

**TOENADO AT CINCINNATI, OHIO, MARCH 11, 1917.**

By WILLIAM CHARLES DEVEREAUX, Meteorologist.

[Dated: Abbe Meteorological Observatory, Cincinnati, Ohio, Mar. 21, 1917.]

The first well-defined tornado in the city of Cincinnati, of which there is an authentic record, occurred during the evening of March 11, 1917. The preceding disastrous storm of July 7, 1915, was not classed as a true tornado although there is some evidence that it was a gyratory storm but on a comparatively large scale.

storm, and no other unusual changes in the pressure occurred at either station during the evening. At 7:11 p. m. the electric lights went out in the northern portion of the city, after a sharp flash of lightning which burnt out a transformer. The thunderstorm moved off to the east and lightning was observed in that direction during the following hour. The highest wind velocity recorded was 25 miles per hour at the observatory from 7:09 p. m. to 7:12 p. m., and 18 miles per hour at the Government Building about the same time.

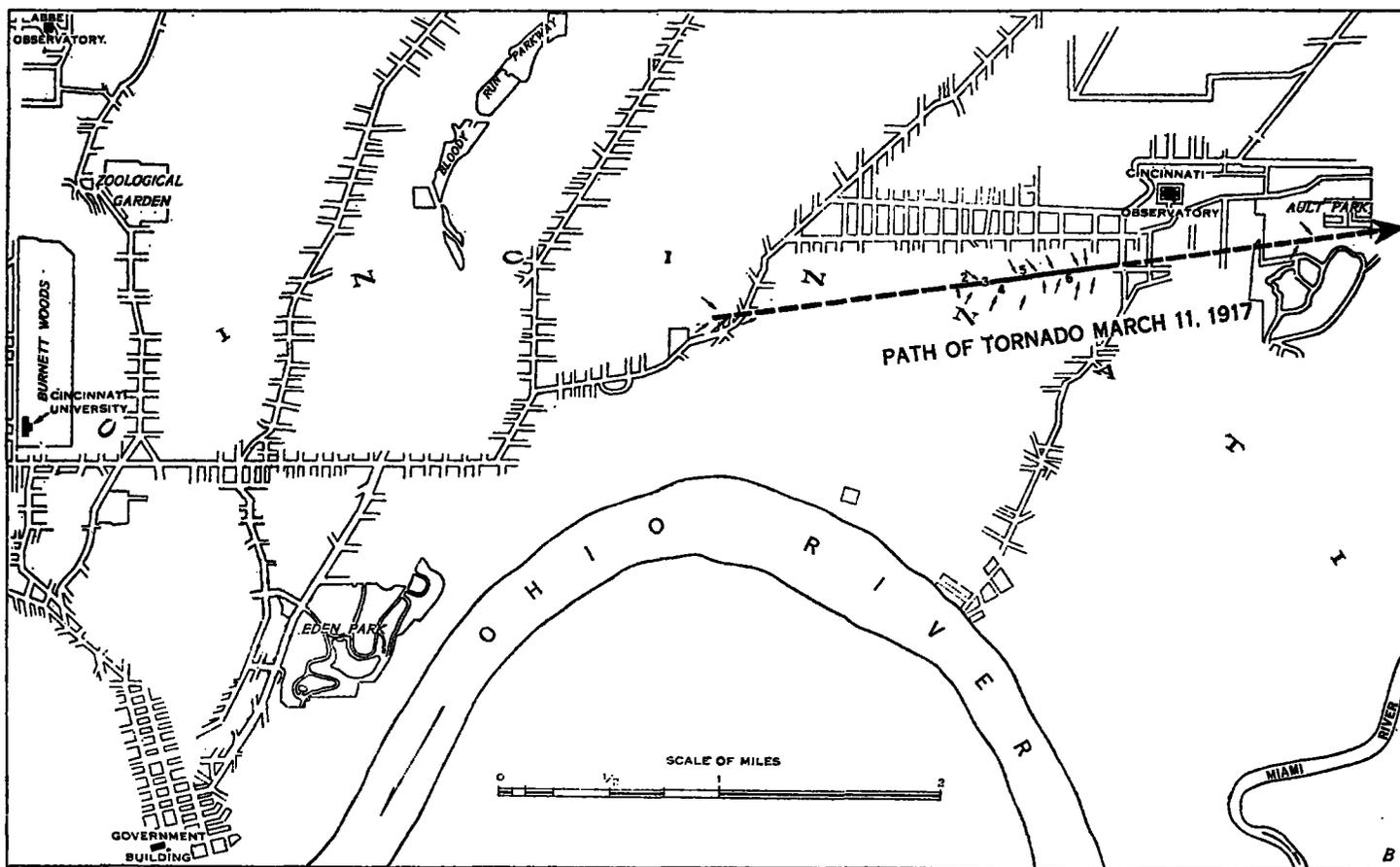


FIG. 1.—Skeleton plat of the portion of Cincinnati visited by the tornado of March 11, 1917, showing the track of the storm and the location of significant points. (Top of map is north.)

*The thunderstorm.*—During the afternoon of March 11, 1917, the weather was unseasonably warm with a light southwest wind and an overcast sky. The weather map made from the observations taken at 8 p. m., 75th meridian time (7 p. m., local standard time), showed an area of low pressure over the lower Lakes Region with a trough of low pressure extending southwestward across the Ohio Valley close to but slightly northwest of Cincinnati. At the time of observation a thunderstorm was approaching the city from the west, and a light rain was falling. The thunderstorm was over the western portion of the city from about 6:50 p. m., to 7 p. m., local time, and over the central portion of the city from 7 p. m., to 7:12 p. m. The lightning flashes were bright but the storm was not specially severe. About 7 p. m., the barograph trace at the Abbe Meteorological Observatory showed that the pressure fell sharply 0.08 of an inch and rose sharply 0.09 of an inch, and similar but somewhat smaller changes occurred at the Government Building (fig. 2). These changes were of the usual type of pressure changes attending the passage of a thunder-

