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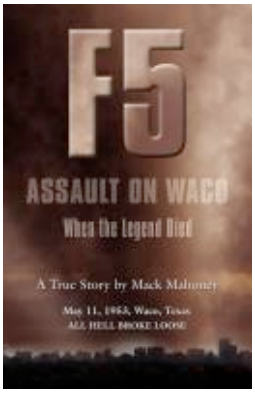
ASSAULT ON WACO

When the Legend Died

A True Story by Mack Mahoney

May 11, 1953, Waco, Texas
ALL HELL BROKE LOOSE



In 1953, a devastating tornado slammed into downtown Waco, Texas, the first tornado ever striking the heart of a city. It left death and destruction that cannot be compared to any other tornado. Mack spent years researching and interviewing others who experienced the tornado and this book contains intimate accounts of their thoughts and experiences, including actual photographs. It was a life altering experience and this book is his true story of that amazing event.

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MACK MAHONEY

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THE YEAR OF TORNADOES

1953 was a year of tornado hell. It had some of the most disastrous tornadoes in American history. Less than a month after the Waco tornado, while its residents were still grappling with the aftermath, another tornado slammed into Flint, Michigan on June 8, killing 115 people. If that were not enough, unbelievably, on June 9 another brutal monster roared into Worchester, Mass. killing 94 and injuring 1,288.

The American people had a lot to worry about in those days, what with Russian spies, hydrogen bombs being tested and suddenly… tornadoes ripping through the heartland.

The first hydrogen bomb test was conducted at Eniwetok Atoll in the Pacific in January 11, 1952 and for the first time nuclear fusion occurred on Earth. On the 24th of March that year a nuclear test was conducted near Las Vegas, Nevada. Then on the 15th of June an Atomic Bomb as powerful as an earthquake was tested in Nevada. Shortly thereafter, the Atomic Energy Commission announced that they would immediately begin test firings of the first atomic cannon.

The tornado blitz was seen all across the country as the eyes and ears of black and white newsreels depicted the devastation of the three towns. Mile after mile of twisted metal, denuded trees, crumpled cars and collapsed buildings. Newsreels showed houses and buildings mangled and strewn with debris like gruesome sculptures. It was only natural that some people started to talk about the possibility of all those recent atomic bomb tests causing the sudden outbreak of tornadoes. They demanded an investigation to determine if there was any connection. A few scientists theorized all that radioactive material being blown into the atmosphere and drifting around could generate abnormal weather patterns. The authorities denied it, pointing out that any plain old ordinary rainstorm releases more energy than an atomic bomb every few seconds.

The media didn't buy it and articles began to appear about the possible causes of America's abnormal weather. Weather Bureau authorities capitalized on the publicity and, using pictures of rubble-strewn towns, persuaded Congress to give them increased funding. With the money they were able to install weather radar units in

tornado-prone areas of the country. Those radar units subsequently became important tornado forecasting tools.

MACK MAHONEY

THE ANGRY TORNADO

Imagine if you will a monster twice as tall as Mount Everest, with a black spinning, twisting tail plummeting down from a thundercloud and churning across the face of the earth. It snatches telephone poles from the ground like toothpicks and flings them with sufficient power to penetrate a concrete structure. It buzz-saws houses and buildings in half and throws cattle, cars and people around like specs of dust.

It all starts when a warm air mass containing millions of gallons of moisture collides head on into a fast-moving cold front being pushed along by the high-speed, high-altitude winds in the jet stream. This is no rare phenomenon. Every spring it happens in our mid-western skies, as the hotter suns begin to heat up the Gulf of Mexico. The evaporation rises and slowly drifts north into the United States until it meets the winters' leftover cold dry air moving southward from Canada.

This combination is deadly and explosive. The moisture rises and the rapid updrafts form giant thunderheads, each containing the energy of many atomic bombs.

The thunderheads begin to roil and rotate, throwing out lightning, hailstones and the heavy rain of thunderstorms. The United States has about 100,000 thunderstorms every year and about a thousand of these storms, which are called tornadic thunderstorms or supercells, go nuts. This usually happens in the afternoon and evening—when the heat of the day has created enough hot air to form a supercell.

