

PSYCHOLOGY

Isotope Inspector Improves Efficiency

► RADIOISOTOPES have a psychological effect on workers, improving their efficiency, the International Isotope Techniques Conference at Oxford, England, was told by a Dutch scientist, B. Schuil of Holland's Roentgen Technische Dienst.

Mr. Schuil's laboratory specializes in the use of atomically active isotopes for on-the-job inspection of welds between sections of large pipelines, radiographic pictures being taken through the welds with the penetrating gamma rays from these isotopes to reveal any defects.

Mere appearance of the radioisotopes inspector at a job, Mr. Schuil observed, reduced the proportion of defective welds from over 80% to under 20%, even though the inspector could not actually begin his checking for a couple of days after his arrival.

These figures are based on actual pictorial back-checks made on all the welds done before and after the inspector's arrival.

The appearance of the inspector with his "magic eye" radioisotopes had made such a psychological impression on the welders that they put their best effort into the job.

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ZOOLOGY

Mother's Cunning Protects Coyote Kid

► A MOTHER'S cunning tactics have kept a coyote from preying on her kid—a baby antelope.

The first known record of how antelope does and kids behave when chased by a hungry coyote was made near Rapid City, S. D., by Wayne Davis and Donald Putnam of the South Dakota Department of Game, Fish and Parks.

The two men, making an airplane census of antelopes, saw what appeared to be "a lone antelope and a bouncing jack-rabbit." They quickly identified the animals as a doe and her kid antelope being chased by a coyote, heedless of the airplane circling above them.

When the coyote came within 50 yards of the kid, the doe dropped back behind the coyote, then with a sudden burst of speed, ran into its side, rolling the pursuer end over end. The doe repeated this performance twice, after which the coyote veered from side to side to avoid similar body contact.

After being joined by another doe, the antelopes outwitted the coyote as follows: While the mother doe continued to harass the predator, the second antelope and the kid veered off at right angles as they passed over the crest of a hill. Duped by the ma-

neuver, the coyote followed the doe, leaving the kid free to seek refuge.

The two men tried unsuccessfully to drive the coyote out of the area by buzzing it after the chase was over. The race took about 15 minutes and the total course covered about five miles, they report. JOURNAL OF WILDLIFE MANAGEMENT (July).

Science News Letter, August 18, 1951

CHEMISTRY

Energy Tossed Between Separated Molecules

► ENERGY can be passed between the molecules over relatively long distances very much as a fast basket ball is passed. This discovery has been made by Drs. Margaret M. Moodie and C. Reid of the University of British Columbia's department of chemistry (JOURNAL OF CHEMICAL PHYSICS, July).

Extremely efficient transfer of energy occurs when two chemicals are dissolved in a rigid glassy material and irradiated by light of a wavelength absorbed by one of the substances, but not by the other or the material in which they are dissolved.

This phenomenon takes place when the material which picks up the energy is in the form of microcrystals rather than being dissolved.

In the discovery experiment anthracene emitted light, the energy of which was transferred to microcrystals of naphthacene, suspended in a glass of ether-isopentane-alcohol.

The scientists believe that the energy transfer which was a thousand times more efficient than when both substances are dissolved is either because the absorbing molecules have become lined up with the orientation of the glass, or that it is a phenomenon of the surface of the microcrystals themselves.

Such energy transfers are very important in the respiration process in living animals and in the process of photosynthesis by which the sunlight's energy is captured by the green plant. The discovery which has just been made may throw light on these two processes.

Science News Letter, August 18, 1951

INVENTION

Bathroom Cabinet Gives Inner Cabinet and Shelf

► SOMETHING NEW in a bathroom cabinet for shaving and cosmetic materials is provided in an arrangement which brought George Wise, Washington, D. C., patent 2,561,681. It might be described as a cabinet within a cabinet. When the downward-opening front is opened it forms a convenient shelf and it also pulls the inner cabinet out so that contents are easily reached.

