

News Notes

Weather Research

President Kennedy recently cabled his deep sympathy to Japan for the disastrous rains that flooded parts of that country and caused more than 1500 casualties, and damages officially estimated at \$422 million. Typhoons as well as torrential rains have annually taken a heavy toll of lives and property in Japan as well as elsewhere in the Far East and Southeast Asia, mainly because scientific techniques for early detection and warning have not been developed sufficiently to permit adequate advance preparation and safeguards. Many of these destructive storms form near the equator in areas practically devoid of weather information; and frequently the first warning of such a storm is after it strikes an island, ship, or continental shore line. Presently Tiros III, America's latest weather satellite, placed in orbit 50 degrees north and south of the equator 30 days ago, is providing meteorological observations previously unavailable in these data-sparse regions by measuring earth-atmosphere energy exchanges through infrared sensors and by photographing cloud formations.

The rate at which various energies enter and leave the atmosphere may have a profound effect on weather, but the full possibilities of such data cannot be realized until techniques have been developed to fully utilize and evaluate them. However, observations have demonstrated that weather phenomena are accompanied by cloud patterns. Spiral cloud bands, for example, are associated with tropical cyclones; hurricane clouds have similar banding but are smaller and move faster than cyclone clouds, and certain storm-producing clouds cannot be detected by surface meteorological observations. Such cloud pictures were made available to Japanese meteorologists from Tiros III in its first 17 days of operation. They have proved so valuable that Kiyoo Wadachi, the chief of Japan's weather bureau, is hopeful that cloud data to be obtained from the satellite when it again orbits near Japan during 18 August to 25 September, a period expected to be high in typhoon activity, may open a new era in forecasting typhoons and storms.

At the same time, Tiros III also will be providing data that will improve national ability to forecast hurricanes thus demonstrating it is no burden to a satellite system to satisfy national requirements as well as those of the in-

ternational community. Previous Tiros pictures were made available to all nations that could benefit from them, including Russia. And, according to the U.S. Weather Bureau, any nation that desires can, "at minimum expense," establish local stations to obtain cloud pictures in its immediate vicinity.

Complementing the hurricane detecting capabilities of Tiros III, the U.S. Weather Bureau recently announced that Nomad I, the first in a series of seven ocean-floating electronic weather robots, will be anchored in the Gulf of Mexico about 300 miles south of New Orleans in the area where hurricanes develop. The robot station, a 10- by 20-foot platform equipped with weather gear, will gather information on air and water temperatures, barometric pressure, wind speed and direction, and the direction of ocean surface currents and will transmit in code made available to private or governmental agencies. Anyone with a short-wave receiver will be able to pick up the signals. The sea-going Nomad, like the airborne Tiros, can report data from areas that are not conveniently accessible by manned vehicles.

From Nomad, Tiros, other future weather satellites, and more conventional techniques, meteorologists hope to be able to understand the development of atmospheric movements so that slight modification in weather may be possible. The aim is to be able, for example, to break up storms before they reach the severe stage, or to redirect rain-producing clouds over drought-stricken areas. But meteorologists will conduct such experiments with extreme caution, since wrong weather modification methods could lead to worse weather rather than improved conditions.

Missile Medicine

An instrument used in the guidance system of the Polaris missile has yielded new data about the viscous character of blood which may lead to greater understanding of circulatory disorders and cardiovascular disease. The new data disproves a previously accepted theory that blood is a Newtonian fluid, one whose thickness or viscosity remains unchanged no matter how fast or slow it is moved. (Water is a Newtonian fluid. Catsup or mayonnaise are non-Newtonian; rate of flow varies their thicknesses.)



Navy Hurricane Hunter flying above typical hurricane cloud formation. [Courtesy U.S. Navy]