

Iron Particles Patch Brain 'Blowouts'

► **PATCHING** "blowouts" in blood vessels of the brain with tiny particles of iron has shown promise in preliminary research.

The new technique was developed by a team of surgeons from the University of California at Los Angeles, and Harbor General Hospital. They are Drs. John F. Alksne, Aaron Fingerhut and Robert W. Rand.

The procedure is used to treat a condition known as a brain aneurysm, which arises as the result of a weak spot in a blood vessel wall. The vessel balloons at the site of the weakness, and the balloon bursts much like a blowout in the inner tube of a tire. The resultant hemorrhage, or stroke, can lead to serious brain damage unless the aneurysm is repaired.

Conventional surgical treatment involves clips to repair the ruptured blood vessel, but this is sometimes difficult in certain areas of the brain.

The new procedure employs tiny iron spheres injected directly into the aneurysm by a needle passed through a magnetic probe. The magnetic probe causes the iron spheres to clump, forming a clot that seals off the rupture. In time, the clot is incorporated in scar tissue creating a permanent seal.

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CHEMISTRY

Clue Believed Found To Catalyst Mystery

► **SCIENTISTS** may be a step closer to solving the mystery of how catalysts work—a vital discovery that could save millions of dollars a year for industry.

Researchers at the Massachusetts Institute of Technology have observed in their study with a germanium-nickel catalyst that tiny variations in the movement of electrons across the interface between the nickel and germanium greatly increased catalytic activity.

Drs. Max C. Deibert and Raymond F. Baddour, working under a National Science Foundation grant, discovered that "catalytic activity increased by as much as a factor of four when calculations indicated a variation of electron transfer across the interface of a single electron per 10,000 nickel atoms in the catalyst layer." They found the catalyst's activity by measuring the decomposition rate of formic acid to hydrogen and carbon dioxide in the presence of the catalyst.

Catalysts are substances which, when added to certain raw materials, trigger the reaction and also enable reactions to take place that would otherwise be impractical or difficult. The catalysts themselves are not used up in the process.

They are an essential material in many industries and are widely used

in the manufacture of pharmaceuticals, man-made fibers, gasoline, fertilizer and many other products. Each year many millions of dollars are spent in the search for new and better catalysts. In spite of this, exactly how these substances perform their functions is not known. This discovery would mean that much of the time and money spent in trial and error and guesswork to find suitable catalysts would be eliminated.

Industrial catalysts usually are metals deposited onto porous, high-surface-area pellets of some supporting materials, such as the catalyst nickel deposited on germanium, used in this research.

Drs. Deibert and Baddour did not suggest that the highly expensive germanium might become a common industrial support material for catalytic reactors. The metal was useful in their investigations because its exact electron properties were known, permitting them to make accurate theoretical analyses.

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DENTISTRY

Protruding Teeth Corrected by Surgery

► **A SWISS** dental surgeon is fracturing jaws to do for adults what braces do for children.

The protruding teeth of adults can be corrected by surgery, not only improving their appearance, but preventing the loss of teeth from the gum disease pyorrhea, which often stems from severe overbite.

Overbite prevents a person from biting or tearing his food, and his gums suffer from lack of stimulation, a Conference on Comprehensive Oral Surgery was told in Washington, D.C.

Children from the ages of eight to 15 can have their bite corrected by braces—a combination of bands and wires which influence growth into proper angles—but after potential growth stops, there is little help from the method.

Prof. Hugo Obwegeser of the Dental Institute, University of Zurich, Switzerland, explained his technique of moving intact parts of the bone with teeth included.

"Essentially what we have done is fracture the jaw, move it to a new position and wire it," Dr. Obwegeser told his colleagues.

The upper and lower jaws are maintained in a closed position for four to six weeks. Patients must feed themselves through straws, but are able to continue with their daily jobs.

Other corrective surgery performed by the Swiss professor includes repositioning the protruding jaw and reshaping the narrow chin of the so-called "bird face."

