

TECHNOLOGY

Magnetism Produced In Flexible Plastic

► A FLEXIBLE plastic can be magnetized in any direction and can be chopped into all sizes and shapes without losing its magnetic properties.

Developed by the B. F. Goodrich Company, Akron, Ohio, the plastic is being produced in strips at the rate of more than ten miles a week. The strips are intended for use on refrigerator doors, both to insulate and to keep the doors shut by magnetic attraction.

Robert Shornstheimer, a Goodrich product engineer, said the plastic contains a magnetized metallic powder. He said the magnets are produced by melting a vinyl resin mixed with plasticizers and powder, then extruding the mixture in the desired shape, and finally running the strips through a magnetic field.

The poles, instead of being at the ends of the strips, extend the entire length, the north pole along one edge and the south pole along the other edge. The poles also can be reversed along a single strip at intervals, so that they run north-south, south-north, north-south, etc. Or, as in ordinary magnets, they can be induced at the ends of the strips.

The permanency of the flexible magnet is about twice that of some small metal magnets now in use.

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PUBLIC HEALTH

Polio Virus Widespread Throughout U.S. Now

THE POLIO virus is now widespread in communities throughout the country, a U. S. Public Health Service official said.

Few areas of the country have, so far, escaped the effects of the virus. Paralysis has been reported from the north, south, east and west.

Health officials are concerned most about the preschool children. They are the number one candidates for this crippling summer disease, Dr. Glenn Usher, communicable disease center, told SCIENCE SERVICE.

Studies have shown that the Salk shots do not appear to break the chain of infection from the polio virus. This means that a person can be immunized against polio, yet carry the virus and infect others, some of whom will not be strong enough to build up a natural immunity. Paralysis can then occur.

The virus is usually accidentally swallowed by persons. Then it multiplies in the digestive tract. From there it is passed on in secretions from the nose and mouth or excreted. The virus can even pass from one person to another during a kiss. If a person has the virus in his digestive tract, he will not necessarily have polio, however, Dr. Usher said.

Commenting upon the recent rise in incidence of polio in this country, he explained the following general theory held by many health officials:

Polio hit the country heavily during the ten years prior to 1955. As a result, there was extensive natural immunity to the disease. In the several years since then, however, the Salk shots have not been given to enough people to fill the gap that natural immunity would have filled had the years since 1955 seen more polio.

In other words, a child born in 1955 or thereafter would not have had the opportunity to build up a natural immunity as did her sister who was born in the ten years prior to 1955.

The latest figures reveal that 177 paralytic cases were reported for the week ending July 25, setting the highest record for any week in 1959. The newly reported cases bring to 1,133 the total number of paralytic cases that have occurred this year.

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PHARMACOLOGY

Research Confirms Value Of Honey in Drugs

HONEY, an oldtime home remedy for coughs and colds, may soon find itself mixed with the newest drugs.

The combination means better tasting tonics and wider use of honey, the U. S. Department of Agriculture reported.

Ferrous sulfate sirup, a popular iron tonic, was made with honey as the only flavoring agent. It was stable, "exceptionally palatable," and free of the astringent after-taste characterized by most iron medicines. Medicines in honey preparations settle very slowly and moderate shaking will again distribute the drug throughout the liquid. Vitamin B-2, or riboflavin, is especially stable in honey solutions, the researchers found.

The Philadelphia College of Pharmacy and Science carried out the honey research project under contract to the USDA's Agricultural Research Service.

Science News Letter, August 8, 1959

ORNITHOLOGY

Large Mainland Birds On Tropic Jungle Island

ISLAND LIFE agrees with the birds, they apparently grow larger than their mainland contemporaries.

In a report on the uninhabited Caribbean jungle Isla Escudo de Veraguas, Dr. Alexander Wetmore of the Smithsonian Institution describes three new sub-species of birds. The birds, a blue tanager, a manakin and a tropical wren, are all mainland types apparently isolated on the four-square-mile island for thousands of years.

Although many of the size differences between the two types of birds would be too small for the average person to detect, a difference of 2.5 millimeters in bill length, for example, island birds one-third larger than mainland ones were observed.

Dr. Wetmore also obtained one spiny rat belonging to an unknown species. There are few other mammals, he said, except for wild pigs.

