

## MEDICINE

## Non-Physician Scientist To Receive AMA Award

► PRACTICING PHYSICIANS do not always approve of the research done by Ph.D.'s. But when the American Medical Association meets this month, honor and gratitude will go to Dr. John F. Enders of Harvard University and the Children's Medical Center, Boston.

The Scientific Achievement Award, a gold medal, has been given only once before, although it was established in 1960 for non-physician scientists, to be bestowed on special occasions for outstanding work.

The pioneering work of John F. Enders, Ph.D., led to the vaccines against poliomyelitis and measles, both now perfected for use on patients in doctors' offices.

Dr. Enders, in the AIBS Bulletin 13:30, 1963, stated that he does not anticipate further great expansion of vaccines, however.

"Immunization has proved highly effective," Dr. Enders said, "against diseases such as smallpox, yellow fever and poliomyelitis." He also said vaccines either had been found or soon would be for measles (licensed last March), mumps and chickenpox, as well as infectious hepatitis, "if reliable techniques for its cultivation become available."

These diseases are caused by only one antigenic type, or a very few types, Dr. Enders said, and the natural immunity is of long duration. The problems seem insurmountable because of the difficulties involved in attempting to vaccinate whole populations against the "ever-swelling numbers" of distinct viruses responsible for diseases of the respiratory, gastrointestinal and nervous systems.

"Possibly, then," Dr. Enders concluded, "investigations in this area will be directed principally to the improvement of the vaccines now available, or soon to become available, in respect to their potency, purity and safety."

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## PUBLIC SAFETY

## Playing With Park Bears Dangerous

► FEED a friendly bear in a National Park, and you may be signing his death warrant.

Being friendly with a wild teddy bear can bring immediate disaster, warn officials of the Department of Interior's National Park Service. You may get hurt, your car may get damaged—and the bear may have to be destroyed for his behavior.

Now that warm weather is upon us, bears and humans come out of winter quarters to stare at each other in the great natural reserves and parks throughout the nation.

People try to lure wild animals closer by tempting them with food from the picnic basket. They also tease or annoy them.

Bears tend to become demoralized in a short time when they are permitted to share human food, report park officials.

They become more dangerous than wild, free-living bears because they look to humans for food handouts, and resent it when food is not furnished.

If a bear develops a nasty temper too often from being refused food, or being annoyed or teased, he must be killed to protect visitors.

A few simple rules can prevent accidents resulting from overfriendliness of humans and bears. These rules include:

1. Never feed, molest or try to make friends with a wild animal, especially a bear.

2. Keep car windows and doors closed when you park.

3. Keep all food locked in car trunks or containers, and dispose of garbage promptly. The smell of food brings bears in search.

4. If any bear or wild animal continues to wander around your camp area or scares you, report immediately to a Park Ranger.

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## BIOCHEMISTRY

## Four Roles Found for Vitamin B-12 Coenzymes

► FOUR NEW ROLES in biological metabolism were reported for the coenzyme form of vitamin B-12 during the Conference on Vitamin B-12 Coenzymes sponsored by the New York Academy of Sciences at New York.

The coenzyme form of vitamin B-12 is the "active" and naturally occurring form of the antipernicious anemia vitamin. This vitamin, found in meats and certain fermented foods, is synthesized only by bacteria and is not produced by any animal or plant. The normal daily requirement for humans is less than 0.000001 gram.

One of the new roles found for the B-12 coenzymes is its importance in the fixation of nitrogen by plants, which was described by Prof. H. J. Evans and Dr. Mark Kliewer of Oregon State University. The plants they worked with included those which are important in replenishing the nitrogen content of soil.

Dr. Thressa C. Stadtman of the National Heart Institute, Bethesda, Md., reported a second new role, that B-12 coenzymes are important in the biological formation of methane.

Dr. Earl Stadtman of the National Heart Institute found that the B-12 coenzymes are important in a new mechanism for the biological formation of acetic acid.

The fourth new importance of vitamin B-12 coenzymes is in the formation of methionine, one of the essential amino acids for growth. Dr. John Guest of the University of Oxford, England, Prof. J. M. Buchanan and colleagues of the Massachusetts Institute of Technology, and workers from the National Heart Institute independently confirmed the importance of B-12 coenzymes in methionine formation in both bacterial and animal metabolism.

