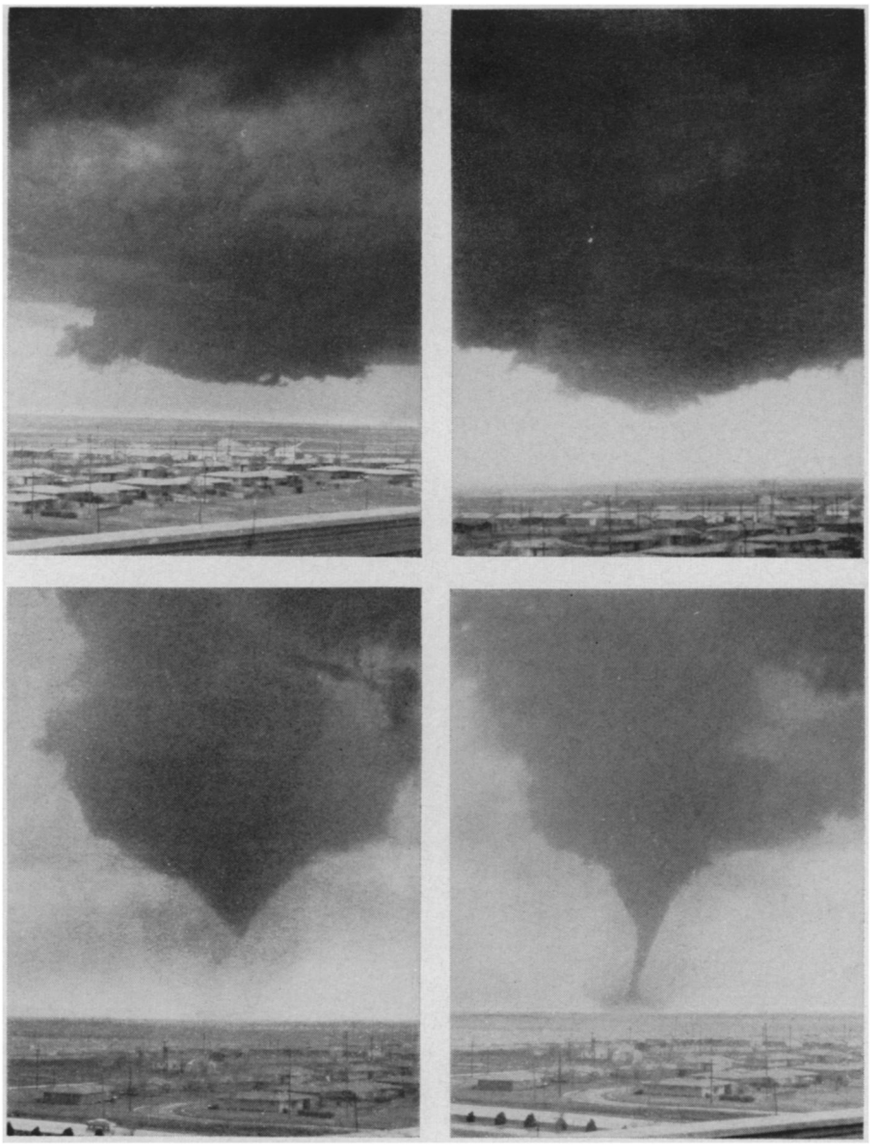

Caught in the act: formation of a tornado funnel over Wichita Falls, Texas. The elephantine twister leaves a path of destruction wherever it touches ground as it hop-skips across the countryside.

Photos: USAF

METEOROLOGY

Terror of the Midwest

The birth process of a tornado is detected by radar in the near collision of two thunderstorms

by Ann Ewing

Tornadoes are the most vicious storms on earth. They are spawned, for the most part, in spring and early summer. But the men who try to understand them work the year around.

Eventual aim of the year-round tornado research is to find a key for aborting such windstorms.

The work is frustrating; so simple a thing as measuring the speed of a tornado's winds (at least 500 miles per hour—is impossible) the winds destroy the instruments.

A major mystery is why the violent funnel storms happen at all. Now a specialist reports he has watched the beginning of rotation in a tornado system.

The fantastic energy in the embryo tornado came from the clash of two thunderstorms, with the smaller storm strangely absorbing the larger one. This is the finding of Neil B. Ward of the National Severe Storms Laboratory in Norman, Okla., a part of the Environmental and Science Services Administration. He studied radar pictures of two thunderstorms 125 miles west northwest of Norman in the afternoon and early evening of June 10, 1967.

The smaller storm, moving from the southwest, approached the larger, older thunderstorm, which was moving in from the west. Two and a half hours after the two were detected on what appeared to be a collision course, they were about five miles apart.

Rapid changes then occurred in the smaller storm. Its western side flattened, it changed direction clockwise by 30 degrees and its movement slowed. Within 15 minutes, the first of several tornadoes struck earthward.

Within an hour the older storm had joined the younger on its northwest side and within another hour it had lost its identity entirely.

Dr. Ward suggests that this combination of events was produced by forces in the outflow of air at low levels from the older storm feeding into the newer one. These forces could have resulted in a strong horizontal shear, immediately producing rotation in the newer one, and tornadoes were spawned.

In all the world there is no place more favorable for tornado birth than the flat plains lying east of the Rocky Mountains.

The general weather conditions for twister formation require the presence of layers of air of differing temperature, moisture and wind flow patterns. Usually, drier air rides above a moist layer. This condition occurs in the central part of the United States where comparatively dry air from the west or northwest often rides over a moist current moving northward from the Gulf of Mexico.

An individual tornado usually moves from southwest to northeast at 25 to 40 miles an hour. The average width of the path the twisting funnel touches on earth is between 300 and 400 yards for distances of 10 to 40 miles.