

METEOROLOGY

Hurricane Season at Hand

The time for hurricanes to start whirling northward from southern waters is at hand. This year, the best network yet will be on the alert to spot them, Ann Ewing reports.

► THE LARGEST and best network yet is now on the alert to spot, track and predict the paths of hurricanes. The network includes a satellite, radar, airplanes, ships—and you.

For the first time this year, the public is being asked to help in the concerted attack on the secrets of hurricanes. When a hurricane approaches, public broadcasts will request residents to record the sounds made by the violent winds around the eye.

The recordings will help scientists at the U.S. Weather Bureau analyze the pattern of airflow near the center of hurricanes, where they suspect there may be tornado-like circulations. By Weather Bureau definition, winds must be 75 miles an hour or more before the storms are called hurricanes. Winds have been recorded up to 150 miles an hour, with gusts even higher.

Also slated for this year is another stab at testing the effects of seeding a hurricane with silver iodide. On Sept. 16 and 17, 1961, silver iodide was injected into Hurricane Esther, converting many cubic miles of water in clouds to ice.

The same seeding experiment will be performed twice this year. If the results are like those in 1961, then a hurricane will be seeded a number of times during one day, which is expected to have an even greater effect on the storm.

Aim of Hurricane-Seeding

Ultimate aim of the hurricane-seeding experiments is to learn whether or not it is possible to reduce the intensity of a tropical storm's winds or to change its path. The experiments are sponsored jointly by the Weather Bureau, the National Science Foundation and the U.S. Navy.

One primary aim of this year's broad research program is to obtain more information on the spiral rainbands in hurricanes. Tornadoes often form in these rainbands, which encircle the eye of a hurricane like the arms of a pinwheel.

Four Weather Bureau research aircraft that have been probing severe storms in Oklahoma will be ready by mid-August to participate in this year's intensive study. Information collected by the instruments on the aircraft will be processed by a new, high-speed computer now in operation at the Weather Bureau's National Hurricane Research Project in Miami.

Using the computers, weathermen are now working to develop improved numerical methods for predicting the erratic paths of hurricanes, or tropical cyclones.

Alma is the name that awaits the first tropical cyclone to occur in the Atlantic, the Caribbean or the Gulf of Mexico. For 1962, Alma will be followed by Becky, Celia, Daisy, Ella, Flossy, Greta, Hallie, Inez,

Judith, Kendra, Lois, Marsha, Noreen, Orpha, Patty, Rena, Sherry, Thora, Vicky and Wilna.

The first report of a hurricane may come from a Tiros satellite. Last year Tiros III photographed the first, Anna, and discovered Esther as it was forming in the Atlantic. Altogether, five hurricanes and one tropical storm in the Atlantic were seen by Tiros III.

In the eastern Pacific, two hurricanes and a tropical storm were photographed and nine typhoons in the central and western Pacific were followed by the satellite.

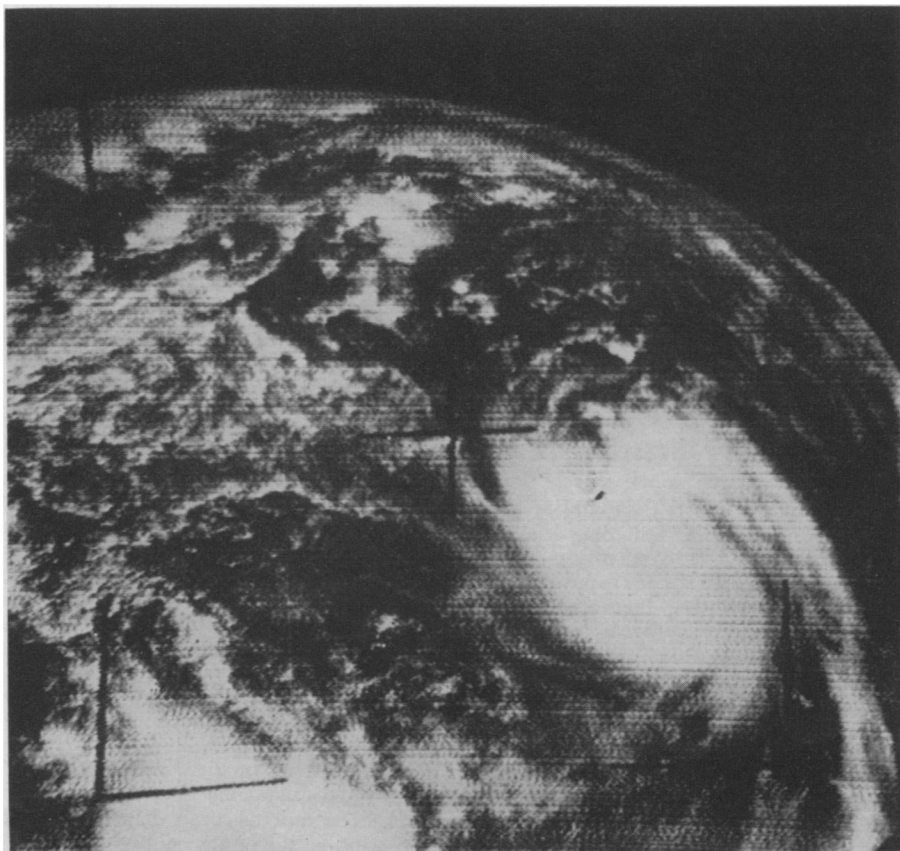
The automatic weather station in the Gulf of Mexico, the first to transmit information on Hurricane Ethel in 1960, will again be on duty reporting weather conditions from 25 degrees north, 90 degrees west, near the center of the Gulf. The station was developed for the Navy by the National Bureau of Standards.

