

OCEANOGRAPHY

**Ocean Floor Pictured
20,000 Feet Under Sea**

➤ TWENTY THOUSAND FEET under the sea an electronic device is "photographing" the ocean floor for a shipboard television.

This new sonar system "sees" with sound by bouncing a beam of high-frequency sound waves against the ocean bottom. As the beam is reflected back to the system, sharp, clear pictures of its contours are produced on a television screen. A more permanent record is made at the same time on a moving roll of sensitive paper.

Developed by Westinghouse Electric Corporation, the system will greatly aid geologists, oceanographers and others interested in a detailed picture of the ocean floor.

• Science News Letter, 85:72 Feb. 1, 1964

BIOTECHNOLOGY

**Laser Helps Biologist See
Deeper Than Microscope**

➤ A HIGHLY INTENSIFIED beam of light called a laser is helping biologists to probe deeper than with the microscope.

By focusing a conventional laser through a microscope alone, a scientist can simultaneously analyze ten or more elements in any living material in one-hundredth of a second, three Boston scientists reported in *Science*, 142:236, 1963.

As the laser light beam is pointed through a microscope, it changes the basic atomic elements in every living thing to gas vapor, and the activated gases are then sparked between carbon electrodes.

The gases thus excited emit light waves of radiant energies arranged in order of wavelength. The resultant light is then recorded photographically or photoelectrically, permitting instant analysis of the elements.

This practical method of analysis has great possibilities for use in intracellular probes and analysis from frozen sections, Drs. Robert C. Rosan, Mary K. Healy and William F. McNary Jr. of Boston University Medical Center reported.

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ENGINEERING

**Don't Blame Battery
When Car Won't Start**

➤ DO NOT BE too quick to blame that battery when your car sputters and refuses to start.

More often than not, your maintenance habits are at fault, two research engineers charged at the Automotive Engineering Congress and Exposition in Detroit.

Surveys of more than 13,900 automobiles in the U.S. and Canada or one out of every 5,000 cars in these two countries, revealed that poor maintenance habits on the part of the average motorist were responsible for a failure to start.

Because of some estimated 31 million automobile engines that failed to start in 1962, researchers of the Champion Spark

Plug Company armed themselves with oscilloscopes and survey forms, then interviewed drivers at gasoline stations all over the United States. No models older than 1954 were considered. The results were amazing.

1. Measurement of the available voltage from the ignition system revealed that at least three out of ten vehicles needed ignition system service. In six out of ten cars the spark plugs needed service or replacement.

2. The southern states had poorer maintenance practices and a higher percentage of unsatisfactory spark plugs than northern states.

3. About three out of ten motorists experienced hard starting in winter due to spark plug condition. Battery age had little effect.

4. Improper cooling system maintenance contributed to approximately one out of seven motorists having overheated engines.

5. Six out of ten motorists interviewed planned a spring tune-up and only four out of ten carried it through. Five out of ten planned a fall tune-up and fewer than four out of ten had this done.

The results of this survey were reported by James F. Hoffman, a research staff engineer, and Richard C. Teasel, director of research, both with the Champion Spark Plug Company.

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AGRICULTURE

**Space-Age Agriculture
Geared to Benefit Man**

➤ THE CHICKEN of tomorrow may lay eggs as the farmer orders.

Cows may produce as much milk as the dairyman can sell—no more, no less.

Other farm animals of the future will conform to fit man's needs, not their own or nature's. Swine will be mated and produce their offspring when the farmer finds it most convenient, and so will cattle. Pork and beef will have the precise lean-to-fat ratio that people like best.

These serviceable animals may result from research with metabolic regulators to modify animal gland functions, said Dr. Robert H. White-Stevens of the agricultural division of the American Cyanamid Company.

This research is an exceedingly complex field, he told the 12th annual meeting of the Agricultural Research Institute in Washington, D. C.

Chemicals are modernizing agriculture to fit the Space Age in other ways, he said.

New discoveries in the pesticide field include chemical compounds that interrupt the maturing process of insects and keep them at the harmless larval stage. Other chemicals stop an insect from eating.

Farmers of the future will pay more attention to the chemistry of their soil, Dr. White-Stevens said.

Agricultural chemicals will continue to help man wage war against a wide array of marauding insects, diseases and predators which threaten food supplies. These enemies of man include some 3,000 major species of insects, fungus diseases, weeds and rodents.

