

## ZOOLOGY

**Bats Most Sensitive Of Mammals to DDT**

➤ **BATS**, those wizened-faced, radar-equipped animals, are more sensitive to the pesticide DDT than any other mammals yet tested, Drs. Mark M. Lukens and Wayne H. Davis of the University of Kentucky, Lexington, have found.

When the big brown bats, *Eptesicus fuscus*, were fed doses of varying amounts of DDT in corn oil injected into meal worms, all the bats died, the scientists reported in *Science*, 146:948, 1964.

Within a few hours to 13 days after receiving the DDT, the animals began to develop tremors followed by convulsions that became progressively worse. After the onset of these symptoms of poisoning, the bats died, some surviving up to three days.

The detailed study on the effect of poison on bats arose from the concern about recent decreases in bat populations in the United States, the scientists reported.

While the lethal dosage of DDT for bats was approximately 20 milligrams or more per pound of the bats' body weight, other mammals tested endured stronger amounts, reported the scientists. For instance, the lethal dose for mice has been reported to be about 200 mg. per pound, for rats 150 mg., and for rabbits 300 mg.

There are 2,000 different kinds of bats in the world consisting of two main groups—insect eaters and fruit-eaters. The fruit-eaters exist in greatest numbers in the tropics and are usually larger than the insect-eaters. Bats vary in size from the enormous flying foxes with a wingspan of about five feet to tiny creatures no bigger than a hummingbird.

Bats are generally useful and harmless creatures, especially the insect-eaters which destroy a considerable number of insects pests each year.

• *Science News Letter*, 86:376 December 12, 1964

## MEDICINE

**Diabetes on Increase But Control Possible**

➤ **DIABETES** is on the increase. There are at least 3.4 million persons with this disease in the United States, including an estimated 1.4 million who do not know they have it.

Control by insulin injections reduces diabetes' danger, although it ranks seventh in the list of causes of death by disease.

Anyone can become diabetic, and everyone should be tested for this chronic condition that develops when the body cannot make full use of food eaten, especially starches and sugars.

Pre-diabetes research has made possible the identification of those who have a tendency to this condition at a time when early treatment can prevent it from developing.

Diabetes can be present without any signs at all, but the usual symptoms include one or more of these: increase in thirst, constant hunger, frequent urination, easy

tiring, intense itching, changes in vision and slow healing of cuts and bruises. Loss of weight may also be an indication, although the overweight person is a likely candidate.

A person over 40 years of age or one who has diabetes in the family is particularly susceptible.

Successful synthesizing of insulin holds promise for detecting unknown diabetics. With this synthetic product scientists hope to increase their knowledge of so-called insulin antagonists or blocking agents.

The lack of insulin, long thought to be the sole cause of diabetes, is not the cause among all people. Some diabetics produce enough of this hormone in the pancreas, but somehow it is blocked and cannot be effectively utilized.

• *Science News Letter*, 86:376 December 12, 1964

## TECHNOLOGY

**Laser 'Shoots' Sound On Intense Light Beam**

➤ A **PISTOL-SHAPED LASER** that can "shoot" voice and other signals great distances on powerful light beams has been developed.

The hand-held laser, which is only six inches long and weighs 12 ounces, carries sound on its intense and narrow light beam to a light-sensitive receiver.

A disc-shaped receiver only three inches in diameter could pick up signals projected from the laser some five miles away, reported scientists from International Business Machines Corporation, developers of the laser transmitter.

• *Science News Letter*, 86:376 December 12, 1964

## MEDICINE

**Heart Attack Prevention Most Important Factor**

➤ **PREVENTION** of heart attacks will soon be possible for as many as 50% of those likely to be victims, Dr. A. M. Lilienfeld, staff director of President Lyndon B. Johnson's Commission on Heart Disease, Cancer and Strokes, told *SCIENCE SERVICE*.

With up to 40% of heart attack victims dying before they reach the hospital, the most important approach is to prevent the first attack, he pointed out.

"We can get the answers to questions of diet, smoking, high blood pressure, exercise and other factors in the next two to four years," he said at the Second National Conference on Cardiovascular Diseases in Washington, D.C.

This month, the commission's report will be published, the commission will be dissolved, and Dr. Lilienfeld will return to Johns Hopkins University in Baltimore where he is chairman of the department of chronic diseases of the School of Public Health.

More studies should be done, especially on diet, Dr. Lilienfeld said. Control of smoking and high blood pressure, other high-risk factors, need further study.

