

MEDICINE

Weak Bacteria May Stop Staphylococcus Infection

► PREVENTION of staph infections in hospitals and households is foreseen with the discovery that a weak strain of the bacteria that cause these infections can be used to inoculate against them.

The bacterium, *Staphylococcus aureus*, causes boils and abscesses on victims. Drs. Marvin Boris, New York, Thomas F. Sellers Jr., Atlanta, Heinz F. Eichenwald, Dallas, John C. Ribble, New York, and Henry R. Shinefield, New York, reported this in American Journal of Diseases of Children, Sept. 1964.

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GENERAL SCIENCE

Cultural Heritage Lost In Too-Rapid Change

► ALTHOUGH scientific growth and development are important to any nation, too-rapid change can result in a loss of cultural heritage.

These thoughts were expressed by Dr. Walsh McDermott of Cornell University Medical College, speaking at the opening session of a conference on Science and Development in Chile, sponsored by the Chilean Embassy and the U. S. National Academy of Sciences, Washington, D.C.

In some countries, Dr. McDermott said, things are changing so rapidly that "a father's whole experience is without meaning for his son."

One of the most significant scientific achievements of our time, he said, is that man is now able to influence all of the three levels of transmission from generation to generation: (1) genes, the lowest level, which can be affected by radiation; (2) the human being before birth, who even then is susceptible to drugs such as thalidomide; and (3) cultural environment, the always-changing reflection of the times.

On the other hand, Dr. McDermott disagreed with those who decry the logic of building nuclear reactors in underdeveloped countries still suffering from basic problems such as poor education and malnutrition. It is unrealistic, he said, to feel that we must first eliminate one social problem before we are allowed to begin solving another.

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ENGINEERING

Copper Supply Can Meet Future Needs

► COPPER has a shining future, but it will be slow digging in the uranium and oil shale industries for the next few years.

Mining experts made these predictions at the American Institute of Chemical Engineers meeting in Las Vegas.

Copper, which has been found with Egyptian tools and pottery more than 14,000 years old, has a reserve supply "sufficient" to meet the demands of the world's industrial economy for the foreseeable future, reported

Dr. James D. Forrester, dean of the College of Mines and director of the Arizona Bureau of Mines, University of Arizona, Tucson.

Since much copper, the only metal common in the pure or "native" stage, is industrially reused as scrap or secondary metal in the United States, Dr. Forrester predicts a "fortunate future" for the copper industry.

In the 11 western states the total value of minerals produced in 1963 exceeded \$4 billion. Copper amounted to more than \$686 million or about 16% of that total.

The near future may not be so rosy for the uranium and oil shale industries.

The uranium industry, celebrating its 21st birthday this year, "faces a limited market" for the next 10 years or more, reported John T. Sherman of Atomic Industrial Forum, New York City. Mr. Sherman predicted that domestic sales of uranium will drop to around one million dollars a year in 1969 and 1970 "and probably still lower in 1971 and 1972."

The uranium industry is now in a period of transition from public to private ownership, but it is estimated that it will take some five to 15 years before the nation's need for uranium increases. By the mid-1970s, however, the free world's market should "rise sufficiently to support a healthy industry," Mr. Sherman predicted.

In spite of enormous known reserves of oil shale, a number of legal, economic, political and technical problems will continue to plague the development of an oil shale industry, reported R. E. Johnson of Plains Exploration Company, Denver.

The big stumbling block has been the Federal Government, he said. Since passage of the Mineral Leasing Law in 1920, "no leases have been issued for oil shale."

Although in two Colorado counties alone there are an estimated 1.3 million million barrels of oil shale, production is not expected to exceed two million barrels a day by 1984.

Oil shale is actually magnesium marlstone rock, which under destructive distillation by heat yields kerogen. Kerogen resembles thick oil and can be distilled into products similar to petroleum.

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SURGERY

Boxing Rules Cut Injuries Due to Kidney Punches

► ATHLETE'S KIDNEY occurs not only in boxers, but also in swimmers and trackmen and football, basketball and hockey players.

In fact, the rate of major injury to a boxer's kidney is extremely low, said Dr. A. Harry Kleiman of New York. This is due to rules that bar kidney punches. Repeated episodes of minor injury to the kidneys of boxers, however, may lead to healing with a scar formation and defect.

