

## SURGERY

**"Open Heart" Surgery For Rheumatic Fever**

► A DRAMATIC SURGICAL TECHNIQUE to repair damaged heart valves was reported to the American Medical Association clinical meeting in Seattle.

This new type of "open heart" surgery, pioneered by two Seattle surgeons, makes possible the repair of the heart's mitral valve, the one most often affected by rheumatic fever.

When damaged by disease, the valve will not open or close properly. This either starves the heart for fresh blood or else causes it to be pumped back to the lungs instead of through the body.

Drs. Alvin K. Merendino and Robert A. Bruce, surgeons at the University of Washington School of Medicine, Seattle, who developed the technique, reported that it was effective in correcting both of these conditions.

Up to now, they said, several techniques of blind surgery have been tried without much success. With these, the surgeon cannot see what he is doing inside the heart, but must be guided by his sense of touch.

However, by using the new pump-oxygenator, the Seattle surgeons were able to open up the heart itself and repair the faulty valve. The pump-oxygenator is a mechanical device that takes over the function of the heart and lungs while the heart is being operated.

Although open heart surgery is not new, this is the first report of its use for correcting mitral valve damage, the doctors noted. The operation has been used successfully on only one patient to date, but the physicians said they felt secure in advising it for severe cases for whom there was no other hope for cure.

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## MEDICINE

**Report on Brain Stroke Solves 2,400-Year Puzzle**

► THE ANSWER to a 2,400-year-old medical puzzle was revealed when two Los Angeles doctors reported a new type of paralyzing brain stroke at the American Medical Association clinical meeting in Seattle.

Drs. Eliot Corday and Sanford Rothenberg, Cedars of Lebanon Hospital and the University of California at Los Angeles Medical School, said the stroke results when the brain does not receive sufficient blood to function properly because of narrowing cerebral arteries and a drop in blood pressure.

There are at least 12 causes of this cerebral vascular insufficiency, they pointed out, ranging from loss of blood pressure because of heart irregularities to severe hemorrhages anywhere in the body.

Four other types of strokes are recognized by physicians—brain hemorrhage, blood

clot in brain, blood clot that has traveled from the heart to the brain and cerebral artery spasm.

Hippocrates puzzled over the newly-discovered cerebral vascular insufficiency type of stroke more than 2,400 years ago, the doctors said. He found that a patient who had suffered a stomach hemorrhage also suffered brain damage.

The investigators reported that elderly patients who also suffer from hardening of brain arteries are the most likely victims of the stroke. With arteries already narrowed, a drop in blood pressure or hemorrhage elsewhere in the body will further starve the brain of necessary nourishment from the blood.

When this happens, the patient's systemic blood pressure must be promptly restored, the doctors warned, or permanent brain damage may result. This can be accomplished through use of certain drugs or by blood transfusions.

The investigators first demonstrated the new type of stroke in experimental animals and have found some cases in humans.

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## BIOCHEMISTRY

**See Disease Weapons From Germ Reversals**

► DISCOVERY of some germ-reversing chemicals by Dr. Werner Braun of Rutgers Institute of Microbiology, New Brunswick, N. J., is expected to lead to "an entirely new means of controlling disease."

The germ reversal Dr. Braun accomplished by chemicals consists in making laboratory-grown germs change from non-disease-producing ones to virulent disease producers.

The chemicals causing this change are breakdown products of the cell nucleus chemical, DNA, short for deoxyribonucleic acid. One of these is kinetin.

Antagonists to such chemicals, if found, would be the expected new weapons against germs, changing virulent to harmless germs.

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## TECHNOLOGY

**Roads Unnecessary for Heavy Cargo Vehicle**

► A TRUCK-LIKE VEHICLE that can haul heavy 35-ton loads over rough, roadless country, even through sand, snow, mud or underbrush, is now being put to work in the undeveloped areas in the world.

Built by R. G. LeTourneau, Inc., at Longview, Tex., the Transporter has a d.c. electric motor geared directly to each wheel. If one of the gigantic six-foot tall tires loses traction, the other wheels take over the power.

Braking is accomplished by a regenerative or feedback action of the motors that turns them into generators. The engine is 335 horsepower diesel.

