

# Severe Weather

## MY FAVORITE TORNADO

By

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### 1. THE AFTERMATH

"It'll be like trying to put a picture postcard back together. There was ample blue sky, clouds white as a diaper, hills, dales and an eyeful of farmland. Nice territory. Trees had been uplifted, roofs snatched away, garages crushed and debris flung over more than a hundred acres. Parts of Strites Orchard looked like a shot from World War One's Western front. The ground was littered. The bare trees were heavily laced with pieces of fibre-glass insulation. Here and there lay a shoe, a child's toy, a phone book, a broken chair and a couple of coffee cups. A rain gutter was wrapped like a necktie around a nearby elm. It was a beautiful

day. Canary yellow forsythia shone under the close sunlight and the tang of spring-time green lay in the rare morning wind. Nice day. Nice territory. Yet ... heart-break."(2)

### 2. INTRODUCTION

"Look, a tornado is forming over there," I pointed out to my mother as I drove her to the shopping center at 4:45 PM. "Don't be silly," I was told. It was April 5, 1977, and seemed too cold for a tornado (it was around 50°F.)

I dropped Mother off at the Harrisburg East Mall and sat for ten minutes watching the clouds move. The sky reminded me of

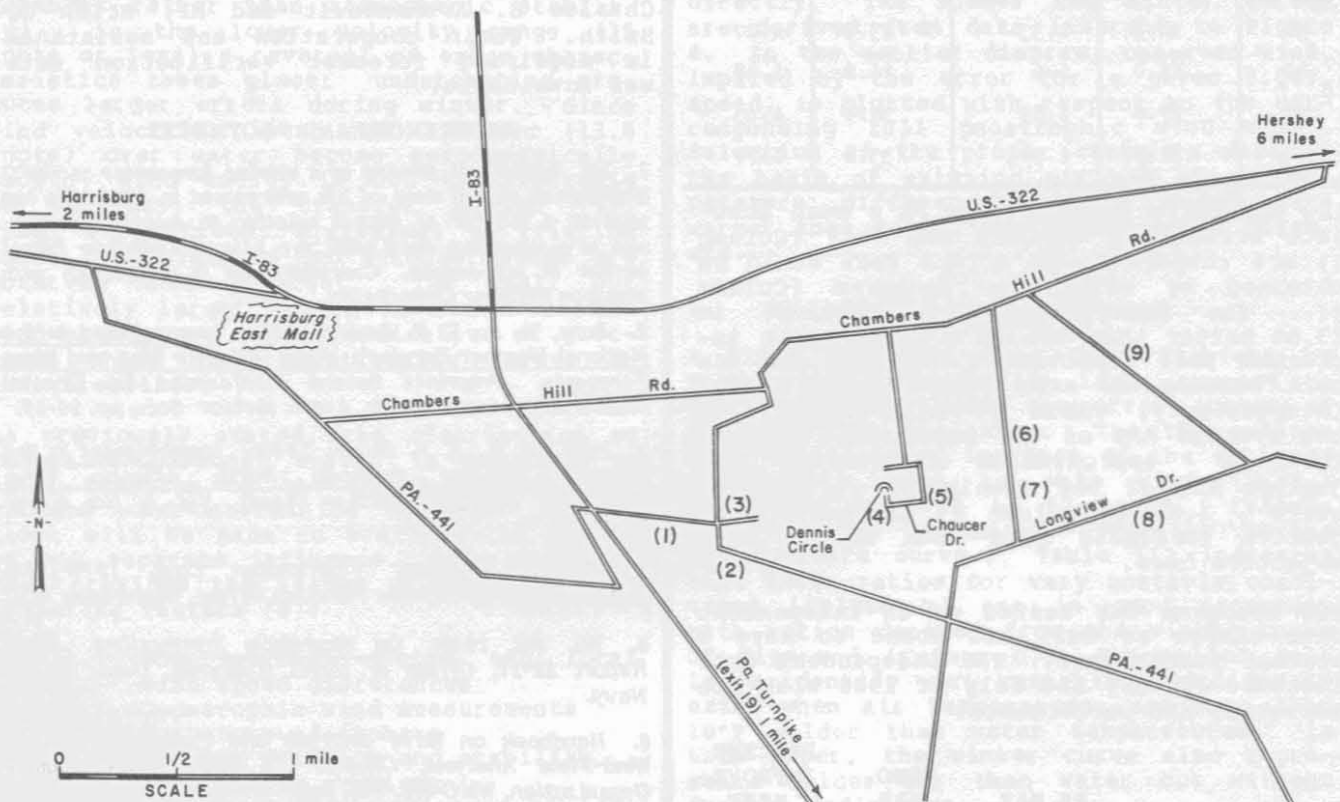


Figure 1. Map of Chambers Hill, PA; numbers indicate locations mentioned in the article text (see Section 3).

the beginning of the National Geographic movies we used to see in second grade, showing time-lapse photography of cloud movement.

When I arrived home, my father, who had been in bed with a 102° temperature, was in the driveway in his housecoat. He pointed to the sky saying to me, "A tornado just went by."

The tornado that touched down in my neighborhood, Chambers Hill, just four miles east-northeast of the Capital City Airport (CXY) and four miles northwest of the Harrisburg International Airport (MDT) around 5PM on April 5, 1977, occurred at a time in my life when I was trying to decide what to do with my future. I had already planned to go to college to study some sort of physical science. Although interested in meteorology, I figured it was just a passing fancy. However, my fascination of the Chambers Hill tornado convinced me that this interest was not only a hobby, but something I wanted to do for the rest of my life.

