METEOROLOGY

Satellites' Greatest Gift

➤ NOT SPACE STEPS toward the moon, but more weather information on the earth is the greatest gift of the multi-billion dollar satellite program.

Weather maps based on satellite spying in space can now be sent to every airport, television station, newspaper or truck dispatcher.

Weathermen attending the American Meteorological Society meeting in New York were excited about the tremendous amount of weather information contained in cloud pattern photographs taken from satellites. They predict that this information will be twice as valuable, especially in making local weather maps, when a new receiving system is put in operation.

The system will allow any weather station in the world to obtain directly the cloud cover photographs taken from a satellite. It is called APT, for Automatic Picture Transmission, and is scheduled for a preliminary test when the Tiros satellite is launched in June.

APT requires only simple ground equipment costing about $30,000 a set, considered inexpensive for the amount of information obtained. The system was originally designed for the Nimbus meteorological satellites, the first of which is scheduled to be operational this year. However, APT is considered so important that it will be tested on the experimental Tiros.

APT will enable weathermen to obtain immediately a few high-quality photographs of cloud patterns in the local area when the satellite is within 1,700 miles of a receiving station. This will usually occur twice a day about noon locally at any station.

Transmission of pictures from the satellite will be by a technique similar in principle to the method now used to send radio news photographs. The pictures will be received and reproduced immediately on specially adapted facsimile machines.

Heart of the APT system is a one-inch vidicon tube designed especially for weather satellites. Photographs taken by the satellite's camera are stored on a transparent plastic layer within the vidicon tube. In effect, the tube exposes and electronically develops each photograph, then stores it for the three-minute transmission period.

• Science News Letter, 83:78 February 2, 1963

METEOROLOGY

Area Coating Makes Rain

➤ CONTROLLING the weather and making rain by coating large areas of the earth's surface was suggested in Washington, D. C.

The studies made so far on the effectiveness of this method are "very encouraging," Dr. James F. Black of the Esso Research and Engineering Co., Linden, N. J., told SCIENCE SERVICE. He said the company had underway a sizable program aimed at finding out how large an area would have to be coated to produce rain economically.

Actual tests of the coating's effect on soil temperature have been made in Arizona, using eight-inch-wide strips and ten-by-ten-foot squares. The squares produced temperature changes twice those recorded under the strips, whether they were black or white.

When the squares were black, soil temperatures one-half an inch below them were 19 degrees Fahrenheit higher than in an adjacent uncoated area. A difference of 4.4 degrees persisted even when the soil was coldest during the night.

If the asphalt was covered with gypsum to give a white, reflecting surface, the highest temperature under the squares was 24 degrees less than that one-half inch under the untreated area.

Dr. Black suggested in Science, 139:226, 1963, that coating tens or hundreds of square miles with asphalt could produce "useful changes in local weather."

One application for black petroleum coatings, Dr. Black proposed, would be to cover large areas of arid land near the shoreline of a sea or large lake. This might increase the intensity of the sea breeze, bringing in moist air from over the water, lifting it to where the water vapor condensed into clouds and then fell as rain.

Dr. Black suggested the southern coast of the Mediterranean Sea and Egypt as areas where such an experiment might prove effective.

• Science News Letter, 83:78 February 2, 1963

TECHNOLOGY

Plastic Film for Space Erased by Sun's Rays

➤ SCIENTISTS have now made a plastitc film, which when no longer needed in space, disappears under the impact of the ultra-violet rays from the sun.

Resembling household packaging wrap, "photolyzable film," as it is called, has been developed by the Goodyear Tire & Rubber Company's research laboratory, Akron. Its primary use will be to hold gas pressure used to inflate, expand and make rigid, closely packed structures, such as wire grid antennas needed on space vehicles. Once the plastic has served its purpose, the intense ultraviolet of space will cause it to disintegrate chemically.

• Science News Letter, 83:78 February 2, 1963

PHYSICS

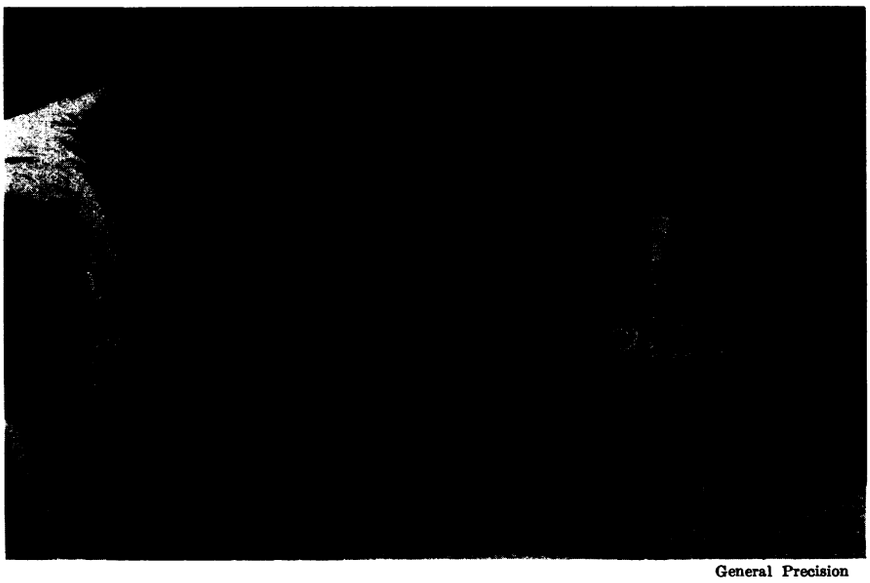
Space Use Foreseen for Nuclear Gyroscope

➤ SPACE NAVIGATION is one of the most important uses foreseen for the first operating nuclear gyroscope.

A nuclear gyroscope contains no moving parts, and is resistant to severe vibration, acceleration and shock. The research model, developed by scientists at General Precision, Inc., Pleasantville, N. Y., under the direction of Dr. James Simpson, uses the atom's spin and is therefore frictionless. It has no bearings to wear out and no balanced parts to be disturbed.

The indefinite life of the nuclear gyroscope will make it useful not only for space guidance but for aircraft and missile navigation. Size, weight and power requirements for a fully developed nuclear gyroscope are expected to be competitive with conventional gyros.

• Science News Letter, 83:78 February 2, 1963



General Precision

NUCLEAR GYRO—Dr. James Simpson at General Precision, Inc., inspects a fuel cell which is to be inserted into the nuclear gyroscope shown at the center. A second nuclear gyro stands at the right.