Science News Letter, December 8, 1956

**IN SCIENCE**

## VITAL STATISTICS

**Cancer Death Rate Down For Women, Up for Men**

► THE CANCER DEATH RATE for women in middle life has dropped 13% over the last 10 years, but for men it has risen somewhat, statisticians of the Metropolitan Life Insurance Company in New York report.

Among the company's millions of industrial policyholders, this 13% drop was shown by women between the ages of 45 and 64, and is attributed to earlier detection and prompt treatment by surgery or radiation. An even greater drop is shown in the death rate from uterine cancer at these ages. The death rate is now only two-thirds as great as ten years ago.

For middle-aged men, however, the statistics show an increase in the cancer death rate. This was due mainly to higher mortality from cancer of the lungs, mouth and throat, stomach and urinary organs.

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## ARCHAEOLOGY

**Find Tools in Mexico Like Those in Arizona**

► AN ANCIENT DESERT PEOPLE who originally could not grow their food but lived on seed gathered in the wild have been found to have lived not only in Arizona and New Mexico but probably also as far south as central and southern Mexico.

Ancient stone tools like those of the Cochise people, formerly believed to live only in the Arizona area, were found in Mexico by Dr. George E. Fay of the Southern State College, Magnolia, Ark.

Particularly interesting was the find of fragments of two metates, stone vessels in which ancient Indians ground their corn.

The fragments point to two milling methods. The Cochise-like people used a shallow basin made of granite and also a thin, flat slab of shale. Also found were numerous one-handed, asymmetrical bifaced manos, the stone tools with which the corn or seeds were pounded and ground on the metate.

Earliest use of corn by the Arizona Cochise people has been dated at about 2000 B.C.

The stone tools found in Mexico were gathered from the surface of the ground in an effort to salvage all the available archaeological material before farmers' plows turn them under or scatter them.

Dr. Fay plans to excavate several of the more important sites he located in Mexico. The digging is scheduled to begin in 1957, he reports in *Science* (Nov. 23).

Science News Letter, December 8, 1956

# CE FIELDS

## GEOPHYSICS

### Sodium Reactions Add to Night Sky's Faint Glow

► THE NIGHT SKY'S faint glow is due to a process involving sodium vapor, a first-of-its-kind experiment at Holloman Air Development Center, Alamogordo, N. M., has shown.

By throwing sodium vapor from a high-flying rocket, scientists of the Air Research and Development Command verified that the night sky glow not caused by moonlight and starlight is due to photochemical reactions in the upper air.

Sensitive instruments can detect the nighttime glow characteristic of sodium.

Previous rocket flights have been used to study sodium behavior at twilight. Then the sodium vapor, ejected from a rocket at high altitudes, was still in the direct rays of the sun. This year's November flight, however, was made at night.

When the rocket reached an altitude of 30 miles, the sodium vapor was released, and the ejection continued until the rocket had reached a peak of 85 miles and returned to 45 miles above the earth. Four pounds of sodium were distributed along the rocket's trajectory.

The chemical caused a yellow trail clearly visible to the eye in the region from 30 to 60 miles high in both the upward and downward path of the rocket. Above 60 miles, there was no visual effect.

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## MEDICINE

### High Lung Cancer Rate Confirmed for Smokers

► SMOKE a pack a day and your chances of dying from lung cancer are 14 times higher than they are if you do not smoke. Smoke two packs a day and your chances are 27 times higher.

These are the findings of the American Cancer Society's survey of cigarette smoking and lung cancer, released in a pamphlet designed for widespread distribution.

The American Cancer Society has no plans for a campaign against smoking, according to the report. To quit smoking or not is still a question the individual smoker must settle in consultation with his doctor.

"The American Cancer Society will continue to support research efforts to find out whether one or more substances in cigarettes, industrial fumes, gasoline and diesel engine exhausts, in dust from asphalt or bituminous roads, etc., actually cause lung cancer in man," the report states.

Here are other findings of the four-year study:

All heavy smokers do not get lung cancer.

How smoking will affect any one person in particular cannot be predicted.

Smokers living in the city have a somewhat higher death rate from lung cancer than those living in the country.