Tornadoes in Harrisburg, PA, are not a rarity; there have been many reports of less devastating tornadoes in the area. The most widely known one happened in Hershey, PA, just fifteen miles east of Harrisburg, on October 11, 1975. Although the Chambers Hill tornado may not be significant compared with the Brandenburg, KY or Xenia, OH tornadoes of April, 1974, it was still a disaster since people were affected and suffered property loss.

### 3. STORM HISTORY

"The events of the tornado are still vivid in our minds. It was right before we started to eat our dinner. I noticed it was getting very dark and rainy. It was raining quite heavily. I was concerned that two of the children were not home from school yet and I was going to pick them up at the bus stop. I just put dinner on the table and it got very windy. My husband went to close the storm door and with that we heard this loud noise. We thought the pine trees in front of the house were rolling and that they were coming through the front window. We all got up at the same time and ran for the back door. We only got between six and ten feet because of the turbulence. We had no idea as to what happened" (3).

The funnel cloud's path of destruction was erratic; it skipped and jumped through Swatara and Lower Swatara Townships. Almost miraculously, no one was seriously hurt.

Residents reported seeing a greyish-blue funnel cloud race across the valley from Blue Mountain toward Chambers Hill (numbers

in parenthesis refer to the map in Figure 1). The tornado touched down by the Host Inn [1], where it ripped off half the roof of a house on Highland Street [2]. It struck a barn, damaging a porch, fence and trees, and then moved across Route 441, where it hit and damaged Joseph Hoffman's new farm house [3]. The tornado then skipped over the neighborhood to Dennis Circle [4], in an area called the Swatara Crest. The tornado hit the house belonging to Donald and Marie Decker. At the time, Mr. and Mrs. Decker and eight of their thirteen children were sitting down to dinner. The tornado tore the roof off the \$75,000 brick house that Mr. Decker, who is a carpenter, had built four years earlier. The family was thrown across the kitchen; the diving board from their pool landed two blocks away, along with the roof of their house.

According to Donald Horner, Swatara Township Code Enforcement Officer, one of the Decker's neighbors had thirty-nine trees in his front yard, some as tall as fifty feet, and all were either broken or torn up. There is no way to put a monetary value on a mature tree.

The tornado then moved to Canterbury Place [5], a new development close by. Sixty-nine houses were either under construction or just completed; some of the lawns had not even been seeded yet. Fourteen of the new homes were damaged; four had to be torn down and rebuilt.

