

TECHNOLOGY

Gas Turbine Engine Suits Ocean Vessels

➤ A RECENT round-trip across the Atlantic made by a British tanker powered by a gas turbine engine indicates that this type of power plant is suitable for ocean vessels and that it some day may replace diesel engines in marine services.

The 12-250-ton tanker, the AURIS, is said to be the world's first merchant ship fitted with a gas turbine. Its recent trip was made from England to the Caribbean area and, although equipped with other engines, it used the gas turbine alone.

Gas turbine engines already power small boats of the American armed forces, are used in airplanes and, experimentally, in automobiles and an American locomotive. They are in wide use in stationary power plants.

The so-called turbo-prop propulsion in modern airplanes makes use of a gas turbine which drives conventional bladed propellers. Turbo-jet propulsion utilizes a similar engine but forward movement is provided by the discharge of high-pressure gases to the rear.

Advantages of the gas turbine engine are small size, efficiency and economy. It gets more useful power out of the fuel consumed than engines of other types, and can use various types of liquid fuels. The recent trip of the Auris was made on heavy boiler oil. Engines of this type need no water, a definite advantage on shipboard.

Science News Letter, July 19, 1952

INVENTION

"Biostrategy" Used In Bacteria Fight

➤ "BIO-STRATEGIC" WARFARE against harmful bacteria can be conducted by a new three-way antibiotic preparation recently patented.

During the government's 1952 fiscal year, 46,531 invention, design, reissue and plant patents were issued. This compares with 50,250 in the preceding year and a record year, in 1932, of 55,709.

Hermann Vollmer, New York, the strategist of the three-way attack on bacteria, assigned his patent, number 2,602,038, to Sharp and Dohme, Inc., West Point, Pa., a drug firm. His preparation consists of a combination of three "wonder drugs," sulfadiazine, penicillin and sulfamerazine.

Mr. Vollmer explains that the three drugs enter the blood stream in succession and reach their highest blood concentration at different times. The sulfadiazine, getting there first, kills off the weaker strains of bacteria, but the stronger strains adapt themselves to sulfadiazine. However, the bacteria are, at the same time weakened against the following, unexpected attack from penicillin.

The bacteria, Mr. Vollmer says, are like military forces which have been trained for

tropical warfare but are sent to the Arctic. They would be less able to resist the cold of the north than troops without training for the tropics.

The few remaining bacteria that survived the penicillin attack, according to the inventor, are knocked out by the third attack with sulfamerazine. Mr. Vollmer claims this is distinctly different from the conventional method of administering two drugs at a time. The conventional way aims at a simultaneous knockout, while the new method is a one-two-three affair.

Science News Letter, July 19, 1952

ENGINEERING

Efficiency Pioneer Says Sit Down While Working

➤ SIT DOWN while you work. Use your head. Figure out how to make your work come to you.

That advice was given the American Society for Engineering Education, Hanover, N. H., by Dr. Lillian M. Gilbreth of "Cheaper by the Dozen" fame.

The efficiency pioneer said life can be easier for everyone if industrialists and homemakers apply to their own work some of the ideas that simplify work for handicapped persons. The reverse also is true.

The demand is for adjustable sinks, movable walls, lightweight household equipment and multi-purpose appliances, she said. It shows that today's husband does not want the kitchen to kill his wife—or himself, as the case may be.

Flexibility and teamwork are the work-simplification principles sought by engineers, home economists, doctors, the Red Cross and others working on the problem, she said.

Flexibility often means taking advantage of all three dimensions, making things below you as easy to reach as the things around you. Wheel chairs, for instance, should be adjustable up and down. A person then could fix the seat so he could reach the wheels more easily.

Teamwork is required between persons working with handicaps and persons simplifying operations in mines, offices, stores and schools.

"And remember," Dr. Gilbreth said, "some of the best ideas and methods come from the homes of America."

Science News Letter, July 19, 1952

INVENTION

Remote Controlled Radio and TV Patented

➤ A NEW method of controlling the tuning and volume of a radio or television set from across the room has been invented by Loy E. Barton, Princeton, N. J., and assigned to the Radio Corporation of America. He received patent number 2,602,851.