Regular smokers have a death rate from all causes 52% higher than that for non-smokers. Lung cancer and heart disease account for most of this difference.

These results are based on a survey started in 1952 and covering 188,000 men between 50 and 70 years of age. Those questioned were selected from nine states from coast to coast, and included smokers and non-smokers from both urban and rural areas.

Although only men between 50 and 70 were surveyed, the report states there is no reason to believe other groups are not affected in the same way.

For pipe smokers and cigar smokers the survey did not show any definite trends. Pipe smoking appeared to have a much smaller relationship to lung cancer deaths than did cigarette smoking, while cigars seemed to have none at all.

The reasons why there is a smaller relationship are still unknown.

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## BIOCHEMISTRY

### Study Pituitary Gland for Light on Stress Reaction

► KNOWLEDGE of how the powerful pituitary gland in the head reacts when a person is under stress is expected from studies reported by Drs. A. R. Currie and B. Cruickshank of the University of Glasgow, Scotland, and Drs. J. B. Dekanski and L. G. Skinner of Organon Laboratories, Newhouse, Lanarkshire, Scotland, in *Nature* (Nov. 24). An effect on the thyroid gland in the neck seems likely.

From 12 human pituitary glands taken from adults after death, these scientists have extracted the pituitary hormone which influences the thyroid gland. This big U-shaped neck gland is best known in connection with goiters.

None of the 12 dead persons had suffered any disease of the thyroid gland.

The average pituitary gland of an adult, the scientists found, stores about two International Units of thyroid-stimulating hormone, or about half the amount excreted per day by some patients with underactive thyroid glands.

This thyroid-stimulating hormone and also a hormone that stimulates the adrenal glands are believed to be produced by basophil cells of the pituitary gland.

The adrenal glands also produce epinephrine, or adrenalin, and are the glands that help the body meet stress.

If the two pituitary hormones that stimulate both thyroid and adrenals are produced by the same cells in the pituitary, the degranulation change found in these pituitary cells during stress must, the scientists suggest, have some influence on the yield of stored thyroid-stimulating as well as other stored hormones.

Science News Letter, December 8, 1956

## MEDICINE

### Strawberry Mark Off Without Disfigurement

► THE STRAWBERRY MARK, or nevus, of babies is a benign or non-cancerous tumor of artery origin that can be removed without disfiguring surgery.

First proof of this is announced by the American Cancer Society, reporting work by Drs. Thomas S. Walsh Jr. of St. Peter's Hospital and Victor N. Tompkins of the New York State Department of Health, both in Albany, N. Y.

Contrary to traditional belief, the condition estimated to afflict one of every 10 or 12 babies is not congenital.

A survey of 4,892 deliveries in local obstetrical hospitals failed to disclose a single incidence in which the tumor was present at birth. The parents usually notice it from one to six weeks later.

The strawberry nevus may appear anywhere on the surface of the body. In the majority of instances, it completely disappears within a few months. Occasionally, it shows rapid and extensive growth.

The Albany scientists showed that rapid and extensive growth occurs only when the tumors overlie certain normal arteries. The sites of the vessels are constant and predictable.

The report is based upon the treatment of 192 children with 281 tumors between January, 1949, and December, 1954.

The small growths did not need treatment, but their disappearance could be hastened by the application of dry ice.

The large growths required an interruption of the blood supply from the solitary feeding artery. This was achieved usually by injecting a sclerosing or hardening drug into or about the artery. In cases where injection failed, closing the feeding artery at operation was sufficient to prevent further growth and initiate regression.

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## NUTRITION

### Milk, Packed and Frozen, Stays Good for One Year

► MILK can be frozen in plastic bags and stored for as long as 12 months.

Studies at Britain's National Institute for Research in Dairying show that milk packaged and frozen in pint, quart and gallon polythene packs, when melted a year later, "cannot be distinguished from pasteurized milk."

British dairy scientists are also using radioactive isotopes to try and discover how cows make milk. They add the atomic isotopes to materials fed cows, then trace them through to the milk produced.

Results to date show that milk fat is made from the acetate and fat circulating in the animal's blood. Further research is expected to pinpoint the production in the cow of the protein and lactose content of milk.

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