Science News Letter, August 18, 1951

IN SCIENCE

MEDICINE

Muscle Relaxing Drug Helps Lockjaw Victims

► THREE SMALL boys with lockjaw, or tetanus, have been helped to recover by the synthetic muscle relaxing drug, mephenesin. The cases are reported by Drs. Truett C. Boles and James H. Smith of the Jackson Memorial Hospital, Miami, in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (Aug. 4).

The boys were eight, six and two and one-half years old. One had stepped on a splinter. The others had each gotten a bad cut on the knee. None of them had had tetanus toxoid or any other immunizing "shots" before the accidents.

Tetanus antitoxin was given in each case to counteract the effect of the tetanus germs which cause lockjaw. The mephenesin was given to overcome the rigid, spastic state of the muscles. Instead of giving it by injection into veins or muscles, it was given through a plastic stomach tube. Results were "almost dramatic," the doctors report. The patients were very quickly able to take fluids by mouth, to open their jaws and eat and chew. Relaxation of all but the abdominal muscles was quickly attained. All three children recovered completely.

Giving the drug by mouth, the doctors believe, has definite advantages in this type of case.

Mephenesin is sold under the trade names Tolserol and Myanesin.

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PLANT PATHOLOGY

Sweet Gum Trees Dying Mysteriously

► A POPULAR shade tree in the Washington, D. C., area, the sweet gum, is threatened with total destruction by a mysterious disease.

It takes the disease about two years to kill a tree, and of 3,000 sweet gums observed in the immediate area, 45% have so far been attacked. A virus is probably responsible for the destruction, though the exact cause is still a mystery, Dr. Paul R. Miller of the Department of Agriculture's Bureau of Plant Industry, Beltsville, Md., states.

The disease attacks the small branch tips and proceeds toward the main trunk. Trees affected shed their leaves by midsummer their first afflicted year, are dead by midsummer of the second. Muriel J. O'Brien is working with Dr. Miller to isolate the responsible agent and to try to find out how it spreads.

Science News Letter, August 18, 1951

CE FIELDS

SURGERY

Operation for Hiccup Saves Heart Patient

➤ WHEN A patient with the kind of heart disease called coronary thrombosis gets a bad attack of hiccups, his life may be in danger. If the hiccups go on, he is worried and frightened and may die of exhaustion.

A 70-year-old man was saved from such a death by a 2:30 a.m. operation, done at the bedside because the patient was too weak to be moved to the operating room. The case is reported by Drs. Samuel H. Rubin, Louis F. Albright, Paul K. Bornstein and David Schwimmer of New York. (JOURNAL, AMERICAN MEDICAL ASSOCIATION, Aug. 11).

The life-saving operation, in which the phrenic nerve to the diaphragm was crushed, was performed by Dr. Charles P. Bailey and his associate, Dr. Robert P. Glover, who were called in from Hahnemann Medical College, Philadelphia, to Fitkin Memorial Hospital, Neptune, N. J., where the patient was.

Science News Letter, August 18, 1951

AERONAUTICS

Hot-Nose Turbojet Engine Safe From Icing Problems

➤ CRASHES OF jet planes due to ice formation in the vicinity of the engine air intake, such as recently occurred with a group of eight planes on routine flight in the Midwest, will be prevented by new turbojets with "hot noses" developed by General Electric of Lynn, Mass.

This new engine, one of the most powerful ever designed, has passed all test stages and is ready for mass production. First installations will be in the six-engine, jet-propelled bomber, the Boeing B-47 Stratojet. It will replace the General Electric J-47 engines which are now used in this bomber, the fastest in the world. It was a Boeing Stratojet that crossed the continent in 1949, an air-distance of 2,289 miles, in a non-stop flight of three hours and 46 minutes.

The intake icing problem is solved with this new engine by hot air from the turbojet compressor which is fed into the hollow parts of the nose. The heat is sufficient to prevent the formation of ice crystals.

In addition, the air inlet screen, designed to keep foreign matter from going through the engine on the ground, is retractable in the air to give unobstructed air flow. The screen, which could serve as the foundation of an "ice dam," is retracted soon after the plane is in flight.

