

PHYSIOLOGY

Why People Attract Mosquitoes Unknown

► **WHETHER** a person gets eaten alive by mosquitoes or is not bothered at all may well depend on the balance of ingredients in his body cells.

Science is trying to identify just which body juices are taste treats to mosquitoes and which are not. So far certain skin lipids "obtained from the washings, in acetone or diethyl ether, of the foreheads or arms of humans are very repellent to female *Aedes aegypti*. . . ." On the other hand, non-repellent material is also present in the lipids.

Unfortunately, the researchers concluded that the significance of skin lipids in terms of their effects on mosquitoes is still unknown.

The sad truth may well be that the body cell balance of mosquito lures and mosquito chasers may come naturally and there is nothing that can be done except fix the screens or rub on prepared repellents.

These findings were reported in *Science*, 149:305, 1965, by W. A. Skinner and H. Tong of Stanford Research Institute, Menlo Park, Calif., and H. Maibach, A. A. Khan and T. Pearson, University of California, San Francisco Medical Center.

• *Science News Letter*, 88:88 August 7, 1965

EDUCATION

Research Grants Hurt Engineering Education

► **A LEADING COMMUNICATIONS** expert charged that Government subsidies for research are alienating engineering education from the civilian economy.

Dr. John R. Pierce of Bell Telephone Laboratories called for a cooperative effort among Government, engineering colleges and industry to halt the drift and draw the profession and consumer business together again.

Writing in *Science* 149:397, 1965, Dr. Pierce said that the Federal Government's 65% share of the \$17.4 billion annual research budget is greatly off balance in favor of space or defense-linked projects.

"Under these circumstances," he said, "it is no wonder that thesis subjects of Ph.D. candidates in engineering are strongly associated with the few sectors of industry relevant to defense and space.

"It is no wonder that, of those Ph.D. candidates who go to work in industry, a large proportion go to aerospace and defense industry, and that another large fraction who go to universities teach what they have learned in doing defense-supported and space-supported research."

This trend, according to Dr. Pierce, is leaving the area of civilian product improvement and development out in the cold, to the detriment of the public.

Dr. Pierce proposed that the Federal Government distribute its support in a way "conducive to filling the needs of the civilian economy."

(A recent report from a panel of the National Academy of Sciences to the Committee on Science and Astronautics of the

House of Representatives recommend that more emphasis be given to support of basic science without tying down research money to specific projects.)

He further urged that the non-space-or-defense industry increase its support of engineering research in universities to get across its view in the development of future engineers. And he suggested closer links between industry, universities, and engineering organizations through an accelerated program of summer employment.

Dr. Pierce is executive director for research of the Communications Sciences Division of the Bell Laboratories, Murray Hill, N.J.

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MEDICINE

Drugs Deforming Rats Safe for Human Use

► **HIGH DOSES** of a drug given widely to pregnant women as a diuretic since 1953 have caused deformities of the right forelimb in rats.

Researchers at Lederle Laboratories, Pearl River, N.Y., who studied the Lederle diuretic product called Diamox, or acetazolamide, found no danger of the drug causing abnormalities in infants such as thalidomide caused, however.

"There is no human danger at all," Dr. W. M. Layton Jr. told *SCIENCE SERVICE*. "The tremendous difference in dosage, 20 times that given to humans, as well as the rarity of the animals' type of defect in people are proof of the drug's safety."

Although the reason for studying the effects of Diamox on animals was to double check its safety for humans, Dr. Layton said the research had uncovered a useful tool for continued study of limb formation.

Dr. Layton found a peculiar "right-sidedness" in the rat deformities that he said was unique. He said further study might show other previously undiscovered defects due to large doses of the drug. Officials of the U.S. Food and Drug Administration said Diamox is considered safe when given according to directions. Dr. Layton's research, which was done in collaboration with Dr. D. W. Hallesy, is reported in *Science*, 149:306, 1965.

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AGRICULTURE

Flax Stalks Important To Cigarette Industry

► **FLAX STALKS**, once thought worthless, have become such an important raw material to the domestic cigarette paper industry that in Spotswood, N.J., alone enough flax paper is made daily to circle the world three times.

The stalks are gathered by mobile mills that separate and bale the stalks right in the fields after the flax seed, the source of linseed oil, has been harvested.

The system of utilizing flax stalks for cigarette paper was developed by the Peter J. Schweitzer division of the Kimberly-Clark Corporation.