*The tornado.*—The tornado occurred in the eastern portion of the city some time between 7:20 p. m. and 7:30 p. m., local time. Three of the large feed circuits of the Electric Light Co. went out at 7:28 p. m., which was probably the time the tornado was most destructive. When the path of the tornado is traced backward, it passes midway between the two Weather Bureau stations, which are 4 miles apart, and over a thickly settled portion of the city. The instrumental records do not show that any storm of this nature passed between the stations. All the available evidence seems to indicate that the tornado developed close to or over the region where the first destruction of property occurred.

A possible explanation of the origin of the tornado is that the wind at the observatory was blowing at the rate of 24 miles an hour from the northwest from 7:08 p. m. to 7:13 p. m. and at the rate of 18 miles per hour from the southwest during the same time at the Government Building. (See fig. 2.) Blowing at these rates and directions, the two winds would meet about 10 minutes later at the point where the tornado is supposed to have orig-

inated. These directions and velocities were maintained for only five minutes, after which the directions became west at both stations and the velocities gradually decreased. The assumption that the tornado developed during the time from 7:18 p. m. to 7:23 p. m. and then moved eastward at the rate of about 20 miles an hour seems to agree with available data and records at the time the storm occurred. The topography of the region is favorable for an acceleration of the winds reaching the point in question, as valleys lead up from the south and from the north to the ridge where the first destruction occurred.

The barograms reproduced in figure 2 show that there was no large rapid fall and rise in pressure at the Abbe Observatory and at the Government Building during the progress of this storm. The pressure changes partook rather of the nature of squall-hooks. The lower portion of figure 2 presents in detail the changes in wind direction and velocity at the same two stations from 6:50 to 7:20 p. m. It is regrettable that no record of the storm was secured at the Cincinnati Observatory, which stood close to its track.