In his invention the remote control connectors are attached in series in one of the power supply leads.

Science News Letter, July 19, 1952

IN SCIENCE

PUBLIC HEALTH

Low Cost Clinic in Jeep Is Doctor's Bag on Wheels

➤ THE FIRST completed clinicar, a jeep pick-up truck converted into a small and reasonably priced clinic, was put on display in the lobby of the new State Department building in Washington recently.

Designed especially for Point Four health and sanitation officials, the clinicar costs \$6,000 compared to the \$30,000 for the larger, more elaborate mobile health units. Although originally intended for use in Libya, the "doctor's bag on wheels" is expected to be in demand in other countries where the services of a limited number of trained medical personnel must be spread over the widest possible territory.

The clinicar can take all the essentials necessary to a small clinic over desert roads, or even no roads at all, to speed up immunizations, vaccinations and other forms of preventive medicine. The sides of the clinicar have been built so that they convert into two "flaps," the lower providing a work shelf, the upper extending from the body of the car to form a roof.

Patients do not enter this mobile clinic for treatment as they do in the case of more elaborate healthmobiles. Instead, a tarpaulin can be carried from the roof of the car to extension poles to provide a shelter area large enough for an emergency operation.

Science News Letter, July 19, 1952

MEDICINE

Strep. Germ Chemicals Heal Difficult Operations

➤ TWO CHEMICALS made from germs can be used to speed the healing of troublesome wounds of the lower intestinal tract following removal of cancer.

Successful use of streptokinase and streptodornase, chemicals made from hemolytic strep. germs, is reported by Drs. Oliver H. Beahrs and George L. Jordan, Jr., of the Mayo Foundation. The blood clots, pus and other waste products of the operation are liquefied by the chemicals when they are injected four to six times beginning three days after the operation.

Complete healing of such operations involving resections has taken three to six months or longer heretofore. But with the two chemicals, which have been used by other surgeons in the past couple of years to aid healing of other infected wounds, the patient is completely well usually in about three weeks.

The two strep. chemicals do not act like antibiotics to check the growth of disease germs, but may be used with antibiotics.

Science News Letter, July 19, 1952

E FIELDS

VETERINARY MEDICINE

X-Disease in Cattle Traced to Chemical

► ONE OF the causes of "X-disease" which infects and shrivels cattle, hardening their skin, has been discovered, the U. S. Department of Agriculture has reported.

The cause was identified by researchers at the University of Tennessee state experimental station as chlorinated naphthalene compounds. These are infrequently found in wood preservatives, although it is believed that the compounds are not being used in preservatives at the present time.

Other causes of the disease have not yet been identified, although there is evidence they might be found in a petroleum lubricant and several livestock feeds. "X-disease" is known to scientists as hyperkeratosis.

Thousands of cattle have died of the disease since it was first recognized in 1941. It has caused serious loss of meat, milk and other products in every cattle-producing area.

Science News Letter, July 19, 1952

PUBLIC HEALTH

Take It Easy In Vacation Sun

► MANY A city dweller's idea of a good vacation or summer weekend holiday is to take it easy in the sunshine. Taking it easy is a fine vacation idea, but remember to take the sun easy, too, or you may end up with long hours of suffering from sunburn or an accident because the sun affected your eyesight for night driving.

Many people forget that a burn is a burn, whether it comes from an atom bomb explosion or the sunshine. Blistering is a sign of a second degree burn. How sick you get when you are burned to blistering will depend on how much of your skin is that seriously burned. You can suffer shock from sunburn as well as from other kinds of burns.

The sensible way to get an enviable coat of tan plus the health benefit of the sun's rays is to take sunshine in small doses at first. Start with only a few minutes the first day and increase the dose by just a few minutes each day.

If you use one of the creams or lotions designed to protect against sunburn, remember that it will rub off, dry off and be washed off when you go in the water for a cooling dip or swim. So do not count on one application to protect you for too long a time.

Never look directly into the sun, no matter how dark your sunglasses, warns the National Society for the Prevention of

Blindness. No glasses can keep out all the burning ultraviolet rays of the sun and these rays can actually burn the retina of the eye, causing permanent damage.

