

SPACE TECHNOLOGY

Method Found To Shield Satellites

➤ A MAGNETIC FIELD has been used successfully in the laboratory to shield a satellite from the high-energy atomic particles such as created by high-altitude nuclear blasts.

A belt of high-energy electrons caused by nuclear detonations in 1962 has spoiled instrument readings on several satellites passing through it. Since the radiation is expected to remain intense for several years, magnetic shielding for space probes penetrating this belt with sensitive instruments is being investigated at several laboratories.

At Lockheed Missiles & Space Company, Sunnyvale, Calif., scientists have successfully tested a laboratory model of a magnetic shield that could operate for 300 hours. The equipment could fit in the Agena launch vehicle, which is five feet in diameter. Dr. S. R. Hawkins told the Cryogenic Engineering Conference in Philadelphia, Pa.

The shielding is accomplished with a superconducting magnet. Once an electrical current is established in any superconducting material, it continues to flow apparently indefinitely without loss. Superconductors so far known work only at temperatures near absolute zero, which is 459.7 degrees below zero Fahrenheit.

• Science News Letter, 86:136 August 29, 1964

AERONAUTICS

Transport Helicopter Has Detachable Van

➤ A HELICOPTER has been developed that can do everything from transport a missile to help build a bridge.

This helicopter, called the YCH-54A "Skycrane," flies with a detachable van and can carry a variety of loads beneath its open fuselage. It can also be used to transport vans to serve as repair shops, command posts or hospital units and can even tow vehicles stuck in the mud.

The "Skycrane" was built by Sikorsky Aircraft, Stratford, Conn., for the U.S. Army to be used by the 11th Air Assault Division at Fort Benning, Ga.

• Science News Letter, 86:136 August 29, 1964

SPACE TECHNOLOGY

Versatile Atlas Rocket Comes as 'Launch Kit'

➤ THE ATLAS rocket—being used variously as a ballistic missile, earth orbit booster and manned space flight booster—comes in kit form, just like a toy model plane.

To the basic air frame are added standardized guidance, auto-pilot, telemetry, tracking and electrical units that tailor each Atlas to its particular mission. The use of kits by prime contractor General Dynamics/Astronautics, San Diego, Calif., improves both economy and reliability.

A further advantage of kit installation is that it permits assembly of each Atlas closer

to required delivery dates than ever before, offering greater flexibility in scheduling of launch facilities and flights.

• Science News Letter, 86:136 August 29, 1964

ENTOMOLOGY

Plastic Honeycombs Found More Durable

➤ BEEHIVES are going plastic.

Honeycombs and their frames of plastic have been successfully used for two years at the University of Wisconsin.

They are more durable and keep their shape better than the beeswax honeycombs assembled in wooden frames. Plastic honeycombs and frames can be mass produced in one piece.

Bee diseases, such as foulbrood, may also be controlled more easily with the plastic combs, since they can be sterilized in boiling water after use.

• Science News Letter, 86:136 August 29, 1964

ENGINEERING

Drill Oil Wells With Glass Grenade Explosion

➤ GLASS "GRENADES" are contributing their bit, or rather "bits," to oil wells.

From 20 to 40 of the pear-shaped glass capsules made by Corning Glass Works, Corning, N. Y., can be lowered 20,000 feet down into an oil well shaft and exploded. The fragments pierce several layers of casing and the surrounding strata.

The capsules must powder completely to leave no clogging debris, yet be strong enough to withstand rattling down the long well casing as well as temperatures up to 300 degrees Fahrenheit and pressures of 20,000 pounds per square inch.

• Science News Letter, 86:136 August 29, 1964

AGRONOMY

Sprinkler Irrigation Brings Crop Benefits

➤ SLOW IRRIGATION of farmlands using sprinklers is more effective in many ways than irrigation by flooding.

Tests at the University of Arizona show the use of sprinkler irrigation can bring lower irrigation costs, increased irrigation efficiency and larger, higher quality crop yields.

The slower rate of water applied to the soil prevents the soil from packing, thus allowing continuous bacterial action and gas exchanges in the soil.

• Science News Letter, 86:136 August 29, 1964

TECHNOLOGY

Water Ballast Liferaft Will Not Overturn

➤ A NEW LIFERAFT that does not tip even when a man stands on one edge has been developed by the National Aeronautics and Space Administration. The raft has only one seam and is simple to construct. Three water ballast buckets give it the necessary stability.