When the weather conditions are right and a supercell develops, it tends to rapidly change direction, wind speed and height. Its powerful updrafts suck in the slowly rotating air, which enhances the spinning motion, much like water speeding up as it begins to swirl down a drain. As the updraft gains strength, the spinning increases until it becomes a narrow, rotating, spinning column of air with wind speeds up to 300 miles per hour—the most violent winds on earth—the tornado.

How powerful are they? Well, to put it into perspective, a hurricane is defined as a storm with wind speeds faster than seventy-four mph. A tornado with a wind speed of 200 mph—releases kinetic

energy at the rate of 1 billion watts, which is equivalent to the output of a couple of big nuclear reactors. Even more amazing, the thunderstorm, which spawns a tornado, is immensely more powerful, releasing its latent heat at the rate of 40 trillion watts, which is about 40,000 times as powerful as the tornado itself.

The column lengthens at both ends and draws in water vapor, making itself visible as it reaches down to touch land. There is a low-pressure area in the center the tornado vortex. Air rushes into this vortex and its pressure lowers, which in turn cools down the air. This cooling effect condenses water vapor in the air causing it to start swirling and evolve into that well-known funnel shaped cloud. The swirling begins to vacuum dust, dirt and other small debris from the ground—turning the funnel darker in color.

As it gains strength, the newborn twister begins to suck up everything it can, like a hungry monster. It inhales fence posts, rocks, small trees and everything else in its path. Tornadoes are typically about 500 feet wide and generally travel about four or five miles, lasting only a few minutes. However, some monsters may up be to a mile wide, last for an hour or more and run fifty miles or so before they dissipate.

As the parent thunderstorm, which spawned a tornado moves across the countryside, its tornado offspring may run along the ground for a while and then lift back up, sometimes while other tornado children descend down from the cloud to wreak their havoc. Most tornadoes move along at a speed of about twenty to twenty-five miles per hour, but some traverse at speeds up to seventy miles per hour.

Tornadoes turn pebbles into bullets, rocks into cannonballs and cars into wingless airplanes. They shoot straws through boards and splinters of wood into steel. They can throw a railroad car around like a feather in the wind. Anyone exposed to tornado winds may pick sand, splinters and slivers of glass from their skin for weeks.

MEASURING TORNADOES

Since 1973, tornadoes have been rated on a scale, created by Professor T. Theodore Fujita, of the University of Chicago, to classify tornadoes according to their range of violence, damage done and wind force.

THE FUJITA DAMAGE SCALE:

F-0 A Gale Tornado, with min-max winds of 40-72 mph, causes light damage

F-1 A Moderate Tornado, with min-max winds of 73-112 mph, causes moderate damage

F-2 A Significant Tornado, with min-max winds of 113-157 mph, causes considerable damage

F-3 A Severe Tornado, with min-max winds of 158-206 mph, causes severe damage

F-4 A Devastating Tornado, with min-max winds of 207-260 mph, causes devastating damage

F-5 An Incredible Tornado, with min-max winds of 261-318 mph, causes incredible damage.

There is an additional rating of **F-6** identified as "inconceivable." There has never been an F-6 tornado witnessed, which would have winds from 319 to 379 miles per hour.

Note: The National Weather Service has retroactively rated the 1953 Waco Tornado as a "**F-5**".

Because of cell phones and digital recording devices more and more photographic tornado action is being recorded and broadcast on TV to the public almost immediately. Some meteorologists think that within a decade or two, improved radar systems and computer models will be allow forecasters to accurately predict and pinpoint tornados.

From 2000 to 2004 experts of the National Weather Service including many meteorologists and engineers in conjunction with

members of the American Meteorological Society met at the Wind Science and Engineering Research Center at Texas Tech University. They opted to revise the tornado rating scale created by Ted Fujita in 1971 and so, in 2007 the Enhanced Fujita Scale with 6 categories that better reflected the various degrees of wind damage was introduced and all tornado ratings are now represented as Enhanced Fujita (EF) 0,1,2,3,4, and 5.

