

GEOPHYSICS

First Artificial Moonlet

Start this fall of test firings for components to be used in launching artificial satellite may result in the first earth-circling object, actually a burned-out rocket.

► THE EARTH could have an artificial satellite in a few weeks. It would be a burned-out test rocket, flung upward with sufficient speed to take up a globe-girdling orbit.

The United States would therefore win the race with Russia to be first to create a man-made "moon" of the earth.

Test firings are starting soon from Cape Canaveral in Florida, a U. S. Air Force Base. Scientists are gathering there. The satellite rockets are about ready.

The first "shoots" will not carry a satellite "vehicle," complete with radio and other equipment. The satellite would merely be a bit of rocket debris.

However, if the rocket goes fast and high enough, it will usher in a new epoch in space travel.

Even though such a flying "tin can" would not carry instruments, scientists still could learn much from its motion and the time it took to spiral in and burn up in the earth's outer atmosphere.

The first big problem would be to locate, or "acquire," the earth-circling vehicle. This will also be the first problem attacked when an instrumented satellite is launched.

To solve it, visual tracking teams are being organized both here and abroad. They are expected to hold a practice drill sometime between now and Christmas.

The practice, however, could turn out to be a real search for a burned-out rocket, which would be even harder to spot than the first instrumented moonlet to be boosted into an orbit around the earth. This basketball-sized globe will not only have a highly polished finish for the best possible light reflection but will carry a tiny radio transmitter.

In either case, the first few hours after launching will be the critical ones. It is then the teams of visual observers, armed with especially designed and wide-eyed instruments, will be depended on to spot any satellite, since the radio transmitter in an instrumented vehicle could fail.

When the satellite's approximate path has been located, precise optical tracking telescopes, strategically located around the world, can take over the job of tracking the rocket shell or the instrumented object.

As it now stands, the satellite launching program calls for using six preliminary rocket systems for test purposes, to be followed by six complete rocket guidance and control systems.

It is thus possible that by the end of 1958, when the International Geophysical Year during which the satellites will be hurled skyward closes, as many as 12 planet-

circling objects may have been launched by the United States.

Details of Russian plans have not been made public. Delegates to a recent international conference in Barcelona report, however, that Russian agreement made unanimous a resolution calling for publication of codes used in telemetering information from satellites.

Science News Letter, October 13, 1956

TECHNOLOGY

Giant Army Telescope Tracks Missiles in Color

► THE ARMY has a giant telescopic tracker that can follow missiles 300 miles away and show them on a screen in natural color. It weighs a ton and one-half.

Designed to operate in conjunction with radar tracking sets, the optical device simultaneously takes color and black and white photographs of rockets, jets and other flying objects automatically.

The Army reports the tracker can be remotely controlled, thus can be placed in danger areas to record the impact of rockets

and other missiles. Differences between two types of objects moving at the same time within its range are clearly shown.

Now undergoing tests at the White Sands Proving Grounds, the instrument will be used to track and photograph high altitude meteorological balloons for their location and altitude, to locate such objects as rockets and artillery shells, and to evaluate radar systems.

The tracker has a 400-pound lens of 160-inch focal length. It was developed at the Army Signal Corps Engineering Laboratories, Fort Monmouth, N. J.

Science News Letter, October 13, 1956

GENERAL SCIENCE

5,000 Employed in Research Laboratories

► COMMERCIAL LABORATORIES and nonprofit research institutes employed 5,000 scientists and engineers and expended \$85,000,000 in 1953, a survey made for the National Science Foundation indicates.

Of the commercial laboratories expenditures, approximately \$35,000,000 was for scientific research, and about \$4,000,000 for basic research, while the equivalent figures for nonprofit research institutes were more than \$50,000,000 and over \$3,000,000.

The Federal Government contracted with the commercial laboratories for about half of their total research expenditures, with industry responsible for about an equal amount. The institutes had twice as much money from the Government as from industry. (See p. 237.)

Science News Letter, October 13, 1956



PIN-POINTING PLANES—This new Army Signal Corps optical tracker, developed at Fort Monmouth, N. J., can trace a moving plane 300 miles away in natural color on its scope through a powerful, 160-inch lens. The steerable instrument, weighing a ton and a half, is designed to operate with radar sets. Pvt. Lee Harsburger, Leipsic, Ohio, is operating the equipment.