

METEOROLOGY

Put Radio In Hurricane

Balloon-borne radio transmitters promise to contribute greatly to a program designed to test the development of an automatic hurricane-tracking system.

► THE WEATHER BUREAU has definite plans to drop five balloon-borne radio transmitters into the relatively quiet eyes of 1958 hurricanes.

The first was placed in the eye of Hurricane Helene about 500 miles east of Palm Beach, Fla., at 1:06 p.m. EDT on Sept. 24.

The balloon carries a payload weighing about 20 pounds containing the high frequency radio transmitter. The inflated balloon measures about 12 feet in diameter.

The polyethylene balloon carries an instrument package, cylindrical in shape, 11 inches high, 11 inches in diameter. The instrument cylinder contains a mechanism for controlling the flight level of the balloon. The hurricane beacon package, when ready for loading into the bomb bay of the B-50 airplane used, weighs a total of 400 pounds.

The constant-level balloons destroy themselves in five hours to avoid any possibility of their becoming hazardous to aircraft. They are being released in the hurricanes' eyes as part of a program to test the development of an automatic hurricane-tracking system.

The balloons are being placed at different levels within the eyes, at altitudes from 5,000 to 50,000 feet. Weathermen will then study the coded messages sent by the radio transmitter to determine which level yields the most useful information for tracking the hurricane's path and predicting its position.

A hurricane's structure can be considered similar to that of a giant smokestack, some 30,000 feet tall.

Above 10,000 feet, the "smokestack" widens slowly. There is some evidence that the environment between 10,000 and 20,000 feet controls the storm's development. Cold air moving in and mixing with the warm air can choke its growth. It may also account for changes in the hurricane's direction.

The organization of winds in the turbulent core immediately surrounding the center of the hurricane holds the clue to the storm's rate and direction of motion for the subsequent 24 hours. This is one reason why dropping the radio transmitter into the "eye" can result in so much information for meteorologists.

The balloons will not only aid forecasters in tracking, but will give them information on the forces at the storm's center that could not be obtained in any other way.

Reconnaissance airplanes can plot a hurricane's future path from readings of maximum winds taken in the four directions at equal distances from the storm's center as determined by radar.

Characteristics of hurricanes that still are puzzling meteorologists are the systematic eddies found throughout the entire storm and the observation that a hurricane seems to "know" where it is going.

The project is being conducted by the Weather Bureau's Hurricane Research Project in cooperation with the Geophysics Research Directorate of the Air Force Cambridge Research Center.

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DIAGNOSTIC AID—With Rauland's large screen image, the radiologist can see the whole stomach from the greater curvature to the duodenal bulb as shown in the upper photograph. In the lower photograph there can be seen, for example, the entire orientation of a catheter in its journey through the heart chambers. In both the photographs the area circled by the white dotted line corresponds to the image size provided by small screen X-ray image tubes.

TECHNOLOGY

Device Aids Fluoroscopy

► AN APPARATUS that will make X-ray diagnosis by fluoroscope faster, safer and easier has been developed.

The apparatus is built around a newly developed eight-inch amplifier tube that allows the radiologist to view two and one-half times as much area as is possible with the five-inch tubes presently employed. And the image he sees is 350 times brighter.

The five-inch tube now in general use has not been adequate to permit doctors to see the whole area of such organs as the adult heart, brain or colon.

Because the new tube produces an enlarged picture, it will take the doctor less time to find what he is looking for, and thus reduce the patient's exposure time. The Picker X-Ray Corporation is the producer of the equipment, and Zenith Radio Corporation manufactures the new eight-inch Rauland tube.

The tube also permits the radiologist to work much faster because the enlarged cov-

erage reduces the necessity for repeated shifting of the apparatus as is required with the conventional tube.

The Picker assembly has a 16-millimeter camera mounted on top of the image tube. This is directly synchronized with the X-ray tube so that the tube is energized only when the camera shutter is open. As a result, the patient receives sharply reduced amounts of radiation exposure during a continuing examination.

Image amplification fluoroscopy in X-ray work differs from radiography, X-ray photography, in that the radiologist sees a continuous, functioning view of an organ and need not wait for a still picture to be developed.

Many operations that have been limited mainly to children in the past because of the restrictions of the five-inch tube will now be possible on adult patients, the manufacturers said.

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AERONAUTICS

Women Making Inroads In World of Aviation

► WOMEN ARE beginning to scratch the surface of one of the world's few remaining male strongholds, aviation.

There are 18,067 female pilots in American aviation, contrasted with 791,282 male pilots, the Civil Aeronautics Administration has revealed. That still is a ratio of about 40 to 1 in favor of the men.

The total number of pilots of both sexes increased dramatically in 1957, the latest reporting year. The 1957 total of slightly more than 809,000 represents an increase of 43,000 pilots over the previous reporting year.

"This increase in certificated pilots is evidence of the vigorous growth of aviation in the United States," Civil Aeronautics Administrator James T. Pyle said in making the figures public.

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