

## MEDICINE

**Radio Wave Machine Promotes Faster Healing**

➤ AN ELECTRONIC MEDICAL device called the Bio-Cold-Ray that can heal burns, ulcers and poison ivy faster than any other method is reported by Dr. Daniel L. Seckinger, former director of Public Health, District of Columbia, in the *Medical Annals of the District of Columbia* (Sept.).

The Bio-Cold-Ray generates radio waves at a frequency of 420 kilocycles per second, a little below the lowest frequencies used by commercial broadcasting stations.

The electrical energy is not the same as that from a short-wave diathermy machine, and seems to have some "unknown" attraction to tissues that results in faster healing. It does not heat the body internally as diathermy does, Dr. Seckinger reports.

One patient treated with the ray had been admitted to the hospital with advanced gangrene from frozen feet. Amputation was thought to be the only choice when the electronic treatments were started. Definite improvement was noticed after the fifth treatment. Within 30 days complete healing had occurred and the patient was released from the hospital as cured.

The Bio-Cold-Ray was also used on a severe case of poison ivy, and relieved the itching and soreness after the first treatment.

In use, the patient holds one electrode in his hand and places the affected part of his body between it and the machine. The Bio-Cold-Ray has been used on tissues as delicate as the eye without any noticeable increase in temperature, Dr. Seckinger reports.

Science News Letter, October 5, 1957

## SURGERY

**Mechanical Hearts Prove Life-Saving**

➤ MECHANICAL HEART SURGERY, considered extremely daring only five years ago, is now more satisfactory for many heart conditions than older surgical methods, Dr. C. Walton Lillehei, University of Minnesota, Minneapolis, told many of the nation's heart specialists meeting at the National Institutes of Health, Bethesda, Md.

The meeting commemorated the discovery of circulation 300 years ago by England's famed William Harvey.

Dr. Lillehei, one of the world's foremost surgical users of heart-lung bypass machines, said that mortality was down to between one and two percent for repair of ventricular septal defects. These are cases in which there is a hole between the two pumping sections of the heart, allowing blood from the veins and arteries to mix inside the heart where it should not.

Use of the heart-lung machines gives the surgeon enough time, up to more than an hour, Dr. Lillehei said, to repair the defect while the breathing and blood pumping functions of the heart and lungs are taken over by the machine.

The heart patients are almost always children, because the condition usually kills an individual before he reaches adulthood.

Amazing as many of the new developments in heart surgery are, Dr. Lillehei said that if William Harvey were still alive he would probably wonder why there have not been further advances.

These have been slowed up by an unfavorable "intellectual atmosphere" that helps to discredit new ideas, Dr. Lillehei charged.

Science News Letter, October 5, 1957

## ENGINEERING

**Lightweight Gas Turbine Developed by the Army**

➤ A LIGHTWEIGHT GAS turbine engine weighing only 326 pounds, one-tenth as much as diesel or gasoline engines of comparable performance, is now under development by the U. S. Army.

The little engine works much like a jet motor, with expanding gases burning at a red-hot 1,500 degrees Fahrenheit, turning a high-nickel alloy steel turbine impeller wheel that generates power at a constant speed, about 12,000 rpm. Approximately 44 inches long, 31 inches wide and 29 inches high, the gas turbine was developed by the Army's Corps of Engineers' Research and Development Laboratories, Fort Belvoir, Va., and AiResearch Manufacturing Company of Arizona.

The engine can run on ordinary combat gasoline, aviation, jet or diesel fuel, and will be capable of producing 170 horsepower under extreme conditions, or 286 hp normally in a sea-level environment. As a constant-speed, low-torque engine, it is not expected to be used as a truck or car motor, but primarily as an engine to generate electrical power in an engine-generator "power package" putting out approximately 100,000 watts of electrical power at 400 volts.

The engine is designed for 1,000 hours of life before overhauls, and maximum ease of maintenance in the field. Present designing and tests are expected to be completed by mid-1958.

Science News Letter, October 5, 1957

## GENERAL SCIENCE

**Show Interlingua on Slides for English Lecture**

➤ A WAY to lecture in a language the audience does not speak and yet have them understand has been worked out in Lima, Peru, by an American pediatrician, Dr. Lytt I. Gardner of the State University of New York's department of pediatrics, Syracuse Memorial Hospital, Syracuse, N. Y., who attended international congresses on pediatrics.

