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TORNADOES



TORNADOES

By Elvin C. Schultz
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What Is a Tornado?

The tornado is a violent local storm with whirling winds of tremendous speed. It usually appears as a rotating, funnel-shaped cloud which extends toward the ground from the base of a thundercloud.

The color of a tornado varies from gray to black. Often it is white or gray while in the air and then turns dark when it touches the ground because loose soil and other debris are drawn into the whirl. It may resemble a dangling rope, an elephant's trunk, or a vertical column.

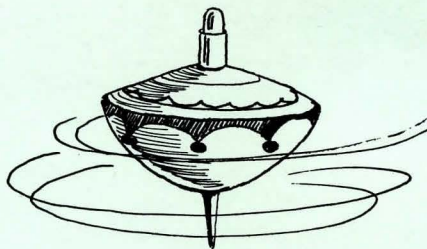
How Is it Formed?

Most tornadoes are associated with thunderstorms, especially thunderstorms accompanied by hail.

Tornado formation requires a particular combination of layers of air of contrasting temperature, moisture, density, and windflow characteristics. When cool dry air from the west, and northwest moves over moist surface air and is accompanied by a narrow band of strong winds at intermediate levels, complicated energy transformations result which can produce a spinning vortex.

Funnel formations start several thousand feet above the earth's surface and some never reach the ground and rise again. Only the spinning funnel which reaches the ground is termed a tornado.

All tornadoes have one common characteristic -- the rapidly rotating winds that cause them to spin like a top. To a person nearby, the tornado may sound like the roaring of hundreds of airplanes or locomotive engines. It is one of the smallest but most dangerous of all storms.

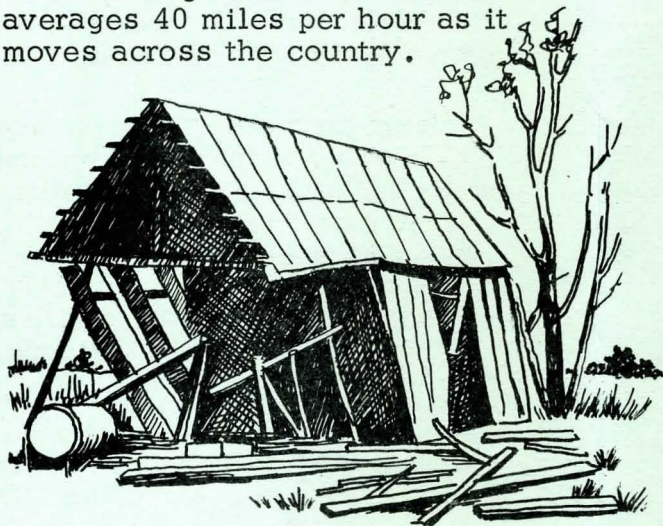


Danger Areas

Tornadoes can occur anywhere in the country, but they are most prevalent east of the Rocky Mountains. They strike suddenly and leave behind them a trail of destruction.

They usually occur between 3:00 and 7:00 p.m. They seldom strike after midnight or before noon. They usually travel from southwest to northeast, because the parent mass of warm, moist air in which they have their origin blows in that direction.

The path of destruction averages less than 1/4 mile wide and little over 10 miles long, although tornadoes have been known to extend 300 miles in length. The storm itself averages 40 miles per hour as it moves across the country.

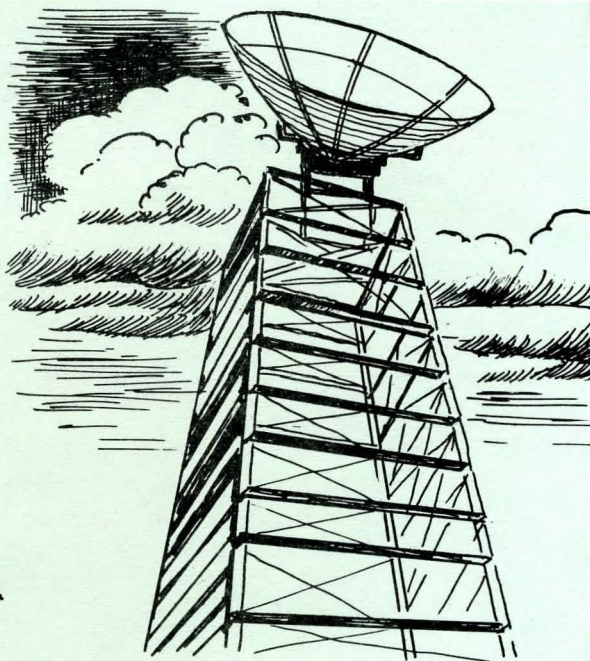


Sticky, sultry and oppressive weather, generally with southerly winds, is typical tornado weather.

