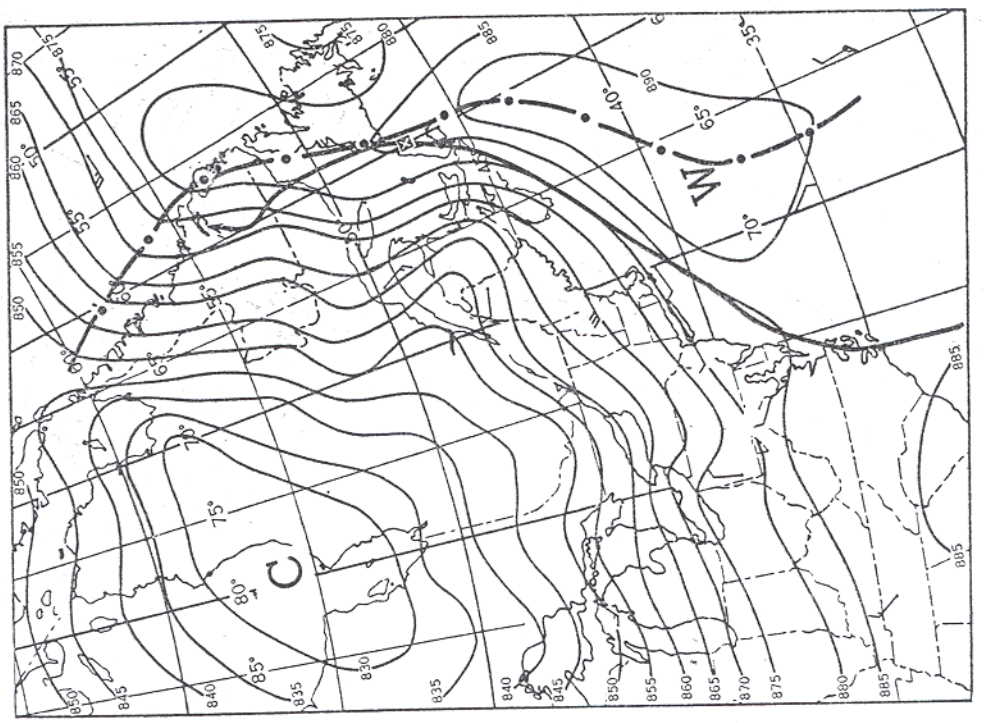

FIGURE 8.—700-500-mb. thickness chart for 0300 GMT, August 16, 1953. Notice sharp north-south warm tongue across Newfoundland.

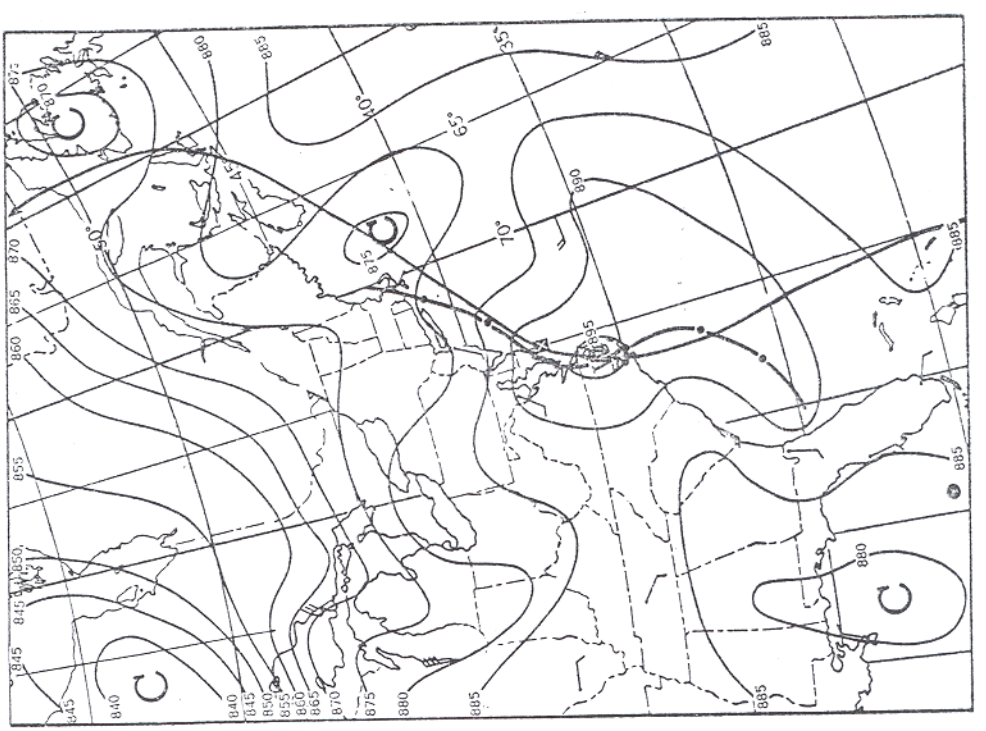

FIGURE 7.—700-500-mb. thickness chart for 1500 GMT, August 14, 1953.