The potential outlook is very good, Dr. Lilienfeld believes.

• *Science News Letter* 86:376 December 12, 1964

**IN SCIEN**

## SPACE

**Spacesuit Air Is Thinner Than Atop Mt. Everest**

➤ **IF IN AN EMERGENCY** an astronaut has to depend on his spacesuit for breathing, he will be using air that is thinner than the air a mile above the top of Mt. Everest.

The air pressure in the suits of the astronauts in both Gemini and Apollo will be 3.5 pounds per square inch, less than one-fourth of normal pressure at sea level. This is equal to the pressure at an altitude of about 35,000 feet, well above Everest's 29,028 feet.

Normally the pressure in the spacesuits stays the same as that in the spacecraft, about 5 psi. However, if something should cause the cabin to depressurize, suit pressure will be lowered 30% automatically, thus reducing the strain on the suit material.

Another reason for having low suit pressure is that it is difficult to provide an air supply in space. Only so much compressed oxygen can be included in a super-cramped space capsule such as Gemini because of restrictions on both space and weight. Also, circulating systems that reprocess the air in a continuous closed cycle have a limited capacity.

While these are problems that depend on the space vehicles themselves, suit pressure affects the spacemen.

Man can become used to the thin air. Many of the companies involved in the nation's space program have their own high altitude simulation chambers in which test subjects have lived for days at greatly reduced air pressure. Furthermore, astronaut Scott Carpenter has stated that one of the biggest obstacles to a man working in space is the pressurized spacesuit. The greater the pressure, the more difficult movement becomes.

Keeping the pressure as low as possible permits reasonably free movement without eliminating the protection of the spacesuit all together, as was done in the "shirtsleeve environment" of the Soviet three-man Sunrise last October.

• *Science News Letter*, 86:376 December 12, 1964

## PHYSIOLOGY

**Heart Patients Survive Longer When Active**

➤ **QUIET, BORED INACTIVITY** is bad for everyone, including heart patients.

Dr. Daniel Brunner of the Donolo Institute of Physiological Hygiene, Jaffa, Israel, found in followup studies that former heart patients in hard labor jobs showed a greater survival rate than those who were sedentary after their attacks. Dr. Brunner's research was supported by an international research grant from the U.S. Vocational Rehabilitation Administration of the Department of Health, Education and Welfare.

• *Science News Letter*, 86:376 December 12, 1964

# CE FIELDS

## BIOLOGY

### Inner Workings of Genes May Regulate Population

► THERE MAY BE inner complex mechanisms working in man to regulate the load on our genes, those paired heredity factors that determine details of our individual characteristics, believes an Australian zoologist.

By analyzing the distribution of certain traits present in Europeans and in Jewish populations, Dr. P. A. Parsons of the University of Melbourne, Victoria, believes that genes are regulated in such a way that they do not become overloaded with traits that would lead to extinction of the population.

For instance, he found that people in the Basque country have a high frequency of Rh-negative traits, but have a low load of ABO blood groups. In ten Jewish populations, he points out that the lowest incidence of Rh-negative individuals is found in a group which has high frequency of both thalassemia (a form of anemia) and glucose-6-phosphate dehydrogenase deficiency. Within Sardinia, the frequency of Rh-negative individuals is low in malarial regions where gene frequencies for thalassemia in G6PD deficiency are high.

This mechanism in man implies a balancing of the genetic load so as not to overload the genes and cause extinction, Dr. Parsons reported in *Science*, 146:924, 1964.

• *Science News Letter*, 86:377 December 12, 1964

## MEDICINE

### Altitude Will Slow Runners in 1968 Olympics

► LONG-DISTANCE RUNNERS at the 1968 Olympic Games in Mexico City are expected to be slowed up by the altitude, Dr. Bruno Balke, University of Wisconsin, said. Sprinters, however, probably will not be affected.

The altitude of Mexico City is 2,250 meters (7,400 feet), nearly half a mile higher than the mile-high city of Denver, Dr. Balke told the meeting of the Conference on Medical Aspects of Sports in Miami Beach, sponsored by the American Medical Association.

Mountain training can build up runners to "restored maximum oxygen intake," Dr. Balke reported. Studies were carried on during the past summer with five athletes working out in Red River, N. Mex., at an elevation slightly higher than that of Mexico City, and in Oklahoma City, Okla., with an elevation of 1,300 feet.

