

## ASTRONAUTICS

# New Satellite Launching

The Discoverer series of satellite launchings is aimed at safe recovery of orbiting vehicle. The assured return of instruments, animals, then man, lies in the future.

## See Front Cover

► THE MOST RECENT LAUNCHING of U. S. satellites highlights problems still to be solved before man achieves space flight.

Foremost is the recovery problem. Despite successful recovery of nose cones from missiles and animals from rocket flights, the return of a man or animal from an earth orbit or space flight lies in the future.

One aim of the Discoverer series of satellite launchings being made by the Defense Department from Vandenberg Air Force Base, Calif., is to solve the re-entry problem. Discoverer II, launched April 13, carried a re-entry vehicle weighing 195 pounds. The attempted recovery was not successful, however, although the 1,600-pound satellite is expected to remain in its polar orbit until about mid-May. The Air Force said Discoverer II was circling the earth every 90.84 minutes at a speed of more than 17,000 miles an hour. It ranges from 243 miles from earth to 156 miles.

Another space flight problem, to be solved even farther in the future, is mapping space to avoid regions of intense radiation such as found in the Van Allen belts. A first step toward doing this will be made by a future National Aeronautics and Space Administration's Vanguard satellite, which will carry a magnetometer to measure the earth's magnetic field that guides and concentrates the radiation particles.

At least two problems are international in scope—the radio frequencies satellites should use and the lifetimes of their batteries, and

who owns outer space or the moon and other planets.

It is quite likely that in the future dozens of earth-circling satellites chattering away at various frequencies on solar-powered batteries will prove extremely troublesome since there will be no way to stop their noise. New and improved methods of obtaining electrical power for satellites, such as NASA's paddle-wheeled vehicle to be tested soon, will augment the problem of unceasing clamor from space.

In this satellite, shown in the photograph on the cover of this week's SCIENCE NEWS LETTER, paddle-like fins are attached to the spherical instrument and battery container to act as solar cells. Testing the efficiency of this configuration as a satellite's energy source is a first step toward exploring the planets, particularly Venus and Mars.

Many persons believe the United Nations should lay claim to outer space, as well as the planets. Chances are high, however, that in the long run, no one will own space.

Even defining where space begins is a problem. Does it start at about 22,000 feet, where pilots first begin to experience space-equivalent conditions? Would a reconnaissance satellite circling at 200 miles violate the territory of all the countries of which photographs might be taken? That is not yet a question since present instruments cannot give sufficient detail except for such broad outlines as cloud cover. But better devices are sure to be developed in the future, especially for shorter-lived satellites circling at about 60-mile heights.

Science News Letter, April 25, 1959

## AVIATION

# Space Research Problems

► SCIENTIFIC PROBLEMS pressing for solution in the fields of aviation and astronautics were outlined by Maj. Gen. John W. Sessums Jr., USAF Air Research and Development Command, before the World Congress of Flight at Las Vegas, Nev.

He said scientists should step up work on: converting heat directly into electricity; getting more power per pound of fuel; propulsion in space-plasma jets, ion and photon rockets; lightweight, long-duration systems to provide electrical power in space without nuclear radiation, and protection of man against radiation in space.

Brig. Gen. B. G. Holzman, commander, Air Research and Development Command, Office of Scientific Research, mentioned these additional problems as areas for basic research:

Study of cosmic rays; properties of intermediate isotopes for use in lightweight

shielding; fusion, or another simple way to release all the energy in the atom.

He said it is possible that theories concerning the gravity fields of stars may provide new understanding of the nature of atomic nuclei. Application of quantum mechanics concepts to real chemical systems may help explain the internal structure and properties of materials.

Science News Letter, April 25, 1959

## MEDICINE

## "Go-Getter" Type Is Heart Attack Candidate

► THE AMERICAN "go-getter" type is a prime candidate for a heart attack.

There appears to be a strong link between the behavior of a man with regard to his business and social activities and his chances of being a victim of a heart attack,

two San Francisco specialists have suggested.

Intensive studies to determine the reasons for the marked increase in coronary disease and the increased incidence of heart attacks among both younger and older men and women suggest that:

A person who is full of drive toward previously selected goals; loves competition, both in work and play, and strives to "best" the other fellow; desires the position of "top man"; constantly strives for recognition and advancement; accepts responsibilities; constantly drives himself to meet deadlines and who, as a result, must speed up everything from his daily work to his ordinary living habits, is a person who is likely to suffer a heart attack.

On the other hand, a high fat content diet, moderate obesity, people with anxieties and frustrations, heavy smoking and moderate alcohol intake did not materially affect the studies unless they were coupled with the attitudes previously mentioned.

The results of the study were presented at a meeting of the American Heart Association by Drs. Meyer Friedman and Ray H. Rosenman of San Francisco.

Science News Letter, April 25, 1959

## OCEANOGRAPHY

## New Lagoon Found Under 500 Feet of Water in Gulf

► AN UNUSUAL lagoon has been discovered: it lies under 500 feet of water in the Gulf of Mexico, oceanographers of the Coast and Geodetic Survey have reported.

Lagoons are shallow ponds or lakes. Their surrounding land formations are common along the coastline. But this new lagoon is under 500 feet of water 150 miles out in the Gulf, George F. Jordan and Dr. Harris B. Stewart Jr. reported.

The lagoon is situated inside a perfectly formed barrier spit, a curving ridge 65 miles long, that extends west of Key West, Fla. The oceanographers have named the formation Howell Hook in honor of Commander J. A. Howell, a Survey officer who in 1872 took the first depth soundings in the area.

Since the lagoon opens toward the north, the discoverers expressed the opinion that at the period it was built the prevailing coastal currents were northward. They now run southward toward the Florida Straits and into the Gulf Stream.

Until the oceanographers can analyze samples of the bottom sediment, the exact geological age of the formation will remain undetermined. The investigators call it a "drowned" barrier beach. This is the term scientists use when they do not know whether the sea rose or the land sank or both.

They do know, however, that the water level at the spit, or ridge, was once from 450 to 600 feet below where it is today. Since the spit and its enclosed lagoon and channel have been so perfectly "mummified," the men deduced that after nature built them, the spit was preserved by cementation or encrustation, plus an absence of land sediments, which normally mask depressions like a lagoon.

Science News Letter, April 25, 1959