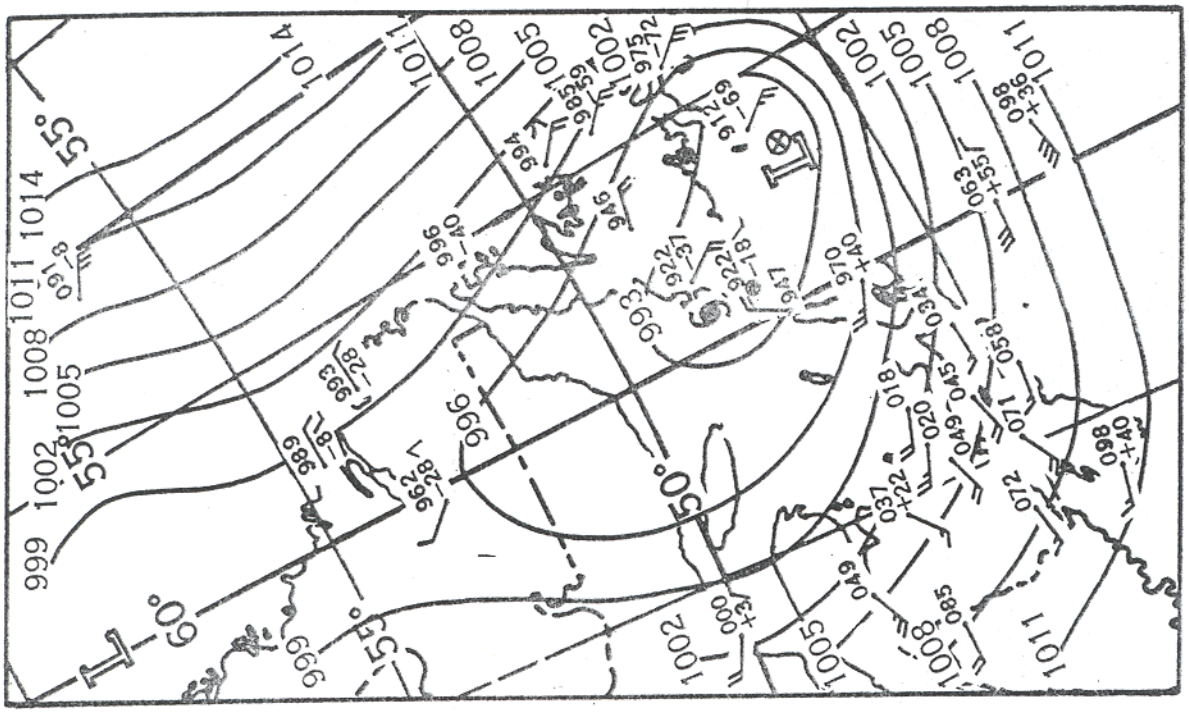

FIGURE 10.—Surface weather map for 0630 GMT, August 16, 1953. The time of the first appearance of the new Low on the southern coast of Newfoundland.

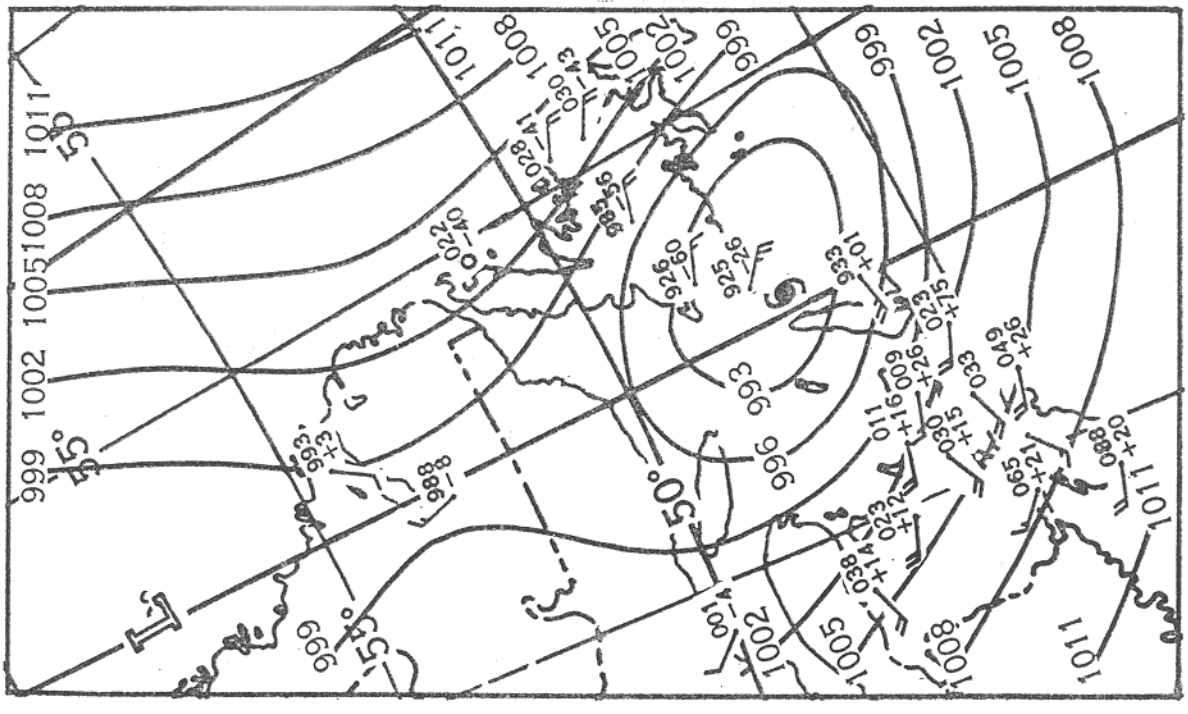

FIGURE 9.—Surface weather map for 0430 GMT, August 16, 1953. Isobars are labeled in whole millibars. Fronts and precipitation are not indicated. A trough has developed southeast of Barbara.