The New E-ratings are as follows:

RATING	ESTIMATED WIND SPEED (MPH)
EFO	65-85
EF1	86-110
EF2	11-135
EF3	136-165
EF4	166-200
EF5	200+

We have been lucky thus far. Other than Waco, no other powerful tornado has ever directly attacked the business district of a large city. This is mainly because the total geographical areas of our cities are relatively small compared to the vast rural areas of the country—but the odds are—sooner or later it will happen. Thank God there has never been a 6.

MACK MAHONEY

‘TORNODDITIES’

The word *tornado* is derived from a couple of Spanish words: *tronado* which means “thunderstorm” and *tornar,* which means, “to turn” The National Weather Service calls it a “Violently rotating column of air pendant from a thunderstorm cloud and touching the ground. There are many things that we still do not know about tornadoes and how they function, but there is one thing that everyone agrees: they are the most destructive of all the weather-related events.

As I was growing up, I often heard adults talk about the many weird things they’d seen twisters do, never dreaming that I’d actually live to see some of them myself.

I’d heard stories about straw being driven into trees, fence posts and telephone poles. There were stories of beds snatched from a house and transported long distances, only to be set down with their linen still in place. Hogs supposedly were lifted up and set down into another farmer’s hog pen unharmed. Chickens had been blown into jugs. And so on.

I never really paid much attention to such stories, but the Waco tornado made me a believer. I saw tree limbs wrapped in tin roof sheeting so tightly they couldn’t be removed. I saw telephone poles driven into a cement building like giant nails. I saw wooden splinters driven into telephone poles. I saw outside brick walls neatly removed, leaving the inside completely intact like a movie set. I saw ripped-off roofs and flying cars. I saw buildings collapse like they were made of tissue paper. I saw the sky spit out baseball-sized hail. I saw hysterical people running around wildly while others stumbled around in a trance through debris-strewn streets. I saw miraculous escapes. I saw people crushed and bleeding. I saw people die. That’s what tornadoes do.

They do horrible and sometimes unbelievable things. There have been cases where chickens, ducks, geese and other fowl had their feathers plucked by tornadic winds. One sucked up over 45,000 migrating ducks from ponds, later raining their corpses down from the sky like feathered hailstones. Yet in another tornado, a box with a hen was carried some 200 yards without as much as ruffling a single

feather on the unharmed chicken. A Great Bend, Kansas, tornado drove wood splinters into an iron water hydrant.

Cows have been carried aloft and set down unharmed, usually acting strangely for days afterward. In an Oklahoma feedlot, 13 cattle were lifted up and transported over a quarter mile away, where they were set down unharmed. They could be heard bawling during their flight.

Near Richmond, Wisconsin a dog was taken for a flight and returned home some four hours later. Wouldn't you have liked to hear that dog's story if it could talk?

Codell, Kansas was hit by three different tornadoes—in 1916, 1917 and 1918—each time on the 20th of May.

In McComb, Mississippi a 1974 tornado tossed three forty-passenger school buses over an eight-foot embankment and into some woods near the local school. Luckily the buses were empty at the time.

In Lubbock, Texas, a 1970 tornado moved an empty fertilizer tank that weighed some 26,000 pounds about 3,900 feet.

During another Texas tornado, a mother huddled in an interior closet with 6 children as the twister ripped off the roof of their house, tore down one wall and destroyed the garage. Not one of the 7 people was even scratched.

A 1990 tornado in Plainfield, Illinois relocated a tractor-trailer loaded with scrap metal to a field about 1,100 feet away.

In 1931, a tornado in Minnesota picked up an 83-ton railroad train with 117 passengers on board and carried it for 80 feet.

On April 3-4 1974 there were 148 tornadoes recorded in a single week—more than any other day in U.S. History. But, when conditions are right "super outbreaks" erupt. In April of 2011 there were 362 tornadoes during a single week. In the largest outbreak since 1974, powerful killer tornadoes ripped Tornado Alley viciously in the spring of 2011. Across the twister-ravaged South, tornados left devastation trails over 300 miles long, and killed hundreds across seven states. In Alabama and Mississippi thousands were hurt and

hundreds of homes and businesses vanished or were turned into rubble. During the first half of 2011 the death toll was more than 520 people, making it the most deadly year ever, beating out 1953 when the toll was 519.