Other reports at the conference included a description of several methods for the chemical synthesis of the coenzyme from the vitamin.

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# IN SCIEN

## SPACE

## "Needles" Spread Out In Precise Orbit

► THE 400 MILLION copper "needles" are now spreading out across our skies only because they reached a precise, predetermined orbit.

If they had been launched too high or too low, they would still be encased in a compact 90-pound "package."

The command signal to disperse the tiny copper dipoles was radioed in code from earth only when the package reached the right orbit and the right inclination angle—2,000 miles high, in a path that passes close to the North and South Poles, at an inclination of about 87 degrees, or almost at right angles to the equator.

This precise orbit was selected in order to limit the lifetime of the fine needles to five years at the most. At this height and inclination, the radiation pressure from the sun's rays will push the filaments out of orbit, and they will be burned up harmlessly in the earth's atmosphere.

The band of copper fibers, launched May 12, is now more than 5,000 miles long and is continuing to spread at about 800 to 1,000 miles a day. After some 60 days after launching, the two ends of the long, thin cloud will be joined together in a continuous belt around the earth.

The belt will then be about five miles wide, 25 miles thick and about 40,000 miles in circumference. Each individual fiber will be about a quarter of a mile away from its neighbor, traveling at its own velocity in its own orbit.

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## PUBLIC HEALTH

## Home Canners Warned Of Botulism Danger

► THE PRESSURE COOKING method is the only safe process to use when meats and vegetables are canned at home, food authorities are warning as a result of the recent botulism scare over improperly canned tuna fish now removed from sale.

Boiling and preserving by the open kettle method will not destroy the botulinus germs that cause the deadly poisons.

Deaths from botulism are infrequent in this country. In 1961 there were only ten reported to the U.S. Public Health Service's mortality analysis division, and in 1960 there were only 12.

The deaths of two Detroit women from eating canned tuna fish led to barring all canned tuna with the embossed codes WY2 and WY3, which were from the same lot.

Buyers are also warned against all defective cans, whatever the food. This means dented cans as well as those that are bulging, leaking, have swells or split seams.

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# CE FIELDS

## SURGERY

### Freezing Peptic Ulcers Should Precede Surgery

► ALL PEPTIC ULCER patients, unless they have an obstruction, should be treated by the new stomach-freezing method before any attempt at surgery is made, the Clinical Congress of Abdominal Surgeons meeting in New York was told.

One of the first physicians to use the freezing procedure in private practice, Dr. Calvin Reed Brown of Covina, Calif., said none of his patients had any bad effects, although more than one freezing has been necessary for several.

In the freeze treatment, patients swallow a balloon through which cooled alcohol is circulated for 45 minutes. Freezing the stomach destroys cells that secrete pepsin and acids, both of which are barriers to healing. The technique is not extremely uncomfortable for most patients.

Dr. Brown said long-term results of the method cannot be known yet because it is new, but it is expected that the acid reduction may last as long as six months to a year, during which time the ulcer will heal. If the patient follows a moderately rigid dietary regime after that, he should have no trouble.

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## CHEMISTRY

### New Synthetic Metal Similar to Tin Produced

► A NEW SYNTHETIC metal similar to tin at low temperatures but so unstable that it turns to powder at room temperatures has been produced in the laboratories of Dr. Willard F. Libby, Nobel Prize chemist, at the University of California, Los Angeles.

Working with graduate student A. J. Darnell, Prof. Libby has obtained a total of approximately 30 grams of the synthetic metal, indium antimonide.

This is the first time that the metallic compound has been produced at normal pressures. It is stored in liquid nitrogen at a temperature of 325 degrees below zero Fahrenheit. When exposed to normal room temperatures, the material explosively changes to its non-metallic form.

The compound was first noted in this new state under high pressure by H. G. Drickamer and co-workers at the University of Illinois and by UCLA scientists in 1961. The UCLA group was the first to speculate on its metallic nature. Before Dr. Libby's work, the compound was a laboratory curiosity, produced under pressures of 25,000 atmospheres.

In late 1962 Dr. Libby and Mr. Darnell developed a procedure for obtaining the metallic forms of indium antimonide at low pressures by cooling the material after conversion and while still under pressure.