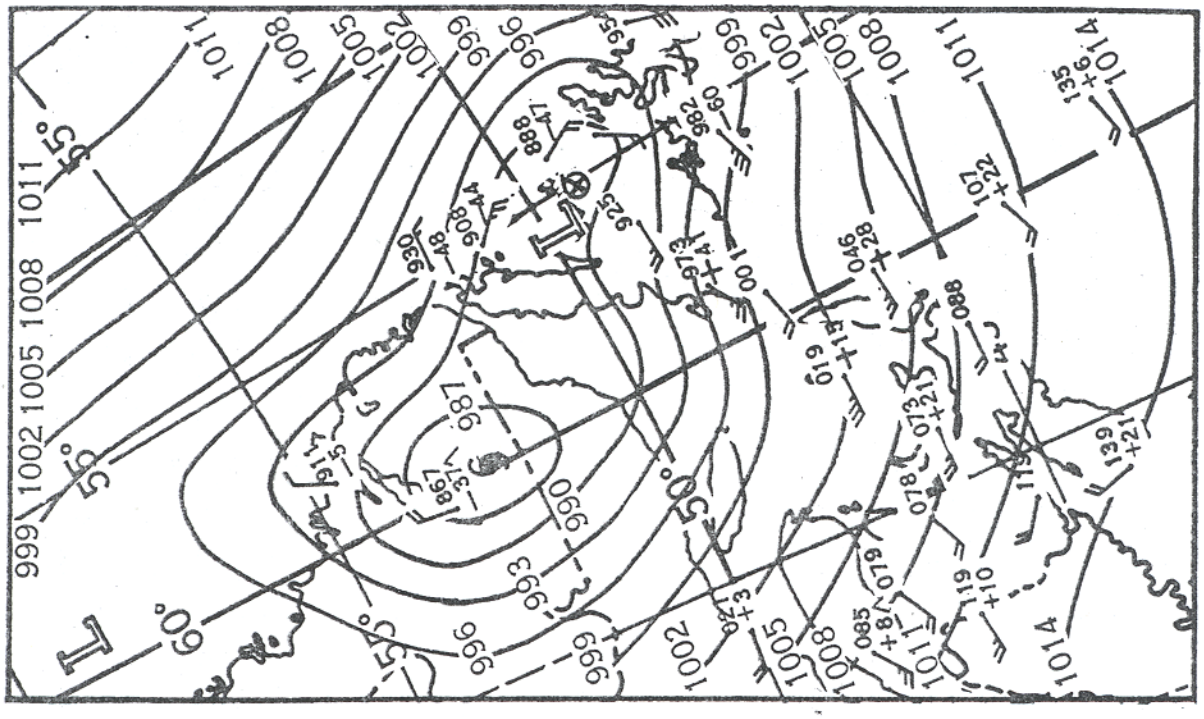

FIGURE 12.—Surface weather map for 1230 GMT, August 16, 1953. Both Lows continue moving northward.

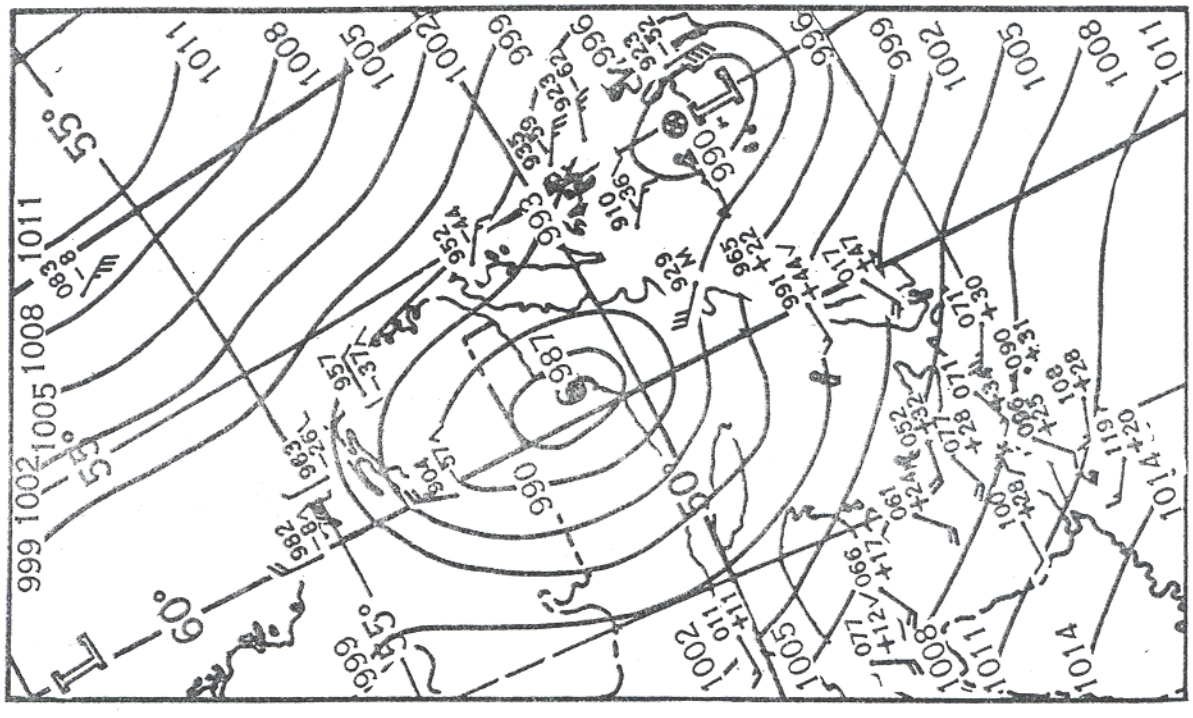

FIGURE 11.—Surface weather map for 0930 GMT, August 16, 1953. The two distinct circulations can be seen on this chart.

