

## METALLURGY

**Molybdenum Is Strong At Very High Temperatures**

► FOR USE at high temperatures such as encountered in jet and turbine airplane engines, molybdenum metal of high purity is the material that is strongest and has long life.

Research at the Lewis Flight Propulsion Laboratory of the National Advisory Committee for Aeronautics, Cleveland, shows that sintered wrought molybdenum at temperatures in excess of 1,800 degrees Fahrenheit outclasses other materials, such as titanium carbide and inconel X alloy.

Even at higher temperatures, such as 2,400 degrees, molybdenum has high strength. Tensile strengths of 33,670 pounds per square inch at 1,800 degrees to 27,500 pounds per square inch at 2,400 degrees were reported by R. A. Long, K. C. Dike and H. R. Bear in the NACA test (NACA TECHNICAL NOTE 2319). The way the metal is worked and handled in manufacture has much to do with the strength of the finished metal.

Molybdenum is a metal that promises to have great importance in the U. S. defense program. It is already used widely as an alloying element in steel and for making electronic equipment. As yet there has been little experience in fabricating large pieces of the pure metal, such as would be required if molybdenum were used as a material for jet engines.

Molybdenum is one of the chemical elements, number 42 in the periodic table of the elements. It melts at 4,750 degrees Fahrenheit, almost 2,000 degrees above the melting point of iron.

The United States has an ample supply of molybdenum, since 90% of the world's production in the past quarter century has been met from within the North American continent.

Science News Letter, May 5, 1951

## GEOLOGY

**Search for Oil Aided by Magnetic Logging Device**

► THE SEARCH for oil deep in the earth will be aided by a new magnetic logging device developed by scientists of the Magnolia Petroleum Company. Lowered into a drill hole in the earth, it records the magnetic properties of the various layers in the underground geological formations through which it passes.

The new magnetic logging instrument is based on the knowledge that geological formations, because of their magnetic properties, distort the earth's magnetism. From a measurement of the distortion, it is possible to calculate the structure of the formation. The device is designed to supplement information acquired at the surface of the earth with the magnetism-measuring magnetometer by giving more exact knowledge of underground formations.

The instrument easily distinguishes between sedimentary rock, the type capable of holding crude oil, and igneous rocks which are often highly magnetic because of their iron content. It also measures simultaneously the electrical resistance of rock. This resistance is another property of rock which is important to petroleum geologists.

The logging device is four feet in length, three inches in diameter and weighs 80 pounds. It is designed to withstand pressures of 10,000 pounds per square inch and, with some of its apparatus housed in a form of thermos bottle, is unaffected by temperatures up to 250 degree Fahrenheit.

Science News Letter, May 5, 1951

## PUBLIC HEALTH

**Test Tells When Dust Can Cause Lung Disease**

► AN AID in the fight against dangerous dusts was shown at the Industrial Health Conference in Atlantic City, N. J.

It is a method for detecting the size and quantity of silica, cause of silicosis, and can be applied to detecting the toxic dust particles that cause another lung disease, asbestosis.

The method, said to be faster and more accurate than previous ones, was developed by Germain Crossmon of Bausch and Lomb Optical Company. A dust sample suspected of containing silica is placed on a glass slide and a drop or two of a liquid having the same refractive index as free silica is added. The preparation is then examined with either a dark-field or phase contrast microscope, using either polarized or unpolarized light.

Science News Letter, May 5, 1951

## INVENTION

**Carbon Monoxide Danger Offset by Detecting Device**

► GAS DETECTING apparatus, particularly to detect dangerous carbon monoxide being discharged into the cabin of an airplane and releasing an off-setting gas, brought Charles W. Klug, Chicago, patent 2,549,974. Rights are assigned to Stewart-Warner Corporation of the same city.

Detection is by means of a yellow gel developed by the National Bureau of Standards which turns to a dark blue-green color in the presence of carbon monoxide. The gel is in a suitable container through which the air of the cabin passes. The apparatus also contains a light source and a photosensitive device which impinges light passing through the sensitive gel to change the conductivity of the device.

