

## Astronaut's Pill Could Prevent Microbe Shock

► THE GERMFREE state could carry with it as many dangers for astronauts as superinfection, the American Society for Microbiology meeting was told in Los Angeles.

To prevent the shock that could occur during space travel, a microbic pill might do the work, Dr. Thomas D. Luckey, professor and chairman of the department of biochemistry, University of Missouri School of Medicine, suggested.

Astronauts spending prolonged periods with sterilized food, air, water and waste would probably have only one yeast and two microorganisms as intestinal flora. One of the few surviving organisms could either be potentially virulent or so innocuous that the men would be left in a germfree state. Either one could cause serious illness or death.

The microbic pill could take care of space travel, but there is the added question of reinoculation when the space travelers return to the microbe-laden earth.

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### ENTOMOLOGY

## Ants, Bees Can Learn But Flies Cannot

► YOU CANNOT TEACH a fly a thing.

In a series of simple learning experiments such as those used on rats, Dr. Vincent G. Dethier of the University of Pennsylvania has found absolutely no evidence that a fly can learn and thus modify its behavior.

He never found a fly that learned to find its way through a maze with food as a reward. Nor did any "punishing" electric shocks have any effect on a fly's behavior, Dr. Dethier said during the annual meeting of the National Academy of Sciences.

A cockroach, however, can be taught to run a simple maze, to avoid a shock and to avoid its natural habitat, dark places.

The bee is at the top of the list as far as possibilities of learned behavior.

Perhaps learning is a luxury for flies, and it is to their disadvantage to so waste their time, he commented. A fly is middle-aged in a month since its lifespan is only 60 days.

In explaining the behavior of these miniature creatures that have been existing successfully on earth for more than 400 million years, the scientists discussed studies of innate behavior "programmed" into the insect system, in contrast to learning behavior.

An insect such as the bee or termite, for instance, learns to identify and remember certain things such as flight paths and nest sites, said Dr. Edward

O. Wilson of Harvard University. He cited as an example the complex nest structure of the tropical termites that stands 10 to 15 feet high and houses a community of over 10 million individuals. These organized insects have behavior patterns programmed in their individual brains, and also complex forms of communication for working and living together. As yet, scientists do not know the mechanisms that determine individual decisions such as to repair a gap in the nest wall or to select a food particle.

In considering the caterpillar, Dr. Dethier pointed out the complex behavior of that insect, which first is programmed to eat, move and act like a perfect caterpillar. When it goes into another stage of growth to emerge as a butterfly, the old nervous system is torn down, and a new system is reprogrammed to enable it to flutter, eat and act like a perfect butterfly.

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### PHYSICS

## Construction of Solar Vacuum Telescope Begun

► A UNIQUE SOLAR vacuum telescope under construction in New Mexico will be used for research on a range of solar phenomena and is closely linked to the nation's space programs. The \$3.16 million telescope will be 326 feet long, extending 200 feet beneath ground level. Above ground it will rise 126 feet on a mountain peak 9,200 feet above sea level.

The telescope was designed by Dr. Richard Dunn for the Air Force Cambridge Research Laboratories' Sacramento Peak Solar Observatory, Sunspot, N.Mex.

The above ground portion of the instrument will consist of a truncated, cone-shaped tower and associated laboratory buildings. A rotating turret atop the tower will track the sun in elevation and azimuth.

Two design features should give the telescope exceptional flexibility and resolution. First, the entire optical system, including the 320-foot interior tube and associated instrumentation, will rotate as the sun is tracked.

Second, the entire optical system will be placed in a vacuum to eliminate air turbulence that can greatly affect the resolution of the telescope. The vacuum also eliminates dust from optical surfaces that would degrade resolution and sensitivity.

When completed, the telescope will be used to study characteristic features of the surface of the sun that give rise to proton showers.

These showers are a potential hazard to man in space and degrade electronic equipment. Scientists hope to extend the period over which they can predict the onset of proton showers which can now be anticipated with accuracy for only a 10-day period.