The year 2011 would be considered to be of biblical proportions, with more billion-dollar tornado catastrophes than ever. Meteorologists have never seen such a year, calling it the most deadly, destructive and relentless ever. Many climate scientists believe it was caused by an unfortunate combination of unusual circumstances and freak chance, but are hesitant to say the primary cause was global warming. The truth is that they don't really know if it is a harbinger of things to come.

2011 Tornadoes

Tornadoes in the Midwest and Southeast from June 18 to June 22 caused more than 1.3 billion in damage and killed at least three people.

In the Midwest and Southeast May 22 – 27 twisters caused 9.1 billion in damage and killed 177 people.

In the Southeast and Ohio Valley April 25-28 tornadoes killed 32l people and caused more than 10.2 billion in damages.

In the Midwest and Southeast April 14-16 tornadoes killed 38 people and caused more than 2.1 billion in damages.

In the Southeast and Midwest April 8-11 tornadoes caused 2.2 billion in damages.

In the Midwest and Southeast April 4 and 5 tornadoes killed 9 people and caused more than 2.8 billion in damages.

That's a total of 548 people killed and 27.7 billion dollars in damages.

As this photo of a wood splinter driven into a telephone pole during the Waco tornado shows, tornadoes can work miracles.

HOW FAR DO TORNADOES CARRY THINGS?

There are documented cases of tornadoes picking up objects and transporting them for unbelievable distances. Here are a few officially recorded 'debris-dispersal' distances:

A double-wide mobile home - 1,000 Feet
A car with two women in it - 200 Yards
5 horses (at one time) - 1/4 Mile (they were hitched to the same rail)
A harvest reaper - 1/2 Mile
A 14-foot boat - 1/2 Mile
A refrigerator - 1/2 Mile (lodged at top of a telephone pole)
A feather bed - 2 Miles
Chickens - 5 Miles
A cow - 10 Miles
A coat - 13 Miles
A jar of pickles - 18 Miles
A pillow - 20 Miles
Dead ducks - 25 Miles
A brick - 25 Miles
A music box - 35 Miles
A book - 40 Miles
A necktie rack with 10 ties - 40 Miles
A single necktie - 50 Miles
A four-page letter - 70 Miles
A social security card - 75 Miles
Unopened cans of soda - 87 Miles
A flour sack - 110 Miles
A post card - 124 Miles
A cancelled check - 305 Miles

HUMANS IN TORNADOES

The reality of it all is that tornadoes are pretty rare and you will probably never encounter one. Most people never do and fewer still are injured. If you ever should meet one, don't expect a pleasant time of it. When humans interact with tornadoes, they usually lose, but not always.

In 1899, a tornado in Kirksville, Missouri, picked up two women and a boy and lifted them over a church, gently lowering them to the ground more than a thousand feet away, completely unharmed.

One of the women said afterward, "I was conscious all the time I was flying through the air. I seemed to be lifted up and whirled round and round, going up to a great height, at one time far above the church steeples. As I was going through the air, being whirled about at the sport of the storm, I saw a horse soaring and rotating about with me. It was a white horse and had a harness on. By the way it kicked and struggled as it was hurled about I knew it was alive. I prayed God that the horse might not come in contact with me and it did not".

Sergeant Roy Bennett, stationed at Sheppard Air Force Base near Wichita Falls, Texas, clung to basement pipes as a tornado tore his home to pieces. It snatched him up and carried him aloft inside the tornado funnel. He said a tractor bed flew past him and in his confused state he gazed at it and thought, *"If I could get over to that bed, I could take a nap.*" He circled around, peering down at the town being ripped to pieces a few hundred feet below him. He ended up laying some 300 feet from his home, tangled in barbed wire. He was practically dead when emergency crews found him and had to spend almost two years recovering in a hospital.

