SPACE

Search for Life in Space

➤ STAND BY for count-down on search for life in space!

Automatic microscopes for another planet, dust analyzers, protein detectors, and broths for growing a strange organism stand ready.

Rockets designed to land gently enough on another planet without jarring these sensitive instruments are being tested.

Scientists able to understand the messages radioed from satellites circling the landed instruments are perfecting their devices.

Scientists are on the threshold of knowledge about life on other planets, believes Dr. Philip Morrison of Cornell University, Ithaca, N. Y. By 1967 or 1969, he said, life-detecting instruments will land on Mars and start radioing information about whether or not there are any life forms.

We already know something of life outside the earth, he told a two-day workshop on Long Range Goals of Biology in Space, at the University of Rochester, N. Y.

Life outside the earth has been reported in several ways, he explained.

Certain scientists have claimed signs of outer-space life riding in on meteorites called carbonaceous chrondrites. But these living and fossil microorganisms found on meteorites may be only earth forms that have contaminated the meteorites, Dr. Morrison stated. Complex sequences of organic molecules discovered on meteorites may be pre-living compounds, not yet sparked with life.

There may be communicative societies living any place in the galaxy beyond our solar system, he said, but this subject is still in the speculative stage.

In our own solar system, the planet Mars is still the chief plausible site for life outside the earth. Mars' climate, with more arid, thinner air and colder days and nights than in Tibet, is feasible for life.

Dark splotches on the reddish, flat, rocky surfaces of Mars wax and wane in strength as apparent polar ice caps wax and wane with the reasons.

A remarkable spectral feature, an infrared absorption, is associated with these dark splotches, representing an unknown molecule and resembling at least a carbon-hydrogen bond.

Biochemists believe that living organisms in space may be built of carbon, plus hydrogen, oxygen and nitrogen. These chemicals may exist in a water-like base, in liquid or gel state.

• Science News Letter, 85:46 Jan. 18, 1964

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Small Nuclear Explosions To Propel Rockets

➤ ATOMIC ENERGY in the form of small nuclear explosions will propel future spaceships carrying millions of tons of payload throughout the solar system, a report published by the Smithsonian Institution in its annual volume indicates.

A review of rocket propulsion prepared by Ralph S. Cooper of the Los Alamos Scientific Laboratory emphasizes that nuclear energy "can be a very compact type of almost limitless energy." One intermediate step toward nuclear propulsion would be to use the atomic heat of the chain reaction of fissionable uranium or plutonium to propel hydrogen, the lightest of the elements, to exhaust velocities of 25,000 to 30,000 feet per second.

An even more advanced propulsion method would be to use a series of small nuclear explosions in what is called an "external combustion engine."

The nuclear explosive would heat the propellant which would bang into a heavy plate, transferring momentum to the rest of the vehicle.

Another possibility would be the use of nuclear energy to accelerate a propellant electrically, and this has the possibility of obtaining very high velocities of 50,000 to 500,000 feet per second without too much heat being created in the system.

In order to achieve a round trip to the moon or escape from the solar system itself, rocekts must attain a velocity of 60,000 feet per second. Round trips to Venus and Mars would need 60,000 to 90,000 feet per second. Satellites in earth orbit, by contrast, require only 30,000 feet per second and escape from the earth needs 42,000 feet per second. In these cases, the rockets for interplanetary trips would need to be four to nine times as large as the orbital vehicles with the same payload and propulsion system.

Present rockets using hybrid solid-liquid fuels will not be capable of providing enough energy for the longer flights and for that reason space experts are looking toward nuclear propulsion for the future.

The report estimates that nuclear explosion propulsion may come to fruition near the end of this decade while the liquid fuel rockets will continue to be the work horses of the 1960's.

The report was issued at a time when the White House was reviewing the nuclear-powered rocket program to decide whether there would be a curtailment in its development as a part of the budget reductions.

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