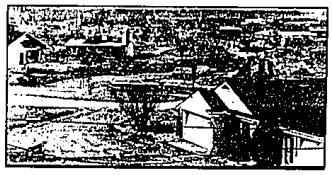
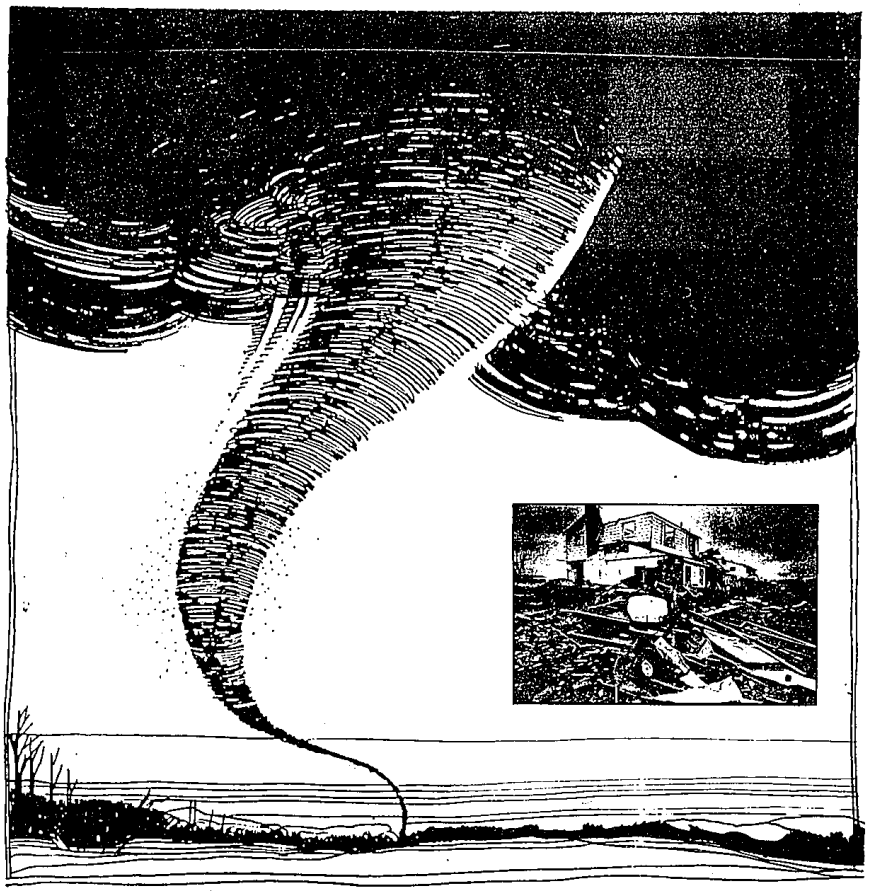
Science

Whirlwind of destruction

TORNADO



A March 1976 tornado left scenes of destruction such as this (above and below) in West Bloomfield.



By Wayne Peal
staff writer

West Bloomfield Fire Capt. Jim Poppelreiter remembers Saturday, March 20, 1976 — the day a tornado ripped through his community.

"Some of the things I saw were pretty shocking," Poppelreiter said. "I saw a Winnebago smashed into a bank. I saw bathtubs lying in the middle of a field more than two blocks away from their houses. I saw cars that had been lifted up and spun around. I never saw anything so completely destroy things like that."

West Bloomfield's well-to-do Orchard Lake/Maple Road district resembled a tiny toy town left in grotesque disarray by an angry, capricious child.

"You had some houses severely damaged, with their roofs blown off and everything. But, at the same time, houses next door would just have a shingle off," Poppelreiter recalled. "It was pretty amazing."

The tornado touched down at 7:18 p.m. Within moments, a teenage girl was killed, and nearly 60 people were injured.

"It was pretty extreme, but I'm told it was far from the worst tornado we could have had," Poppelreiter said.

EVEN THOUGH tornado spotting devices are more accurate than ever, tornadoes remain a fearsome, violent reminder that mankind isn't in full control of its universe. And the lesson is costly.

Super Outbreak, the April 3-4, 1974, burst that sent 148 tornados spinning from Alabama to Ohio, claimed 148 lives and caused more than $600 million in damage.

But every tornado is a potential killer, according to the National Weather Service.

And the flat Midwestern plains, buffeted by the Appalachian Mountains to the east and the Rockies to the west, are especially vulnerable to the deadly twisters.

"I would say Michigan's at the northern edge of tornado alley (a belt stretching from Texas, northwest across the nation's heartland)," said Martin Kaufman, meterologist in charge of the National Weather Service Forecast Office in Ann Arbor.

Kaufman's office issues tornado watches — notifying outlying areas the conditions are right for a tornado. The National Weather Service's Detroit office issues tornado warnings, alerting people that a tornado has been sighted in their area and advising them to take cover as quickly as possible.

ABOUT 16 TORNADOES are sighted in Michigan each year — less than in some Midwestern states, but enough to make skywatching a necessary springtime habit.

April to June is generally tornado season, though it's believed the heavy winds follow atmosphereic conditions rather than the calendar.

"If you're going to have springlike weather then you're going to have everything that goes along with it," Kaufman said, recalling a Januray tornado that blew through the Chicago area one mild winter.

Scientists aren't exactly sure how tornados form — possibly because no one has dared venture close enough to see first hand.

They do know that warm, moist air flowing north from the Gulf of Mexico, joined with dry western winds, cool northern air and a southwest/northeast jet stream in the upper atompshere is a tornado-charged combination.

They also know severe thunderstorms can send one, or dozens, of tornados scurrying across the countryside.