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IN SCIEN

PUBLIC HEALTH

**U.S. Navy Helps Fight
Saigon Cholera Epidemic**

➤ A U.S. NAVY medical team with western know-how has moved into Saigon to stop the spread of the cholera epidemic threatening South Vietnam.

At the request of the South Vietnamese Government, Capt. Robert A. Phillips and his co-workers have gone to Saigon from Tapei, Formosa.

Some 750,000 residents of the South Vietnam capital city have been given anti-cholera shots, and those already affected with the disease are being treated with antibiotics, intravenous fluids to restore fluid and electrolyte balance, along with the more recently developed combination of glucose, potassium and sodium bicarbonate.

Main cause of the outbreak has been identified as the bacillus called *Vibrio El Tor*, originally thought to be less harmful than the specific *Vibrio cholerae*.

Severe diarrhea and dehydrating fluid loss, with vomiting and abdominal pain are present in cholera, which is caused by contaminated water and foods that have been fertilized with human excreta.

U.S. armed forces and civilian travelers to South Vietnam and other parts of Asia are always protected by anti-cholera shots, but the 20,000 Americans in the epidemic area have been warned to bring their vaccinations up to date and to boil their drinking water.

Before the 19th century, cholera was unknown outside India, authorities report, but from 1817 to 1902 the disease spread to other parts of Asia, to England, Canada and the U.S. Early German settlers in St. Louis before the Civil War suffered from cholera epidemics, and almost all settled parts of this country had their outbreaks.

As late as 1958, after a hiatus, cholera epidemics struck Thailand, Cambodia, Burma, India, East Pakistan and Nepal. Korea and the Philippines were struck after 1960.

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TECHNOLOGY

**Blind Persons Good
Computer Programmers**

➤ A BLIND PERSON may be superior to a sighted person of equal intelligence in planning programs for computers, Dr. Theodor D. Sterling, director of the University Medical Computing Center, Cincinnati, believes.

Obstacles usually faced by the blind have been overcome in a pilot training program, and a full-fledged training program, designed to open many new career opportunities to the talented blind, is beginning at the center this year.

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ICE FIELDS

MEDICINE

Heart Attacks Predicted By X-Raying Arteries

➤ AN X-RAY METHOD called fluoroscopy "sees" inside the coronary arteries supplying the heart muscle and enables a physician to predict which persons are likely to develop a heart attack long before symptoms occur, a Veterans Administration doctor reported in Minneapolis.

An enlarged picture of the new screening method was recorded on movie film. This allowed areas of calcification in the arteries to be spotted, Dr. Joseph Jorgens, chief of radiology service at the Minneapolis VA Hospital, said.

As these areas are often in the same sites as the fatty patches or plaques that mark hardening of the arteries, the radiologist can estimate the extent of hardening.

If the hardening is extensive, persons with this condition are likely to develop heart attacks.

Dr. Jorgens was assisted by Dr. Arthur Lieber, now assistant professor of radiology at the University of Kentucky, Lexington, in performing 2,500 such examinations of the heart within the past six years.

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GEOPHYSICS

Northern Glacier Advancing Rapidly

➤ A RIVER OF ICE is flowing fast on its way to the sea.

The Otto Fiord glacier on the northwest coast of Ellesmere Island, north of Canada, shows signs of "catastrophic" advancement, reports G. Hattersley-Smith of the Geophysics Section of the Defence Research Board in Ottawa. No civilized area lies in its path.

On an airplane flight across the icy area this summer, the geologist noticed a highly disturbed appearance on the lonely rugged glacier. Investigation of air photographs taken in 1950 and 1959 show that the glacier had moved rapidly in this period and had pushed out into the waters of Nansen Sound as a floating tongue, and had broken off to form many icebergs.

Glaciers originate in high frozen lands of perpetual snow, where more snow falls than is melted off. After some snow evaporates or melts, it recrystallizes into compact granular particles which become packed down hard by more falling snow.

Gradually the whole icy mass becomes so heavy that the pressurized snow at the bottom becomes plastic and the glacier begins to slip down the slope.

Valley glaciers have been known to move from less than half an inch to more than 65 feet a day. The rate depends on the particular part of the glacier observed. It varies hourly, daily and with the season.