The tornado passed through the eastern suburb of Cincinnati known as South Hyde Park, or Mount Lookout. The first evidence of the storm was at the corner of Fairfax and Cinnamon Streets, where a small residence was blown down. Two short blocks farther east, on Lavinia Street, a tree was blown over and another small building was partly destroyed. Another short block to the east the storm crossed Madison Road, where the poles carrying the electric cables of the Cincinnati Traction Co. were blown down and several large signboards on the east side of the street were demolished. The traction company states that the current went off on Madison Road at 7:15 p. m., but this may have been due to the thunderstorm, which apparently preceded the tornado somewhat.

After crossing Madison Road the storm passed up a gradual slope and across the Cincinnati golf grounds for a distance of about 1 mile without causing much damage. Passing down the hill to the east of the golf grounds, the storm apparently increased in intensity, and the path of greatest destruction began at the head of Morton Street, about halfway down the hill, where one house was entirely demolished and another partly destroyed. The north half of the roof of the house on the left of the path of the storm was carried 300 feet to the north-northwest over a row of houses and deposited in a yard, while a portion of the roof of the house on the right side of the path was carried about 500 feet across a gully to the south-southeast and smashed to pieces on the side of the hill. These roofs must have been picked up and carried by the gyrotory winds until they reached the points where found. The path of destruction was about 50 feet wide on Morton Street.

The path of the storm from the head of Morton Street (points 1 and 2 on map) was plainly marked, passing a little east of north down the hill to the "Arcadia" subdivision, and then up the hill across Linwood Avenue (4 on map), along the south side of the Kessing homestead, popularly known as "Policy Bill Smith's home," and to the corner of Grace and Griest Avenues (6 on map). Trees on the south side of the path lay to the north and northeast, and those on the north side lay to the south and southeast, as indicated by the arrows on figure 1. Along the path of the storm there were many evidences of the gyrotory motion of the winds. On the extensive lawn of the Kessing home (5 on map) many large trees were blown down, and they lay in every direction. At one place near the southeast corner of the house four

large trees were piled one on top of the other with the trunks radiating like spokes in a wheel. The first tree lay to the north, the next to the northeast, the third to the east across the first two, and the fourth tree lay to the south across the other three. Other topheavy evergreen trees near this point were blown down with the first gust of wind and lay to the west. Nearly all buildings, trees, etc., directly in the path of the storm between Morton Street and Grace Avenue were