While external blows can cause ruptures of delicate veins in the kidney, stress can produce "elaboration" of an enzyme, hormone or toxic substance, Dr. Kleiman told the North American Federation of the International College of Surgeons in Chicago.

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MEDICINE

Better Control Seen For Venereal Disease

► HOPE FOR CONTROL of venereal disease, which includes syphilis, gonorrhea and chancroid, is seen by Dr. Wilbur E. Deacon, director of the Venereal Disease Research Laboratory of the Communicable Disease Center in Atlanta, Ga.

Dr. Deacon received a \$2,500 award and a silver plaque in New York for his work on the Fluorescent Treponemal Antibody (FTA) test. The award, called the Kimble Methodology Award, is made annually by the Conference of State and Provincial Public Health Laboratory Directors.

Dr. Deacon's FTA test is now widely used both in this country and overseas to identify syphilis quickly. He also has done extensive work on *Hemophilus ducreyi*, the agent causing chancroid, an infection of the genitals.

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GENETICS

Cholesterol Similarities Shown in Study of Twins

► THE IDEA that cholesterol levels in the body are largely a matter of heredity has been substantiated by a study of twins, three researchers reported to the 92nd annual meeting of the American Public Health Association.

Another hypothesis, that cholesterol levels depend upon sex-linked genes, was not supported by the findings. Sex-linked genes are those located in the sex chromosomes of both males and females.

Drs. Merton S. Honeyman, Henry Eisenberg and Franklin M. Foote, all of the Connecticut State Department of Health, Hartford, reported the study in New York.

To determine the role heredity plays in cholesterol levels, the researchers made blood tests on pairs of twins of different ages. The parents and children of these twins, when available, were also given these tests.

Results indicated that identical twins had significantly smaller cholesterol differences between them than fraternal twins.

There was also little difference in cholesterol levels between two twins whether they lived together or apart, indicating that heredity more than environment determines cholesterol levels in humans, the scientists said.

The researchers also found correlations between father and child cholesterol levels when comparing parents with their children. There was no such correlation between mother and child, however. This indicates that cholesterol level is probably not sex-linked.

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CE FIELDS

SPACE TECHNOLOGY

Huge Antenna Could Spot Marble 1,000 Miles Away

See Front Cover

► ON HAYSTACK HILL, Tyngsboro, Mass., there is a 350,000-pound dish capable of detecting a sphere the size of a marble 1,000 miles out in space.

The "dish" is actually a huge, 120-foot radio antenna, designed to carry out communications experiments begun by "little" 60-foot dishes as part of Project Haystack.

Seen on this week's front cover is a photograph taken from underneath the dish.

To get a proper perspective of the picture, hold the magazine over your head with the binding to the left. You are now looking up past the dish, which points to the left, into the 150-foot "radome" that protects it.

The "Haystack" of the project is outer space, and the giant dish, which functions as both a transmitter and a receiver, is looking for needles. The "needles" are a belt of copper fibers out in space, tiny dipole satellites placed in orbit by the United States.

The 175 tons of aluminum in the dish were formed by Aluminum Company of America into a honeycomb sandwich with a tubular backup structure, designed to allow the extremely fine adjustments necessary for maintaining high accuracy over the whole 11,000-square-foot surface.

Primarily a research facility, the Haystack antenna will provide experience and information to help develop large, ground-based transmitting and receiving equipment for use in earth-girdling communications satellite systems.

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GEODESY

Bermuda Gone North Satellites Discover

► BERMUDA IS NOT where we thought it was, according to a pair of satellites.

The Bermuda Islands are 220 feet farther north and 105 feet farther west than the last survey, in 1959, had indicated. At least those are the results of a series of simultaneous photographs of the Echo I and II balloon satellites, taken from above Bermuda and points in Maryland and Florida.

A number of surveys have been made of the Islands since the British Admiralty made the first astronomical check of their position in the 19th century. When the Admiralty rechecked its figures from a new astronomical position in 1937, the location of the Islands was found to be different.

During World War II, the U.S. Navy wanted to establish military and naval bases on the Bermuda Islands. Together with the Coast and Geodetic Survey, it made still more exacting measurements, this time from

two locations at once. However, the two sets of measurements gave different results. Therefore, the Navy arbitrarily adopted the average of the two positions.

This position was called the Bermuda 1943 Datum, and was subsequently used by surveyors determining the Islands' relationship to points on the North American continent. This was fine for 14 years.