• Science News Letter, 86:136 August 29, 1964



PSYCHOLOGY

Grinding Teeth in Sleep Means Unrest, Dreams

➤ WHEN SOMEONE grinds his teeth in his sleep, chances are he is restless, and may be having a dream.

Bruxism, as tooth-grinding is called, occurs in one of about every 10 persons. Recent studies show that there is a high correlation between bruxism and rapid eye movement (REM) while asleep.

REM is known to occur when persons are having periods of restlessness during sleep. These periods of light sleep are the time of dreams.

A University of Chicago study of 12 students who exhibited bruxism showed that immediately before and during periods of restlessness and REM, tooth-grinding was about four times higher than during deep sleep. The students ground their teeth, sometimes audibly, 20.9 times per hour during REM periods and only 5.3 times per hour during non-REM periods.

The relationship between bruxism and REM is reported by G. R. Reding, W. C. Rubright, A. Rechtschaffen and R. S. Daniels in *Science*, 145:725, 1964.

• Science News Letter, 86:136 August 29, 1964

ENTOMOLOGY

Not Cricket to Live Alone, Evidence Shows

➤ BACHELORS AND SPINSTERS have one thing in common: they die sooner if they live alone—in the world of crickets, that is.

Experiments at the New York State College of Agriculture at Cornell University, Ithaca, N. Y., concerning the effects of mating upon the life-span of crickets have shown that group life is better, for the cricket at any rate.

Isolated "bachelor" males live slightly longer than isolated females.

• Science News Letter, 86:136 August 29, 1964

MEDICINE

Boy Shot in Heart With Rifle Recovers

➤ A 10-YEAR-OLD BOY who was shot in the heart by a high-powered air rifle at short range has recovered, reported the *Journal of the American Medical Association*, 189:579, 1964.

The injury is considered rare because after the pellet entered the boy's heart, it traveled into an artery in his right arm. Drs. Adrian J. Neerken and Frederick L. Clement, physicians at Kalamazoo, Mich., said the pellet entered the lower right chamber of the heart.

• Science News Letter, 86:136 August 29, 1964

CE FIELDS

ZOOLOGY

Common Rats Survive Large Doses of Warfarin

➤ COMMON RATS have been found to have an "astonishing" resistance to warfarin, the chemical that usually kills rodents by causing internal bleeding.

The resistant rats lived in Jutland, Denmark, and were caught after control methods failed. They were then fed large amounts of warfarin with bread, but most of them survived the normally lethal dose. Dr. M. Lund of the Government Pest Infestation Laboratory, Springforbi, Denmark, reports in *Nature*, 203:778, 1964. Whether this is a general situation has not been determined.

• Science News Letter, 86:137 August 29, 1964

PUBLIC HEALTH

Smokers Find Habit Difficult to Break

➤ TWENTY MEN who enrolled in the Roswell Park Memorial Institute's Smoking Withdrawal Clinic, Buffalo, N.Y., a year ago have found they could not stop smoking.

One managed to stop for eight months, and the 15 who can be located have cut down by eight cigarettes per day apiece, on the average.

However, all 15 are still smoking, despite nicotine substitute pills, appetite depressants, and lectures on the dangers of smoking.

• Science News Letter, 86:137 August 29, 1964

TECHNOLOGY

Stock Market Data Put On Desk-Top Screen

➤ AN ELECTRONIC COMPUTER is quietly keeping an eye on the stock exchange's thousands of prices, averages, trends and other data.

Stock brokers at E. F. Hutton and Company in New York merely touch a button on a desk-top device about the size of an adding machine, and the desired information appears on a viewing screen. The first installation is in New York, but branches will be installed at Hutton's offices across the country, to be run from a central "information bank."

Called "Telequote III," the system was developed by Teleregister Corporation, Stamford, Conn.

• Science News Letter, 86:137 August 29, 1964

PHYSIOLOGY

High-Altitude Effects On Muscle-Power Studied

➤ HUMAN OXYGEN CONSUMPTION and storage patterns of the muscle structure at high altitudes of 10,000 to 14,000 feet

are being studied by a group of Indiana University physiologists.