Science News Letter, August 8, 1959

IN SCIENCE

ICHTHYOLOGY

Sharks Trained to Ring Bell for Their Dinner

A LEMON shark is no "lemon" when it comes to ringing the bell for its dinner.

Two captive sharks, a male and a female, were trained to feed at a target which, when pressed, caused a submerged bell to ring. They also learned to press an empty target and return for their food, researcher Eugenie Clark of the Cape Haze Marine Laboratory in Placida, Fla., reports.

After several weeks of getting their food in this way, the sharks "lost interest in food" as winter approached and the water temperature dropped below 24 degrees centigrade. However, when the water temperature rose, after some ten weeks had passed, the sharks readily pressed the target when it was presented to them. They had "remembered" or retained their conditioned responses.

An interesting observation of the sharks' feeding habits is that the female apparently will not press the food-target until the male's initial hunger is satisfied. There is no evidence to explain this, the researcher reports in *Science* (July 24).

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GEOPHYSICS

High H-Bomb Explosions Have Widespread Effects

HYDROGEN bombs exploded high in the atmosphere have an immediate and widespread effect on the earth's magnetic field.

Dr. Hiroshi Maeda of Kyoto University, Kyoto, says he found "marked changes" in records of the magnetic field strength at Honolulu on Aug. 1 and 12, 1958, at times corresponding to high-altitude bomb tests.

These nuclear explosions were conducted in the upper atmosphere over Johnston Island last summer by the United States. Dr. Maeda says other Japanese scientists have found the two test explosions caused disturbances in ionospheric radio propagation, in atmospheric and in the ionosphere.

Dr. Maeda suggests the initial changes in records of the earth's magnetic field at places several hundred miles from the explosion are due to a shock wave having a high velocity, probably greater than a few hundred miles per second, and its ionizing effects. The main changes, occurring later, are due to an increase of electrical currents resulting from increased conductivity caused by ionization by high-velocity particles behind the shock wave.

Studies of these effects should help in understanding the theory of auroras and magnetic storms, Dr. Maeda reports in the *Journal of Geophysical Research* (July).

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E FIELDS

MEDICINE

Acute Heart Attack Can Bring on Peptic Ulcers

YOU CAN GET an ulcer from having a heart attack.

The important point to keep in mind, four researchers report, is that ulcer therapy should seriously be considered for persons who have suffered an acute heart attack.

Clinical studies by these investigators indicate that such heart attacks, known as myocardial infarctions, may be associated with increased gastric secretions. This means that old peptic ulcers can again become troublesome, or that new ones can appear, the doctors report in the *New England Journal of Medicine* (July 30). A peptic ulcer can occur on the mucous membrane of the esophagus, stomach or duodenum. It is caused by the action of the acid gastric juices.

This report does not propose to examine the controversial question of whether peptic ulcers occur more commonly in patients with coronary artery disease than in the general population, the scientists emphasize.

Instead, on the basis of six cases on which their report is based, they write:

"The course of acute myocardial infarction may be suddenly complicated by the development of serious manifestations of active peptic ulceration. . . . That such an association may be more than coincidental, however, is suggested by the occurrence of acute peptic ulceration during a variety of stressful situations."

Thus, anti-coagulants, drugs that delay blood clotting, should be withheld or used with extreme caution, Drs. Joseph C. Shipp, Victor W. Sidel, Robert M. Donaldson Jr. and Seymour J. Gray, all of the Peter Bent Brigham Hospital, Boston, conclude.

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ENGINEERING

Ultrasensitive Radar For Front Line Detection

See Front Cover

RADAR THAT can tell the difference between a WAC and a "GI," as long as they are moving, will soon provide the U.S. Army with a supersensitive detector.

Described as the only ground-to-ground radar that can detect moving targets at long range in fog or darkness, the "movement monitor" can be set up in a front line position in less than one-half hour.

The radar will spot a rolling tank at ten miles or a soldier crawling on the ground two miles away, the U.S. Army announced. It can detect the soldier if any part of his body moves more than one mile an hour.

In one test, under ideal conditions, the set spotted a walking soldier 15 miles away.

The photograph on the cover of this week's SCIENCE NEWS LETTER shows four radarscope graphs. They are, left to right, a train, an automobile, a man walking, and a girl walking.

