

THE CHARLOTTESVILLE, VIRGINIA, TORNADO OF AUGUST 7, 1922.<sup>1</sup>

By ALBERT W. GILES.

"The worst storm in over 30 years!" "The most destructive storm in the memory of the oldest inhabitants!" "The most violent storm this region has ever experienced!" "A regular Kansas twister!" These and similar comments were to be heard on the streets of Charlottesville Tuesday, August 8, 1922.

About 3 o'clock on the previous afternoon the region just west of Charlottesville was swept by a tornado of mild intensity. The day had been hot, with high humidity, and about 2:30 in the afternoon typical "thunder heads" were observed rolling up in the northwestern sky. The storm approached with the rapidity characteristic of its type, the sky becoming black, which turned rapidly to a dark gray and then assumed a copper hue. The usual premonitory gusts were experienced with the wind driving low-lying clouds in several directions. A sharp downpour of rain and hail followed, with intense lightning and thunder. In the midst of this downpour the tornado appeared and disappeared with the roar and rapidity of an express train.

The shower continued for 15 minutes longer. The sky then cleared, but the sunshine lasted for only a few minutes, a gentle rain setting in almost immediately that persisted until nearly 6 o'clock. The sky again cleared and remained clear throughout the night. The next day was as warm and oppressive as the previous one had been, a gentle southwest breeze blowing. A thunderstorm with hail developed again in mid-afternoon. Cooler weather followed on Wednesday.

The tornado developed apparently on the east flank of the Blue Ridge just below the mountain crest, for the first destructive effects were noted  $1\frac{1}{2}$  miles east of Crozet. Here the limbs of trees were broken off and small trees overturned. In its eastward sweep, however, the tornado gained quickly in intensity. It leveled a large number of trees in the grove surrounding the church 1 mile west of Mechum. The roof of the Chesapeake & Ohio Railway station at Mechum was removed, as well as a large part of the summer back porch of the home of Mr. Ira A. Beaver, near Mechum. In this neighborhood the trees and growing crops suffered severely.

The tornado lifted just east of Mechum and for a distance of  $1\frac{1}{2}$  miles there is little evidence of destruction. Descending again on the farm of Mr. Hugh Sims,  $1\frac{1}{2}$  miles west of Ivy, it removed five stacks of hay, blew the chimney from the house, and uprooted and twisted off a number of trees. The tornadic whirl again lifted only to descend with destructive violence on the farm of Mr. H. W. Vandevender at Ivy. A shed 20 by 40 feet was completely demolished, the timbers being carried 300 yards to the east, and the hay that filled the barn was strewn over a large area. Part of the roof of the house was removed, and leaves were blown with such force into the side of the house that they still adhere to the boards (September 12). Over 1,000 trees were blown down on this place, fully half of which were locusts.

The Mackreth farm, adjoining Mr. Vandevender's on the south, was the site of severe destruction, especially to trees. Nearly all the trees around the Shiloh Methodist Church adjacent to the Mackreth place were twisted off or overturned, including an oak 150 years old. The steeple was removed from the Ivy schoolhouse.

Just east of Ivy the chimney was blown from the roof of St. Paul's Church, and an oak in front of the church, 200 years old, was uprooted and overturned, crushing a small touring car which the occupants had just abandoned. At the home of the rector near by nine trees were blown down, but the house miraculously escaped.

The Lewis family was holding a reunion near St. Paul's Church, on the site of "Forest Hill," the name of the plantation settled in colonial times by one of the early members of the family. The place is famous as the birthplace of Meriwether Lewis, who, associated with William Clarke, carried on important explorations in the West in the early part of the last century. Fifteen tents comprising the encampment were leveled, cots were carried across a wire fence into the adjoining cemetery, and suitcases were picked up 200 yards from the camp.

The office building at "Spring Hill," the home of Mr. J. S. Wood near Ivy, was demolished, and a falling tree tore away the porch of the residence.

Just east of Ivy the tornado split, one whirl traveling toward Owensville for a distance of 2 miles and then turning moved eastward crossing the Charlottesville-Owensville road at Ivy Creek. This tornado did little damage, except local destruction of timber and crops.

The second whirl maintained its course east-southeast from Ivy. Striking the home of Mr. Herbert Carey, one-half mile from Ivy, the tornado picked up the roof of the ice house, a building 12 by 16 feet, and rotating it through an angle of  $180^\circ$  in a reported clockwise direction, set it down again upon its foundation. The carriage house just beyond completely collapsed, the roof being turned through an angle of about  $90^\circ$ . In the grove surrounding the house nearly a dozen trees were blown over, one tall locust having been split by a twisting motion and then broken off several feet above the ground. The house was not damaged, due probably to the protective effect of the grove.

The home of Dr. Harry Marshall, three-fourths mile southeast of the Carey place, was damaged slightly, the chimney was blown off and crashed through the porch roof. About 40 trees in the yard of this home were leveled.

Turning to the northeast the tornado crossed the railroad at a point about halfway between Ivy and Woods and descended on "Westleigh," the home of Mr. James Higginson. The implement house, chicken house, and stable shed were unroofed and blown down.

East of "Westleigh" the destructive effects are not so apparent. The tornado passed between Woods and Observatory Mountain and across the campus of the University of Virginia. In this part of its course the damage was less severe, fewer trees were uprooted, overturned, and twisted off, and crops were less affected, though badly damaged.