NEARLY TWO-THIRDS of all tornados are called weak — generating wind speeds of 100 miles per hour or less — according to the National Weather Service. But the term is relative.

Most buildings aren't designed to stand up to the pounding that accompanies all but the mildest tornadoes.

"A tornado puts force on buildings greatly in excess of what any building code would require," said James Abernethy, professor of architecture at Lawrence Institute of Technology in Southfield.

"With a tornado you have winds in excess of 100 miles per hour and often reaching 200 miles per hour. Building codes generally require *structures to stand up to winds of 70-90* miles per hour. The difference is essential."

Flying debris and, ocasionally, building design add to the destruction.

"We do not require a building to withstand a blow from a two-by-four coming at it at 200 miles per hour," Abernethy said. "Sometimes, high parts of buildings will fall on lower parts because tornadoes cause buildings to blow in, not explode."

THE NATIONAL Weather Service offers the following tornado facts:

Tornadoes are violently rotating columns of air that are in contact with the ground. A funnel cloud is a tornado that hasn't yet touched down. Waterspouts are tornados in contact with water.

A tornado becomes visible when it engulfs a cloud or kicks up dust and debris.

One-third are termed strong, with wind speeds of 200 miles per hour. Only 2 percent of all tornados exceed wind speeds of 300 miles per hour, but these tornadoes account for 70 percent of all deaths.

Reductions in a tornado's size are misleading. During late stages tornados may tilt and shrink but are no less deadly.

Exceptionally large tornadoes may lack the usual funnel shape and can appear on the horizon as large turbulent clouds or distant fires.

Tornadoes travel at average speeds 30-40 miles per hour, but speeds as high as 70 miles per hour have been reported.

Even though most follow a southwest/northeast route, travel patterns can become erratic, making it risky to try to flee in an automobile.

The National Weather Service reports that more than half the people killed in a 1979 tornado in Wichita Falls, Kans., died while attempting to flee.

While hail doesn't precede all tornadoes, large hailstones are a good indicator a tornado is approaching.

While most tornadoes are reported between 3-7 p.m., they can occur at any hour.

In all cases, the National Weather Service advises people to seek shelterwas quickly as possible. Basements or small, secluded rooms near the center of a building — such as a bathroom or closet — are recommended.

1. T F

Because most tornados travel southwest to northeast, persons living northwest and southeast of sightings need not take precautions.

FALSE. While it's true tornadoes generally follow a southwest/northeast route, tornado movement is subject to swift changes.

2. T F

Because large hail indicates a tornado is on its way, persons should seek shelter as soon as large hail starts falling.

TRUE. But it's important to note that tornados aren't always preceded by hail. Continue to seek safe shelter for up to 30 minutes after hail stops falling.

3. T F

Because flying debris poses a greater injury threat than the high winds themselves, people should seek shelter in small spaces near the center of their dwelling whenever possible.

TRUE. Closets and bathrooms are particularly recommended.

4. T F

Because wind speeds increase with a tornado's height, it's best to seek shelter as close to the ground as possible.

TRUE. Storm cellars and well constructed basements are particularly recommended

5. T F

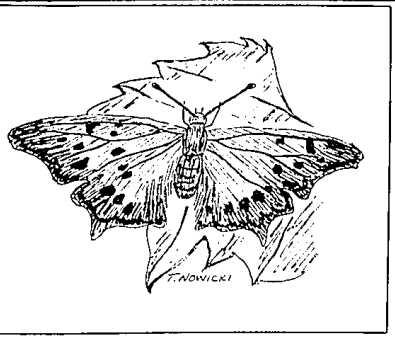
Tornados are silent, thereby increasing their danger.

FALSE. Tornados produce a high-powered roar, similar to that of a fast moving airplane or train. At night or during heavy rainstorms, the roar might be the only signal a tornado is at hand

6. T F

Peak tornado months are April - June and peak hours are 3 -7 p.m.

TRUE. But tornados can occur during any time of the year and at any hour of the day.



The question mark is one of the first butterflies of spring.

This butterfly takes an early flight

nature
Timothy Nowicki

By Timothy Nowicki
special writer

Grays and browns of winter are gradually giving way to the colors of spring. Grass is turning green, and some of our early woodland and wildflowers are beginning to bloom.

Hepatica and bloodroot are two wildflowers that bloom early and add a splash of color to a woodland's neutral winter tones. Vivid violet petals of hepatica and chalky white petals of bloodroot contrast sharply to catch the eye.

And as you walk slowly, soaking in the warm rays of spring sunshine you may see another kind of flashy spring arrival. Beautiful rusty orange butterflies can be seen flitting about. A common species of early spring is the question mark. It is a member of the brush-footed butterflies, the largest family of true butterflies.

BRUSH-FOOTED BUTTERFLIES have foreshortened, hairy front legs, hence the common name brush-footed. Many are orange-brown in color and are striking when seen with wings outstretched on the gray bark of a tree.

A good place to watch for them is a tree leaking sap. The dilute sugar water of the tree is very attractive to butterflies and other insects.

Question mark butterflies emerge in spring from under bark of trees or from log cavities, where they wintered as an adult. That is why we are able to see adult butterflies, instead of caterpillars, this early in the spring.

In sharp contrast to the striking red rusty-orange color on the upper surface of the wings, the under surface is a very cryptic gray-brown. To avoid being seen by a predator, a question mark butterfly will fold its wings together over its back. When placed on the trunk of a tree in this position, it becomes almost invisible.

Adults will lay eggs on elm, basswood, or hackberry trees so that the caterpillar will be able to feed. As many as two broods may be raised in Michigan during the summer. Those adults alive in the fall will winter and wait for warm spring days to come the following year.