• *Science News Letter*, 88:88 August 7, 1965

IN SCIENCE

PUBLIC HEALTH

Danger of 'Farmer's Lung' Finally Made Official

► **AFTER 33 YEARS**, farmer's lung has finally been listed as a disease for which a person is entitled to health plan benefits.

In 1932, Dr. J. M. Campbell, writing in the *British Medical Journal*, July 10, 1965, described an acute respiratory illness in farm workers who had handled moldy hay. The disease has recently been defined as "a pulmonary disease due to inhalation of the dust of moldy hay or of other moldy vegetable produce. . . ."

The journal editorially called attention to the severe implications of farmer's lung and urged sustained publicity to draw attention to the "hazards of handling moldy vegetable produce."

• *Science News Letter*, 88:88 August 7, 1965

TRANSPORTATION

Moderate Cost Transit For Smaller Cities

► **A NEW AUTOMATIC** rapid transit system featuring low cost and efficient service is being developed in a demonstration project operating at South Park, near Pittsburgh.

The new system, called the South Park Transit Expressway Project, was designed and built by the Westinghouse Corporation. It is being considered as a possible answer from the standpoint of cost to mass transit for cities with medium density traffic as opposed to heavy density of New York or Chicago.

The Transit Expressway concept consists essentially of the operation of many small, quiet-running, rubber-tired vehicles over a continuous loop at short intervals 24 hours a day. The test system has 9,340 feet of roadway, level and elevated, three vehicles capable of operating singly or coupled, and two stations.

In actual operation, the vehicles would be operated singly during off-peak hours. More cars would be added for rush hours.

Trains would be assembled and taken apart mechanically. Operation would be fully automatic, with interval, speed, acceleration and stopping precisely controlled.

The cars themselves look like a cross between a small bus and an equally small subway car. Each would seat 28 people and could accommodate 70 when necessary. Economy has been the watchword in design and method of operation.

The roadway consists of concrete slabs laid out like tracks with a steel "I" beam between them to guide the cars and keep them from overturning. Power-system conductors are located on one side of the roadway. A central control system is the brain of the network.

• *Science News Letter*, 88:88 August 7, 1965

E FIELDS

TECHNOLOGY

New Hydrofoil Ship Begins Passenger Runs

► A NEW CHAPTER in maritime history was made in Baltimore, Md., when the fore-runner of a fleet of fast, 75-passenger hydrofoil craft hit the water for the first time.

Named HS Victoria, the ship can hit 40 knots top speed when "foilborne," and is expected to go into service this fall between Seattle, Wash., and Victoria, B.C. This summer she will undergo sea trials in Chesapeake Bay.

Victoria is 64 feet nine inches long, has a range of 180 nautical miles and carries a crew of three. Resting on her hull, the craft draws more than 14 feet, but up on her foils the ship can skim over the surface with a draft of seven feet six inches. The hydrofoil is powered by twin General Electric LM100 gas turbines.

The new ship, when in passenger service, will make three, 75-mile round trips a day. The owners, Northwest Hydrofoil Lines Inc., say the Victoria is the predecessor to a fleet of such craft planned for operation between major port cities in the United States and abroad.

The basic concept of a hydrofoil is a ship on stilts, two aft and one forward. Each stilt has a pontoon on the bottom. The ship rests on the hull at slow speeds and rises on the foils as momentum is picked up.

HS Victoria was built by the Maryland Shipbuilding and Drydock Company in Baltimore.

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MEDICINE

More Glamor, Pay, Glory Needed to Attract Nurses

► MORE GLAMOR, more pay and more of the glory of medical accomplishment is the prescription for dealing with the critical worldwide shortage of nurses, reported Dr. Eliot Corday, associate professor of medicine at the University of California at Los Angeles and president of the American College of Cardiology.

In travels through 31 countries Dr. Corday found that almost all of them suffered a shortage of nurses.

"One would think that dictatorships, which rule by fiat, could redirect more women into nursing. They have not been able to do so," he said.

"Florence Nightingale glamorized nursing and imbued women with a sense of accomplishment that lasted almost 100 years," he observed. "Today the nurse feels she is looked upon as menial. We must glamorize nursing again. I have often wondered how many prospective nurses became airline stewardesses instead because of a more glamorous appeal."