Storm Warning

The U. S. Weather Bureau predicts the possibility of tornadoes and issues storm warnings in danger areas.

The tornado "watch" is to alert persons to the possibility of tornado development in a specified area, for a specified period of time. It is the first alerting message between the National Severe Storm Forecast Center and areas potentially threatened by tornadoes.



The tornado "warning" is issued when a tornado has actually been sighted in the area or detected by radar.

Location of Storm Cellar

One of the safest tornado shelters is an underground excavation, known as a storm cellar.

When possible locate the storm cellar outside and near the southwest corner of your home, but not so close that falling walls or debris could block the exit. If there is a rise in the ground, dig the cellar into it to make use of the rise for protection. The cellar entrance should face northeast and the cellar should not be connected in any way with house drains, cesspools, or sewer and gas pipes.

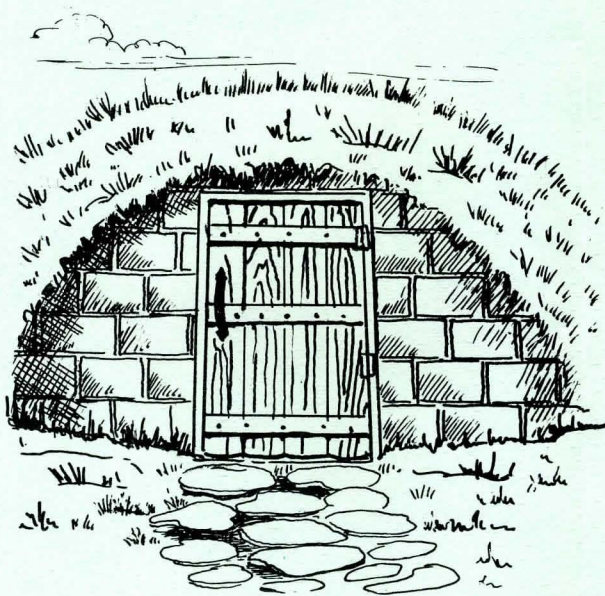
Design and Construction

The size of the shelter depends on the number of persons to be accommodated and the storage needs. A structure 8 feet long by 6 feet wide and 7 feet high will protect eight people for a short time and provide limited storage space.

Building practices for a storm cellar are similar to those for a basement. Footings are placed first, then the walls are built.

Reinforced concrete is the best material for a tornado shelter. Other suitable building materials include split logs, 2-inch planks (treated with creosote and covered with tar paper), cinder block, hollow tile, and brick.

The roof should be covered with a 3-foot mound of well-pounded dirt, sloped to divert surface water. This provides greater protection and helps keep out cold and heat.



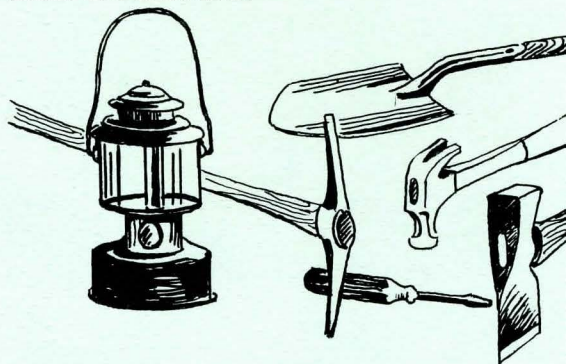
The entrance door should be of heavy construction, hinged to open inward so the door may be opened if the entrance is blocked with debris.

Concrete should not contain more than 6 gal. of water to the sack of cement. This will tend to make a firmer, more solid mix. With average aggregates the mix should contain at least six sacks of cement to the cubic yard. A rule of thumb is: mix proportions of about 1:2 1/4:3 for average aggregates.

Safety Features

Adequate ventilation is necessary. A vertical ventilating shaft about 1 foot square can extend from near the floor level through the ceiling. This can be converted into an emergency escape hatch if the opening through the ceiling is made 2 feet square and the 1-foot shaft below is made easily removable. Heavy wood slat gratings on the floor also will improve air circulation.

Store emergency equipment, such as a pick, axe, shovel, lantern, hammer and screwdriver, in the cellar. Keep it greased to prevent rusting. These tools may be needed if escape exits are blocked.



Other Uses for Cellars

Many storm cellars are designed for multiple-purpose use. In some cases they are used for vegetable storage. Since most tornadoes occur in April, May and June, when the supply of vegetables is usually exhausted, this combination works well.