

# Satellite 'Sees' With Tiny TV Cameras

NEW YORK, April 2 (UPD)—The U. S. weather satellite spinning through space is staring at the earth with a pair of complex electronic eyes.

Each of these eyes is an RCA vidicon television camera small enough to hold in the palm of one hand.

One has a wide-angle lens for seeing the big picture—clouds stretching over an area about 1600 miles wide.

The other takes a narrower view with a lens geared for scanning cloud details in a smaller area.

A miniature television magnetic tape recorder is linked to each camera. These recorders were designed by RCA engineers for use in satellites.

Each recorder stores as many as 32 individual pictures by each

camera during a single satellite trip around the earth. When the satellite passes within communications range, a command signal from a ground station sets devices into motion that transmit the information on the recorder tapes to the ground.

So intricate is the arrangement that when the satellite is within range of a ground station the cameras can be instructed to feed their information directly to the transmitter in the satellite rather than to the tape storage—or memory—systems.

In addition to electronic eyes and brain, the satellite contains a system that automatically measures the angle of the sun in relations to the satellite itself. An infra-red detector adjoins the automatic measuring device in

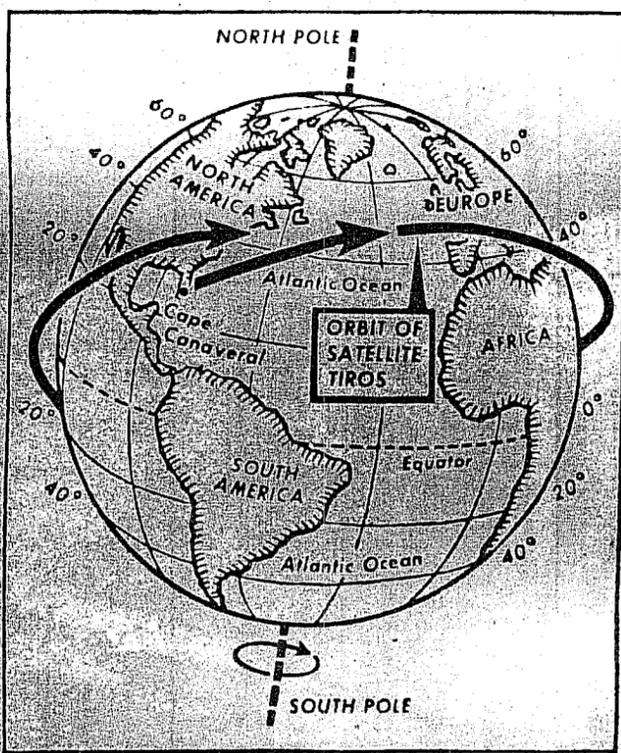
telling the exact position of the satellite when each picture is taken.

At the start of each lap around the earth, the television cameras can be instructed electronically to photograph a specific area, such as a typhoon center over the Pacific or the core of a hurricane in mid-Atlantic.

The instructions are prepared

by U. S. Weather Bureau. They are sent to the ground stations, where they are sent by radio to an "electronic clock" in the satellite, where the information is stored. Working the way an alarm clock does, at the specific time, the storage center sets the cameras to operating.

The pictures taken are flashed by the satellite to the next ground station on a television picture tube. At the same time, the information also is recorded on a magnetic tape system on the ground. In addition, the image on the TV screen also is photographed for further study.



Heavy line shows approximate orbit of Tiros weather satellite—an almost perfect circle ranging from 435 to 468 miles from surface of the earth. In its 99-minute cycle it swings 48 degrees each side of the equator, according to experts at NASA.

## 2d Sky Spy Due Later This Year

Scientists Hope It Will Be Able To See in Dark

From Our Wire Services

WASHINGTON, April 2.

Dr. Harry Wexler, the Weather Bureau's chief scientist, said Saturday that space experts hope to launch a second eye-in-the-sky TV satellite later this year with infrared gear for taking pictures in the dark.

He said this would be the next step in a program aimed ultimately at having six polar-orbiting TV weather satellites and a seventh circling the earth in an equatorial west-to-east orbit.

### PICTURES 450 MILES UP

Tiros I, the first TV weather satellite which was orbited from Cape Canaveral, Fla., Friday, was due to make its 24th circuit of the earth and be over the South Atlantic by midnight (EST).

Pictures of cloud formations and almost continuous observation of every large cloud system that would be associated with a major storm. He said the Weather Bureau thus would be able to "keep track of the shape

these cloud systems are taking, how they are moving and whether they are intensifying."

The significance of all this was boiled down by Brig. Gen. David Sarnoff, chairman of the board of Radio Corp. of America, which designed and built Tiros I under contract from the National Aeronautics and Space Administration.

### MILITARY USE IS SEEN

The day is approaching when you will be able to scan a dependable 90-day forecast and decide whether to begin your vacation on July 1 or July 15," Sarnoff said. "The farmer will get a better idea when to plant and when to harvest, and the weather forecaster will at last become a happy, well-adjusted man."

Scientists said Tiros' performance made it clear that such eyes-in-the-sky also could be used in war strategy, such as spotting Russian military moves. But these experts emphasized that the 270-pound pillbox-shaped Tiros—carrying two television cameras the size of water glasses—was designed only to snap pictures of the earth's cloud cover.

### AMAZED BY CLARITY

The clarity of Tiros' pictures, which President Eisenhower described as "a marvelous development," surprised even scientists working on the project.

Wexler said NASA planned to launch Tiros II, another west-to-east weather satellite, from Cape Canaveral, Fla., later this year. He said "if we can move fast enough," it will be superior to Tiros I in that it will carry infrared equipment for nighttime as well as daylight photography.

The first polar-orbiting weather satellite, Wexler said, probably will be launched from Vandenberg Air Force Base, Calif., in late 1961.