Near the coast, hurricanes are tracked

continuously by powerful radar sets built for weather reconnaissance. The Weather Bureau's radar warning fence, completed in August, 1961, now scans the coastal waters from southern Texas to Maine. Each set can detect any well developed hurricane whose eye is within 200 miles.

The Weather Bureau net of WSR-57 radars is supplemented by radar units operated by the military. Several non-governmental agencies in Texas and Florida also cooperate in the search for storms. The radar warning sentinels proved their effectiveness last year by accurately tracking Hurricane Carla.

When reports indicate that a tropical storm may be building up, Air Force and Navy planes are dispatched to investigate. The Navy hurricane hunters of Airborne Early Warning Squadron 4, based in Jacksonville, Fla., and Roosevelt Roads, Puerto Rico, patrol the Atlantic, the Caribbean and the Gulf of Mexico. Air Force weather reconnaissance planes operate from Bermuda. The Federal Aviation Agency provides communications facilities for hurricane reports and air traffic control services for reconnaissance aircraft.



HURRICANE SEEN FROM SATELLITE—Hurricane Anna, the first of the 1961 season, was spotted in this photograph taken from Tiros III on July 21. The coast of Colombia near Barranquilla passes under the central cross mark, which is part of the reference system for satellite photographs. Lake Maracaibo shows as a prominent dark area below the cross.

The months of most frequent hurricane occurrence are August, September and October.

Hurricanes are large storms accompanied by violent destructive winds, heavy rains, and high waves and tides. The winds whirl in a counter-clockwise direction in the Northern Hemisphere, with the highest winds circling the relatively quiet eye.

Although the winds can do great damage, the storm tide may be the greatest killer. The greatest loss of life during hurricanes is caused by drowning. As the storm moves forward, huge waves pile up. They pound and smash shore buildings, roads and bridges.

Hurricanes Named

As soon as there are definite indications that a hurricane may be forming, it is given a name and the Weather Bureau begins issuing "advisories" so that everyone can know where the storm is and where it is believed headed. Should the hurricane approach the coast, a "watch" is announced for vulnerable areas, indicating that those in the area should listen for future advisories.

When the forecaster finds that the hurricane is likely to slam into a coastal area, a "warning" is issued. This means all precautions should be taken immediately against the full force of the storm.

Girls' names have been used by the Weather Bureau to identify tropical cyclones in the Atlantic, Caribbean and Gulf of Mexico since 1953. In 1960, a semi-permanent list of four sets of names in alphabetical order was introduced. A separate set of names is used each year, beginning with the first name in each set. The letters "q, u, x, y, and z" are not included because of the scarcity of names beginning with those letters.

PUBLIC SAFETY

Disarmament Urged

► INCREASING the already tremendous strength and power of United States military force cannot assure national security or prevent war. Neither will a nuclear test ban agreement.