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# IN SCIENCE

### PSYCHOLOGY

## Psychologists Focus On Fashion Models

► NOT ALL PSYCHOLOGISTS evidently like to study the average man. Some have turned to more exotic subjects—beautiful fashion models.

One such psychologist has discovered that the successful fashion model in New York, Paris or Minneapolis would not particularly like to be a postmistress, bookkeeper, bank teller, physicist, mathematician, YWCA secretary or housekeeper. Indeed, she has a greater aversion to these occupations than "women-in-general," reported Dr. David P. Campbell, University of Minnesota, Minneapolis, to his colleagues attending the Midwestern Psychological Association meeting in Chicago.

She is only half as willing as the average woman to accept regular working hours and would much rather change her working location from place to place than stay in one place.

Dr. Campbell concluded that fashion models tend to be exhibitionistic and prefer the unstructured to the structured setting.

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### MEDICINE

## Interferon Protection Against Virus Explained

► HOW THE PROTEIN substance interferon protects against virus infection was explained in Los Angeles by two New York investigators at the 66th annual meeting of the American Society for Microbiology.

Interferon, which is produced by a cell under virus invasion, inhibits translation of the virus' genetic message and thus prevents production of new virus material, Dr. Philip I. Marcus and Jesse M. Salb of the Albert Einstein College of Medicine, New York, reported.

For more than 30 years scientists have known that an infection by a nonfatal virus often protects against a fatal virus, but the specific protective factor, interferon, was not identified until 1957. It has been known that the substance has no effect on viruses outside the cell. It only disarms them once inside the cell. The Einstein researchers showed how this occurs.

Their conclusion is that interferon induces the cell to produce a new protein, which they have called translational inhibitory protein TIP. This protein binds ribosomes in the cell and specifically inhibits translation of the invading viral RNA, ribonucleic acid.

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## MEDICINE

### Strontium 90 Reduced By Alginate in Diet

► A WAY TO REDUCE strontium 90 uptake in humans exposed to large dietary amounts of the radioactive element is foreseen as a result of animal experiments.

When a standard laboratory diet was supplemented with sodium alginate, uptake of strontium in rats was reduced much more than uptake of calcium, a report from the Medical Research Council of England in *Science*, 152:655, 1966, said.

Since it is generally supposed that alginates are not absorbed by the digestive tract, the researchers said, this observation is of "considerable interest in the consideration of possible remedial measures to reduce strontium 90 uptake in a human population."

The results of the experiments with 15 female albino rats eight weeks old confirmed that sodium alginate, unlike most other therapeutic agents used to reduce uptake of radioactive strontium, does not interfere with calcium absorption.

Alginic acid is composed of one or more polyuronides containing guluronic and mannuronic acids in a proportion that depends on the botanical source of the alginate. Brown marine algae is such a source.

Reporting the study were George E. Harrison, Eric R. Humphreys, Alice Sutton and Hilda Shepherd of the radiobiological research unit of the Medical Research Council, Harwell, Didcot, Berkshire, England.

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## SOCIOLOGY

### Sterilization Sentiment Focuses on the Poor

► SENTIMENT FAVORING compulsory sterilization as a means of protecting the public from its "unfit" members has reemerged in U.S. society, a political scientist warned.

Dr. Julius Paul, of the Walter Reed Army Institute of Research in Washington, D.C., told the Population Association of America meeting in Washington that the current focus of attack is the unwed mother on welfare, or even both parents of illegitimate children.

In the past 10 years, said Dr. Paul, seven states, Delaware, Georgia, Illinois, Maryland, Mississippi, North Carolina and Virginia, have considered legislating sterilization for parents of illegitimate children.

A 1964 Mississippi measure offered

sterilization in lieu of a one- to three-year prison sentence.