The conference was sponsored by the American Society of Oral Surgeons and the U.S. Army Dental Corps at the Walter Reed Army Medical Center.

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IN SCIENCE

GEOPHYSICS

Moon Model Could Aid Surveyor Studies

► **INFORMATION** about the moon from the Surveyor spacecraft, while vital, is only skin deep. But a lunar model built on earth, based on Surveyor's pictures, could reveal features two feet down in the moon's "soil," a scientist believes.

The scientist is Dr. Ronald Scott of California Institute of Technology, Pasadena, who is studying the material of the moon through Surveyor's findings.

The impressions stirred up by Surveyor's pads when it landed were only about three-quarters of an inch deep, reported Dr. Scott in Washington, D.C. This reveals something about the surface—it is apparently granular, almost soil-like—but little about the layers beneath.

If, however, a lunar model were built from the photos, and then altered until a simulated Surveyor landing produced exactly the same effects as did the real one, the resulting model could be analyzed to a depth of as much as two feet.

Such a model may not be necessary, however. There are at least six Surveyors left in the program, several of which will be equipped with automatic chemical laboratories that can drill down below the surface, recover samples and analyze them, transmitting the data to earth.

Several lunar models do exist, but for purposes other than analyzing the surface. Instead, they are based on "informed guesses" at the nature of the moon, and are being used to test astronaut equipment such as spacesuits and rock-sampling apparatus.

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GEOLOGY

Water Dating Method Not Affected by Tests

► **A METHOD** of dating ground water that is not affected by the radioactivity resulting from bomb tests is now being studied by scientists at the Tata Institute of Fundamental Research in Bombay.

Radioactive silicon 32 is the element used to determine the ages of ground water up to 1,500 years old. There is no method now known for dating water aged from only a few to several hundred years.

Details on the dating of several rivers and lakes in India with silicon 32 are reported in *Nature*, 210:478, 1966.

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E FIELDS

GEOPHYSICS

Nuclear Fallout Reaches Southern Hemisphere

➤ **RADIOACTIVE** debris from nuclear tests, whether U.S., Russian, French or Chinese, crosses the equator and falls out in the Southern Hemisphere, a scientist has reported.

Dr. R. N. Woodward of the Institute of Nuclear Sciences, Private Bag, Lower Hutt, New Zealand, has detected barium 140 after virtually every atomic or nuclear explosion since 1961. The only exceptions are the low-yield nuclear explosions by the Russians in the Semipalatinsk area, from which no debris was spotted.

It is not known exactly how this transfer of air mass from the Northern to the Southern Hemisphere occurs, Dr. Woodward reported in *Nature*, 210:1244, 1966.

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MEDICINE

Moonshiners Get Gout From Lead Poisoning

➤ **HEAVY DRINKERS** of moonshine liquor can be punished with gout.

Lead solder used to put together illicit stills can lead to gout caused by lead poisoning, the American Rheumatism Association meeting in Denver was told.

What happens is that "wild" yeast contaminants in sour mash produce acetic acid, which when hot "leaches out" the lead to form lead acetate. Thus moonshine stills, which remain popular in various parts of the United States, carry the penalty of saturnine gout, produced by the absorption of lead into the system.

The relationship between lead intoxication and gout was appreciated early in the 18th century, Dr. Gene V. Ball of the University of Alabama Medical Center, Birmingham, said, but the concept seems to have fallen into disrepute.

Within the past five years, however, the medical records of 220 patients in the medical center showed a suspicious diagnosis of lead poisoning. Notations on the majority of records included the information that these patients were heavy moonshine drinkers.

Of 34 patients seen by Dr. Ball during the past year, about half were thought to have gout related to lead intoxication. All but one were moonshine drinkers, the exception being a house painter using lead paints. In patients with lead intoxication, gout was present when they were less than 40 years old. By contrast, the average age

of gout onset without lead poisoning is 54.