Two-thirds of the nursing force must work during normal sleeping and social hours. Yet the nurse earns less than the secretary in business or the technician in the factory. Her pay must be increased considerably.

"We must reclassify nurses' training to various degrees of skill and ambition," said Dr. Corday. "The larger group might be trained in a combined high school and technical school and thus be available for duty at the earlier age of 18-20 so that they may serve a longer period before marriage scrubs them from the profession.

"We might try to encourage the married nurses fallen away from her profession to undertake relief duties for one or two days a week.

"We should train men, who would be classified as 'technicians,' to take over operating room and other specialized duties as a career. We learned during the two World Wars that Army Medical Corpsmen could be trained to provide excellent care."

• Science News Letter, 88:89 August 7, 1965

MILITARY SCIENCE

Russia Outnumbers U.S. In Submarine Strength

► THE SOVIET UNION is placing far more emphasis than the United States on undersea warfare, with a lead of more than three to one in the number of submarines.

The Soviet Union is reported to have 400 submarines, although no breakdown is available on how many are nuclear powered or how many carry missiles. This estimate was given by Vice Adm. Charles B. Martell, director of the U.S. anti-submarine warfare program.

Asked for a comparison between Russian and U.S. undersea strength, the Navy told SCIENCE SERVICE that the fleet has "about" 120 submarines on active fleet duty now.

A spokesman said that "of course, an undisclosed number are under construction and more could be activated if necessary."

A breakdown shows that the armada at present includes 25 nuclear powered missiles submarines on duty, 20 more nuclear powered but without missiles, and the rest conventional.

In estimating the Soviet undersea strength, Adm. Martell warned that the United States and its Free World Allies face a submarine threat "10 times more powerful than that of Nazi Germany at the start of World War II.

"Last year, the Russians spent at least three billion dollars on their submarine forces alone," the Admiral warned.

He said that to meet any challenge that might develop, new weapons and techniques are being developed, including new nuclear-powered hunter-killer subs.

In addition, a symposium in California on anti-submarine warfare brought out a number of new experimental devices in anti-submarine warfare. One that attracted considerable attention was a combination submarine-and-airplane.

This amphibious air submarine is designed to fly, land on the water, fold its wings, cruise on the surface, and then submerge.

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GEOLOGY

Lunar Fossil Tracks To Answer Many Puzzles

► WHEN THE FIRST manned Apollo moon landing ship returns to earth with samples of the lunar surface, fossil "tracks" in the lunar material will give the answers to many now-puzzling questions.

The tracks, caused by such long-extinct radioactive materials as uranium or plutonium, could be detected using the same methods already developed to date ancient materials originating on earth or to date meteorites, earth's only known visitors from space.

When lunar surface samples become available, analysis of the fossil tracks should answer such questions as how fast the moon's surface is eroding, the age at which the moon solidified, and the date of impacts or eruptions on the surface.

Radioactive atoms undergo natural fission at a known rate. As the fission fragments move apart in a solid, they leave a trail of damage a few atoms in diameter.

Drs. Robert L. Fleischer, P. Buford Price and R. M. Walker of General Electric Research Laboratory, Schenectady, N.Y., have developed a variety of methods by which the charged particles can be detected. They have learned how to develop the damage trails chemically, much as the chemical action of a photographic developer is used to bring out the image of an exposed film.

The General Electric scientists predict in Science, 149:383, 1965, that the track-detecting method could also be used to discover new types of charged atomic particles, such as magnetic monopoles.

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TECHNOLOGY

Two Processes Developed To Coat Solar Disks

► THE SEARCH for a compact solar energy concentrator to drive space power plants has led to the successful development of two processes for making the unit.

One uses an ultraviolet activated polyester-fiberglass laminate as the reflective surface of the disk. The other uses an epoxy syntactic foam activated by infrared radiation.

Disks with either surface can be rolled up and carried aloft in a slender tube eight inches in diameter and five and a half feet long. They can be inflated automatically and formed into a rigid disk five feet in diameter. The inflation process can be carried on in the vacuum of a space environment.

Engineers at the Hughes Aircraft Company, which developed the parabolic concentrators for the National Aeronautics and Space Administration, said that the techniques used in the experimental disks could be used to build concentrators 50 to 100 feet in diameter.

The reflective surface of each disk was formed in the tests to the desired shape by the "Hughes stress-relaxation process," which does not require a master tool.

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