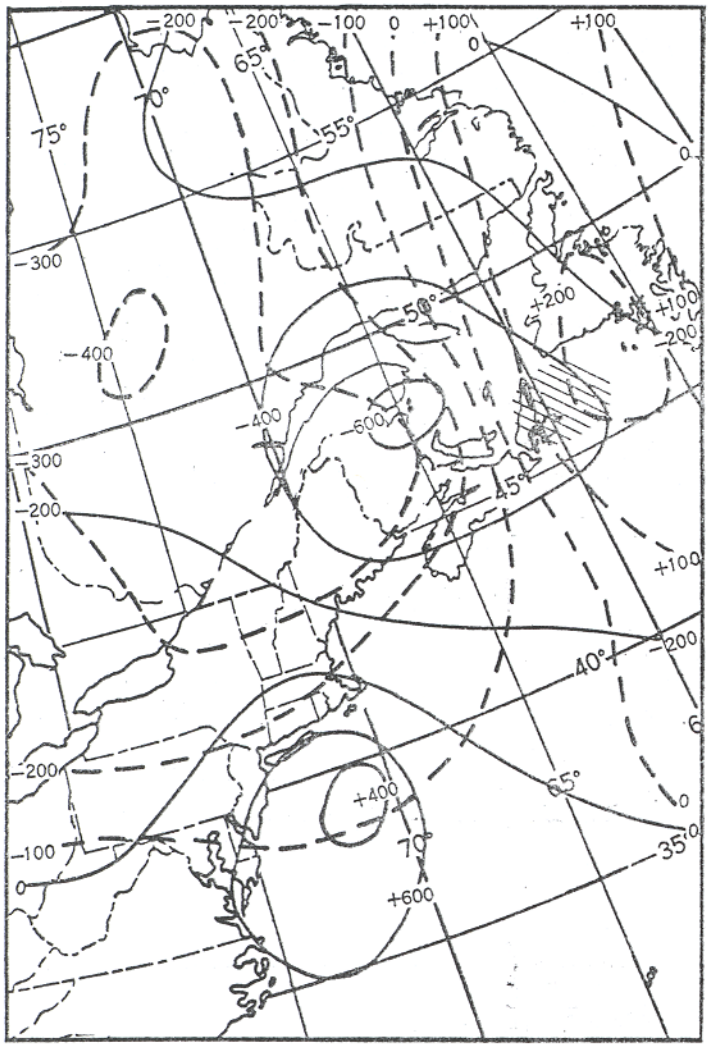

FIGURE 13.—A composite chart showing the 24-hour 500-mb. height change (solid lines) superimposed upon the 24-hour 1000-500-mb. thickness change (dashed lines) for 0300 GMT, August 16, 1953. Hatching indicates area of maximum 1000-mb. fall.

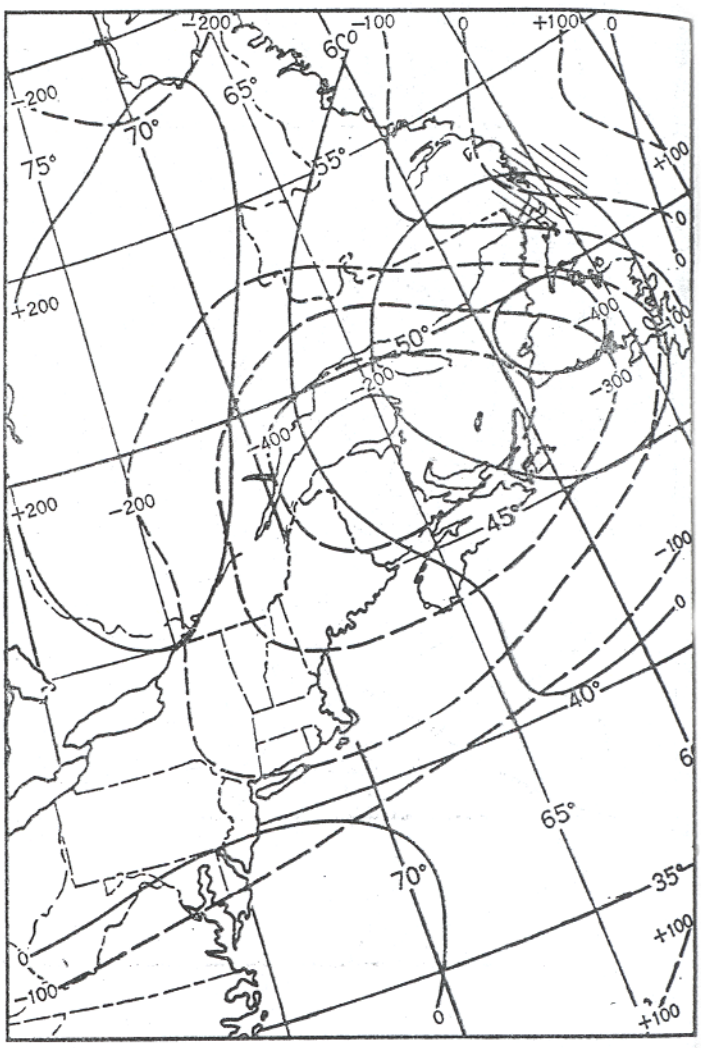

FIGURE 14.—A composite chart showing the 24-hour 500-mb. height change (solid lines) superimposed upon the 24-hour 1000-500-mb. thickness change (dashed lines) for 1500 GMT, August 16, 1953. Hatching indicates area of maximum 1000-mb. fall.