Each type of target produces a characteristic sound in the radar. An experienced operator can distinguish between the sounds of a walking soldier or those of a jeep. In addition, the operator can watch the set's radarscope and obtain more precise information on a target's position and direction of movement.

The monitor set scans a 30-degree sector of a field. When the operator hears a suspicious motion, he can "zero" in on the target and narrow the radar beam. A tiny indicator light mounted under a map of the area shows the target's position while numerical dials give it with greater exactness.

Developed jointly by the U.S. Army Signal Research and Development Laboratory at Fort Monmouth, N. J., and the Hazeltine Corporation of Little Neck, N. Y., the radar is a part of an overall program under the direction of the U.S. Combat Surveillance Agency.

The portable shelter containing the controls and displays and a separate antenna mounted inside a five-foot plastic bubble on a 25-foot pole can be set up quickly at a remote but strategic position. It can be transported by helicopter or on a small two-wheeled trailer.

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ELECTRONICS

New Method Detects Silent Satellites

A METHOD for detecting satellites whose radio transmitters are no longer operating is now available. It was devised by three "ham" radio operators.

They found that each satellite builds and carries along with it a cloud of ionized particles, and that this cloud can be detected by listening to disturbances it causes in the radio transmissions of WWV. WWV is the National Bureau of Standards' broadcast station carrying standard time signals at various frequencies.

Two very different types of disturbances at a frequency of 10 megacycles were found by Clayt Roberts, Paul Kirchner and Dave Bray of the General Electric Company's Advanced Electronics Center, Cornell University, Ithaca, N. Y. Another effect was found at the 20 megacycle frequency, a fast flutter, similar to the familiar airplane flutter seen on TV screens.

The scientists have dubbed the two effects at 10 megacycles, "Doppler" and "Rumble." Both are audible radio tones, they report in *QST* (August), official journal for amateur radio fans.

The ionospheric effects have been recorded from the two sections of Sputnik III, and from the lost satellite, Discoverer I. Their project is being continued using GE facilities.

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EVOLUTION

Lizards in Mink Throw Light on Evolution

MORE KNOWLEDGE on how fur and feathers originated in the distant evolutionary past is being provided by lizards wearing mink and chinchilla coats.

Dr. Raymond Cowles, zoologist at the University of California, Los Angeles, has devised experiments with fur-swathed desert lizards known as chuckwallas to demonstrate an insulating effect against vital heat absorption by cold-blooded animals.

Results of the experiments suggest that furs and feathers developed in an age when temperatures were warm and steadily rising rather than in a cold age as has been thought by most authorities in the field.

Cold-blooded animals, having no internal heat-producing activity such as the warm-bloods, draw their heat from their environment, Dr. Cowles points out. Insulating furs retard heat absorption. Hence a cold climate would not favor survival of fur-bearing (and thus insulated) reptiles.

Experiments with desert lizards have suggested that the skin temperature-regulating mechanisms which help control inflow and outflow of heat may have developed in ancient amphibians and then been passed on to reptiles and subsequently mammals.

Modern reptiles use the skin vascular system as a heat absorbing medium from which sun-warmed blood is transported via veins to internal tissue. In warm-blooded animals the same type of mechanism has a reversed effect with blood carried to the skin surface radiating heat to a normally cooler environment.

While there is fossil evidence that feathers developed before the main age of reptiles, no fossil evidence of furs has been found, Dr. Cowles points out.

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MINERALOGY

Search for Microbes That Will Refine Oil

ATTEMPTS to use microscopic organisms to refine oil are being made at Louisiana State University. If the research is successful, it could lead to radical changes in certain oil processing methods.

The research is being directed by Dr. Raymond J. Strawinski, who several years ago devised an inexpensive method of locating oil deposits with the aid of microbes.

Just as the human body acts as a catalyst to change the chemical structure of foods, he reported, certain microorganisms should exist that can change hydrocarbon-like structures to purify petroleum fractions. It is hoped that the catalytic life processes of some organisms might act on certain chemical structures in oil to change or remove them.

Esso Standard Oil Company has granted Dr. Strawinski more than \$27,000 for his microbe research. The grant will finance two years of study by Dr. Strawinski and two doctoral candidates at LSU.

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