In 1959, Marine Lieutenant Colonel William H. Rankin took off from a North Carolina military base in an F8U Crusader jet fighter. He was wearing ordinary pilot coveralls, not a pressure suit and bound for Massachusetts. He encountered thunderstorms in Virginia and decided to fly over them until his red warning light began to flicker. Thinking that the plane might explode, he ejected while approximately nine miles high. His chute opened automatically, but he had been thrown right into the heart of a storm. The temperature at that altitude was about 70 degrees below zero and the pressure made

the air rush from his lungs, expanding his stomach as if he were pregnant. Blood flowed from his mouth, nose, ears and eyes, as he plunged through the huge thundercloud with lightning exploding all around him.

He began to shoot up and down like an insane carnival ride on the up and down drafts of the storm, all the while being pelted by freezing rain and baseball-sized hailstones. He vomited continuously as the storm battered him practically senseless, until some forty minutes later he crashed into a tree trunk. A passing motorist gave him a ride and after a stay in the hospital he was eventually able to return to active duty. He subsequently wrote an article for the Saturday Evening Post, as well as a fascinating book about his adventure titled, "The Man Who Rode the Thunder."

Horror stories continue to abound. Like the May 2011 story of Will Norton, a young man driving home from his high school graduation. With his father sitting beside him, a tornado snapped his seat belt and he was sucked up through the sunroof the Hummer. His father grabbed his legs and struggled to hold on to him but could not, watching helplessly as his son disappeared into the twister. Will was later found dead in a nearby pond.

A super twister devastated Tuscaloosa on April 27, 2011. Amie Hall and her three children were hiding inside their 4 BR home. The entire house was picked up by the tornado. She remembered the house twisting around and around in the air until it was set down a block or so away. She and her kids all survived with no serious injuries

During that same tornado, Reginald Eppes was rousing his eight-year-old son R.J. from sleep as the tornado attacked their home. R.J. sat up on his bunk bed as his father called out to him to jump into his outstretched arms. Before he could do so, the bedroom walls dissolved and the roof tore away. R.J. was sucked into the debris of the roaring maelstrom and carried up and away into the night soaring around above the trees. A while later, after the storm had died down

R.J. stumbled out of the darkness with only a few bumps and gashes. That F4 tornado killed 65 people and injured more than a 1000.

The damage tornadoes cause comes in many strange ways. In the aftermath of the Joplin, Mo. Storm a number of people developed a rare and often fatal fungal disease, which causes mold to grow inside their wounds. The infection develops when fungal spores are inhaled or when dirt of vegetation becomes embedded under the skin. The fungus blocks blood vessels to the infected area causing tissue to turn red and begin oozing and eventually turning back. Other effects such as respiratory problems, hearing loss, and the mental anguish of a wide variety of psychological scars left behind by tornadoes can linger for years.

TRACKING THE STORMS

Tornadoes form suddenly—often within five to ten minutes—and strike without warning, thus making on the spot observation highly improbable. Sometimes large thunderstorms that look like they will spawn tornadoes don't, while other smaller storms that shouldn't, do.

For many years the strongest ones have destroyed scientific instruments and defeated man's continual struggle to learn more about them. The first actual forecasting of a tornado occurred in March 1948, at Tinker Air Force Base in Oklahoma. Two Air Force officers correctly predicted a tornado based on atmospheric conditions.

The National Weather Service Storm Prediction Centers are now better able to forecast geographically specific tornadic conditions and set community tornado alerts. When the Waco tornado occurred in 1953, forecasting knowledge was almost non-existent. Consequently, most people had no warning at all. This was true in nearly all cases until the advent of such innovations as modern weather satellites and Doppler Radar. We now have a national blanket of overlapping Doppler weather radar that can actually penetrate storms, thus giving forecasters knowledge they'd not had previously. Warning lead times are of paramount importance in saving lives.

