

OPHTHALMOLOGY

Electronic Magnet to Take Foreign Body From Eyes

► IN THE future, eye specialists may use an electronic magnet to remove bits of some foreign materials that get into eyes.

A device for doing this is now in development at the Army Medical Center, Washington, Col. John H. King announced at the International Congress of Ophthalmology in New York.

The electronic magnet, when perfected, will be used to remove fragments of metals other than iron. The ordinary magnet does not attract silver, aluminum, brass, copper and various other metals.

Eyes penetrated by such substances have generally been lost in spite of strenuous efforts to save them. Such non-iron fragments of metals caused 25% of the eye injuries from foreign objects suffered by soldiers in the Korean war.

The new electronic magnet has not yet been used on human eyes and will not be until it has been made more efficient, Col. King said.

It was developed by a research team consisting of Col. King and Capt. William C. Owens, Drs. Alfred A. J. Den and M. Noel Stow, and Mr. William Vail Lovell of the Lovell Research Laboratory, Sanford, Fla.

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CHEMISTRY

Lightweight Fuels May Solve Smog Problem

► DEVELOP "LIGHTWEIGHT" fuel for our automobiles and we may lick the smog problem in Los Angeles and other large American cities, it is suggested by Dr. G. Ross Robertson, professor of chemistry at the University of California at Los Angeles.

Many motor experts consider it impractical to remove smog-producing chemicals from exhaust gas. A more radical proposal is to redesign the motor fuel to eliminate heavier components, particularly the large amounts of material with molecular weights of 150 to 200.

Such heavy fuel often escapes combustion, Dr. Robertson points out, and is thrown out into the atmosphere in a more or less chemically damaged condition, causing smog.

If motor fuel could be changed to lighter compounds with a molecular weight of 50 to 55, such as are found in butane and propane, the problem might be solved. These fuels could be made to burn efficiently and leave nothing but carbon dioxide and water.

Engineers say that redesign of motors to burn such fuel would not be too much of a problem. A pressure tank to contain the liquid petroleum gas would have to replace present air-vented gasoline tanks.

"The problem of converting gasoline refineries to liquid petroleum gas production would not be simple," Dr. Robertson declared. "Both miles per gallon and miles

per dollar would be seriously involved. But unless exhaust gas can be cleaned up, we may be forced to resort to fuel alteration."

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AERONAUTICS

Helicopters Draw New Passengers

► THE HELICOPTER is whipping up a new clientele for a Belgian airline.

Sabena Belgian Airlines report that 15% of their helicopter passengers have never flown before. Company officials attribute this partly to the helicopter's novelty.

A survey of passengers using the helicopters revealed 60% were flying for their "amusement or pleasure," 56% for "rapidity of connections between cities," 25% for "low flying countryside sightseeing" and seven percent for the "novelty."

The company inaugurated the world's first international helicopter services Sept. 1, 1953, and has lifted nearly 18,000 passengers since then.

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ARCHAEOLOGY

Greenland Whalebone 8,500 Years Old

► A PIECE of whalebone from permanently frozen ground near the U. S. Air Force base at Thule in northwestern Greenland has been dated 8,500 years old with a possible error of 200 years one way or the other.

This is one of the first samples of geological and archaeological interest measured by the new U. S. Geological Survey radiocarbon measurement laboratory. It is reported by Dr. Hans E. Suess in *Science* (Sept. 24).

Science News Letter, October 9, 1954

TECHNOLOGY

Uranium Hunt by Air Is Cheap and Effective

► FLYING prospectors have proved that uranium hunting from the air is a cheap, effective method of finding this valuable A-bomb material.

Airborne surveying of radioactive deposits has yielded millions of dollars worth of uranium, Royal S. Foote, chief of the U. S. Atomic Energy Commission's Geophysical Exploration Branch, told the American Mining Congress in San Francisco.

At a low altitude, outcrops holding as little as one-tenth of one percent uranium in the ore can be spotted if the deposit is several hundred square feet in area, he said. Smaller deposits can be detected if the outcrop contains a higher percentage of uranium.