Then, the tornado skipped over to Cockley Road [6], taking the roof off a house owned by Earl Strite. It then knocked over a mobile home in a trailer court [7], and damaged a couple of others, injuring one woman. After scattering debris and insulation all over Strites Orchard [8], passing within a half mile of my home [9],



Figure 2. Damage to the Decker house, indicated by Location 4 in Figure 1.

the tornado finally dissipated over the far part of the orchard. Horner said the orchard looked like "marshmallows or cotton candy stuck all through the trees." Chambers Hill Road, the main street through Chambers Hill, was said to look like the Schuylkill Expressway during rush hour; four to five hundred sightseers came to witness the destruction.

Pennsylvania Power and Light (PP&L) reported three outages of electricity. The first occurred at the time of the tornado when forty-one customers had no power for three hours. The second was at 6:45 PM; sixteen families had no electricity for six hours. At 8PM, 740 families lost their power for forty minutes. The second outage was probably caused by clean-up efforts. The last outage was most likely caused by PP&L shutting off the power so as not to hamper cleaning.

#### 4. NATURE

"When it was all over, we looked up to a beautiful sunny sky. The roof was gone

and so was the porch. My neighbor was first on the scene and he told us what it was, because he watched it from his back window. The back door was jammed, so he helped us get it open. Luckily, the electricity was knocked off, because there were a lot of hanging electrical wires" (3).

The National Weather Service issued a statement the following morning saying, "a tornado touched down approximately five miles east of Harrisburg around 5:10PM EST April 5, 1977. The following damage report was given to the Harrisburg Weather Service Office by the Civil Defense officer: 6 homes destroyed, 20 damaged, 50 people homeless."

Records at the National Severe Storms Forecast Center (NSSF) in Kansas City, MO classified this tornado as a 2,1,2 on the Fujita-Pearson (FPP) scale of classifying tornadoes (see Table 1). According to my own inspection of the disaster area, I agree with the records. Roofs were taken

TABLE 1

Fujita Pearson (FPP) scale for classifying tornadoes

#### Fujita (F) Scale of Intensity

- F -: Little or no damage (40 mph or less winds). Breaks twigs off trees.
- F 0: Light damage (40 - 72 mph winds). Some damage to chimneys or TV antennae; breaks branches off trees.
- F 1: Moderate damage (73 - 112 mph winds). Peels surface off roofs; trailers pushed or overturned; windows broken.
- F 2: Considerable damage (113 - 157 mph winds). Roofs torn off frame houses leaving strong upright walls standing; weak structured houses and/or trailers demolished.
- F 3: Severe damage (158 - 206 mph winds). Well-constructed frame houses leveled, leaving piles of debris.
- F 4: Devastating damage (207 - 260 mph winds). Structures with weak foundations are lifted, torn and blown off some distance. Trees are debarked by small flying debris. Cars thrown some distance or rolled considerable distance. Large missiles are generated.
- F 5: Incredible damage (261 - 318 mph winds). Strong frame houses lifted clear off foundation and carried considerable distance to disintegrate.
- F 6 to F 12: Inconceivable damage (319 - sonic speed).

#### P-scale path length

- P -: less than 0.3 miles
- P 0: 0.3 - 0.9 miles
- P 1: 1.0 - 3.1 miles
- P 2: 3.2 - 9.9 miles
- P 3: 10 - 31 miles
- P 4: 32 - 99 miles
- P 5: 100 - 315 miles

#### P-scale storm width

- P -: less than six yards
- P 0: 6 - 17 yards
- P 1: 18 - 55 yards
- P 2: 56 - 175 yards
- P 3: 176 - 556 miles
- P 4: 0.3 - 0.9 miles
- P 5: 1.0 - 3.1 miles



off some homes and one or two houses had collapsed walls. The length was 1.75 miles and the width of the funnel was about 200 feet. Wind speeds were not measured, but can be estimated from the FPP scale (mentioned above) as being between 113 to 157 mph. No one was killed but there was one injury, the woman in the trailer. She was taken to the hospital and released the next morning. Two million dollars was lost in damages. This figure does not include trees and utilities. Most of the homes in Dennis Circle and Canterbury Place are worth around \$120,000 today. Two mobile homes from the trailer court were demolished.

