

METEOROLOGY

World Joins Tiros Plan

► THIRTEEN countries and the crown colony of Hong Kong have so far shown interest in receiving weather information from the orbiting United States satellite, Tiros III. Russia is not among them.

Nor have any other Iron Curtain countries answered the U. S. invitation asking 100 countries to participate in a mutual exchange weather program.

Tiros III is taking pictures of the earth's cloud cover between 48 degrees latitude north and 48 degrees south, or as far north as Newfoundland and northern France and covering all of Africa and Australia, and South America as far as southern Chile.

Since England and The Netherlands are north of latitude 48 degrees they will be able to get only very limited information from Tiros III. However, the United Kingdom will take pictures of radarscopes showing cloud cover from several stations while Tiros passes by, as Japan will also.

The Netherlands plans to make observations from the ground, as do Ireland, France, Australia, Japan and New Zealand, the U. S. Weather Bureau told SCIENCE SERVICE. Japan and Australia will take pictures of the whole sky at one time.

Weather photos from planes at times when Tiros III passes will be made by France, Australia and New Zealand. Australia will also launch cameras in high-flying balloons and make special upper air soundings.

An expanded program of upper air soundings will be undertaken by India, Rhodesia, Chad and British East Africa. Special solar radiation studies will also be carried out by the last country and by Ireland.

Portugal, Brazil and Columbia are interested but have outlined no program yet. The British crown colony of Hong Kong has a fleet of merchant ships that will make special observations when Tiros III passes.

Meteorologists from the invited nations have also been asked to come to the U. S. for a workshop between Nov. 13 and 22. The workshop will consist of lectures discussing all the Tiros satellites, past and future (four more are expected in the series), and what they can do. Samples of information from the already launched Tiros will be distributed, and how to use this information will be studied.

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ASTRONOMY

Cometary Space Probe

► A SPACE PROBE traveling through the head or tail of a comet in April, 1962, could yield information on the formation and evolution of the solar system.

Dr. P. Swings of the University of Liege, Liege, Belgium, proposed that a far-flying rocket be hurled some 18,000,000 miles into space to investigate the composition of comet Tuttle-Giacobini-Kresak, which makes a "close" approach to earth next April. The probe might even share the orbit of the comet while sending back information by radio, he told the International Symposium on Space Age Astronomy.

Dr. Swings also suggested launching an artificial comet nucleus that would be in a 24-hour orbit, thus remaining visible for

long periods of time. A man-made mixture of ice and frozen ammonia and carbon dioxide weighing about a ton could probably last for several days. The addition of meteoritic material to make the artificial comet a more realistic model might change this lifetime.

Such a one-ton artificial comet nucleus in orbit would probably release enough gases to give rise to an observable cometary head, Dr. Swings said. An artificial comet tail would also be formed.

Studies of the man-made comet could yield valuable clues as to the chemical composition of real comets, and thereby clues to the solar system's origin.

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SPACE

Space Telephone by 1962

► BY LATE 1962, telephone conversations and telegraph messages will be relayed by way of an "active" communications satellite in a 24-hour orbit 22,300 miles above the earth, if present plans are successful.

The 50-pound experimental space craft will be built by Hughes Aircraft Corporation for the National Aeronautics and Space Administration as part of Project Syncom. When placed in an orbit synchronous with the rotation of the earth, the satellite would move in an elongated "figure eight" pattern 33 degrees north and south of the equator

over a given longitude near the east coast of the U. S.

The satellite will be boosted to the 22,300-mile orbit by a three-stage Delta vehicle. Then it will be injected into the desired orbit by an additional solid propellant rocket attached to the space craft.

An "active" communications satellite carries equipment to rebroadcast the messages it receives, whereas "passive" ones act as high-flying "mirrors" from which the messages are bounced back again toward earth.

Two other active satellite projects—Relay

of NASA and TSX of American Telephone and Telegraph in cooperation with NASA—will test low-altitude systems at up to 3,000 miles. The Department of Defense, using Project Advent facilities, will participate in Project Syncom by furnishing ground stations and performing communications experiments.

Syncom test results will be made available to communications interests, commercial and governmental, around the world. Early Syncom satellites will not have instruments to handle TV band widths. Frequencies used will be 8,000 megacycles from ground to satellite and 2,000 megacycles from satellite to ground.

The Hughes contract, now under negotiation, calls for at least three flight units at approximately \$4,000,000. The program will be managed by NASA's Space Flight Center at Greenbelt, Md.

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SPACE

Ranger Satellite Whirls In Unplanned Earth Orbit

► THE RANGER I satellite is now whirling through space transmitting information of "questionable" value from an unplanned near-earth orbit far short of its original goal. (See SNL, 80:85, 1961)

The complex satellite, instrumented to probe the mysteries of the cosmic rays and radiation 685,000 miles in space, swung into an orbit from 105 to 312 statute miles above the earth.

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ASTRONAUT TRACKER—Antenna array, built by the Bendix Corporation, New York, is used to find and track the manned Mercury spacecraft, receive telemetered information on 90 channels and maintain two-way voice communication.