

## PHYSICS

**Photograph Birth of Meson  
13 Miles Above Earth**

► **CAPTURING** at 13 miles above the earth's surface a picture of a powerful cosmic ray particle giving birth to a meson, fundamental bit of matter still largely unexplored, is hailed as an aid to finding new kinds of atomic energy.

Dr. Marcel Schein and J. J. Lord of the University of Chicago's Institute of Nuclear Physics reported their unique balloon flight photograph to the American Physical Society.

The particle from outer space rushed along with an energy of 20,000,000,000 electron volts and the production of the meson hardly affected the plunge earthward. There was no explosion when the meson was let loose, although usually there is normally star-shaped evidence of a great smash-up when a meson is detected in cosmic rays.

No man-made atom smasher is in the billion electron volt range yet, although two machines with ranges of from three to seven billion electron volts have been financed for completion in three to five years and artificial mesons have been made in the 400,000,000 electron volt cyclotron at Berkeley, Calif.

New hints of atomic energy may come from cosmic ray studies with photographic plates sent aloft in free-flying balloons to heights where the rays are powerful. The studies with nature's own atom smashers may point the way to some new atomic reactions that will release energy.

New transformations of fundamental particles that would yield potent projectiles are quite possible, as Dr. Cecil B. Ellis of the Office of Naval Research told the physicists, discussing new sources of atomic power.

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## MEDICINE

**Fall Over Tricycle May  
"Crack" Child's Kidney**

► **MANY** a small child has had a "cracked kidney" from a fall over the handle bars of a tricycle or from a kick in the course of his play with other youngsters, Dr. Cyrus E. Burford of St. Louis warned at the meeting of the American Medical Association in this city.

The child may not complain much at the time but later will need an operation to save his life.

Children and athletes, he said, are vulnerable to serious kidney disease.

"Boxers and wrestlers receiving kidney punches bleed from bruised kidneys, and many develop kidney stones eventually," he said.

"Streptococcus throat infections in children not infrequently cause kidney disease,

many cases of which may be cured if recognized, managed, and treated by a physician."

Blood in the urine may be the only early symptom of cancer or kidney stones, Dr. Burford emphasized.

"Of importance is the seeming increase of tumors of the kidney and bladder first indicated by the appearance of blood in the urine. These are usually painless, and failure to diagnose the condition in the early stages denies the patient his chance for a cure," he said.

"Perhaps our greatest concern should be with young children who do not describe particular symptoms but whose urine may lead us to a diagnosis of Wilms' tumor of the kidney, one of the most malignant and rapidly growing tumors known, occurring almost exclusively in children under 11 years of age and which may be cured by surgery if discovered early.

"Silent stones in the urinary tract may cause blood in the urine as their only symptom until the kidney is damaged beyond recovery.

"Blood in the urine should always be given careful consideration, and if not readily explained deserves a complete urological examination to determine the source and cause."

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## AERONAUTICS

**Pilotless Planes Make  
Record Controlled Flights**

► **THE LONGEST** controlled flights ever made with pilotless aircraft powered with ram-jet engines were revealed by the U. S. Navy at its Air Missile Testing Center, Point Mugu, Calif. Several flights under radio control of more than 10 minutes were made.

The plane used was the Gorgon IV, officially the PTV-N-2, a high-winged monoplane 22 feet long, 10-foot wingspan, and almost no tail. It was purposely designed under Navy direction to operate at subsonic velocities. It was built by the Glenn L. Martin Company of Baltimore and powered by a ram-jet made by Marquardt Aircraft of Venice, Calif.

The ram-jet on this plane, seven feet long and 20 inches in diameter, is suspended below the fuselage well toward the rear. Because the ram-jet engine can not operate until it has sufficient speed to scoop up enough air for the combustion of its fuel, the plane in the tests was taken aloft by a U. S. Air Force Black Widow fighter from which it was released to obtain speed by gliding.

In flight, the plane was tracked by ground-based radar and maneuvered by ground-based radio control. It was completely instrumented to telemeter to a ground receiving station such data as speed, altitude, brake drag, controllability and engine operation.