Between 200 and 500 feet, an airborne survey should show all outcrops having areas larger than 1,000 square feet, but the "grade" of uranium must be not less than two-tenths of a percent.

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IN SCIEN

TECHNOLOGY

Box of Tomato Juice Becomes a Reality

► A HOUSEWIFE can soon ask her grocer for a box of tomato juice.

Tomato juice powder, newest addition to a growing list of fruit juice powders, has been developed by the U. S. Department of Agriculture.

The powder can be quickly restored to liquid tomato juice simply by adding water. It is processed in one of two ways: by vacuum drying the pulp and the liquid separately and then mixing the two powders, or by directly vacuum drying tomato paste.

The saving in storage and freight costs is expected to be responsible for wide civilian and military usage of the new powdered juice.

Paradoxically, there is no saving in making dry tomato juice rather than the present canned juice method. It costs as much to take the water out of the tomatoes for drying as it does to add water to make canned tomato juice.

Science News Letter, October 9, 1954

CHEMISTRY

Polonium and Actinium Isolated as Metals

► TWO METALS seldom or never before seen with human eyes were shown to the American Chemical Society meeting in New York by men who had isolated them.

Metallic polonium and actinium, elements discovered by Mme. Curie and her associates in 1898, were obtained in globules about the size of a grain of table salt. They glow in the dark and would be hot to touch if one dared touch them. This amount represents a struggle against the extreme radioactivity of the metal.

Polonium is especially difficult to obtain because it continuously decomposes the water in which its compounds are dissolved. Its activity, continually giving off hearts of helium atoms, is 5,000 times as great as radium. Polonium, however, does not emit the beta radiation that makes radium useful in treatment of cancer.

Occurring in nature in quantities of less than an ounce in 25,000 tons of ore, the two rare elements are now made in atomic reactors.

The two metals were isolated by chemists at the Mound Laboratory of the Monsanto Chemical Co., Miamisburg, Ohio. Metallic actinium was described by Joseph G. Stites Jr. E. Francis Joy made polonium tetrabromide, and E. Orban and L. S. Brooks described other properties of polonium.

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CE FIELDS

BIOLOGY

Lignin, Found in Trees, Made Synthetically

► **LIGNIN**, A plant substance which makes it hard for a human to make a dent in a tree and which is responsible for the hardness, strength and compactness of wood, has been produced synthetically.

Dr. S. M. Siegel, research fellow in biology at the California Institute of Technology, described the laboratory making of lignin to the American Institute of Biological Sciences meeting in Gainesville, Fla.

The biosynthetic lignin is similar to most natural lignins, and almost identical to the lignin of spruce trees.

In his studies of lignin formation, Dr. Siegel has shown that tissue slices from a variety of plants can transform such compounds as eugenol, an aromatic oil found in cloves, into synthetic lignin when the tissues are supplied with the eugenol and hydrogen peroxide, an oxidizing agent formed naturally by most living cells.

In natural plant growth, lignin has been associated with the aging process. Lignin creates cell walls that are resistant to compression, more watertight, tougher and denser than found in younger shoots. The new artificial lignin possesses the same properties as natural lignin.

Lignin has long been troublesome to the wood pulp industry because it makes up half of the wood and has long been considered as waste material.

In recent years, practical pilot plants have been set up to test the use of lignin as adhesive, plastic, a source of organic chemicals, or to replace carbon black in rubber heels and soles.

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NUTRITION

New Frozen Food Use For Old Oriental Rice

► **WAXY RICE** flour, formerly used only in oriental ceremonial dishes, has solved the problems of frozen and canned pre-cooked food texture.

The discovery that the flour, made from waxy or glutinous rice, improves the stability of these prepared foods was made at the U. S. Department of Agriculture's Western Utilization Research Branch, Albany, Calif.

Frozen cooked foods thickened with ordinary flours, starches or eggs have taken on a curdled look when thawed or heated. Canned foods, thickened in the same manner, tend to become increasingly firm in storage. Use of waxy rice flour, however, prevents this instability in both instances.