Due to greatly improved storm science, the average lead-time for tornado warnings has continually increased from about five minutes in the early 1990s to fifteen to twenty minutes nowadays. TV forecasters narrate each twister's every turn. The National Weather Service issues prompt accounts of tornadic activity and advance tornado watches these days. Such warnings allow many more people to seek proper shelter, secure property, and escape the wrath of impeding storms. Loud community warning alarms, loudspeaker alerts from police vehicles and helicopters and neighbored telephone calling systems, are all no doubt saving countless lives by making people aware of impending tornadoes.

Although scientists have learned much about tornadoes in the last century, there is still a great deal to be discovered. Tornadoes have occurred in every state and in every month of the year. Tornadoes happen all over the earth but are primarily an American monstrosity.

By global standards, America experiences far more than any other country. More than a thousand sweep across the Great American Plains yearly, which far exceeds any comparable area on the rest of the globe. The entire continent of Australia for example, only has about fifteen twisters a year.

The strip encompassing Texas, Oklahoma, Kansas and Missouri is often referred to as "Tornado Alley." With around a 170 per year, Texas has the most tornadoes and tornado-related deaths, but that is because it also has the largest geographical area in Tornado Alley. Texas is followed by Oklahoma, which has about half as many. Oklahoma City has been hit by more than 100 tornadoes, which is more than any other city. Florida has the most tornadoes per square mile and Arkansas has the most "killer" tornadoes and tornado related deaths per square mile.

The reason the area known as "Tornado Alley" experiences so many, is simply because of the mountains to the west and the Gulf of Mexico to the south. Each spring, the strong westerly jet stream moves over Tornado Alley, creating atmospheric instability and a trough of low pressure that sucks up the warm moist air coming in from the Gulf. This creates the super cells.

Some people think there are more tornadoes occurring these days, but that is not true. What is true is more of them are being reported. In the eighteen hundreds, there were very few tornadoes reported and obviously very few deaths. The reasons are obvious. No one was around to observe them.

As America has grown, so has the number of reported tornadoes. As more and more people move out of our cities and into sprawling suburbs, the potential tornado targets increase. With population increases, tornadoes are not nearly as likely to pass unnoticed. That is why the number of reported tornadoes has ratcheted upwards rapidly during the last half century.

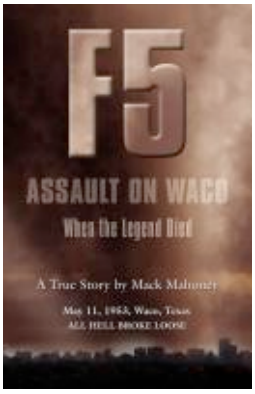
A hundred years ago there were fewer than a hundred tornadoes a year recorded. By 1950 that number had increased to two hundred. In the nineties the rate skyrocketed to more than 1,000. Nowadays, the National Weather Service issues more than 15,000 severe storm and tornado watch warnings yearly.

It is often thought tornadoes will not strike at the heart of a big city. First off, it is highly unlikely simply because of the size factors. The actual "heart" of most cities in tornado areas is not that big (perhaps a square-mile or two). Those cities are surrounded by suburbs, which experience tornadoes far more frequently.

Are there more tornados nowadays? I don't think so, but I do acknowledge that the reported number of tornados has increased since the 1950s. Some self-proclaimed experts blame this statistic on climate change. There is no empirical evidence that global warming is directly responsible for any significant increase. Climatologists caution that drawing such hasty conclusions is at best haphazard because of unreliable statistics. It is true that more tornados are being reported because of better monitoring systems and weather reporting. These days it seems the storm chasers, helicopter reporters, and radar watching weathermen come out in droves whenever the dark clouds gather. They report and record even the smallest twister. In the old days many of these storms would simply have gone unnoticed and unreported.

Because a suburban landscape is almost always larger than the heart of its city, vast areas of countryside generally surround the suburbs, which experience tornadoes far more often than the suburbs. Get the picture? If we looked down on the earth from space, the heart of a city is a very small target indeed. This is why most tornadoes simply churn through the countryside, destroying an occasional farm or two. The odds that a tornado will strike any particular square mile in tornado alley are estimated to be 1 in 700 or once every 700 years.

After all this has been said, I must acknowledge that they sometimes they do strike cities. The Waco tornado proves this point.



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