selection of these is reproduced in figures 9 through 12. In figure 9 Barbara was centered over the southwest tip of Newfoundland, and a trough was forming southeastward. By 0630 GMT of the 16th (fig. 10), a center was beginning to form in this trough. The tropical storm continued to move rapidly northward, while the new center intensified and moved more slowly northward. In figure 11 the cyclones can be seen as separate circulations. Barbara then became almost stationary near Goose Bay, Laborador (fig. 12). The new Low continued to move northward along the coast line, deepening rapidly, and soon became the more intense of the two storms.

An investigation into the relation between the upper level charts and the surface cyclogenesis was made by constructing and comparing 24-hour change charts for the 500-mb. level and for the 1000-500-mb. thickness. Superimposing the 24-hour change of the thickness on the 24-hour 500-mb. height change so as to be able to estimate the combined effects of both as well as the contribution of each to the surface pressure change, we observe in figure 13, for 0300 GMT, August 16, that the area of the combined maximum effects of the two charts extended eastward from the vicinity of Barbara toward the area of surface cyclogenesis. A rise on the thickness chart coincides with the advection of warmer, less dense air, so the combined effect of the two charts must fall somewhere between the 500-mb. fall center and the thickness rise center. Twelve hours later (fig. 14) this area had moved northeastward to the eastern coast of Laborador, slightly in advance of the surface position of the new rapidly deepening Low. The temperature distribution in the lower levels is shown by the 1000-700-mb. thickness chart for 0300 GMT, August 16 (fig. 15). The new center was not in evidence on the surface until three hours later, but it will be noted that cold air was being advected into the cyclogenetical area from the vicinity of Sable Island by

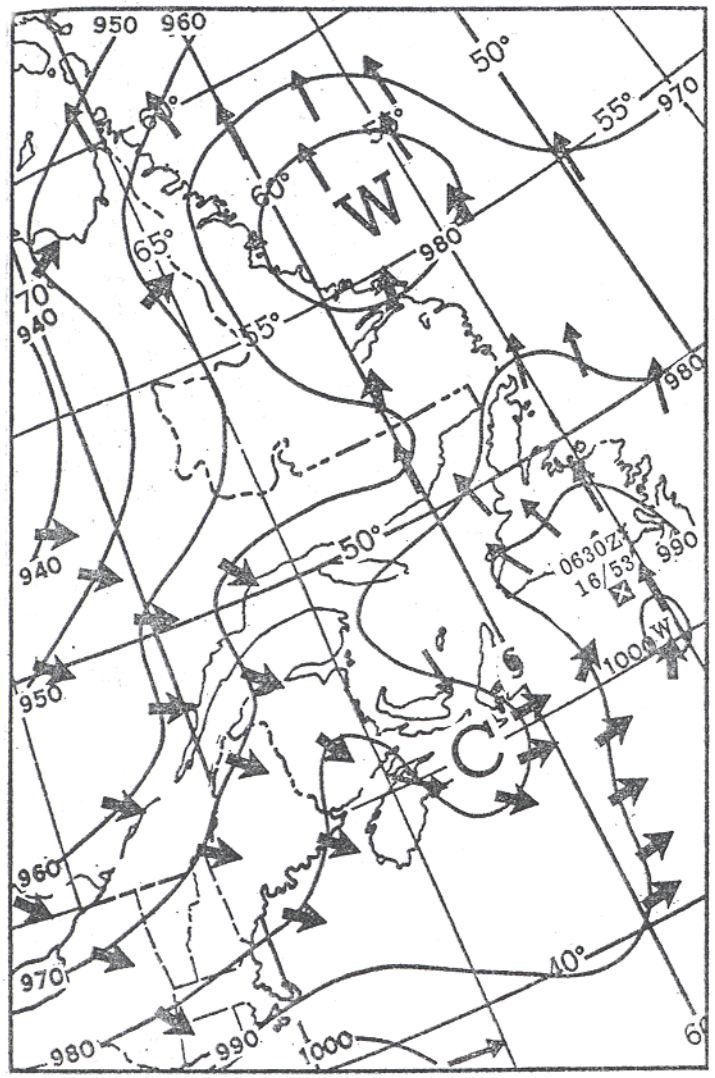

FIGURE 15.—1000-700-mb. thickness chart for 0300 GMT, August 16, 1953. Thin arrows indicate warm advection, and thick arrows cold advection. Hurricane symbol shows surface position of Barbara and "X" the surface position of the cyclogenesis.