None of the sterilization clauses has passed into law, Dr. Paul said, but the attempt indicates that "we have come full circle" back to the punitive attitudes of the early 20th century, when many states passed sterilization laws aimed at criminals and other "undesirables"—the insane, the feebleminded, the epileptic.

In the 1930s, 25,000 people were sterilized under state laws. Since then the practice has dropped to a few hundred a year.

Ironically, as the old laws are being replaced or neglected, the sentiment that gave rise to those laws is being reborn. This time, however, the attack, which has racial overtones, is on the poor.

Dr. Paul warned against being blinded by the moralistic tone of the sterilization proposals. The usual tack centers around "fitness for parenthood." North Carolina, the leading sterilization state, is a case in point.

Its stated eugenics policy is to protect persons from parenthood whose impairments would seriously handicap them in assuming the responsibilities of parents."

Even where consent of the individual is considered, there is always the possibility that the so-called "consent" was a price paid for release from some institution, Dr. Paul pointed out.

The application of scientific or pseudo-scientific knowledge to public policy, particularly under compulsory circumstances, poses a "grave and serious threat to individual civil liberties," he said.

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## PUBLIC HEALTH

### Nurse-Smoking Study Shows Many Chest Colds

► TWICE AS MUCH time was lost to lower respiratory infections by cigarette-smoking student nurses than by their nonsmoking classmates, a one-year study reported in the *New England Journal of Medicine*, 274:979, 1966, showed.

Forty-seven smokers and 47 nonsmokers in the senior class at the Vancouver General Hospital School of Nursing in British Columbia were compared.

The frequency and duration of pure upper-respiratory-tract infections were not significantly different in the two groups.

Smokers suffered more nonrespiratory illnesses, including hepatitis, than nonsmokers, however. In the total group of 47 smokers there were 43 respiratory illnesses.

Drs. John L. Parnell and Donald O. Anderson of the University of British Columbia reported the study with the aid of Clair Kinnis, R.N., registrar of the School of Nursing, Vancouver General Hospital.

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## PUBLIC HEALTH

### Roll Snoring Child Over; Do Not Scold Him

► IF A CHILD SNORES—and many youngsters under the age of 10 have the habit—do not scold him. Roll him over on his side.

This is one of a number of suggestions made by Dr. Marcus H. Boulware of the Florida Agricultural and Mechanical University, Tallahassee, in *Rehabilitation Literature* 27:141, 1966. Dr. Boulware has a snoring problem himself and has done considerable research on the subject.

Allergies, respiratory disease, growths and swollen tissues are among the numerous causes of snoring.

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## MEDICINE

### Stress Causes Rise In Hormone Output

► STRESS has now been shown to increase growth hormone secretion.

Two English scientists became interested in the possibility that stress affects growth hormone when a medical student reacted to an experiment in which he was given upsetting false information.

He was told that he had received a large dose of insulin and that he would experience severe symptoms caused by a fall in blood sugar, or hypoglycemia. In reality, a salt solution and not insulin had been injected. Although his blood sugar was unaltered there was a demonstrable increase in his growth hormone as well as in his plasma hydrocortisone (cortisol).

Saline injection in four control subjects, who had not received any disturbing information, produced no changes in plasma sugar, cortisol or growth hormone.

To prove further that growth hormone secretion increases with stress, the scientists induced stress with a pyrogen, a substance that causes fever, in two males and two females.

The results suggest that a fever-induced stress stimulates both pituitary growth hormone and ACTH secretion not due to a measurable fall in blood sugar. Plasma sugar levels were unchanged in both men and women. The growth hormone response to a pyrogen appears to involve a different mechanism not before demonstrated since it was not suppressed by a continuous intravenous infusion of glucose.

Reporting the findings in *Nature*, 210:540, 1966, were Dr. F. C. Greenwood of the division of chemistry and biochemistry, Imperial Cancer Research Fund, Lincoln's Inn Fields, London, and Dr. J. Landon, metabolic unit, department of chemical pathology, St. Mary's Hospital, London.

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