No amount of weapons really can assure the prevention of a first strike by an enemy, Dr. Louis B. Sohn, professor of international law at Harvard and consultant to the Arms Control and Disarmament Agency, told SCIENCE SERVICE. A nuclear test ban is a side issue upon which time and effort have been expended all out of proportion, he said. A ban on nuclear tests can reduce fallout but not the threat of atomic war.

"No one complains about the testing of military delivery vehicles which continue without let-up," Dr. Sohn said. Control of the development and production of devices that can deliver a nuclear bomb probably should have greater priority than a test ban, he said.

Only a concerted effort of all scientific groups can bring about a change in the present situation and prevent the military

The sets are repeated in four years, with the exception that the name of a major hurricane seriously affecting the U.S. mainland is dropped from the list for ten years and another name substituted.

The names for 1963 are: Arlene, Beulah, Cindy, Debra, Edith, Flora, Ginny, Hannah, Irene, Janice, Kristy, Laura, Margo, Nona, Orchid, Portia, Rachel, Sandra, Terese, Verna, and Wallis.

For 1964, hurricanes will be named: Abby, Brenda, Cleo, Dora, Ethel, Florence, Gladys, Hilda, Isbell, Janet, Katy, Lila, Molly, Nita, Odette, Paula, Roxie, Stella, Trudy, Vesta, and Winny.

During 1965, the names are: Anna, Betsy, Carol, Debbie, Elena, Frances, Gerda, Hattie, Inga, Jenny, Kara, Laurie, Martha, Netty, Orva, Peggy, Rhoda, Sadie, Tanya, Virgy and Wenda.

Each year the Weather Bureau emphasizes that the names of particular individuals have NOT been chosen for inclusion. They are picked because the names are short, clearly pronounced, quickly recognized and easily remembered.

These requirements are necessary because a single hurricane can cause millions of additional telephone calls, thousands of additional news bulletins over radio and television, numerous newspaper stories and countless telegrams, written messages, advices, warnings and oral instructions among the millions of persons who may be affected.

The same kind of storm called a hurricane in the Atlantic is called by different names in other areas of the world.

The hurricane is identical with the typhoon of the China Sea, the baguio of the Philippines and the cyclone of the Bay of Bengal. Tropical cyclones occur over every major tropical ocean except the South Atlantic.

• Science News Letter, 82:10 July 7, 1962

quent unofficial inquiries by Soviet officials indicate a growing interest.

"I assume one reason they (the Russians) want a postponement of the current disarmament talks is perhaps to come up with a version of their own (zonal plan) when meetings are resumed in August," he said.

Peace today depends on achieving effectively controlled disarmament, efficient but properly restrained United Nations Peace Force, adequate means for settling both legal and political disputes, development of international law into world law, more rapid growth of the underdeveloped areas of the world and the strengthening of the United Nations, Dr. Sohn said.

Effectively controlled disarmament could be established by "built-in controls." One essential control is a police force, preferably under the United Nations, that would consist of troops made up of all nations, with a limited number from each nation. These troops would be under multi-lateral command. Command and troops would be rotated regularly to prevent concentration of authority and power in any one area or any one nation.

The jurisdiction of the World Court might be expanded to interpret treaties, Dr. Sohn suggested. For example, the language of a treaty on space could be ruled on and clarified by the World Court.

For political disputes, a World Equity Tribunal could determine what is a just and proper solution for such problems as Berlin, Laos and the Congo.

• Science News Letter, 82:11 July 7, 1962

ZOOLOGY

Lamprey Eel Shrinks During Migration

► THE RIVER lamprey eel shrinks in length while migrating upstream to spawn. The shortening takes place while fasting.

Contrary to most animals which only lose weight, the river lampreys shorten, keeping essentially the same length-to-weight ratio, Dr. Lis Olesen Larsen, the University of Copenhagen, reported in *Nature*, 194:1093, 1962.

Between migration in autumn and spawning in spring the animals do not eat, and their gut is reduced. The eel loses weight but it loses length in the same proportion.

This shortening during fasting has also been observed in planarians (flatworms) and is probably common in other animals that do not have stiff skeletons.

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Cesium-137 is well-suited for the sterilization of medical supplies and for the preservation of food.

Cystic fibrosis now ranks high as a cause of death among childhood diseases.

Royal jelly, a special food of queen bees, has no practical value for humans as a food, drug, or cosmetic.

Special plastic materials, which can be tinted to any desired hue, provide the latest possibility: multicolored pavement.