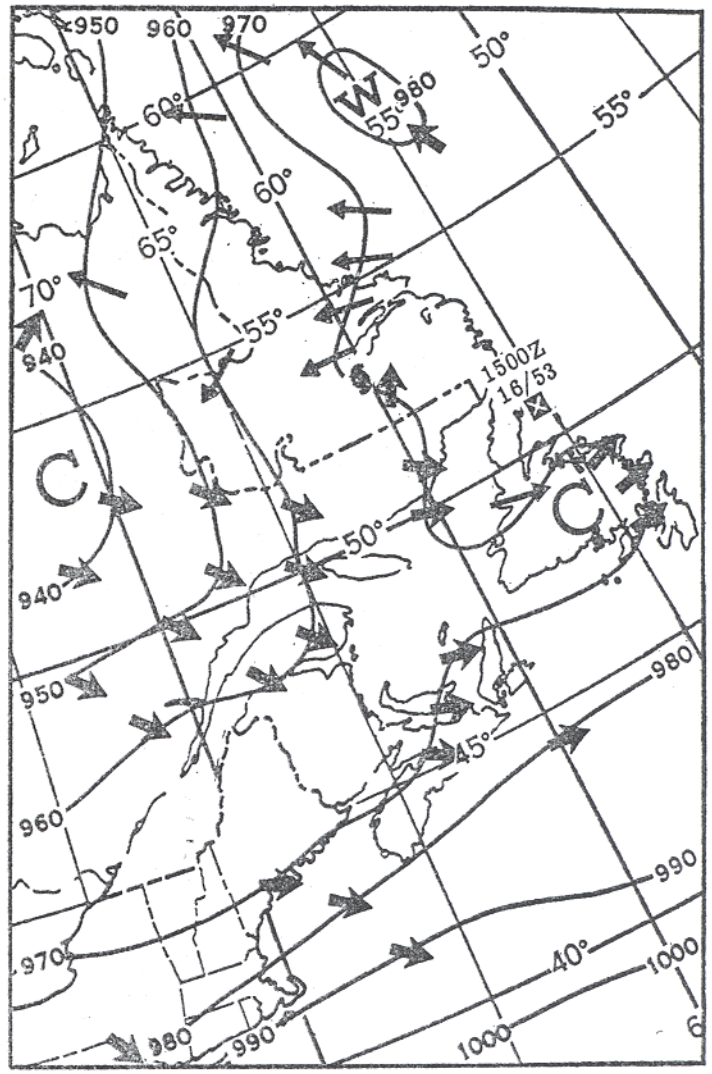

FIGURE 16.—1000-700-mb. thickness chart for 1500 GMT, August 16, 1953.

the circulation around Barbara. Twelve hours later the cold air in the low levels was being advected into the circulation of the new Low as shown in figure 16.

The 500-mb. chart for 0300 GMT, August 15 is shown in figure 17. A weak trough extends from the Low east of Hudson Bay southward toward the circulation around Barbara. Note that the temperature in the hurricane area is higher than in the surroundings. This is in agreement with Palmén's findings [3] in the hurricane of September 11–20, 1947 in which the temperatures directly above the hurricane at 500, 400 and 300 mb. averaged 4° C. higher than in the areas adjacent. The −10° isotherm in figure 17 outlines the warm tongue in the Nova Scotia area. Twenty-four hours later (fig. 18) the Hudson Bay Low had deepened slightly without much movement and the circulation around Barbara at 500 mb. had become absorbed in the deepening trough which was oriented northwest-southeast by 0300 GMT, August 16. The warm tongue by this time had moved northeastward over Newfoundland and become quite pronounced.

A closed circulation, associated with the cyclogenesis over Newfoundland developed in the trough, and by 1500 GMT of the 17th (fig. 19) this new Low dominated the 500-mb. chart. It is interesting to note that this Low had a warm center surrounded by colder air except in the north quadrant. This is the last remnant of the pronounced warm tongue brought northward in advance of Hurricane Barbara (illustrated by the mean virtual isotherms over Newfoundland in fig. 8).

EFFECTS ASHORE

Barbara crossed the North Carolina coastline between Morehead City and Ocracoke about 2200 EST, August 13