I personally took a damage survey at 9AM the following day. This is what I saw:

- a. Rt. 441: Broken and uprooted trees. Roofs off homes.
- b. Swatara Crest: Whole roofs off, trees uprooted, two houses totalled, one off foundation. Garages destroyed. Just a few walls of the Deckers' home left standing, trees turned every which way.
- c. Trailer Court: One trailer upset, two damaged. Storage shed torn up. Small trees uprooted.
- d. Strites Orchard: Insulation and debris strewn throughout the orchard. Metal supports of a green house bent like straw. Green house collapsed.

## 5. PREDICTION

The National Weather Service in Harrisburg issued the following at 5:10PM EST: "The National Weather Service has issued a tornado warning effective until 6:30 PM for the Eastern portion of Dauphin and Lebanon counties of Pennsylvania. A tornado five miles east of Harrisburg was reported by the public and is moving east at 40 miles per hour. If threatening weather approaches, you should go to a place of safety." The Emergency Broadcast System (EBS) was activated at that time on WHP AM and FM radio and television in Harrisburg.

During the several days before, and the day of the tornado, severe thunderstorm watches were in effect for the Harrisburg area. This means the conditions for severe thunderstorms were present. Perhaps when the Doppler Radar is perfected and put into full swing, we might be able to better identify rotational returns and potential tornadoes. But with the present state of the art, it is not possible to detect each and every tornado signature on radar. This tornado was not expected. The warning was issued after it was spotted by the public and reported to the National Weather Service. There was no lead

time; in fact, it may have actually been negative lead time (reported to the public after the fact).

## 6. RELIEF

"The Red Cross came to our assistance and gave us clothes for the kids. The neighbors couldn't have been better. We had no problem at all with insurance and not much red tape. I would like to recommend that everyone should have full detail of every item in their house; this information can be very useful for insurance purposes"(3).

Red Cross volunteers immediately surveyed the area to determine if anyone needed medical help, to regroup scattered families and to generally offer reassurance. No mass housing was requested since people stayed with friends and neighbors. The Harrisburg River Rescue and volunteer firemen helped residents carry their belongings to a caravan of rented trucks to put into storage until the people could rebuild their homes. Fire companies set up hose lines against the threat of fire. State Police, Civil Air Patrol, Dauphin County Sheriff's officers and surrounding townships' police helped Swatara Police Department create a security perimeter around the homes. Nine ROTC (Reserve Officers Training Corps) cadets from the Pennsylvania State University Capital Campus dressed in army fatigues helped direct traffic and maintain security. River Rescue and volunteer fire companies fed the homeless families. Red Cross provided money to feed and clothe the families until insurance payments could begin. Mark Powers, the Chairman of the Red Cross Disaster Service, was quoted on April 7th, two days after the tornado, as saying, "The residents have really bounced back psychologically. Everyone is in good spirits and insurance companies are acting quickly to help the victims." A state of emergency was declared on the night of April 6th. The Swatara Township Commissioners tried to get state and federal aid to help pay for clean-up efforts. To get state aid, the governor of the state, who was Milton Shapp at that time, had to declare the area a disaster. To get federal aid, the President of the United States, then President Carter, had to declare it a disaster area. Swatara Township Civil Defense Director, Commissioner Dominick Costanza, who lives in the disaster area, told The Harrisburg Patriot that if the area did not get any state or federal aid, at least they had tried. Since the homes in the area were 100% insured, any state or federal aid available would have been limited, since this aid is usually for uninsured homes. Since no municipal property was damaged or destroyed, the area was not eligible for Federal Small Business Administration aid.

