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Orbiting Weather Satellite Sends Back First Pictures

Continued

don B. Johnson (D., Tex.) called Tiros' launching "the best space news that we have had in a long time."

The 270-pound Tiros, appearing much like an oversize hatbox, rode into the skies from Cape Canaveral, Fla., at 6:40 A. M. All three stages of its Thor-Able rocket carrier ignited in succession. The satellite then broke away and went into a circular orbit close to advance calculations.

Tiros—which takes its name from initials for television and infrared observation satellite—is traveling in an almost perfect circle, the space agency said. Its orbit was calculated to take it as far as 468.28 miles from earth and within 435½ miles at its closest point.

Silverstein said the weather eye satellite should stay in orbit for decades. But its sun-powered radio equipment is expected to function for only about three months.

The top and sides of the 42-by-19-inch satellite are practically covered by 9000 solar cells intended to trap the sun's rays and convert them into energy to run batteries of Tiros' three radio transmitters.

When computations indicate conditions are right for pictures, radio commands are sent to the satellite from stations at either Fort Monmouth, N. J., or Kaena Point, Hawaii.

Two cameras point out from Tiros' underside. One is set to cover an earth area 800 miles square, the other to photograph a 30-mile-square plot at the center of the larger area.

Each camera is geared to take 32 pictures at 30-second intervals. The images may be transmitted to earth directly, or stored on magnetic tape and sent later on command from the ground. The images are then fed onto a television screen and photographed.

Photograph signals are coming in on 235 megacycles while the tracking signals are on 108 and 108.03 megacycles.

In advance of the launching, the space agency stressed that Tiros I was only an experimental meteorological satellite.

However, Wexler said that if it collected good clear pictures of the cloud cover over large areas of the world, it was conceivable some limited use might be made of such pictures in actual forecasting.

Space agency officials also speculated that Tiros could get long range pictures of southern Russia and all of Communist China. But such pictures would only show a land mass outlined against surrounding sea, they said, and would not be fine enough to detect such points as missile bases.

A more advanced Tiros II is due to be launched late this summer. It will carry infrared radiation detectors to map relative temperatures on the earth's surface.

Tiros I is the third heaviest satellite now in orbit around the earth. In orbit with it is the 50-pound casing of the third stage of the launching vehicle.

The heaviest of the dozen earth satellites now in orbit is Russia's Sputnik III, which weighs 7000 pounds.

The heaviest U. S.-made artificial moon is the once-called "Mystery Satellite," later identified as the 300-pound capsule of the Discoverer V satellite launched Aug. 13, 1959.

The satellite would still be on the ground if the countdown had been delayed another four minutes.

The launching was scheduled for 5:45 A. M. Scientists had nearly an hour, until 6:43 A. M., to get the rocket off. During this period conditions existed for the desired satellite course. These conditions were determined mainly by the relative positions of the earth and sun.

The hours-long countdown proceeded smoothly until two minutes before 5:45 A. M. But technical problems developed and a hold was called. The countdown, recycled to 15 minutes, resumed at 6:25 A. M. No further delays occurred and the Thor-Able blasted off smoothly at 6:40 A. M.

AP Wirephoto

Maurice Staton explains operation of new weather-eye satellite, Tiros I, at National Aeronautics and Space Administration news conference in Washington. Staton is planning manager of satellite's builder, a division of RCA.

Future Weather Eyes in Space

Radar to Watch All Storms

WASHINGTON, April 1 (AP).—A radar watch from space on rain and snowstorms all over the world may be a future development of the pioneering weather satellite launched Friday.

Even as Tiros I seeks to blaze a trail for robot weather watching from space by taking pictures of the cloud cover over much of the earth, space scientists are planning more sophisticated and versatile meteorological satellites.

MANY INSTRUMENTS

Their objective is to launch a whole family of weather-eye space vehicles, each equipped with a variety of instruments. These would range from cameras, like Tiros itself has, to radar sets and instruments to measure the composition of the atmosphere and the exchange of heat between the sun and the earth.

The aim will be not only to try to improve weather forecasting, but also to help answer such questions as these:

Is the world's climate warming or cooling?

How much solar energy goes into energizing storms?

Is it possible for man to control the weather on a large scale?

The aim of taking pictures of the cloud cover, and relaying them to earth by a television-like transmission, is to try to spot world-wide weather patterns as they generate and develop.

Satellite radar sets, on the other hand, are expected to give meteorologists another type of information. The cameras are designed only to look down on clouds and keep tabs on their structure and distribution; radar could snoop on the clouds in action.

That is, radar could detect rain or snow falling from clouds in various parts of the world and measure the height and thickness of the cloud areas.

It's unlikely that a weather radar will be flown in a satellite before next year. But another type of sophisticated instrument is slated to get its first big trial in Tiros II, scheduled to be launched later this year.

This is an infrared radiation sensor, designed to discern the average temperature of the earth's surface and lower atmosphere as well as to take the temperature of the tops of clouds.

Later weather satellites will also carry another type infrared detector designed to measure how much of the heat which the earth gets from the sun is returned to the atmosphere.

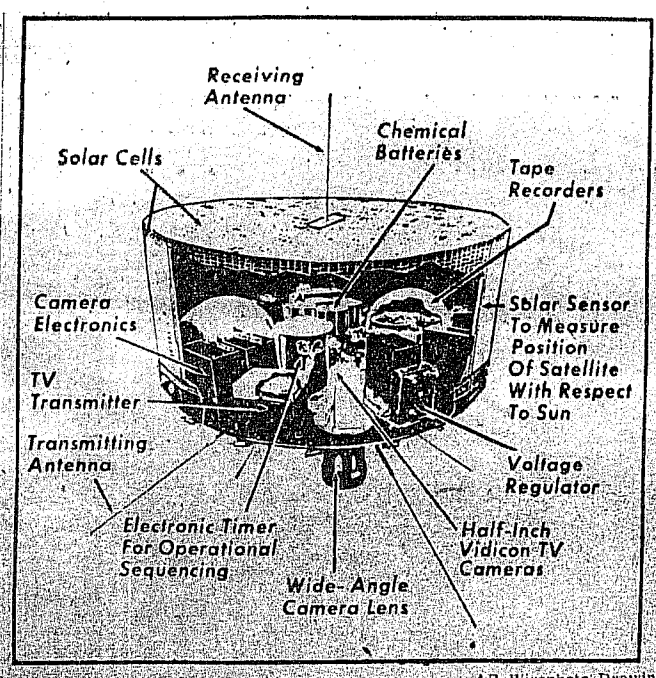
It is known that the equatorial regions receive more solar energy than they need and that the polar regions receive less than they need. And the atmosphere, by ceaselessly attempting to equalize this unequal heating, creates winds, weather and storms.

But scientists don't know just how much of the sun's energy goes into energizing storms.

That's one of the reasons why such infrared detectors may prove important.

Another is that such instruments may help determine whether—over a long period of time—the earth as a whole is receiving more energy from the sun than it is giving back into space.

Scientists already know that the atmosphere has been warming up over large portions of the earth for many years, especially in the polar regions, but they still don't know whether this is true for the whole atmosphere of the planet.



AP Wirephoto Drawing

Cutaway drawing shows complicated maze of instruments carried into orbit by Tiros I from launching at Cape Canaveral, Fla., on Friday.