The new engine is a version of the older General Electric J-47. Its official designation is the J-47-GE-23, called the "23" for short. Thrust provided by it is over 600 pounds more than its predecessor. It has a lower rate of fuel consumption, is completely de-iced, has a special ignition system which makes possible high altitude starts, and may be equipped with water injection for thrust increase.

Science News Letter, August 18, 1951

DENTISTRY

Fluorides for Mother May Protect Baby's Teeth

➤ THE FIGHT against toothaches and decay is being carried back to the period before birth in studies supported by the Dental Research Institute of the National Institutes of Health.

Sodium fluoride in drinking water is known to provide about 65% protection against tooth decay in children drinking such water continuously from infancy. Whether the same water taken during pregnancy will protect the offspring against tooth decay is to be investigated by Dr. Reuben Feltman of the Passaic General Hospital, Passaic, N. J. Support for this idea comes from surveys in South Africa showing that the baby teeth of children whose mothers had fluorine in drinking water during pregnancy were remarkably free from decay.

Dental defects and susceptibility to tooth decay may develop as a result of diseases during the late stages of pregnancy. Investigation of this possibility will be made by Dr. S. J. Kreshover of the Medical College of Virginia, Richmond, Va., through another of the 25 National Dental Institute grants totalling \$175,878 announced in Washington.

Science News Letter, August 18, 1951

INVENTION

Patented Process Gives High-Grade Soybean Oil

➤ SOYBEAN OIL substantially free of impurities, a product coming into wide uses ranging from foods to paints and plastics, is obtained by a refining process which brought Arnold L. Ayers, Bartlesville, Okla., patent 2,561,330. Rights have been assigned to the Phillips Petroleum Company of the same city. The process can be used for purifying soybean oil obtained from pressing or by use of a solvent.

It is described by the inventor as a two-stage process by which undesirable components of the oil are removed by liquid-liquid extraction from an oil-hydrocarbon solvent mixture with aqueous methanol, followed by a dilute aqueous solution of an alkali metal hydroxide, such as sodium or potassium hydroxide.

Science News Letter, August 18, 1951

TECHNOLOGY

Russians May Have New Machine Rifle in Reserve

➤ WHAT HAPPENED to Russia's Tokarev rifle? It has not shown up during the Korean war.

This is a situation which has American ordnance men puzzled. Perhaps, according to the magazine *ORDNANCE* (July-Aug.) the Russians "have developed this weapon into a machine-rifle and are just waiting for the proper time to spring it on a waiting world."

The Tokarevs were first produced in Russia in 1938 and were modified in 1940 and 1942 when the final form came out. What the magazine calls an "interesting" carbine on the Tokarev system was brought out in limited quantities in 1940.

It is believed that the rifle freezes up in cold weather. However, a frostproof oil was brought out to correct this. American ordnance men say that this freezing-up is not to be sneered at, in view of the fact that American rifles and machine guns, with ordinary lubricants, quit in Korea in cold weather as though soldered up solid.

The non-appearance of the Tokarev rifle has caused considerable speculation in this country, particularly since all the weapons given the North Koreans and Chinese Communists by the Russians have not been second line. Some have been first-grade.

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GENETICS

New Barley Shows Extent of Disease Damage

➤ AGRONOMISTS can now measure disease damage to such crops as barley without establishing chemically protected controls.

This new tool, developed by scientists of the University of California, is known to geneticists as "backcrossing"—a method of transferring a selected character from one variety to another by recurrent crossings to the desirable type.

A spectacular example is a barley known as Atlas 46, derived by backcrossing. It is a disease-resistant form of Atlas, the variety now grown on about 20% of the barley acreage of California. Atlas 46 has been used to measure damage from two of the most destructive barley diseases—powdery mildew and scald.

By comparing yields of the resistant Atlas 46 with those of Atlas, C. W. Schaller of the University of California was able to measure yield losses ranging from 3.8%, for 1949's light infection, to 17.6% in 1947, a year of severe infection.

Similarly, he measured reduction in kernel weights from the effects of both scald and powdery mildew infections.

The use of the resistant variety as a measuring tool points to the economic advantage of replacing presently grown Atlas with Atlas 46. Annual savings to the barley industry might easily run to \$750,000.

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