



ELIMINATING "BLACK PIT"—Special boxes which contain experimental lighting elements are shown in this daylight photograph at Andrews Air Force Base. The lights are being tested in a program to provide for safe night landings.

METEOROLOGY

Tornado-Proof Houses

► **HOUSES** can be made virtually "tornado-proof" for only a few hundred dollars extra, George W. Reynolds of the University of Michigan believes.

Three shortcomings—improper anchorage, insufficient internal bracing or lack of proper air vents—account for the great majority of structures destroyed in tornadoes, he told the American Meteorological Society meeting at the University of Chicago.

Mr. Reynolds believes houses can be built to survive all except the most severe such storms at a cost increase of from \$50 to \$350. Properly built structures, he said, might eliminate as much as 90% of deaths and injuries resulting when the tornado's swirling funnel strikes.

Improper anchorage of a house to its foundation or of a roof to the building can result in the house being tipped over or the roof being peeled off, Mr. Reynolds said.

Sudden lowering of air pressure, caused by winds sweeping around the structure or found in the tornado's center, can cause buildings to "explode." To remedy this, Mr. Reynolds suggests inexpensive ties to hold each wall securely to its neighbors and simple air vents in attics and basements to equalize the pressure inside and outside a house.

Fireplaces, open windows and attic fans all provide a means for the air to escape. Although these might be enough, Mr. Reynolds gave as a rough estimate an air escape area of one or two square feet for each 1,000 square feet of floor space, including the basement and attic. This much venting, he said, "might be enough to keep houses from exploding during all but the worst part of the most severe tornadoes."

Mr. Reynolds said he doubted that tornado winds are as strong or the drop in air pressure as great as generally believed. Although the highest wind speeds in a few tornadoes may reach up to 300 miles an hour, he thinks the maximum speeds in most tornadoes are between 100 and 200 miles an hour.

The pressure on the inside of most tornadoes, his studies showed, appears to be about 75% of that on the outside and is usually probably closer to 90% or 95%. Even this, he said, is enough to cause the air on the inside to push on the wall harder than the outside air is pushing in by about 100 to 200 pounds per square foot of wall space, if none of the air inside the house escapes.

Mr. Reynolds came to his conclusions after touring the scenes of nine tornadoes and reading many technical reports.

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AERONAUTICS

Lighting Research for Safe Night Landings

► **THREE AIRPLANE RUNWAYS**, ablaze with experimental lights, are being tested at Andrews Air Force Base, Camp Springs, Md., to make night landings safer, the Civil Aeronautics Administration reported.

The lights are designed to eliminate the "black pit," that area of the runway between the two rows of lights now being used to show the way for pilots.

Each of the three experimental systems had to employ lights flush with the runway when used on the runway, and of minimum height just off the runway. Otherwise, CAA researchers pointed out, the lights would be a hazard for airplane wheels and wings.

In one system, bars of lights 30 feet to either side of the runway centerline, have been put in especially constructed boxes designed to allow the approaching pilot to see a point of light from each.

In a second system, similar to the first, the light-bars have been placed 45 feet from the centerline.

These two systems give a "narrow gauge" and a "wide gauge" runway for the CAA tests.

The third system tries to make markings on the center portion of the runway show up by means of reflected light.

Pilots of all types of planes, from small twin-engine craft to jets, are invited to fly the systems and make comments on them, the CAA said.

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PSYCHIATRY

Backward Child Should Be Helped at Early Age

► **PROPER ATTENTION** to mentally retarded children and their parents when the children are of nursery school age might alleviate difficulties in later life and reduce the population of institutions for the mentally defective.

This conclusion, made as a result of study of a group of retarded pre-school children, was reported to the American Orthopsychiatric Association meeting in Chicago by Drs. Katherine F. Woodward, Miriam G. Siegal and Marjorie J. Eustis, of the pediatric psychiatry service of Lenox Hill Hospital, New York City.

Parents of the children studied by the New York doctors were all of average intelligence or better. The fathers were professional men or white collar workers.

Work with the parents proved to be of major importance in helping the children, the psychiatrists reported. Psychological factors in the parents' make-up and relationship seemed to contribute to the backwardness of the children.

Parents and children should receive help very early, as soon as there is any suspicion that the child is retarded, the scientists warn.

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