

## ASTRONAUTICS

# Space Man May Be Sleepy

The possible effects on man of traveling through space are being investigated. Scientists find that weightlessness may make space men sleepy.

► THE WEIGHTLESSNESS space travelers will encounter might put them to sleep.

This is a speculation, Dr. C. M. Brooks of the department of physiology of the State University of New York told a press conference following a closed session of the Symposium on the Possible Uses of Earth Satellites for Life Sciences Experiments meeting in Washington.

It can only be a speculation, Dr. Brooks stressed, because weightlessness cannot be duplicated on earth for a period longer than 40 seconds or, at most, one minute.

We are anti-gravity people, he explained, and possess an anti-gravity center in our brain. This center is constantly being bombarded with signals from the muscle labyrinths and this bombardment is important because it keeps the anti-gravity and other brain centers active.

Orthodox physiologists, Dr. Brooks pointed out, think that this bombardment thereby keeps us awake. Weightlessness, on the other hand, reduces the bombardment and may very well "reduce the drive that keeps us alert." It could very well cause the person who encounters weightlessness to go to sleep.

Further evidence on the effects of weightlessness have been demonstrated in experiments with mice at Holloman Air Force Base in New Mexico, Dr. Harald J. von Beckh reported.

By returning to an "older aeromedical laboratory, the aircraft," Dr. von Beckh said, Holloman scientists have been able to duplicate weightlessness for one minute. They have also been able to test an animal's reaction to both acceleration and weightlessness by sending a plane into a diving steep angle spiral and then into a parabola.

A "surprise" finding when mice were subjected to the acceleration-weightlessness tests, Dr. von Beckh said, was that recovery from acceleration unconsciousness or "blackout" becomes complicated and takes longer if the acceleration is followed by weightlessness. The possible explanations for this might be a general muscle relaxation, such as a person feels when he jumps off a high diving board, and upsetting of the blood pressure sensing and regulating mechanism in the animal.

## Propose Nuclear Batteries

► NUCLEAR BATTERIES appear to be the most promising source of power for the electrical and electronic systems within satellites and space vehicles.

The nuclear batteries being developed act as thermoelectric converters, Harold Zahl of the U. S. Army Signal Engineering Laboratory, Fort Monmouth, N. J., explained. Radiation energy from an isotope is used to

produce heat and then to convert the heat with thermocouples into electrical power.

The batteries have demonstrated two big advantages in their favor—they produce a high current and have a very low current drain.

Mr. Zahl stated to a closed session of the symposium that "it is expected that operational models of sufficient power output will be available in the very near future."

The output ratings of some of the experimental batteries, he pointed out, have been between 500 and 2,000 watt hours per pound, depending on the isotope used.

Cesium-144, when used as a power source, for example, produced the lower figure, whereas polonium-210, produced the higher rating.

Nuclear batteries boast another advantage for use in satellites. They provide a long life for the power source, a need, he added, that was made obvious by the power failure of the Russian sputnik instrumentation when compared to the life of the sputniks themselves. Cesium-144 can operate for 290 days and polonium-210 for 136 days before their output drops 50% as determined by their half-lives.

Mr. Zahl also described the advantages and disadvantages of the other power sources available, including the man-made chemical batteries, fuel energy devices and mechanical energy storage devices and the naturally available solar energy.

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## MECHANICAL ENGINEERING

## Engines in Arctic Ruined By Lack of Good Lubricant

► ENGINES used in sub-zero Arctic weather must be discarded long before their normal life spans are passed because no one has yet invented the "ideal lubricant" for the Arctic.

Engineers on Arctic projects have found it is easier to throw away hard-working engines after only short use than to try to lubricate them properly.

The problem is that heavy and medium weight oils congeal in subfreezing weather and engines will not turn over enough to start. On the other hand, lightweight oils do not offer enough protection to the engines, Earl J. Beck Jr., project engineer, U. S. Naval Civil Engineering Research and Evaluation Laboratory, Port Hueneme, Calif., reported at a meeting of the American Society of Mechanical Engineers in Philadelphia.

One compromise has been worked out in the Antarctic by International Geophysical Year engineers, Mr. Beck said.

They use two engines on each piece of equipment. One is the large engine that powers the truck, tractor or other equipment; the other is a small engine just powerful enough to turn the large engine in starting.

The large engine is properly lubricated for long life, Mr. Beck reported, and the small engine is very lightly lubricated. The small engine "cranks" the large one until oil is flowing freely.

The ideal lubricant for which scientists are searching was described by Mr. Beck as "a golden oil that would pour at any temperature." Until such an oil is found, he said, "modification of a starting engine that could be hand cranked seems most appropriate."

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## PHARMACOLOGY

## Doctors Can Help Prevent Suicides by Poisoning

► PRESCRIPTION drugs, especially barbiturates, are the main poisons used in suicides. For this reason the physician is often in a position to prevent such attempts, an internal medicine specialist told the Illinois State Medical Society meeting in Chicago.

Neither justifiable nor honorable suicide exist in our culture, Dr. Frank B. Norbury of the Norbury Sanatorium, Jacksonville, Ill., pointed out. Therefore, suicides must be considered to be a product of mental disease or personality aberration.

Dr. Norbury listed these three characteristic ways of attempting suicide:

1. "Impulse consumption," which is the most frequent. The person reacts to an overwhelming situation by impulsively emptying the medicine cabinet of all available sedatives. The severity of the poisoning will depend in part upon the amount of sedatives already in the medicine cabinet. Barbiturates, salicylates and opiates are often taken in this manner.

2. "Calculated consumption," whereby a lethal or near-lethal dose is carefully calculated in advance. This indicates a serious suicidal trend and risk of other attempts in the future.

3. "Serial consumption," in which the person takes his usual sedative in a somewhat larger dose because of more severe anxiety or impatience. This weakens his defenses so that a suicidal thought becomes more dominant.

Suicidal trends often accompany symptoms that are of an emotional nature or are vague and nonspecific, the specialist said. Depression, impulsive behavior, obsession with insomnia, deficiencies in judgment, and alcoholism are signs which should warn the attending physician to use caution in prescribing large doses of sedatives. This includes limitations on both amounts and refills.

The patient-physician relationship can also be a powerful factor in suicide prevention, Dr. Norbury said. Patients often like to discuss their depressed feelings and suicidal thoughts if the opportunity is offered them. The physician can listen carefully and judiciously question the patient.

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