The sprinting athletes were virtually unaffected by the change in altitude, he said, but when they ran a mile they were considerably slower at Red River than at Oklahoma City. After a 10-day period of acclimatization, improvement was noted.

Improvements are apparently based on increase of the heart's capacity to move a maximum volume of blood, as well as on an increased amount of oxygen carried in the blood of arteries.

Dr. James E. Counsilman of Indiana University, Bloomington, coach of the 1964 U.S. Olympic swimming team, whose members captured 13 gold medals, explained the "mixed program" of training used by swimming champions.

A mixed program includes training at the lower levels of intensity to condition the heart and body for endurance; hard kicking and pulling to condition muscles against localized muscle fatigue; then moderately hard repetition work at the end of the workout to condition the body for still harder work.

The suprarenal glands (above the kidneys) increase in size during intensity training. Animal experimentation has shown that when intensity is maintained at 100% level for a period of time, the glands apparently deplete their reserve and are incapable of supplying the hormones needed to handle the stress imposed by the exercise.

Dr. Counsilman said this gland must be conditioned to its highest level in Olympics swimmers.

• *Science News Letter*, 86:377 December 12, 1964

## ASTRONOMY

### Luminescent Matter May Cause Moon's Red Light

► UNDAMAGED MATERIAL on the moon, brought to the surface by the smashing impact of a meteorite or by possible volcanic activity, could account for the patches of red light reportedly seen on the moon.

The impact could have occurred 10,000 or even 100,000 years before the luminescence was observed, suggested Dr. J. E. Geake of the Manchester College of Science and Technology, England, in *Nature*, 204: 866, 1964.

He suggests that a meteorite slamming into the lunar surface would "distribute and expose" undamaged material from just below the surface. If the impact was in a region consisting of luminescent material, then the rocks would later emit light when hit by charged particles.

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## PUBLIC HEALTH

### Emerson Foote to Head Council on Smoking

► THE MAN who wrote such slogans as "Be happy, go Lucky," and "Reach for a Lucky instead of a sweet," is taking up the fight against smoking as head of the National Interagency Council on Smoking and Health.

Emerson Foote of New York is resigning as chairman of the board of McCann Erickson, second largest advertising agency, to take up his new job. Reason given was a "conflict of interest" because of the agency's attitude on smoking.

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## ICHTHYOLOGY

### Fish Out of Water? They Like It That Way

► SOME FISH like being out of water.

The mudskipper, a small marine fish, seems right at home on the land.

Mudskippers can stay out of water at least 90% of the time with only brief returns to the sea to sip some water, reports Dr. Malcolm Gordon, zoologist at the Los Angeles University of California.

They usually just immerse their mouths, he observed, unless they are disturbed and dive completely in the water.

These mudskippers could survive out of water for as long as a day and a half, stated Dr. Gordon, who has been studying these fish on the island of Nosy Be, just off the coast of Madagascar. Even during the heat of the day the fish usually moistened their general body surface less than once an hour.

This ability to adapt to land gives the mudskippers more opportunities to survive, Dr. Gordon believes. By being able to pursue insects on land, the fish are less dependent on marine organisms for food. Possibly the phenomenon of this mudskipper tells the story of how our ancestors originally emerged from the sea.

Most fish cannot survive out of water. When they do, drastic physiological changes occur, similar to those when human beings dive into water. Heart and metabolic rates slow down dramatically, and lactic acid piles up in tissues.

However, none of these things happens to mudskippers when they stay on land, out of water.

• *Science News Letter*, 86:377 December 12, 1964

## VITAL STATISTICS

### Population Growth Rate Highest in History

► EVERY MINUTE almost 120 more persons are added to the world population—the highest rate in recorded history. This is a total increase of almost 63 million persons each year, the United Nation's statistical office reports.

The world's total population is 3.3 billion. There are 119 million births each year and 56 million deaths.

This means that every second, about four new babies are born, two persons die, and the world is made more crowded by two more arrivals.

The fastest growing population in the world today is Central America. The population of South America and Southeast Asia is increasing at the rate of 2.7% each year, and Southwest Asia at the rate of 2.6%.

Among the newly developing countries, Mauritania is increasing at the rate of 5.1%, Costa Rica at 4.3%, Viet Nam at 3.7% and the Dominican Republic at 3.6%.

In the United States, the population growth rate is relatively lower—1.6%, which is also the rate for all of North America. For Europe as a whole, the population rate is 0.9%.

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