

Cosmic Tests Helpful

➤ A COSMIC RAY experiment successfully accomplished by the Gemini 11 flight will shed light on the fast, heavy atomic nuclei that bombard the earth from outer space.

Designed by scientists of the Naval Research Laboratory and NASA's Goddard Space Flight Center, the experimental apparatus consisted of sensitive photographic nuclear emulsion, capable of recording the tracks of nuclear particles. The equipment was located at the surface of the spacecraft in the retro-adapter section.

Shortly after the launch, a "guillotine" automatically cut a cable that allowed a covering hatch to spring open, exposing the detector to the sky. Astronaut Richard Gordon then depressed a switch that initiated the experiment.

Every minute for the next 22 hours of the flight, a photographic sub-stack moved with respect to a stack above it. This motion provided a time history of the arrival of the cosmic particles.

Command pilot Charles (Pete) Conrad oriented the spacecraft during passage over the South Atlantic Ocean so that the Van Allen particles over that part of the earth entered the stack in a direction that minimized their interference.

After the 15th revolution, while the spacecraft was passing over the United States, Astronaut Gordon opened the hatch for his "space walk," and extracted the cosmic ray package from its temperature-controlled well. Command pilot Conrad then stowed the package inside the Gemini capsule.

This marks the first time that a

photographic cosmic-ray detector has been exposed directly to the energetic cosmic rays in the earth's equatorial regions without the interfering effect of an intervening absorber.

Principal investigator in this experiment is Dr. Maurice M. Shapiro, chief scientist of the laboratory for cosmic ray physics at the Naval Research Laboratory. The head of the group at the Goddard Center is Dr. Carl Fichtel.

SPACE

Long-Term Monkey Orbit Study Begun

➤ AN EXTENSIVE study of how to keep two small monkeys in space as long as one year to help biologists learn the long-term effects of weightlessness has been started by the National Aeronautics and Space Administration.

NASA has asked competent industrial firms to draw up a "preliminary design study" for an Orbiting Primate Spacecraft capable of being carried into Earth orbit during the Saturn Apollo program. The Langley Research Center, Hampton, Va., will manage the study.

The study is being undertaken for a better understanding of the physiological changes which have been predicted during manned planetary flights. Duration of the experiment would be beyond the 30-day period in which primates will be studied in the NASA Biosatellite Program.

The concept under study consists of a small spacecraft capable of being carried aloft on an Apollo flight. It would contain an animal package for two or more unrestrained squirrel monkeys.

The spacecraft would be released by the astronauts in orbit and independently maintained for six months to one year. The animal package would then be recovered by astronaut rendezvous and returned to earth in the Apollo Command Module.

The condition of the animals would be continuously monitored by telemetry sensors, supported by a daily television transmission to earth on command. The trained monkeys would be required to manipulate handles for food and water.



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Do You Know?

The June census of *sea otters* showed 591 animals this year, up nearly 100 from the 497 counted in June, 1965, along the California coast between Cayucos and Monterey.

The largest hydroelectric *power* plant in the world, under construction in Venezuela, will generate six million kilowatts, enough for all Venezuela and for some of the neighboring countries.

On the average all the *water* in the air falls and is replaced every 12 days.

An obsolete Air Force Atlas *missile site* in the State of Washington is being utilized by the Bureau of Mines for research activities.

Rivers throughout the United States were found to be deficient or well below normal in streamflow and the ground water levels declining throughout July.

The hot *exhaust* of rockets often interferes with radio signals between the missile and the ground, causing a black-out of all communications.

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