## National Weather Digest

Dauphin County Civil Defense Director Kevin Malloy praised fire and police crews' efforts saying, "The response by volunteer firemen, police departments, Red Cross, Civil Air Patrol, Dauphin County Sheriff's Department, River Rescue and State Police was just fantastic." There were no reports of any vandalism or break-ins.

### 7. PREVENTION

There is no way a tornado can be prevented from occurring. However, in many cases, the trauma of loss of life and/or property can often be prevented by strong construction of buildings, good watches and warnings, and better public awareness of the meteorological terms. During the Chambers Hill tornado, as was said before, there was no lead time, since the tornado was not expected. The absence of lead time was not the fault of the National Weather Service. It was caused by the nature of the tornado. One promising way to improve this lead time may be with the use of Doppler Radar, as previously mentioned. The construction of the houses probably could not be improved. Quoting Mrs. Decker, "If that house wasn't put up sturdily, we wouldn't be here now."

### 8. REACTIONS

The Harrisburg Patriot and Evening News did an excellent job giving the tornado victims the publicity they needed to get

outside help. The quotes of these people helped outsiders realize how it actually was. Following are quotes from some of the victims, as taken out of the Patriot or News:

"Just like what I saw in the Wizard of Oz."

Mrs. Lee Myers, Hoffman Drive

"The tornado sounded like the whine of a jet engine."

Jack Sandherr, PP&L foreman,  
Chaucer Drive

"All of a sudden it got very dark and the wind was going in circles. I could tell because of the way the leaves were going. My doorbell rang. Yes, the wind must have rang the doorbell."

Mrs. Curtis Weber, Chaucer Drive

Tell Eleanor to find a sub for me for bowling tonight."

Mrs. Decker, Dennis Circle

"Thirty to forty yards from me, two houses were smashed and my pigeon coop out back wasn't touched. I only lost the lid to my garbage can."

Robert Brown, Chaucer Drive

"All I could see was white. It echoed like the wind going through a tunnel. The roof just took off and

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the sides of the house gave way. Everything came apart all at once."

Maureen Decker, 16 years old,  
Dennis Circle

## 9. CONCLUSION

The National Weather Service should be commended on their swiftness in reacting and issuing the warning. This tornado warning was heard on WHP radio just three minutes after it was reported by witnesses. The official word of the National Weather Service, as quoted in The Harrisburg Patriot, was that the storm was only a funnel cloud, not a tornado, which is a funnel cloud that touches the ground. Technically, a funnel cloud with damage, which this one had, is classified as a tornado. The Meteorologist in Charge of the National Weather Service in Harrisburg, the "official on the scene", went on record as saying that a tornado definitely had touched down and was responsible for the damage.

No research was spawned from this storm. However, the people of Chambers Hill learned that everyone, even residents of the capital of a state, set among mountains, is vulnerable to the devastation of a tornado. Civil Defense Director Malloy compared this disaster to the death of nine people in a plane crash just five miles southwest of Chambers Hill earlier in the year saying, "That plane crash last month was horrible, but this disaster equals it in human terms of mental shock and trauma."

"After it was all over and you realize what happened, you have mixed emotions, fear of what could have happened, and relief that everyone is OK, then sadness at the sight of your losses." (3)

## AFTERTHOUGHT

A tornado and airplane crash would seem to be enough, but unknown to the people of Chambers Hill, another event would cause concern within two years. The Three Mile Island nuclear plant stacks are less than seven miles away.

## P.S.

Six years after this tornado, I am about to graduate from Pennsylvania State University in Meteorology and it all started with the Chambers Hill tornado!

## REFERENCES AND FOOTNOTES

1. Carin Goodall has graduated from Pennsylvania State University this year, and plans to work in researching severe storms. This paper is a transcript of a seminar she gave for her Natural Disasters Seminar class. She is the daughter of the Meteorologist-in-Charge at Harrisburg, PA, Cliff Goodall.
2. Cal Turner, staff writer, in The Evening News, on April 6, 1977.
3. Quotes from Mrs. Marie Decker, mother of thirteen children, as taken from a recent interview conducted by the author for this paper.

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