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## ENGINEERING

**Warmer Color Is Added to  
Mercury Vapor Lighting**

► **HEALTHY MEN** working under mercury vapor lights need no longer look pale and sickly, and women's lips may appear their natural or applied color. A fluorescent material, developed by a Westinghouse scientist, makes the light from the mercury vapor tube eight times richer in red than from the tubes of clear glass, and people under it look natural.

The material is a high-temperature phosphor, which is used to powder the inner glass wall of a mercury vapor lamp. This fluorescent coating transforms the invisible ultraviolet rays into pure red light which, added to the bluish-white light from the mercury vapor, gives illumination under which persons and objects appear more nearly in their true colors.

The discovery of the phosphor which transforms the invisible radiation into visible red light and at the same time withstands the high heat within the tube, was made by Luke Thorington of the Westinghouse lamp division staff. This temperature is in the neighborhood of 750 degrees Fahrenheit. The phosphor absorbs some of the light normally given off from the mercury vapor but the invisible ultraviolet converted into visible radiation more than offsets the loss.

When the first mercury vapor lamps were introduced in 1901, they produced a cold blue light which blackened red lips and distorted color values generally. Later they were improved by boosting the pressure of the mercury arc inside the tube. Still later, cadmium and zinc were added to the lamp itself. These devices cut overall lighting efficiencies. The new phosphor does not.

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## PUBLIC HEALTH

**Plastic Spoons Help  
Army Fight Disease**

► **PLASTIC SPOONS** are the Army's newest weapon against disease.

A new C ration (Ration, individual, Combat, C-4), announced by the Department of the Army will have plastic spoons. The spoons are sterilized, sealed in cellophane wrappers and are to be thrown away after one meal. This is designed to combat dysentery, which sometimes has resulted from the use of utensils by troops with no facilities for cleaning them.

Science News Letter, December 11, 1948

# CI FIELDS

## MEDICINE

### Streptomycin Mold Yields Vitamin B<sub>12</sub> Group Finds

➤ ONE of the newest vitamins, B<sub>12</sub>, for pernicious anemia, can be obtained from the same species of mold that produces another important modern remedy, streptomycin, a five-man research team at Merck and Co., Rahway, N. J., have discovered.

The five are Edward L. Rickes, Frank R. Koniuszy, Norman G. Brink, Thomas R. Wood and Karl Folkers who last April first reported isolation of this vitamin from liver. They report their latest discovery in the journal, *SCIENCE* (Dec. 3).

The red crystals they have now obtained by fermentation from the mold, *Streptomyces griseus*, have the same beneficial effect in pernicious anemia as the vitamin B<sub>12</sub> from liver, Dr. Randolph West of Columbia University's department of medicine found.

The discovery is "an important stride forward from having to work up huge quantities of liver" to obtain the vitamin, George W. Merck, president of Merck and Co., pointed out. He hopes that the new vitamin can be made commercially available soon, although the extensive work now under way has not yet reached the stage, he said, where promises on commercial availability can yet be made.

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## ENGINEERING

### Reflective Radiant System Will Feature New Home

➤ REFLECTIVE radiant conditioning, not the relatively new radiant heating system, will be employed to keep a house to be constructed in Cincinnati comfortable in summer and winter, the University of Cincinnati revealed.

The house when completed will contain none of the conventional furnaces, air-conditioning units and insulation. Walls and ceiling surfaces are to be of embossed aluminum foil, one of the best heat-ray reflectors known. In place of heating plant there will be a few electrical resistance coils in each room for generating heat rays.

Cooling coils, resistance wires for heat, and fluorescent color lighting will all be placed in a cove near the ceiling, giving heat and light and removing radiant heat in hot weather only by indirection. The scheme, according to the university, is to heat and cool through radiant channels almost exclusively, with little or no concern for air temperatures or humidity.

