

Why We Have Hurricanes

Meteorology

AS TOLD THE NATION BY

Charles L. Mitchell, Chief Forecaster of the U. S. Weather Bureau

FROM out the "doldrums" of the atmosphere where, like in the human state of mind of the same name, decisions are variable without force and permanence, there come the West Indian hurricanes that occasionally cause damage and loss of life in Florida and the Gulf Coast, Mr. Mitchell said.

"You have doubtless experienced a state of mind known as the 'doldrums' when there was a sort of sense of depression with variable decisions that lacked force and permanence," he explained. "There is likewise an area, or belt, called the doldrums, over the Atlantic Ocean north of the Equator, between South America and Africa, that moves northward and southward with the sun and in this belt there is a slight depression of the barometer." During the seasons of the year that this belt of doldrums is quite near the Equator nothing happens except that the winds are light and variable and local thunderstorms of the usual afternoon convectional type are rather frequent. This is true, Mr. Mitchell explains, largely because of the fact that the deflective force of the earth's rotation is necessary in the process of initiating a cyclonic storm, and that force is so near zero on and near the Equator that no such storms can originate there.

Shifting Doldrums

"In late summer and early autumn," Mr. Mitchell continued, "the eastern end of the Atlantic belt of doldrums is so far north that it is between 10 and 15 degrees away from the Equator. The deflective force of the earth's rotation is quite sufficient to initiate a cyclonic circulation, granting that other conditions are favorable. At the other end of this belt of doldrums, only 6 or 7 degrees away from the Equator, the deflective force is too small, so that such storms do not develop these. High temperature and high

OVER the Columbia net-work of long and short wave radio stations while the recent West Indian hurricane was destroying life and property.

THIS was a Science Service broadcast scheduled two months in advance. The Science News-Letter of August 2 announced that Mr. Mitchell would talk about hurricanes on September 5. Neither the Science News-Letter nor Mr. Mitchell claims to have foreseen the storm, but the editor does ask that you read on this page announcements of radio addresses.

humidity are favorable to, if not essential in, the development and maintenance of a tropical cyclone. Both of these requirements are fully met in the doldrums between the system of northeast trade winds of the northern hemisphere and the

southeast trade winds of the southern hemisphere.

"When the belt of doldrums shifts sufficiently far to the north, which is in the period roughly from the middle of July to the middle of September, the southeast trade winds change their direction due to the deflective force of the earth's rotation, and become southwest winds when more than about five degrees north of the Equator. Between these steady winds blowing from opposite directions is the doldrum area of light variable winds, high temperature, and high humidity—all favorable for the development of local thunderstorms and squalls. At times these conditions increase in frequency and intensity for a few days, and then by some so-called "trigger" action, which is not thoroughly understood, but which requires winds from opposite directions over the ocean areas to the north and to the south of the unsettled region, a cyclonic circulation is somehow set up around a center in the belt of doldrums. After the wind circulation is once started, there is a plentiful supply of energy from the latent heat set free in the process of condensation and precipitation of moisture in connection with the heavy rainfall that always accompanies tropical cyclones, so that the cyclonic circulation is not only maintained but greatly increased, both in lateral and vertical extent."

RADIO ADDRESSES

Columbia Chain

Friday Afternoons, 3:45 P. M., E. S. T.
HEREDITY AND ENVIRONMENT

—Sept. 19

Dr. A. F. Blakeslee, assistant director, Station for Experimental Evolution, Carnegie Institution of Washington

UNCLE SAM WATCHES HIS ANIMALS

—Sept. 26

Dr. Paul G. Redington, director, U. S. Biological Survey

WHO WAS THE INDIAN? —Oct. 3

Rev. John M. Cooper, professor of anthropology, Catholic University of America

THE HIGH ATMOSPHERE AND RADIO

—Oct. 10

Dr. Edward O. Hulburt, physicist, U. S. Naval Research Laboratory

EARTHQUAKES IN THE UNITED STATES

—Oct. 17

Capt. N. H. Heck, chief of the Division of Terrestrial Magnetism and Seismology, U. S. Coast and Geodetic Survey

A FUTURE JOURNEY TO THE MOON

—Oct. 24

Dr. John Q. Stewart, associate professor of astronomical physics, Princeton University

Science News-Letter, September 13, 1930