Just how lead may affect the kidney to cause the high concentrations of uric acid in the blood of these patients will be studied by Dr. Ball, who said he also expects to study further cases of saturnine gout, inasmuch as moonshine remains popular.

He pointed out that moonshine is not just manufactured in the South. The three largest stills seized during the past year were in the New York area, and industrial New England was the location of a number of other confiscated stills. A total of 7,437 illicit stills was seized in 1965.

Other investigators, therefore, might do well to be on the lookout for gout cases caused by lead poisoning, Dr. Ball said.

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NEUROLOGY

British Migraine Trust Seeks Headache Cure

➤ **CURING** the agonizing pain of migraine headache is the goal of the British Migraine Trust, whose chairman is Lord Brain.

Launching an appeal for two million dollars, Lord Brain said a cure "is well within the bounds of modern medicine."

He told the Royal College of Physicians, London, that with "the application of electronics, radioisotopes, and other revolutionary developments, the prospects of securing results in this complex field have become, for the first time, more definite.

As many as two million persons in Britain suffer from migraine attacks. Migraine is not a killer, but it is an agonizing and recurrent ailment that is generally disabling and may be more common in some sections of the population.

Although the Migraine Trust has been sponsoring research for some time, some aspects of the work are hampered because patients can rarely be studied during an attack.

It is therefore intended to establish a migraine in-patient unit, the first of its kind, at the National Hospital, London.

The unit will be equipped to carry out complete metabolic studies on all patients, and to study brain blood-flow and other activity. Over a period of 10 years, this alone will cost about one million dollars.

Other research projects include surveys of the incidence of the disease to determine the number of sufferers and also to discover whether there is a regional pattern in the distribution; psychological studies to discover whether sufferers fit into any personality pattern; an investigation of possible relationships between migraine and other disorders; and research into pain.

The Medical Research Council is co-operating in the research.

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PSYCHIATRY

New African Drug Aids Psychotherapy

➤ **A NEW HALLUCINOGENIC** drug has been found more effective for psychotherapy than LSD.

It is the alkaloid, ibogaine, derived from a plant growing in the Belgian Congo. A South American psychiatrist, Dr. Claudio Naranjo, professor of anthropological medicine at the School of Medicine, University of Chile at Santiago, gave the first report of results in humans.

He reported to an LSD conference in San Francisco, sponsored by the extension division of the University of California, on 15 cases he has treated with ibogaine in Chile since last December.

Dr. Naranjo said ibogaine gives a person access to his unconscious while leaving him in control of his actions and mental processes. The drugged man relives experiences and emotions from childhood, often in the form of exotic, dream-like images. With the therapist's help, he is able to find the personal significance of these hallucinations, much as he does with dreams in traditional, non-drug therapy.

One difference between LSD and ibogaine lies in the patient's greater accessibility. In some cases LSD may send him so "far out," he will not or cannot respond to the therapist.

But by using ibogaine, the therapist manipulates and probes directly into a patient's difficulties.

In short, it is more compatible with intellectual activity than is LSD, making "an ongoing dialog" easier to maintain. Ibogaine also produces a positive desire in the subject to express himself, in contrast to LSD.

Dr. Naranjo said he found that yage, a drug used by South American Indians, has the same out-going effect as ibogaine.

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CONSERVATION

Research Grant Given To Save Polar Bear

➤ **THE GREAT** white bear of the Arctic will be better protected and perhaps saved from extinction by a research grant from the Conservation Foundation.

The grant will be used this summer by Dr. Richard A. Cooley of the University of Washington in an effort to accelerate research on the polar bear and promote international cooperation to halt the decline of the population.

The polar bear inhabits five nations in the frigid regions around the Arctic—the United States, Canada, Denmark, Norway and the Soviet Union. In recent years, the bear's numbers have been declining because of the increasing number of hunters.

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