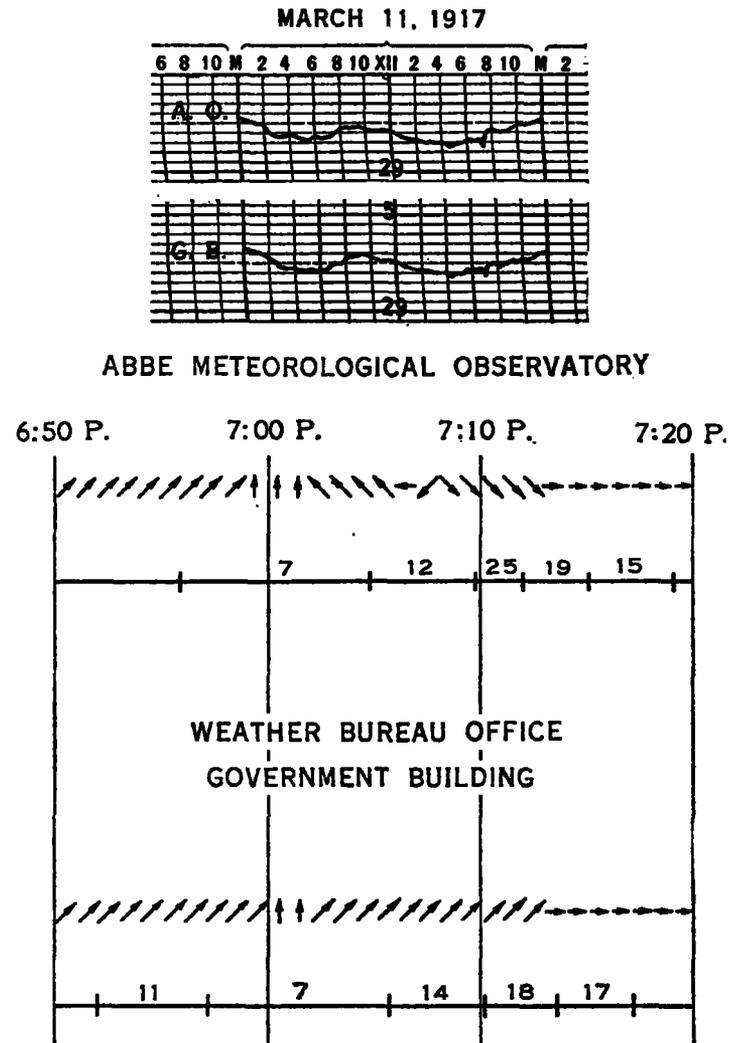


FIG. 2.—Changes in pressure, wind direction and wind velocity (mis./hr.) at Abbe Meteorological Observatory (A. O.) and the Government Building (G. B.), Cincinnati, Ohio, during March 11, 1917.

blown down, except Kessing's home, which is an exceptionally well-constructed building.

After crossing Grace Avenue the storm gradually decreased in intensity and width, but was still destructive down Griest Avenue, across Delta and Herschell Avenues, through Ault Park, and as far east as Red Bank (end of track on map).

The total length of the path of the storm from near Cinnamon or Lavinia Streets to Red Bank was 3½ miles, but the path of greatest destruction was about three-fourths of a mile, from Morton Street to Delta Avenue, and the width in this region varied between 50 feet and 300 feet or more.

As the storm occurred after dark it was difficult to observe the clouds. A few people, however, claim to have seen the tornado cloud, one witness describing it as pear-shaped with the stem toward the ground, the

center of the cloud having a dull reddish glow. This same witness also describes the lightning as being of the sheet type and of a diffused glare. There is general agreement as to the tremendous hissing, roaring noise accompanying the passage of the tornado. The rainfall attending the storm was light.

As a result of the storm 3 people were killed and 32 injured. Ninety houses were totally or partly wrecked, and the property damage is estimated as between \$250,000 and \$300,000.

551.515 (771)

**TORNADOES OF MARCH 11, 1917, IN MONTGOMERY COUNTY OHIO.**

By R. FRANK YOUNG, Meteorologist.

[Dated: Weather Bureau Office, Dayton, Ohio.]

[It is interesting to note that the two tornadoes here reported came on the same afternoon and but little earlier than the storm reported at Cincinnati which is 0° 15' west and 0° 40' south of Dayton.—C. A., jr.]

Two tornadoes passed over western Montgomery County, Ohio, March 11, 1917, about one hour later in the afternoon than the storm that partly destroyed New Castle, Ind. They moved along parallel paths about 4 miles apart, one just south of the towns of Brookville and Trotwood, and the other about the same distance south of Johnsville and New Lebanon. They occurred about 4:30 p. m. and 5 p. m. (local standard time?) respectively.

*First storm.*—The first of these (I in fig. 1) was apparently a storm of scarcely less violence than the one that visited New Castle, and caused less destruction only because its path lay across a rural community instead of a city.

The storm was of the true tornado type. Of this there is abundant evidence in every part of its track, in the distribution of the debris as well as in its destructive character. The funnel-shaped cloud was observed by nearly every one interviewed, and was seen by many who were 5 or 6 miles away. It was described by some as resembling a gigantic balloon swaying in the wind.

The appearance of the cloud was generally described as of a gray or ashen color with a distinct reddish glow. This apparently more noticeable at distances of 3 to 6 miles.

