

BIOLOGY

Does Life Exist on Mars?

► THE SEARCH FOR LIFE on Mars and other planets should have the highest priority among all objectives in space science, Dr. Colin S. Pittendrigh of Princeton University told the 102nd annual meeting of the National Academy of Sciences.

This was the conclusion of a study conducted in the summer of 1964 by the Academy and the National Research Council at the request of the National Aeronautics and Space Administration.

U.S. scientists should be prepared to exploit all technical and scientific possibilities of observing and exploring Mars as it swings near earth during the favorable years 1969 to 1973, Dr. Pittendrigh commented.

In an increasingly intensive program to learn if life exists beyond earth, or if our planet is unique in this phenomenon, scientists are concentrating first upon Mars as the nearest and most earth-like planet in our solar system.

If evidence of life, either existing now or having once originated and existed, is found, then there is indeed a possibility that life might be abundant in the billions of planetary systems that fill the sky.

In the last decade, space technology has grown in a spectacular manner, to such a point that landing Martian missions will probably be feasible in the 1980s—preparing the way for the next step of returning ships to earth with samples of Martian materials, and then of landing men on Mars.

Opportunities for flights to Mars are by no means always at hand, Dr. Pittendrigh pointed out. The orbits of earth and Mars are such that these opportunities are limited to "brief windows" that recur about every

second year but are most favorable about every 17 years. The next two favorable periods will occur during the years 1969 to 1973 and then again in 1984 to 1985.

Recommendations to press forward as fast as technology and other factors permit were presented with grave warnings to take utmost precaution against contaminating Mars with any earthly microbes which could "irreversibly destroy a truly unique opportunity for mankind to pursue a study of extraterrestrial life."

Meanwhile at the annual spring meeting of the American Institute of Physics, Dr. R. Smoluchowski of Princeton University said the curious seasonal growth of the Martian dark areas could be accounted for in many ways besides interpreting them as evidence for vegetation.

The dark colors, which develop at the border of a receding polar frost cap and advance toward the equator and into the opposite hemisphere, may be caused by the presence of color centers similar to those which exist in various X-ray irradiated minerals such as cooking salt or diamonds, Dr. Smoluchowski said.

These color centers consist usually of an electron located at a major crystal defect or impurity, and the absorption of light results in the ejection of the electron from the defect into the crystal. In the Martian summer, the ejected electrons eventually return to the centers, which then are ready for further absorption of light. In winter, however, the ejected electrons are captured in numerous "shallow traps" or defects and do not return to the centers. Hence there are fewer color centers able to absorb light.

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TECHNOLOGY

Device Sends More Sound

► NOW THAT THE WORLD is becoming more and more crowded with human beings who just cannot stop talking, the communication systems have been facing an increasingly dire problem: how to send this crescendo of human babble over already congested channels of communication?

Three Radio Corporation of America scientists reported one solution which eventually would carry more than 1,000 conversations over a system where now only one conversation is being carried.

Harry F. Olson, Herbert Belar and Edward S. Rogers of RCA Laboratories, Princeton, N.J., reported the communications system before the 102nd annual meeting of the National Academy of Sciences in Washington, D.C.

Now, by a special process, machines can analyze and determine the smallest recognizable particle of a spoken syllable which is transmitted and then synthesized into speech at the receiving end by another machine.

This smallest particle is called a "syblet,"

which is a contraction of a syllable or speech element. For instance, a total of only 550 different syblets are required to make up 1,370 syllables.

At present, scientists have been able to construct equipment for analyzing and transmitting 200 syblets or speech elements which are then synthesized into intelligible speech at the receiving end.

During years of research on this system, the scientists said, each model of speech analyzers and synthesizers constructed presented an improvement over the preceding one, and it is hoped eventually to have an ultimate machine which can deal with 1,000 speech elements.

The speech analyzer consists of several batteries of equipment, the researchers reported—mechanical devices that distill the cacophony of human voices to a pure precise minimum before it is transmitted and then synthesize over the loudspeakers of telephone, radio and television to add to the rising sounds of the world.

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Questions

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ENTOMOLOGY—What is one of the methods for controlling the Mexican fruit fly population? p. 294.

GENERAL SCIENCE—What damaging effect does complete social isolation for the first six months of life have on monkeys? p. 291.

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OCEANOGRAPHY—What is the depth of the recently discovered valley under the Andaman Sea? p. 296.

PUBLIC HEALTH—What disease is now the fastest growing killer in the United States? p. 297.

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