The change in light passing through the gel as it changes in color activates the photoelectric device which in turn releases a gas to restore the gel to its original color. Ozone is one of the gases and the oxides of nitrogen are others having this restorative action. They react on the carbon monoxide.

Science News Letter, May 5, 1951

**IN SCIENCE**

## DENTISTRY

**Dentist Can Help Prevent Cancer of the Mouth**

► "YOUR dentist can help you prevent mouth cancer. See your dentist twice a year." This advice-giving slogan is suggested by Dr. Leonard B. Goldman, director of the cancer prevention and detection center at Queens General Hospital, Jamaica, N. Y.

Infected gums, jagged teeth, ill-fitting dentures (false teeth) and excessive smoking are factors in mouth cancer, Dr. Goldman said in a report to the JOURNAL of the AMERICAN DENTAL ASSOCIATION (April).

"How much these factors contribute to cancer is unknown," he said. "However, it is known that the incidence of cancer is much lower in the well-kept mouth than in the neglected one."

Urging that every dental examination include a check-up for suspected growths, Dr. Goldman said:

"Treatment of malignant tumors of the mouth needs the combined skill of the dentist and the physician. The dentist is the detective and the physician the prosecutor."

Deaths from cancer of the mouth have declined during the last 10 years, Dr. Goldman pointed out. In 1936 there were 4,081 deaths from mouth cancer, a mortality rate of 3.19 per 100,000, as compared with 1947 when there were 3,755 deaths, a mortality rate of 2.6 per 100,000. Dr. Goldman attributes this decrease in part to early detection of the disease by the dentist. Cancer of the mouth, like cancer elsewhere, may exist for some time without the victim being aware of it. But when a person visits his dentist regularly and the dentist is alert to the signs of mouth cancer, early cancers can be detected and cured.

Science News Letter, May 5, 1951

## MEDICINE

**Health Danger Is Seen in Perfect School Attendance**

► DO NOT insist on perfect attendance records, the nation's elementary school teachers were warned by the American Heart Association, New York.

If children stay home with minor colds and sore throats, it will help cut down the danger of rheumatic fever and rheumatic heart disease. This is the reason for the warning. "Strep." infections may lead to rheumatic fever in susceptible children, the association points out in its new booklet, "What the Classroom Teacher Should Know—and Do—About Children with Heart Disease."

Science News Letter, May 5, 1951

# E FIELDS

## TECHNOLOGY

### Gas Pressure in Hole in Coal, Eliminates Blasting in Mines

► A FORWARD step to promote safety in coal mining will result from the use of a non-explosive device for breaking down the face of the coal, revealed by the Du Pont Company, Wilmington, Del., in which gas pressure is used to cause breakage.

This device utilizes the high pressure of a gas generated inside a steel tube which is inserted into an ordinary drill hole driven into the coal seam. Chemical reaction is started by an electric current which produces heat to initiate the action. The same heat destroys the starter wire as soon as electric current is no longer needed.

The tube which contains the chemical is closed at the outer end by a plug with electrical connections, and at the other with a disk that is ruptured by the compressed gases formed. When the gas has been liberated in sufficient quantities to create a desired pressure, the disk breaks and the gas rushes out to break down the face of the coal. No flame is produced.

This non-explosive method for use in mining coal is somewhat similar to one now employed which utilizes compressed air to break down the face of the coal. In the latter a heavy compressor is used and the compressed air is carried to the bore hole by hose and released from a special nozzle which is inserted in the hole.

The new Du Pont device is called a Chemechol. The chemicals used are not revealed. It is already under extensive field testing. The tube used can be refilled in the mine with another chemical unit and disk. The device can not be activated by small electrical stray currents, nor by the high currents used in mine power and lighting. It can not be detonated by blasting caps or high strength dynamite.

Science News Letter, May 5, 1951

## MEDICINE

### Paste of Germ Extract Heals Diabetic Gangrene

► MATERIAL EXTRACTED from the streptococcus germ and made into a paste is giving good results in treatment of diabetic gangrene, Drs. Leon V. McVay, Jr., and Douglas H. Sprunt of the University of Tennessee and John Gaston Hospital, Memphis, Tenn., report.

