ASTRONAUTICS

Space Flight Succeeds

Two monkeys have successfully completed a round-trip into space, the nose cone in which they made the journey being recovered in less than two hours after launching.

See Front Cover

TWO LITTLE monkeys, one clad in a space suit and the other lying in a special capsule with her knees drawn up under her, were blasted 300 miles into space on Thursday, May 28, from Cape Canaveral, Fla., the National Aeronautics and Space Administration has revealed.

Drama of the experiment was heightened as U. S. Navy frogmen successfully snatched the missile nose cone from shark-infested waters in the Atlantic Ocean. This makes the animals the first monkeys known to have been shot into space and successfully retrieved.

The pre-dawn experiment, using a Jupiter intermediate-range ballistic missile, had five objectives:

1. To recover the Jupiter nose cone with its two passengers.
2. To test the behavior of "Monkey Able," a seven-pound American-born rhesus monkey who had been trained to work a telegraph key.
3. To measure physiological reactions of "Monkey Baker," a one-pound squirrel monkey.
4. To carry out biological experiments for radiation studies on cellular systems such as those of human blood, fruit fly larvae, mustard seeds, corn, yeast and fish eggs.
5. To see what effects radiation and weightlessness might have on cell division and egg fertilization.

The photograph on the cover of this week's SCIENCE NEWS LETTER shows a rhesus monkey in the special space suit, lying on a glass fiber contour couch such as the one used by test monkey Able.

The monkey experiment helps pave the way for "Mr. Mercury," one of the seven men to be chosen by NASA to ride the first manned space capsule in orbit. Using telemetering equipment, earth-bound scientists were able to study the effects of noise, acceleration, deceleration, vibration, rotation and weightlessness upon the two little monkey pioneers as they zoomed into space, then whistled back at 10,000 miles an hour to their Atlantic landing point.

Monkey Able's "co-pilot," as NASA called her, rode in a 28-pound capsule measuring 9.75 by 12.5 by 6.75 inches. Dressed in a helmet of molded plastic compound over chamois, and lying on a bed of silicone rubber overlaid with foam rubber, Monkey Baker was a "living laboratory."

Her contribution to the experiment was in terms of such things as an electrocardiogram (to show how her heart was working under the space stresses), an electromyogram (to show how her muscle reaction was bearing up), heart sounds, pulse velocity from large blood vessels, body temperature and respiratory rate.

During their ride 1,500 miles over the Atlantic Missile Range the monkeys were kept in a weightless state for about nine minutes.

The project was a joint effort of the U. S. Army, Navy, Air Force and National Aeronautics and Space Administration.

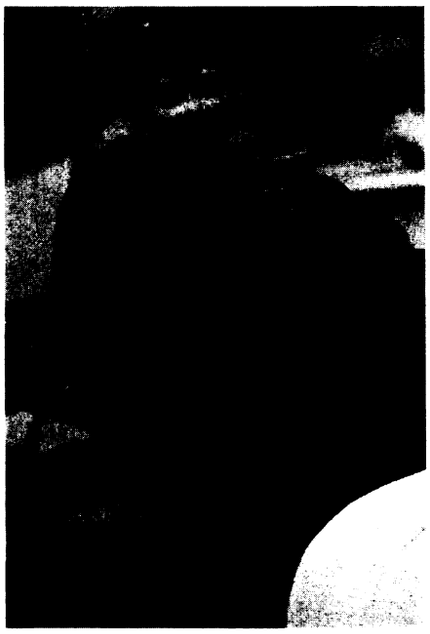
Recovery was made by the U. S. Navy and Air Force. Recovery gear included two destroyer escorts, a fleet tug, the U.S.S. ATF Kiowa which effected the actual recovery, and two P2V aircraft.

The ships sailed in advance to the area where the spent nose cone was expected to plunge to its watery end. Airplanes helped guide the Kiowa to the nose cone. It was spotted via a dye marker, a five-foot orange-and-blue balloon sporting a flashing light on the top, and a radio transmitter used as a beacon.

A capsule of shark repellent was released to protect Navy frogmen who secured hoisting lines to the cone suspended in the water beneath the balloon.

The recovered nose cone and its contents were shipped to San Juan, Puerto Rico, and then to the U. S. mainland for further study.

Two of four tiny capsules included in the nose cone experiments of a Jupiter IRBM contained mold spores sensitive to radiation. Study of the spores should provide important information on the spores' ability to live in outer space. Some scientists believe that spores may have been the original "space travelers." They may be the only life capable of survival in the temperature and atmosphere encountered in space.



MONKEY BAKER—A squirrel monkey is shown wearing the special molded plastic helmet over chamois like the one that protected Monkey Baker in her space flight and recovery.

Results of the experiments, involving vials, cylinders and capsules containing whole blood, yeast cells, sea urchin eggs and sperm, young fruit flies, corn kernels and tissue from onions (both white and purple), will be reported later, the National Aeronautics and Space Administration said. Agencies of the Government as well as educational institutions carrying out biomedical research will receive the experimental data on request.

Researchers are particularly interested in learning the effects of weightlessness, cosmic rays, radiation, temperature and gravity forces on various tissues and organisms. Some of the results, such as the experiments with whole human blood, will have direct bearing on man's flight into space. Others, such as examination of fruit fly pupae for radiation damage, will help answer basic problems in biology.

Science News Letter, June 6, 1959

GENERAL SCIENCE

New Science Adviser Is Explosion Expert

PRESIDENT Eisenhower's new science adviser, Dr. George B. Kistiakowsky of Harvard University, is an expert on explosives and explosions, among other subjects.

During World War II he was first chief of the explosives division of the Office of Scientific Research and Development, then in 1944 became chief of the explosives division of the Los Alamos Laboratory, where the atomic bomb was developed.

Dr. Kistiakowsky was a member of the National Academy of Sciences' committee on atomic energy as early as 1941.

As official historians, Dr. Kistiakowsky and Dr. Ralph A. Connor have reported on United States work on military explosives during World War II. Their work covered the synthesis, testing and production of explosives, including underwater explosives, gun propellants, propellants for rockets and high explosives for use in shells and bombs.

One of the new explosives developed, RDX, is described by the scientists as an "example of perfect international cooperation in research."

Dr. Kistiakowsky is a 58-year-old Russian-born chemist who became a U. S. citizen in 1933. He is a member of the National Academy of Sciences and the President's Science Advisory Committee.

He is replacing Dr. James R. Killian Jr. who will resign in mid-July to return to Massachusetts Institute of Technology in his new post as chairman of the MIT Corporation.

Dr. Kistiakowsky's other specialties include chemical kinetics, the thermodynamics of organic molecules and molecular spectroscopy. He is the author of the book, "Photochemical Processes."

Science News Letter, June 6, 1959