Lantern slides with legends in Interlingua, the international language based on basic western European languages, were shown by Dr. Gardner. The Spanish-speaking audience was nevertheless able to read them and follow what Dr. Gardner said in a two-hour talk before the Medical School of San Marcos, Lima.

Science News Letter, October 5, 1957

**IN SCIEN**

## TECHNOLOGY

**Israel's Sun Freshens, Heats Water, Dries Crops**

➤ THE SUN'S HEAT is being used in three ways, to provide hot water, dry agricultural crops and desalt water in new developments by the Technion, Israel Institute of Technology, Haifa.

A new type of solar heater to provide warm water without use of scarce fuel is now in production and replaces an older type used hitherto, which was twice the size. The invention has been patented in the United States, Great Britain, Uruguay, Greece and other countries. It can heat 25 gallons of water to 155 degrees Fahrenheit in six hours.

A solar dryer for agricultural products, such as hay, has been turned over to Agriculture Ministry by Technion for comparison with other methods of drying.

To make sea and brackish waters drinkable by desalting them, construction of a solar still is being resumed after an interruption due to lack of funds.

Dr. N. Robinson is head of the solar physics laboratory.

Science News Letter, October 5, 1957

## MEDICINE

**Find Way for Earlier Mouth Cancer Detection**

➤ EARLIER DIAGNOSIS of mouth cancer can be achieved by examination of cells shed from oral tissues, three University of California Medical Center scientists have found.

They adapted a cytological method—previously used as an aid in spotting cancer of the cervix, stomach and chest—to search for mouth cancer in 1,000 persons. One-half were normal, and one-half had mouth lesions of various kinds.

Results were especially striking in a group of 60 patients with mouth lesions, but in whom the likelihood of malignancy was so remote that biopsy was not proposed. Malignancy, however, was spotted in four of these.

In another series of 15 patients, all with suspected mouth cancers, each method missed one tumor when biopsy and cytology were compared, but in all 15 malignancies were confirmed.

The method is an aid, not a substitute for biopsy. It has the advantage of relative simplicity for screening patients in whom biopsy does not seem justified. Also, it is useful when biopsy may risk infection.

The work was done by Drs. Sol Silverman and Herman Becks, dental medicine, and Dr. Seymour Farber, physician, who report their findings in the *Journal of Dental Research*.

Science News Letter, October 5, 1957

# CE FIELDS

## BIOCHEMISTRY

### Plant Protein Important To Photosynthesis

► FRESH EVIDENCE that Fraction I, a plant protein, is important to photosynthesis has been reported at the University of California at Los Angeles.

Dr. Robert Dorner, Albert Kahn and Dr. Samuel Wildman have been studying Fraction I, which is found only in plants and tissues containing the green pigment chlorophyll.

Properties of the protein correspond with those of a key enzyme in the photosynthetic process isolated by researchers at the National Institutes of Health.

The UCLA investigators found the same protein widely distributed in the plant kingdom. They also found that the amount of protein could be correlated with the leaf's capacity to photosynthesize.

The protein is abundant when the leaf is young and capable of maximum photosynthesis. As the leaf ages, the protein decreases as does the photosynthetic capacity. When the leaf becomes yellow and incapable of photosynthesis, the protein can no longer be detected.

The study also revealed the growing leaf is outstanding material for gathering much needed experimental information on protein synthesis, the researchers said. It also provides a model system for studying changes in the composition of living material during aging.

Science News Letter, October 5, 1957

## GEOPHYSICS

### Satellite Will Measure Cosmic Ray Increases

► MEASUREMENTS made from earth satellites should solve the mystery of where cosmic rays come from and where they get their energy, the highest known in nature.

Dr. S. F. Singer of the University of Maryland said that cosmic rays regularly arrive at the top of the earth's atmosphere with almost the speed of light. However, he told the American Physical Society meeting in Boulder, Colo., at times when the sun shoots out great tongues of flame thousands of miles into space, cosmic ray activity increases many times on these rare occasions.

It is fairly certain, Dr. Singer said, that the increased cosmic ray particles either are accelerated on the sun or were in the sun's vicinity at the time of the flare. They travel toward the earth and are then deflected by the earth's magnetic field, hitting only certain locations.

These so-called impact zones depend on the relative positions of the sun and earth at the time.

What is totally unknown is the reason

why only a few solar flares cause these large increases. Only five have been detected in the past 15 years, although thousands of flares have been recorded.