The materials are called streptokinase and streptodarnase. An excellent response in treatment of five cases of gangrene has been achieved with this new medicine. In some of the patients, the ailment had progressed so far that amputation was recommended.

When these patients refused to have an operation, the new preparation was put on the ulcerated areas. One of the patients had had two chronic ulcers on the right foot for 32 years. He had been on crutches for nearly 15 years. Various other forms of local medication had been tried without success.

When streptokinase and streptodarnase were applied, he spent 10 days in bed and then was given the freedom of the ward. Not long after, he was free of pain and could walk unaided.

"The evaluation of any conservative therapy in diabetic gangrene is difficult," the physicians report. "The improvement in these cases was undoubtedly aided by the regulation of diet and insulin administration of supplementary vitamins, control of physical activity and treatment of secondary infections.

"However, there can be little doubt that the clinical results were essentially due to streptokinase and streptodarnase. It appears that they are of great value in the conservative treatment of diabetic gangrene."

Results of the study are published in the ARCHIVES OF INTERNAL MEDICINE

Science News Letter, May 5, 1951

## MEDICINE

### Romans Treated Headaches With Electroshock from Fish

► ELECTROSHOCK treatment, modern method of treating some patients with mental sickness, was used by physicians of ancient Rome, Dr. John Fulton, professor of the history of medicine at Yale University reports.

For the electricity, the Roman physician, Scribonius Largus, used the discharge of an electric fish, the Torpedo. He delivered the shock to the head for the relief of headache and also to lessen the pain in childbirth.

Science News Letter, May 5, 1951

## INVENTION

### High Quality Magnesium by Alloying With Rare Earths

► WIDER USE of magnesium in many applications is promised with British-developed magnesium alloys which have improved mechanical properties, offering advantages both in the cast and wrought conditions. They contain 85% magnesium, the rest being certain so-called rare-earth metals, neodymium, lanthanum and others. Cerium is removed from the rare-earth metals used in order to improve resistance to corrosion.

Alfred Claude Jessup, Edward Frederick Emley and Philip Andrew Fisher are the inventors. All are at Clifton Junction, near Manchester, England, and their rights to patent 2,549,955 have been assigned to Magnesium Elektron Limited of the same address.

Science News Letter, May 5, 1951

## BIOLOGY

### Efficient Algae Factory Is Step to Food for Future

► THE MOST efficient commercial production of algae, best way so far of capturing the sun's energy, was announced by Dr. Jack E. Myers, director of the University of Texas algal physiology laboratory, Austin, Tex.

For each gallon of water in his algae-growing apparatus, Dr. Myers gets a half-pound of algae, whereas a pond will produce that amount of growth as a green scum with 50,000 gallons of water.

Algae are simple plants. The *Chlorella* species is capable of multiplying seven times in volume in a single day under proper conditions.

Scientists expect algae to be used in the future as food for animals and as raw materials for making fats, oils and other organic materials.

With further development, algae might feed a blockaded nation such as Japan might become in an extension of war in the Far East.

The Myers process grows the algae in a narrow space between two glass tubes, one inside the other. Carbon dioxide, which the algae need as their principal raw material, is bubbled through the water. Sunlight supplies the energy. Added minerals are necessary.

The Myers process has solved previous difficulties in producing a high concentration of the plants in thin layers, and the exact control of introducing minute amounts of needed iron and other minerals. The new process is reported to be eight times as efficient as a similar system recently reported.

Science News Letter, May 5, 1951

## AERONAUTICS

### British Aircraft Engine Both Piston and Jet

► A COMPOSITE engine for airplanes, which has both piston and jet power, has been developed in England. It is the Napier Nomad, and is actually a combination of a piston engine and a turbo-jet power plant.

The gases for driving the turbine are produced by a highly supercharged piston engine and not by static combustion chambers. Details of the combination have not been revealed. Low fuel consumption is said to be an advantage. This means extra range for long-distance civil and military planes.

Another new turbo-jet engine just revealed is the British Olympus which is said to have very low fuel consumption. There is a probability that this engine may be built in America by the Curtiss-Wright Corporation as part of the long-term agreement between the two companies for mutual engineering and technical aid.

Science News Letter, May 5, 1951