Although only one person is reported to have seen a funnel-shaped cloud, there can be little question but that this storm should be classed as a tornado. In most places its path was wide, one-half mile or more, hence its energy was dissipated over a considerable area, rather than confined to a narrow belt with the intensely destructive effects and loss of life characteristic of many tornadoes.

The rapid movement of the storm and the roar of its passage are characteristic of tornadoes. Numerous observers report that the storm passed in less than 2 minutes; all of the damage was done in that time. The

<sup>1</sup> The illustrations submitted by Professor Giles have been filed in the Weather Bureau archives, where they may be consulted by those interested in the study of tornadoes in general or in this particular tornado. See also the account by the same author of the tornado of October 28, 1918, this REVIEW 46:460-64.—Ed.

rotation of buildings observed in the path of the storm, the transfer of heavy building timbers hundreds of feet, and the twisting off of trees are also tornado characteristics.

No one was injured, although a number had narrow escapes. The chief damage was confined to timber and crops. The corn and fruit crops within the path of the storm were almost entirely destroyed. Locust trees suffered more than any other kind. It has been estimated that half of the trees blown down were locusts. Oaks also suffered severely, a number of oaks destroyed had been landmarks for more than a century.

The following temperature and precipitation records for the date of the storm and the days immediately preceding and following were furnished by Dr. Harold L. Alden of the University of Virginia Observatory. The barometric pressure record was taken from the daily weather map published by the Washington office of the Weather Bureau. The record as reported by the Lynchburg office was used.

Date.	Temperature.		Atmospheric pressure.		Precipitation.	Remarks.
	Maximum.	Minimum.	Lynchburg—8 a. m.	Abnormal change in 12 hours.		
Sunday, Aug. 6.....	° F. 89	° F. 62	30.06	+4	0.61	Heavy hail, thunderstorm. Hall, thunderstorm.
Monday, Aug. 7.....	87	66	29.86	-14	0.79	
Tuesday, Aug. 8.....	87	64	29.76	-6	.....	
Wednesday, Aug. 9..	77	59	29.96	+4	0.07	
Thursday, Aug. 10..	77	62	30.10	+8	.....	

Tornadoes almost universally occur in the southeast quadrants of the cyclonic storms or cyclones, the type of storm that occurs in the United States and gives it nearly all of its precipitation. The weather map for Monday morning, August 7, shows such a storm occupying the region of the Great Lakes, the center of which, marked "low" was a long elliptical trough with axis extending east-northeast and west-southwest. The temperature distribution associated with this storm was rather peculiar, a belt of relatively low temperature occupying the Appalachian region from New York to Alabama.

The weather map for Tuesday shows that the storm had moved northeastward and its axis had shifted to a northeast-southwest direction to form a long linear trough paralleling the Atlantic Coast. Such long linear lows constitute the type of cyclone in which tornadoes frequently develop.

The immediate cause of the tornado was the passing eastward of the relatively cold belt of air that occupied the Appalachian region on Monday morning. This colder air came into conflict with the warm air moving northeastward on the Piedmont and produced a turbulence with vortex form that burrowed downward through the lower layers of air until it reached the surface of the earth as a typical tornado.

It is interesting to note in connection with the description of this tornado that a similar phenomenon occurred August 18, 1904. This tornado followed a path closely parallel to that pursued by the one of recent date. It had its origin in "Pigeon Top," an eastward sloping spur of the Blue Ridge west of Owensville and traveling rapidly eastward passed through Owensville. East of Owensville it turned to the southeast and reached the vicinity of Woods before its energy was dissipated. A funnel-shaped cloud followed by "white smoke" was observed by a number of persons. This tornado was accompanied by extremely heavy precipitation and intense lightning. Hail did a great amount of damage also.

At Owensville the path was one-half mile wide. A number of buildings were leveled and crops were destroyed. Fallen trees blocked the roads for days. Only one person was hurt. She was hit by a window sash that was blown into the room where she was sitting.

TORNADOES IN NEW MEXICO.

The rarity of tornadoes in New Mexico is justification for the printing of the accounts of two small tornadoes which occurred on June 2 and Aug. 4, respectively. The account is furnished by Mr. Chas. E. Linney, meteorologist in charge of the New Mexico Climatological Service.

The tornado of June 2, which occurred near Onava, is described by Mr. Ralph Hicks as being observed at 4 o'clock p. m. and lasting but a few moments. It moved to the southeast, the length of path being unknown. There was some rain, thunder, and lightning but no hail. The day was hot and sultry with the clouds moving very rapidly; a funnel cloud was observed. The damage amounted to about \$2,000 and was confined to fences, buildings, and live stock. No lives were lost.

The tornado of August 4 was observed at 2 p. m. at a point about 16 miles southwest of Dedman, Union County. Mr. Lewis Hall, who was caught by the storm, reports that it came from the northwest and moved to the southeast in a path about 3 miles long. It caused a loss close to \$5,000 in buildings, crops, fences, and live stock, while Mr. Hall and his wife were seriously hurt. The tornado was accompanied by rain, hail, thunder, and lightning, and a pendant funnel cloud was present.—A. J. H.