This system for maintaining year-round indoor comfort is credited to Dr. Clarence A. Mills, of the university's medical college. He proved it to be workable 10 years ago under laboratory conditions. Now it is to be tested in an actual house, and the house is to be the residence of the physician.

In his laboratory work, Dr. Mills demonstrated that complete human comfort can be achieved by controlling heat loss from the skin through radiant channels alone. Thus an individual, he states, can be made equally comfortable at 100 degrees Fahrenheit or at zero by proper attention to the net rate of heat loss from the body.

"Let him lose heat freely by radiation from his body to a cold object, such as a wall surface, and he can disregard the hot air next to his skin," Dr. Mills declared. "Under such conditions his skin becomes distinctly cooler than the air next to it."

"And in colder air he is comfortable if his skin is kept warm by adequate rays from a radiant object, again such as a wall surface. Under this radiant system, wall and ceiling surfaces act as passive reflectors of heat rays, while their actual temperatures remain the same as those of the air mass next to them. Thus there is no longer any concern over heat flow through walls or ceiling and no further need for insulation."

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## GENERAL SCIENCE

### World Campaign for Literacy Expected

➤ A WORLD CAMPAIGN to be sure that everybody can read and write is likely now that Mexico's great teacher of literacy heads the United Nations Educational, Scientific and Cultural Organization.

Jaime Torres Bodet, who has just resigned as minister of foreign affairs of Mexico, recalls the successful "alphabetism" program which he conducted in Mexico while he was minister of education. More than one million Mexicans learned to read and write as a result of this campaign for which only two million pesos (or about \$400,000) was spent. This was a cost of only about 30 cents per person.

Key method in the Mexican fight against illiteracy was a good neighbor process of having each literate person teach someone who had not had educational advantages. Thus, the lady of the house might be school marm to her cook and the head of a business concern might be the professor of reading and writing of a laborer in his employ.

Sr. Torres Bodet expressed the hope that UNESCO could be operated within the budget set up for it and that the many countries contributing to UNESCO will feel that they get a full measure of return for their financial and cultural support.

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## PHYSICS

### New Kind of Oxygen Has Been Created

➤ A NEW KIND of oxygen has been manufactured and discovered.

A Princeton University team of scientists, Drs. R. Sherr, H. R. Muether and M. G. White, reported to the American Physical Society meeting in Chicago that by flinging the hearts of hydrogen atoms into nitrogen compounds it is possible to create a very short-lived variety of oxygen.

This is the sixth isotope of oxygen to be known. It is oxygen 14, which makes it just the same atomic weight as the commonest sort of nitrogen. Both positrons (positive electrons) and gamma radiation are involved in the decay of the new kind of oxygen, which exists only about 76 seconds before it turns into an excited sort of nitrogen.

The other sorts of oxygen weigh 15, 16, 17, 18, and 19 times that of hydrogen, lightest of the elements, and oxygen 16 is the commonest sort in the air we breathe. Nitrogen 14 is also in the air.

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## ENGINEERING

### Ice in Continuous Column Extruded by New Ice-Maker

➤ HARD white ice in a continuous column comes out of a new ice-making machine described in New York to the American Society of Mechanical Engineers by Prof. John R. Watt of the University of Texas. The machine utilizes no brine, ice cans or labor.

Mr. Watt, who developed the process, explained that in his scheme a method of freezing the water from the inside outward is followed. In conventional ice-making the outside is frozen first. In his method, after the center core is formed successive layers are added around it to bring the whole to a proper size. It is like the growth of a snowball rolling down hill, he said.

Basically, the machine developed by Mr. Watts in his preliminary work was composed of a tank of water in which a doubled-wall tapered freezing cylinder was mounted big end up. A perforated ram at the bottom worked up and down in the lower end of the cylinder.

With the ram in low position and the machine filled with water, an ice core was frozen low down in the tapered chamber. When this was solid the ram lifted it about an eighth of an inch where a thin layer of water surrounded it. When this water was frozen, the ram and new core below raised it higher. With the process continued, the result is a column of ice built up of successive layers, visible to the eye but permanently bonded together.

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