They hope to learn whether a man in a low-oxygen environment uses more or less energy from "stored energy" sources in his system than he does in a normal environment.

The research, intended to aid future astronauts, is led by Prof. Sid Robinson under a National Aeronautics and Space Administration grant. It is being done at the University of California's White Mountain Research Station.

• Science News Letter, 86:137 August 29, 1964

OCEANOGRAPHY

Computers to Guide Ships for Research

➤ THE OCEANOGRAPHER and her sister ship the Discoverer, which are now being built, will study the oceans with the aid of computers.

The two ships will be outfitted next year with automatic data processing systems that will monitor their engine room operation, and give oceanographers navigation and weather information. The systems will also process the vast amount of data oceanographers will gather.

The Westinghouse Defense and Space Center underseas division, Baltimore, Md., is building the ships for the U.S. Coast and Geodetic Survey.

• Science News Letter, 86:137 August 29, 1964

ANIMAL HUSBANDRY

Patch for Roosters Prevents Blistering

➤ A BREAST PATCH for chickens will not save them from eventual doom in the frying pan, but it will help prevent skin blisters.

The shield is an adhesive patch, placed over the keel bone, an unfeathered area near the breast of young fowl. It is made to stay on through pecking, scratching, fighting or any other rooster exercise.

The patch was co-invented by Alton B. Poole, Abington, Mass., and Richard S. Brennehan, Natick, Mass. It earned patent 3,143,099.

• Science News Letter, 86:137 August 29, 1964

METEOROLOGY

New Technique Samples Air Levels at Same Time

➤ A NEW METHOD for taking simultaneous measurements of the earth's atmosphere at two levels by dropping instruments 10,000 or more feet on a nylon string attached to a high-flying balloon has been developed by four Australian scientists.

The technique is promising for heavy loads, although so far the nylon cord unwound from an oil-damped reel has been used to support only a two-pound load.

V. D. Hopper, Jean E. Laby, J. G. Sparrow and E. L. Unthank of the physics department, University of Melbourne, reported the new development in *Nature*, 103:289, 1964.

• Science News Letter, 86:137 August 29, 1964

SPACE TECHNOLOGY

Umbrella Included in Mars Rocket Equipment

➤ THE FIRST rocket ship to Mars may carry its own umbrella, not to protect it from meteor showers, but to shade it from the sun's heat.

A Mars vehicle, designed for flight between 1975 and 1985, may carry a solar shield to help protect its liquid hydrogen propellant, which boils at 423 degrees Fahrenheit below zero.

The shield, being studied at the Douglas Missile and Space System Division in Santa Monica, Calif., could greatly limit surface heating of the vehicle, which on its return trip to earth would be as near the sun as the sun's nearest planet, Mercury.

• Science News Letter, 86:137 August 29, 1964

PUBLIC HEALTH

Diabetes Cases Reported On the Rise in U.S.

➤ ONLY TWO YEARS AGO there were estimated to be some three million diabetics in the United States. Now the number is believed to be at least four million.

The increased estimate is partly due to improved methods of testing, but according to findings by the U.S. Public Health Service, the disease is actually on the rise.

Since diabetes can be controlled if spotted early enough, but can be fatal if left untreated, the Public Health Service urges everyone to have annual blood tests to spot the disease—especially if he is over 40, overweight or comes from a diabetes-prone family.

• Science News Letter, 86:137 August 29, 1964

TECHNOLOGY

Mine Fires 'Blown Out' Through Surface Holes

➤ AN UNDERGROUND mine fire can be controlled from the surface by blowing dry sand or rock wool through six-inch boreholes to cut off the fire's air supply.

The air-blowing technique, tested by the Bureau of Mines, U.S. Department of the Interior, can be used for fires in abandoned or inactive mines in which the air passages are too dangerous to be sealed directly by miners.

• Science News Letter, 86:137 August 29, 1964

TECHNOLOGY

Paper Mill Wastes Sent Down 1,600-Foot Well

➤ A WELL is being dug nearly a third of a mile deep to dispose of paper mill wastes in Erie, Pa.

The well will dispose of non-toxic pulping liquors formed by paper mill processes by injecting them into a huge limestone layer 1,600 feet beneath the ground. The well is the first of a series of four such holes to be dug at the Hammermill Paper Company.

• Science News Letter, 86:137 August 29, 1964