Observations from a satellite could establish whether increases occurred more often, but with effects not detectable from the surface. Since the satellite will survey most of the earth within a very short time, thus passing over all of the impact zones, measurements from it would give a picture of the geographic distribution of cosmic rays.

Following most solar flares by a little more than a day are disturbances in the earth's magnetic field. Associated with these magnetic storms are decreases in cosmic ray intensity, which last a day or so. These decreases occur even at the poles. They show a 27-day recurrence pattern, so are clearly associated with the sun's rotation period.

The "missing link" in solving this puzzle, Dr. Singer said, is a knowledge of the energy range of cosmic rays before they smash into the earth's atmosphere, knowledge which could be obtained from earth satellites.

Science News Letter, October 5, 1957

## TECHNOLOGY

### Offshore Oil Platform Works in Deep Water

► AN OFFSHORE OIL drilling platform that will operate in water six times deeper than that worked by present rigs was reported in Tulsa, Okla.

The floating platform, which can be economically converted from a mobile-type rig to a permanent one, was described at the petroleum section meeting of the American Society of Mechanical Engineers by R. L. LeTourneau, vice president of R. G. LeTourneau, Inc., Longview, Tex.

Mr. LeTourneau said the platform will be able to operate over water up to 600 feet deep. Most present offshore oil drilling is confined to water only about 100 feet deep, he said.

The new rig will carry its own diesel-electric power system to raise itself on its tripod legs, and the legs can be carried disassembled on the deck and attached after the machine arrives at the drilling location.

Science News Letter, October 5, 1957

## TECHNOLOGY

### Develop 250-Pound Jet Airplane Engine

► A SMALL JET ENGINE for airplanes that weighs only 250 pounds but delivers a thrust of 1,050 horsepower was described at the American Society of Mechanical Engineers meeting in Hartford, Conn.

The lightweight gas turbine engine is called the T58 by its developers, the General Electric Company. The T58's turbo-shaft engine is 16 inches in diameter and 55 inches long.

It is seen as a major step towards reducing the weight and increasing the efficiency of aircraft engines.

Science News Letter, October 5, 1957

## METEOROLOGY

### Falling Snow Can Trigger Lightning

► LIGHTNING BOLTS can be triggered by snow falling through electrically charged sections of clouds, two University of Chicago scientists have reported.

Dr. Horace R. Byers and Donald R. Fitzgerald said the snow in the cloud's upper part has a positive charge, while the moist lower cloud is negatively charged.

The negative field is boosted as the snow falls through it, resulting in lightning bolts sometimes hitting the positively charged earth, they told the joint meeting of the International Association of Meteorology and the International Union of Geodesy and Geophysics at the University of Toronto in Canada.

The cloud's millions of volts are built up by strong currents of rising air that pull negatively charged air molecules from the surrounding air. As the cloud pushes up through the atmosphere, it reaches freezing levels, where the water droplets turn to snow and take on a strong positive charge.

The snow falls when it becomes too heavy to be supported by the vertical air flow. Of the lightning bolts started by snow, only about a third ever reach the ground. Most go on to positively charged parts of other clouds.

After a bolt is fired, the cloud's negative electricity is rebuilt by the strong upward air currents.

Data for their report were obtained by Air Force B-17 bombers flying 1,000 passes through cumulus clouds.

Science News Letter, October 5, 1957

## MEDICINE

### Make New and Better TB Drug From Old One

► A BETTER TB drug, longer acting and less toxic than the presently used isoniazid, is reported by scientists from the University of Melbourne, Australia, in *The American Review of Tuberculosis and Pulmonary Diseases* (Sept.).

Named Verazide, the drug is derived from isoniazid by chemical treatment. It appears to be safe in man in doses up to four times those recommended for isoniazid, Drs. Sydney D. Rubbo, Janice Edgar and Geoffrey Vaughan of the University's school of bacteriology state.

Although isoniazid is probably the most effective drug now available against tuberculosis, it can cause neuritis in some TB patients. In neuritis, the nerve cells become damaged and cause pain sensations that vary from tingling to stabbing.

To prevent this, patients on isoniazid must often be given supplementary doses of vitamin B-6. Verazide is regarded as potentially superior to isoniazid since higher concentrations can be kept in the body without this side effect.

It appears to work against tuberculosis in the same way as isoniazid. Clinical trials have been started in Australia and South Korea.

Science News Letter, October 5, 1957