The new synthetic metal is similar to tin in many respects. It is, however, stronger than tin. One characteristic of indium antimonide is that at very low temperatures, as when cooled in liquid helium, it is a superconductor. This is a special class of materials not resistant to the flow of electricity at extremely low temperatures, with great promise in electronics.

The superconductivity was demonstrated in work by Prof. Hans Bommel and B. Tittmann of UCLA.

A whole new class of metallic compounds, synthetic in nature, can now be predicted using similar methods of production. It is expected that some compounds in this class may be much harder than diamonds—as indium antimonide is harder than tin.

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## PSYCHOLOGY

### U.S. Image Not Damaged By Birmingham Riots

► BIRMINGHAM race riots do not necessarily spoil the U. S. image abroad.

Criticism of the U. S. on the specific issue of segregation should not be confused with criticism of the U. S. as a whole, Dr. Bryant M. Wedge, director of the Institute for the Study of National Behavior, Princeton, N. J., told SCIENCE SERVICE.

Although reports of riots and violence are picked up and circulated, the issue of race relations is often recognized as "an understandable social problem," Dr. Wedge said.

Latin American and African countries where criticism of U. S. race relations runs high are each "afflicted with class problems attached to color," Dr. Wedge said. They can separate the problem from the broader picture.

Latin Americans and Africans are struck by the lack of freedom in Russia, Dr. Wedge explained. U. S. riots, he said, "indicate the presence of freedom." Propaganda statements by those unfriendly to American interests do not fool them.

Paradoxically, those who criticize most have a "positive image" of the U. S., Dr. Wedge found. His poll of 100 Department of State escort-interpreters about the way foreign visitors perceive the U. S. showed issues can be kept separate. Dr. Wedge said criticism, used by local politicians to enforce their own points of view, does not in the long run damage the U. S. image.

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## TECHNOLOGY

### Ultrasonic Instrument Aids Ear Surgery

► AN ULTRASONIC instrument for use by surgeons in destroying the vestibular end organ of the labyrinth of the ear has been developed by a British firm.

Members of the physics department of Bristol (England) General Hospital designed the device in conjunction with the ear, nose and throat department of the hospital. In treating Meniere's disease a prototype has been employed in more than 50 successful operations.

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## SOCIOLOGY

### Charge Outside Agitation To Deny Own Guilt

► STRONG DEFENSE mechanisms are at work in charges by Alabamians that racial turmoil in Birmingham is caused by outside agitators.

Intimations of Communist interference are part of "a standard routine that one hears in any area of the South," an Atlanta, Ga., psychiatrist told SCIENCE SERVICE.

The accusations are "based on ignorance and denial," Dr. Robert Coles, research consultant to the Southern Regional Council, Atlanta, said. White officials have no idea how the Negro feels, he said, nor will they talk with the Negro to find out what he wants. Instead, the accusers try "not to look at the situation." Denying their own responsibility, they attempt to place the blame on others.

If Southern officials faced the situation, Dr. Coles said, they would see the Negro will no longer put up with the sense of inferiority forced upon him, and he is now "willing and able" to do something about it.

Negroes in Birmingham will never be the same, Dr. Coles explained, for they have shown Birmingham and themselves that they no longer have to put up with inequality. Their self-respect has been "enormously enhanced" by their efforts, he said.

The schoolchildren also feel more self-respect, Dr. Coles said. The demonstrations are not hurting them psychologically. Dr. Coles, who studied the New Orleans and Atlanta children spearheading school desegregation, called Alabama officials' concern for the children's mental health "nonsense."

There will be more Birminghams in the years ahead, Dr. Coles predicted, as Negro hostility toward the whites for his inferior treatment comes to the surface.

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## GENERAL SCIENCE

### More Research Dollars, More New Developments

► THE MORE MONEY spent on research and development by industrial firms, the larger the number of new products, processes and inventions produced.

A study made for the National Science Foundation by Prof. Edwin Mansfield of the Carnegie Institute of Technology, Pittsburgh, shows that the long-run benefits of research are closely related to the size of research and development expenditures when firms of the same size are compared. Increases in research expenditures by the larger firms resulted in more than proportionate increases in inventive output.

When more money was spent on innovations, the average annual growth rate in capacity was several percentage points higher over a period of five to ten years after the innovation was produced.

New processes were most likely to be introduced when industries were operating at about 75% of capacity.

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