In 1957 the Naval Oceanographic Office performed various experiments in submarine gravity. These resulted in the Bermuda 1957 Datum, according to which the Islands were 100 feet south and 525 feet west of their 1943 position.

Two years later, in August of 1959, the Air Force got into the act with simultaneous observations from Massachusetts, Virginia and Bermuda of high-altitude flares. These "two-dimensional" studies moved the island group back to the north again, 220 feet, and 60 feet farther west.

Enter the satellites. Using a system known as satellite geodesy, the Coast and Geodetic Survey took photographs of the sun reflecting off the shiny surfaces of Echos I and II.

"Three-dimensional" measurements such as these offer greatly increased accuracy over earlier methods, and have resulted in the Bermuda Islands' current "official" position, 340 feet north and 690 feet west of the Bermuda 1943 Datum.

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ORNITHOLOGY

Birds Are 'Picky' About Taking Baths

► BIRDS are particular creatures when it comes to taking baths, an amateur ornithologist has found.

Martins Slessers of Suitland, Md., has recorded on film in a 2,500-hour study more than 40 species of birds bathing in all seasons.

The most popular places for birds to bathe are in areas where dense thickets surround shallow spring water gurgling over miniature waterfalls. During the winter, these spots are particularly attractive because many other places, where water is slower moving, have frozen over.

Birds are also particular in the ways they bathe. Most species, including robins and sparrows, will wade into the water, cautiously get their heads and limbs wet, and finally lower their bodies into the water.

Mr. Slessers said others birds such as vireos chickadees prefer not to pussyfoot around. They simply find a favorite branch on a nearby thicket and use it as a diving board. Still another way birds bathe themselves is by floating on top of the water. The mourning dove and at times also the tufted titmouse, for example, take their baths this way.

One of the most interesting features of bird bathing is the way that birds rapidly roll their bodies once they are in the water. These motions are so rapid that an ordinary movie camera cannot record them. The rolling motions serve not only to bathe the birds, but also to keep them physically fit, Mr. Slessers said.

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MEDICINE

Allergy-Caused Sniffles Continue Through Winter

► THE "HAYFEVER" SEASON caused by pollens may be over for some allergic persons in the North, but pollens continue till November in some parts of the South.

Moreover, allergic rhinitis, which is a better name for inflammation of the nasal membranes, can continue the year round. "Hayfever" is really a misnomer that got started in England because victims sneezed especially during the haying season.

Turning on the hot-air heating system at the beginning of cool fall days can bring on an attack, and a humidifier may help. Dog and cat danders and exposure to other animals may also cause weeping and sneezing.

Feathers in pillows or wool in blankets are other offending allergens that can be removed from the allergic person's surroundings.

Injections are available for all allergies, and if a person cannot change his occupation of veterinarian, farmer, jockey or worker in an animal laboratory, he may get over his reactions by taking shots.

The treatment of chronic allergic rhinitis is frequently frustrating because no one treatment is likely to produce dramatic and permanent relief of symptoms.

Dr. Samuel O. Freedman of McGill University Medical Clinic, Montreal General Hospital, advises a variety of treatments including shots and drugs.

Most patients will show some response to antihistamines taken by mouth, Dr. Freedman said in the Canadian Medical Association Journal, 91:602, 1964. Some drugs have serious side effects, however, and because allergic rhinitis is not life-threatening, such drugs should be avoided.

A moderately potent antihistamine is chlorpheniramine, Dr. Freedman said. This drug, which also has been used in treating peptic ulcer, can be given as an eight-milligram prolonged-action tablet three times daily.

Side effects of drowsiness are somewhat less than in more potent antihistamines such as Benadryl.

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GEOLOGY

Blasts in Lake Superior Help Study Earth's Crust

► GEOLOGISTS from the Department of the Interior's Geological Survey, with the assistance of the Coast Guard Cutter WOODRUSH and a Navy Demolitions Team have set off chemical explosives at depths of 390 to 600 feet in Lake Superior at points 65 miles north of Ironwood, Mich.

For five successive days, daily charges ranged progressively from 2,000 to 20,000 pounds.

Geologists hope to obtain a "profile" of a portion of the earth's crust and upper mantle from Minnesota to Arizona by studying the shock waves resulting from the explosions.

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