It was found that the superiority of waxy

rice flour as a stabilizer in frozen pre-cooked foods is related to the greater spreading out of the starch molecules in waxy cereals than in ordinary cereals.

The U. S. Army Quartermaster Corps has already specified that waxy rice flour be used in all frozen cooked meals containing sauces or gravies purchased for the armed forces.

Recent tests have also shown that the new flour improves the texture of frozen custards, puddings and thickened fillings for cakes and cream puffs.

At the present time, there are more than 50 commercial concerns, as well as the Quartermaster Food and Container Institute that are interested in the unique properties of waxy rice flour.

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GENERAL SCIENCE

Chemical Research Gives \$36 Sales Per Dollar

► **RESEARCH IN** chemical industries induces \$36 for each dollar spent, the American Chemical Society meeting in New York was told.

Dr. R. W. McNamee, chemist-manager of research administration of Union Carbide and Carbon Corporation, New York, reported a study made jointly with L. E. Erlandson, of financial records of research by a group of chemical companies during the last 15 years.

The \$36 for one dollar figure was based on the sales from products of research in the fourth through tenth years after completion of research. Profit before taxes was in excess of \$7.20 for each dollar invested in research.

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CHEMISTRY

Fiber Stretching Gives Clues to New Materials

► **COTTON AND** paper fibers may at times stretch like rubber, and at other times like glass, chemists addressing the American Chemical Society meeting in New York said.

Energy used in stretching the fibers that make up paper and cotton can be measured to give a check on the invisible changes taking place when materials made of these cellulose fibers are treated in manufacturing processes.

Studies of the energy changes when these natural fibers are treated with chemicals help textile scientists develop new fibers whose properties make them more suitable for particular uses. These were reported to the meeting by Dr. Helmut Wakeham of the Textile Research Institute, Princeton, N. J.

How stretching affects the fundamental structure of the cellulose molecule was described by Dr. W. E. Roseveare of the DuPont textile fibers department at Richmond, Va.

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BIOCHEMISTRY

Witch Doctors' Snuff Yields Active Chemical

► A **CHEMICAL** that affects nerves, heart and blood vessels has been extracted from a sleep-inducing snuff used by West Indian witch doctors at the time of Columbus.

The snuff is called cohoba. It comes from the seeds of a mimosa-like tree, *Piptadenia peregrina*. However, the active chemical in it is bufotenine, Dr. Verner L. Stromberg of the National Heart Institute has discovered.

Bufotenine is much like a chemical obtained from the venom of tropical toads. Its effect is something like that of the naturally occurring chemical, serotonin, which constricts blood vessels and speeds the heart rate.

Its effect on heart and blood vessels is being studied at the Heart Institute while scientists at the National Institute of Mental Health probe its effects on nerves and mind.

Dr. Stromberg studied cohoba from seeds obtained by the Department of Agriculture from Las Mesas, Puerto Rico, he reports in the *Journal of the American Chemical Society*.

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MEDICINE

Saliva May Hold Clue To Anti-Cancer Agent

► **SALIVA IN** the human mouth holds a clue to a possible anti-cancer agent, it appears from studies at Ohio State University's College of Dentistry.

By its continuous cleansing action, saliva itself may check cancer-producing agents in the mouth.

Dr. Steve Kolas suggests this on the basis of studies he has just completed. The finding may explain why cancer of the mouth has not increased in the way lung cancer has parallel with the increase in tobacco consumption, he thinks.

Using mice, he applied a cancer-causing chemical to the roof of the mouth of each mouse, letting the chemical spread to other parts of the mouth and face. Six months later, no cancers or other significant changes had developed in the mouths of the mice, but cancers had developed on the skin of the faces.

The continuous cleansing action of the salivary flow, which diluted and removed the cancer-causing chemical at the same time, is, in Dr. Kolas' opinion, the chief reason why no cancers developed in the mouths of the mice.

However, saliva may contain an anti-cancer agent. None has so far been found but Dr. Kolas believes further search should be made. If such an agent exists and can be isolated, it might not only save the lives of the 5,000 to 6,000 Americans who die each year of oral cancer, but might also have wide applications in the continuing fight on all forms of cancer.

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