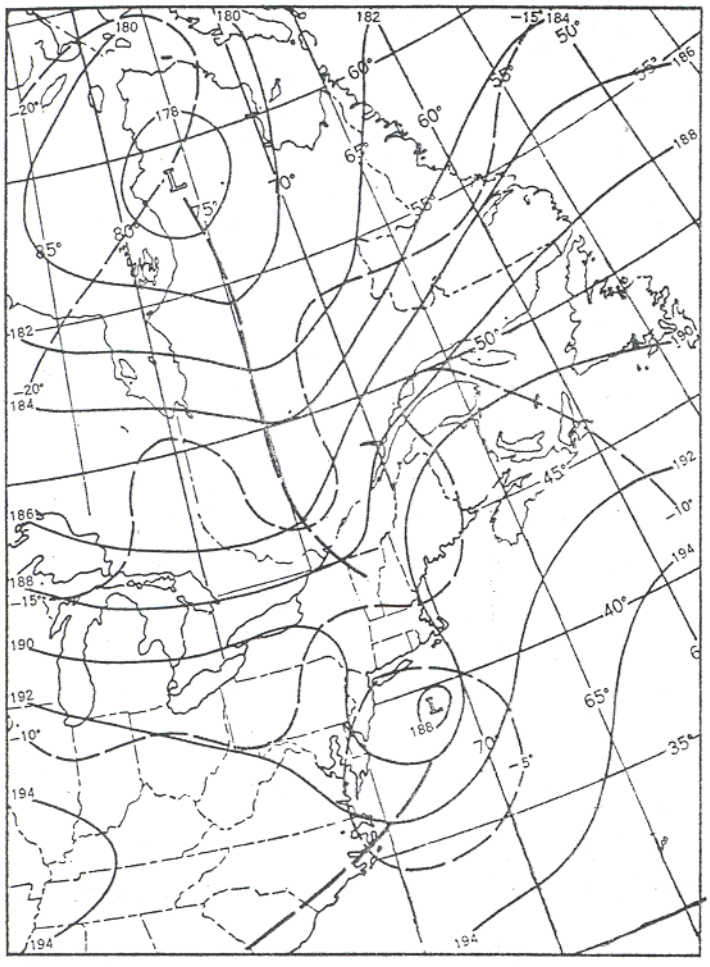

FIGURE 17.—500-mb. chart for 1500 GMT, August 15, 1953. Contours (solid lines) are labeled in hundreds of geopotential feet for 200-ft. intervals. Isotherms (long dash lines) are drawn for 5° C. intervals. Trough lines are heavy dash lines. Note the small closed "188" contour surrounded by the warmest air in the region (−5° C.) off the New Jersey coast; also, the north-south cold trough preceded by a warm ridge (−10° C.).

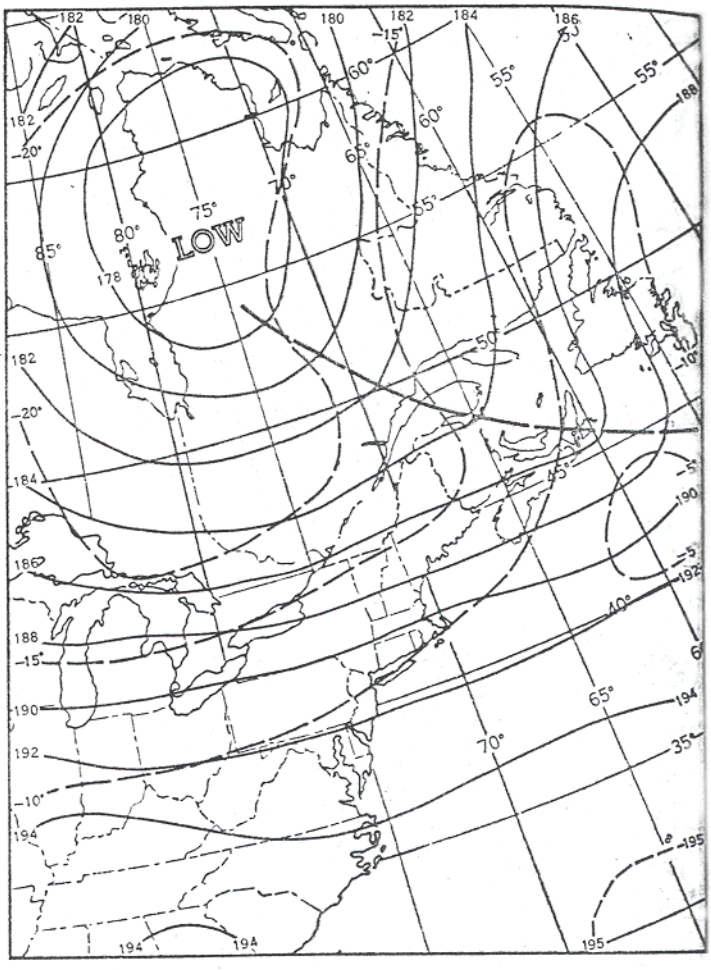

FIGURE 18.—500-mb. chart for 0300 GMT, August 16, 1953. The trough deepened and absorbed the circulation around Barbara at this level, and the warm tongue (−10° C.) sharpened.

(fig. 20), and after sweeping the entire Capes section of North Carolina passed out to sea again about 0600 EST, August 14. The lowest pressure reported on land was 29.19 inches at Coinjock, N. C. near where the storm re-entered the Atlantic; both Morehead City and Belhaven reported 29.20 inches. The strongest winds reported from land stations were gusts of 90 m. p. h. at Hatteras and Nags Head, N. C. Gusts to 78 m. p. h. were reported from Cherry Point before a power failure rendered some instruments useless. Radar fixed the center of the storm 23 miles east of Cherry Point at 2130 EST, August 13; an amateur radio operator at Ocracoke reported being in the eye one hour later; and at about 0300 EST, August 14 the eye passed about 10 miles west of Nags Head. Some unofficial rainfall amounts associated with Barbara are given in table 1.

The only known casualty of the storm occurred at Wrightsville Beach near Wilmington, N. C. where a man was swept from a pier and drowned. Two marines were injured at the Cherry Point base.

TABLE 1.—*Rainfall amounts (unofficial) for August 12–14, 1953 during passage of Barbara*

Station	Amount (inches)	Station	Amount (inches)
Wilmington, N. C.	1.29	New Holland, N. C.	5.70
Morehead City, N. C.	5.92	Cape Hatteras, N. C.	3.66
Cherry Point, N. C.	5.58	Elizabeth City, N. C.	6.09
New Bern, N. C.	5.11	Nags Head, N. C.	9.67
Oriental, N. C.	3.28	Portsmouth, Va.	6.55

Damage from the storm was light to moderate in the North Carolina-Virginia Capes area. Preliminary press reports indicated around a million dollars in damage to crops and property, crop damage in some areas reaching as high as 25 percent. Elizabeth City, Nags Head, New Bern, Kitty Hawk, and Cherry Point suffered some damage to buildings. A report from Nags Head mentioned that numerous trees were uprooted, some being large ones that survived the great September 14, 1944 hurricane unharmed.