Very little if any precipitation accompanied the tornado, but there was a heavy downpour of rain immediately after. Coincident with this rain a severe hail storm occurred about 3 to 4 miles north of the path.

The noise attracted the attention of some who were in the track about 10 minutes before its force was felt, while others had not more than a minute's warning. The sound was variously described as, like that of freight trains moving over a trestle, the rumbling of near-by thunder, "a thousand airplanes," etc.

Numerous freak occurrences were related as evidence of the force and character of the storm. In one instance the roof of a brick house was blown off, the walls left intact, and all furniture lifted out and carried away. At another place a coal shed built against the west bank of a deep ravine was carried away. Large pieces of slate from roofs were carried several miles. Pieces of shingle and even straws were found driven into the bark of trees. A piece of tin from a roof was driven about 1½ inches into the trunk of an oak tree.

Half a mile west of the village of Amity stood a thickly wooded plot of about 10 acres across which the storm passed. Here the path along which the axis of the vortex moved was plainly marked. The zone of destruction is about 200 yards in width. A strip about 50 feet wide in the middle of this zone is a tangled mass of trees and brush. On the north side for about 100 feet all uprooted or broken trees fell toward the south and for an equal distance on the south side they point toward the north, the tops of the nearest ones meeting across the middle line.

After leaving this timber the path crosses the east and west road. On the south side of the road, some 50 yards out in the field stood a large walnut tree which was uprooted and fell nearly due north. A short distance farther east on the opposite side of the road was a five-room house. This house with its brick chimney was lifted bodily from its foundation and carried south across the road a distance of 100 feet. It was then completely demolished and a section of the floor was found half a mile east in a field.

The first place destroyed was that of Mary E. Myers (1 in figure) about 15 miles west and 2 miles north of the center of Dayton. As nearly as can be estimated this distance was covered in about 20 to 25 minutes. After leaving the place of Ira Denlinger (24 in the figure) about 5 miles west of Dayton, the vortex rose above the earth but descended again and did considerable damage in West Dayton shortly before 5 p. m.

The only life lost in the storm was that of Jacob Myers, who was fatally injured while clinging to a post to avoid being carried away by the wind. A few persons were injured but none seriously.

The numbers along the route of the tornado as shown on the accompanying map (fig. 1) indicate the locations

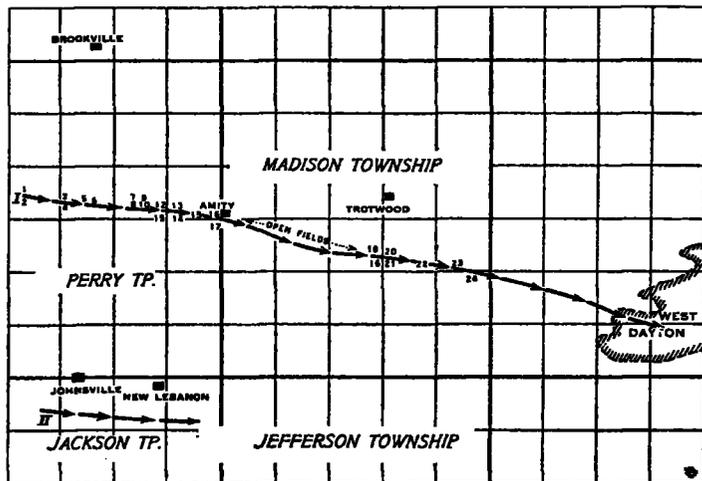


Fig. 1.—Plat of tracks of tornadoes in Montgomery County, Ohio, March 11, 1917.

The track covers a distance of about 9 miles, beginning about the center of section 16 in Perry Township and running a little south of east to the southwest corner of section 23 in Madison Township. Along this line to a width of 150 to 200 yards every farm building, except some of the more substantially built dwellings, was completely destroyed and the debris scattered over the adjacent fields. In some cases debris was caught up in the vortex of the whirl and carried miles along the path.