Be extra careful driving home at night after a day at the beach. Your eyes may be temporarily more sensitive to light, which means you cannot see as far at night as you ordinarily could. If you are driving 40 m.p.h., you could stop your car in 126 feet. This means you would avoid hitting an object just visible 130 feet away. But if the sun has temporarily weakened your vision so that you can only see the object 109 feet away, you may not be able to stop in time.

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BIOCHEMISTRY

More Copper, Less Iron In Blood of Cancerous

► THE VITAL metallic elements, iron and copper, are markedly changed in their concentrations in the blood serum of cancer patients as compared with the normal concentration in the serum of healthy people.

This is reported by Dr. Robert Pirrie, Muirhead Department of Medicine, Glasgow University, in the JOURNAL OF CLINICAL PATHOLOGY.

Dr. Pirrie measured the copper in the serum of 40 healthy and 19 cancer-stricken people and found that in those with cancer the copper content averaged more than twice as high as normal, but the iron was well below normal. This was true for all types of malignancies, those observed being as diversified as, among others, cancers of the lung, bone and breast.

Dr. Pirrie says it is not yet possible to assess the significance of the inverse effect of cancers on the serum copper and iron concentrations.

Science News Letter, July 19, 1952

INVENTION

Alarm Sounds If Tub Overflows

► IF YOU have a habit of wandering off after you have started to draw your bath and coming back only after the water has flooded the bathroom floor and ruined the plaster on the ceiling downstairs, what you need is a bathtub alarm patented by Nathan Polikoff, Brooklyn, N. Y.

The alarm, which operates on a dry cell battery, is mounted on the side of the bathtub. A float connects the electrical circuit when the water reaches a desired level, setting off a gong which can be heard throughout the house.

Provision is made so that the gong will not sound unless the alarm is actually attached to the side of the tub and the float moves up to the desired contact position. In other words, it will not go off at any other time except when a bath is being drawn and the alarm is in use.

Mr. Polikoff received patent number 2,602,846 for his invention.

Science News Letter, July 19, 1952

INVENTION

Algae Aid Separation Of Radiocarbon Isotopes

► CHLOROPHYLL, THE ubiquitous green agent of plants, plays an important part in a new method of separating the light and heavy radioactive isotopes of carbon used in medicine and research. The method was invented by Melvin Calvin and John W. Weigl, Berkeley, Calif., and assigned to the Atomic Energy Commission. Its patent number is 2,602,047.

The invention is based on the fact that organisms that contain chlorophyll use carbon dioxide to form complex organic molecules when they are exposed to the sun. The problem is to separate the heavier radioactive carbon isotopes, 13 and 14, from the lighter isotope, carbon 12.

The carbon dioxide containing a mixture of the isotopes is fed to algae, one-celled plants. The sun is allowed to shine upon them and photosynthesis takes place. The carbon dioxide containing the lighter isotopes is preferentially absorbed by the algae during the photosynthesis process. In this manner, according to the inventors, it is possible to separate the heavier from the lighter radioactive isotopes.

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METALLURGY

"Lost-Wax" Casting Produces Precision Parts

► A PROCESS of casting metal, described even in early Egyptian records, now is being used to produce precision parts for jet aircraft.

Known as the "lost-wax" or investment process, a wax model of the part to be cast is made from a master pattern. A liquid silica refractory is poured around the wax model and allowed to set. The whole business then is turned upside down and heated. The wax model melts and runs out, leaving the mold.

Molten metal is poured into the mold and allowed to cool. Afterward, the mold is broken open and the cast part is removed.

Describing the ancient process, a report from the Office of Technical Services, U. S. Department of Commerce, says the system was revived and expanded in recent years to produce dental castings and jewelry. It especially has been found valuable as a means of producing jet-engine parts that cannot be readily forged or machined.

By the process, intricate parts may be made of nonferrous metals as well as of cast iron and steel. The surfaces emerge smooth and have high dimensional accuracy.

Other processes can produce castings having these qualities. Other methods often are more economical. But the lost-wax method is best when it becomes too expensive or difficult to prepare small, intricate molds out of the materials in which parts usually are cast.

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