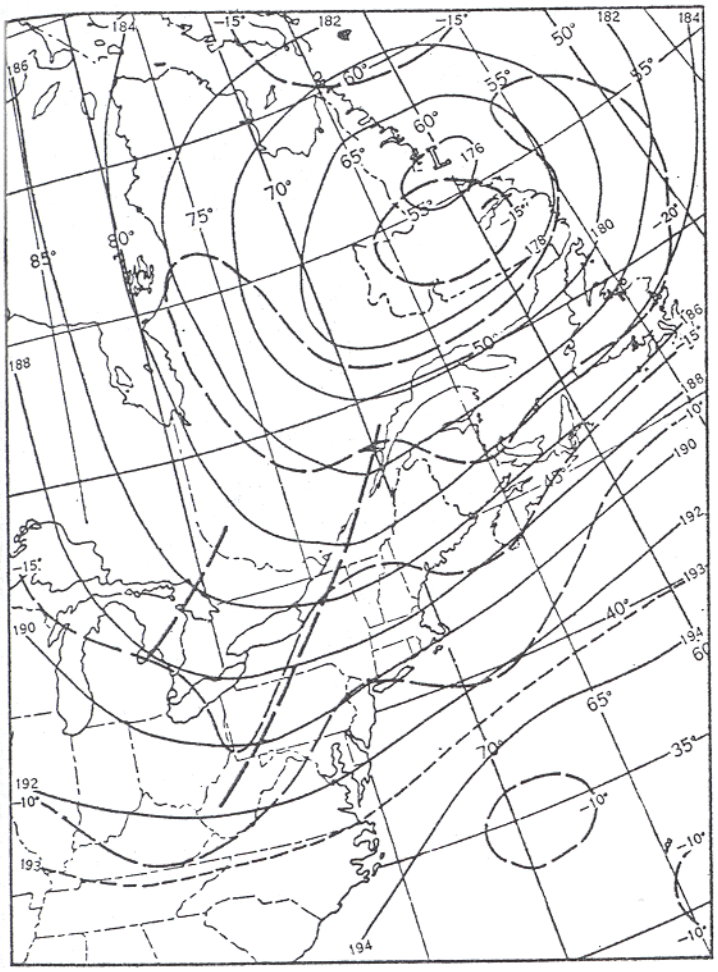

FIGURE 19.—500-mb. chart for 1500 GMT, August 17, 1953. Note that the −15° C. isotherm indicated a warm Low, while cold air surrounded it except to the north.

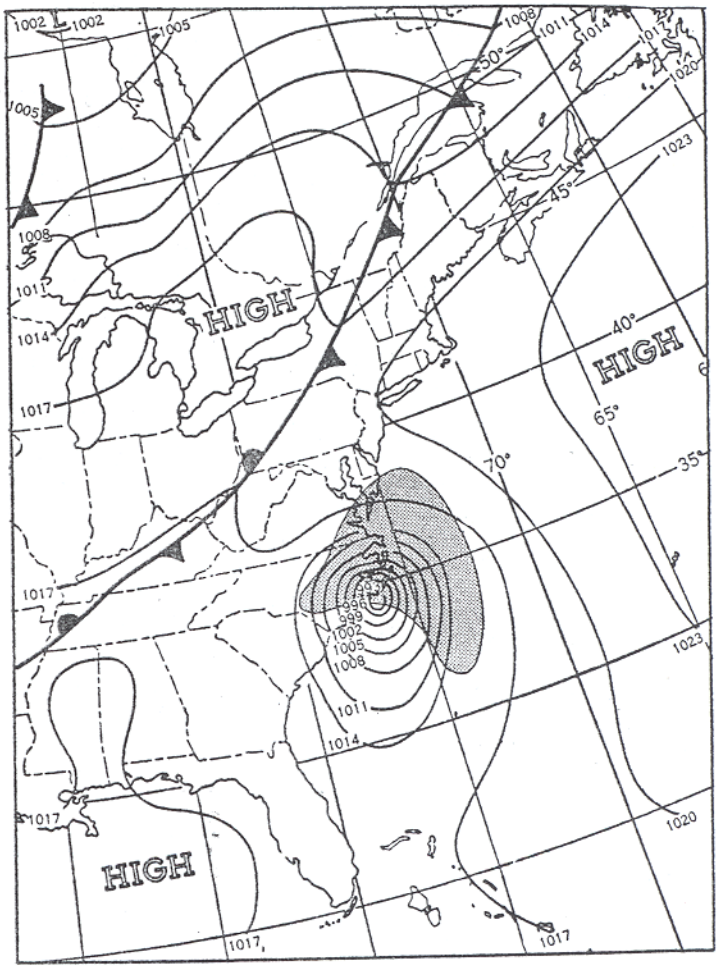

FIGURE 20.—Surface weather map for 0030 GMT, August 14, 1953. Contours are in millibars, and shaded area represents active precipitation.

After re-entering the Atlantic, Barbara continued on a northeasterly course, deepening slightly and passing a short distance southeast of Nantucket. The strongest winds in New England were only about 60 m. p. h. There were no casualties there, and damage was minor.

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