

## SCIENCE NEWS

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## RECORDS OF STORMS WITH RADAR EQUIPMENT

RADAR instruments developed for war purposes may play an important part in future weather forecasting and also make permanent records relative to the nature of storms and their movements for use in the science of meteorology. The entire progress of the recent September hurricane in its gradual curve up Florida was accurately plotted on film near Orlando, Florida, by Army radar war equipment. Photographs of each radar scope were taken each 15 seconds by electrically operated cameras.

The use of radar to detect storms began at least as early as August, 1943. Before that, Army radar technicians had noticed "ghost echoes" on their relatively primitive scopes but did not realize at first that they were caused by thunderstorms. Later they did, and Army weather observers soon learned how to use radar to plot other storms and they later developed better techniques of detection. But the size and violence of the storm of September 15, and its closeness to the radar station, resulted in new findings about the nature of hurricanes.

Throughout the hurricane the general shape of the disturbance was plainly seen on the micro-wave set, whose energy was reflected excellently from the rain carried by the storm. The storm was seen to be in the shape of a figure six with clockwise spiralling tails. At one time six distinct tails were observed, three of which were detached and were moving northward ahead of the storm's center. These tails were deduced to be rain-bearing storm clouds, or line squalls eight to ten miles in width and from three to five miles apart.

When the hurricane was abreast of the radar station, and only 10 miles away, the radar revealed that the eye of the storm, the low pressure area in its center, was 12 miles in diameter, and the lack of echoes proved that there was no precipitation within it. The height-finding radar set revealed that the dense cloud deck surrounding the eye extended up to an average height of 18,000 feet.

## RADIO-TELEPHONE CIRCUITS

RADIO-TELEPHONE circuits permitting 24 two-way simultaneous conversations on a single radio-frequency carrier wave, have just been successfully demonstrated here at the headquarters building of the International Telephone and Telegraph Corporation, New York City, when two groups of twenty-four men in separate rooms conversed at the same time, the conversation passing through relay stations at Hazlet and Nutley, N. J.

The experimental network utilizes the pulsetime modulation principle of transmission recently perfected by the Federal Telephone and Radio laboratories and other laboratories of the corporation after nine years of research. Only one transmitter and receiver are required at each location for the 24-channel simultaneous communication.

Common waveguides and antennas are used both for transmission and reception: parabolic reflectors, eight feet in diameter, serve to beam the 1,300 megacycle carrier. The reflector at the New York end is located on the roof of the thirty-five-story International Telephone building, those at the two New Jersey relay stations are on high towers.

The present twenty-four-channel arrangement makes use of a combination of pulsetime modulation plus a system of electronic time selection, certain fractions of each second being allotted each channel for the transmission of its signal. In contrast to mechanical systems evolved in the past, the method of time selection used is entirely electronic in operation, and was developed especially for this purpose.

It permits 24-channel voice communication with all the fidelity of modern telephone standards, it is claimed, and is much more compact than equipment designed for frequency selection.

## ITEMS

THE discoverer of the planet Pluto, Clyde W. Tombaugh, is to be visiting assistant professor of astronomy at the University of California at Los Angeles. During the term beginning on October 26 he will give classes in celestial navigation, an essential part of air navigators' training, as well as in elementary and stellar astronomy. Mr. Tombaugh was a young assistant at the Lowell Observatory at Flagstaff, Ariz., when he discovered the ninth major planet in the solar system. Subsequently he was first holder of the Slosson scholarship at the University of Kansas, founded in memory of Dr. Edwin E. Slosson, first director of Science Service. Mr. Tombaugh received his bachelor's degree there in 1936, and his master's degree in 1939. In recognition of his discovery of Pluto, he was awarded in 1931 the Jackson-Gwilt medal of the Royal Astronomical Society.

THE New Guinea Shangri-La or Hidden Valley, from which three survivors of a plane crash were rescued by glider plane during the past summer, is now identified as the Grand Valley of the Balim River discovered and explored in 1938 by a combined American and Dutch scientific expedition organized and led by Richard Archbold, of the American Museum of Natural History. The identity of the valley came about through a comparison of photographs taken by the Army just before the survivors were rescued with airplane photographs taken by the Archbold expedition. The identity is acknowledged by the Army, and particularly by Colonel Ray T. Elsmore, who directed the recent rescue operations. Early in the exploration of the Grand Valley by the Archbold expedition it was found that their flying boat could be landed near the lower end of the valley. A base camp was located there, supplies were flown into this landing place, and from it the whole party of nearly 100 men was flown out of the valley when its work was done.