The Otto Fiord glacier flows down from an elevation of about 5,900 feet, fed from an ice cap which is part of one of the most extensive unbroken areas of land ice in the Canadian Arctic, Mr. Hattersley-Smith said in Nature, Jan. 11, 1964. It flows to sea level in a straight valley about 22 miles long and 2½ to 3 miles wide. Neither the glacier nor the ice cap have been visited from the ground.

Sudden glacier advances are rare here, and no previous record of such an advance has yet been found in the Canadian Arctic.

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MEDICINE

Blood Substance Kills Disease-Causing Fungus

➤ A FUNGUS-KILLING substance has been found in human blood.

Dr. Donald B. Louria, assistant professor of medicine at Cornell University Medical College, told the New York regional meeting of the American College of Physicians that a substance that acts only against *Candida albicans*, a fungus that commonly causes localized infections, has been discovered in the blood of man.

The fungus, in rare cases, may produce a deadly infection that sweeps through the whole body.

The discovery of the blood substance, Dr. Louria said, may answer the question why the fungus produces extensive systemic infections in some and only mild infections in others.

The antifungal substance is almost universally present in the blood of healthy persons from infancy to about age 50. It diminishes some in older people.

Dr. Louria said that the substance seems to be a small protein or a polypeptide, but it has not been exactly defined. It is believed to be an acquired substance similar to an antibody.

A second blood substance acts against the antifungal factor, destroying its activity, he said. The nature of the second substance is not known.

Dr. Louria said it is not known whether heredity determines those who have the antifungal factor, although evidence seems to indicate this.

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TRANSPORTATION

Insulation Protects Railroad Tracks

➤ RAILROADS in the frozen North are not in danger of damage from permafrost, the permanently frozen ground underlying one-fifth of all land on earth, if they are protected with an inexpensive insulation blanket.

Used on Norwegian railroads since 1945, the blanket consists of a dry top layer of gravel and a moist bottom layer of peat, tree bark or discarded railroad ties. This combination holds what heat there is near the surface. By 1970 all Norwegian railroads will be protected against frost-heaving with such blankets.

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PUBLIC HEALTH

Hospitalized Addicts Need Legal Pressure

➤ APPROXIMATELY 74% of the voluntary (non-prisoner) addict patients admitted to the Federal hospital at Lexington, Ky., were discharged against medical advice, a 1960-61 study described in Public Health Reports, 79:13, 1964, showed. Legal pressure was the strongest factor found to influence the addicts to complete treatment.

However, in spite of legal pressure, 43% of 228 patients, all men, studied by Drs. Jerome Levine and Jack J. Monroe left against medical advice.

Addicts recommended for psychotherapy or psychiatric case study, or both, remained for completed hospital treatment in greater proportion than those not recommended. Meaningful relationship with the hospital "therapist" is believed partly influencing the decision to remain, although the researchers said it may be assumed that these patients are selected because they are better motivated for treatment and therefore more likely to stay for the five months required for completed treatment.

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MEDICINE

Severe Childhood Disease Treated With Folic Acid

➤ COOLEY'S ANEMIA, one of the most severe and complex children's blood diseases treated mainly by transfusions, has responded to folic acid treatment in some cases. Folic acid is a normal chemical found in the body.

A team of New York Medical College physicians reported in New York that the folic acid deficiency frequently occurring in patients with Cooley's anemia, also called Mediterranean anemia and thalassemia major, can be managed by folic acid therapy.

Drs. A. Leonard Lohby, Eleanor T. Roth and Jack M. Cooperman reported their limited success with folic acid treatment at a New York Academy of Sciences meeting, held with the Cooley's Anemia Blood and Research Foundation for Children, Inc., Brooklyn, N. Y.

Dr. Frederick Stohlman Jr. of St. Elizabeth's Hospital, Boston, explained that the enzyme responsible for normal synthesis of hemoglobin, the pigment in the red blood cells that carries oxygen to the tissues, is lessened in Cooley's anemia because of a genetic defect.

Thousands of children descended from immigrants from Mediterranean areas have had the disease and been treated for it in the United States. It can affect even third generation children.

Dr. Stohlman explained that the lowered rate of hemoglobin formation by such patients causes a build-up of materials, including iron.

At the same time, low hemoglobin levels and very small red cells exist along with high levels of erythropoietin, a substance that triggers synthesis of the hemoglobin enzyme.

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