

GENERAL SCIENCE

Secrecy Hampers Research

A scientist has charged that Federal Governmental secrecy policies are seriously affecting space research and scientific fields, sometimes making communications impossible.

SPACE research and all other fields of scientific study are hampered by the Government's secrecy policies, a University of Maryland physics professor has charged.

Dr. Fred Singer told the House Space Committee of his unsuccessful attempts to obtain information on the Russian moon shot, *Mechta*, which was launched into an orbit around the sun January, 1958. He said he tried several times in various ways to learn what U. S. Government agencies had learned from the Russian moon shot.

When these efforts proved fruitless, Dr. Singer reported, he obtained the desired information from translated Russian sources. He blamed a tendency on the part of personnel in both military and civilian Government agencies "to sit on data," since the requested information was not under secrecy wraps.

However, Dr. Singer said, the problems of obtaining information are "much broader than space research," and affect all scientists connected with the Federal Government's research programs. Even though he has clearances from more than one agency, in-

cluding the Atomic Energy Commission, Dr. Singer said he had to establish his "need to know" before the information could be given him.

Dr. Singer charged the "need to know" was a device used to keep persons from finding out the information was available at all. It is difficult, Dr. Singer pointed out, to establish a need to know when you do not know that another person has the desired information.

A recent example of this in Dr. Singer's field of rocket and space research was the *Argus* experiment in which atomic bombs were exploded high above the Atlantic Ocean late last summer and the resulting radiation trapped in space was measured. Dr. N. C. Christofilos of the University of California, who suggested the explosions, and Dr. Singer could not discuss the theory of such trapped radiation for several months, even though Dr. Singer had suggested the existence of trapped radiation high above the earth's surface some three years ago, because the experiments were not disclosed until March.

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ENGINEERING

Nuclear-Powered Blimp

AMERICA'S FIRST nuclear-powered aircraft could very well be a huge blimp, about three times the size of those now being used by the U. S. Navy for submarine and plane spotting.

The Navy has been informed of the feasibility of a nuclear powered non-rigid airship, which could be operational by 1963, the Goodyear Tire and Rubber Company reported. The Goodyear representatives spoke at an Aviation Writers Association meeting in Washington.

The blimp would be made of a new rubberized fabric capable of withstanding radiation exposures up to 100,000,000 roentgens. The fabric is made of Dacron cloth, coated with synthetic rubber.

A nuclear-powered blimp could be fitted with a reactor with only one-twentieth the power needed to sustain a nuclear-powered plane. Calculated radiation levels for such a small reactor are of such low order that no elaborate ground handling equipment or special crew environment need be provided, Goodyear officials said.

Capable of 70- to 80-knot speeds, the proposed 4,500,000 cubic-foot airship could reach any point in the world from existing United States bases. Its operational altitude would be 10,000 feet.

The blimp's length would be 540 feet, making it possible to locate the atomic re-

actor far enough away from the craft's control car to permit personnel to work in an environment comparable to that of an atomic plant. The design calls for the reactor to be placed amidship, with the control car near the bow.

The control car would be 86 feet in length, have two decks, and be able to accommodate 24 officers and men. State-room type crew quarters would be relatively free of vibration and noise.

Security requirements, the officials said, prevent disclosure of the airship's detail and the extent of its shielding. They did report suggesting, however, that chemical fuel could be used for takeoff and landing, with the reactor shut down during these times. Once airborne, the blimp's turbo-prop engines would be nuclear-powered.

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BACTERIOLOGY

Invading Virus Transfers Bacterial Drug Resistance

VIRUSES attacking bacteria may be indirectly responsible for making "staph" bacteria resistant to drugs.

The invading virus apparently picks up the heredity material of a drug-resistant bacterium and then transfers it to one that

is drug-sensitive, Dr. M. L. Morse of the University of Colorado Medical Center, Denver, said.

In studies reported to the Society of American Bacteriologists meeting in St. Louis, Mo., Dr. Morse explained that a bacterial virus transferred resistance to the antibiotics streptomycin and novobiocin from one staph cell to another. First the viruses were grown on resistant staph cells. Then they were allowed to invade drug-sensitive cells. Approximately one cell in 10,000,000 of the cells that survived the virus infection became resistant to the antibiotics.

Previously, Dr. Morse reported, other cases of virus infection alone had failed to produce any resistant cells. Therefore, it must have been the transfer of hereditary drug resistance from one staph cell to another that accounted for the new antibiotic resistance, he concluded.

It will be necessary to evaluate the transferring process to discover if it contributed to the occurrence of multiple drug-resistant strains in hospitals, Dr. Morse said. The transfer can produce strains resistant to more than one drug by combining the resistance properties of two different strains.

Staphylococci are currently a source of many hospital-acquired infections.

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BACTERIOLOGY

Bacteria Are "Refined" For Radiation-Resistance

BACTERIA which are resistant to radiation are attracted by a negative electrical charge, reported Dr. Harold L. Sadoff, assistant professor of microbiology, and John H. Green, graduate student, both of Michigan State University.

Normal bacteria, they also found, are attracted by a positive charge.

These findings, Dr. Sadoff told scientists at the Society of American Bacteriologists meeting in St. Louis, Mo., may help science arrive at a better understanding of how radiation kills all living things.

They may also help to solve some problems of preserving food by sterilizing it with radiation, he added.

Dr. Sadoff and his assistant isolated *Streptococcus faecalis*, a fairly common strain of bacteria, from food which had been subjected to 2,000,000 roentgens. This is five to ten times the dose needed to kill a normal culture of the bacteria.

When these bacteria reproduced 99% of the offspring were normal in resistance. Only one percent was exceedingly resistant.

Using a technique called electrophoresis, the MSU scientists observed some bacteria gravitated toward a negatively charged pole. When members of this group were exposed to radiation ten percent survived a high dose. When the group was further refined by electrophoresis, 36% survived the maximum dose that was given.

"By combining electrophoresis with other techniques," Dr. Sadoff said, "we should be able to determine the basis of radiation resistance in this organism."

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