

## OCEANOGRAPHY

## Five Men Swim Down To Giant Mountain Peak

### See Front Cover

► FIVE MEN recently swam to the top of a giant mountain.

Difficult? No, not when the mountain top is 120 feet below the ocean surface. The mountain, known as Cobb Seamount, is a steep isolated cone rising nearly 10,000 feet from the ocean floor. It lies in the Pacific, 275 nautical miles west of Grays Harbor, Washington.

The five scuba divers, one of whom is seen on this week's front cover, operating from the University of Washington's oceanographic research vessel, Brown Bear, explored the peak to determine its potential as a base for a radio tower that could transmit scientific data from the high seas. The tower would be the only one of its kind on the oceans.

Results of the trip showed that it will be possible to build a 150-foot open steel tower on a level sheet of bedrock. Most of the tower structure and equipment would be under water, including the power supply, electronic equipment and transmitter to minimize the impact of waves. Only about 30 feet of the tower and the radio antenna would be above the water surface.

• Science News Letter, 88:8 July 3, 1965

## PUBLIC HEALTH

## Heat From Cigarette Affects Smoker's Health

► NEW RESEARCH to control the temperature of cigarette smoke may lead to new tobacco blending that will keep the heat at a point least injurious to the smoker.

Department of Agriculture scientists undertaking the study are not prepared to say that it is a case of the hotter the smoke, the more harmful.

They do say, however, that the smoke is the cause of harmful effects, and that the components of the smoke can be changed by temperature.

"Therefore, there is some temperature point at which the smoke will contain the least harmful ingredients. Our present effort is to find that point."

The study will be done jointly by the Department of Agriculture's Research Service laboratory in Philadelphia and by the Houdry Process and Chemical Company, Marcus Hook, Pa. The Houdry firm, under an \$84,843 grant from the Department, will study chemicals capable of modifying temperatures of burning cigarettes. The research laboratory will use the findings in studies comparing the components of the smoke at varying temperatures.

Representative types of commercial cigarettes will be smoked mechanically under controlled conditions in the company laboratory.

Measurements will be taken of the temperature of the cigarette coal while burning freely, the maximum temperature of the coal reached when the cigarette is

puffed, and the temperature of the smoke coming from the cigarette butt.

Then the scientists will add chemical modifiers to similar cigarettes and try to raise the coal temperature as high as possible without causing the cigarette to burst into flame and to reduce the temperature as low as possible without extinguishing the cigarette.

They will test chemical modifiers already shown to have an effect on burning temperatures and also develop and test new ones.

Work at Houdry will be conducted under the direction of Dr. L. F. Barrington. The ARS representative will be Dr. R. L. Stedman, who heads tobacco investigations at the Philadelphia laboratory.

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## PUBLIC HEALTH

## Supermarkets Enhance The Risk of Infection

► THE DEVELOPMENT of modern food supermarkets serving a large number of people is more likely to cause large outbreaks of infection than small stores or butchers' shops, Dr. William G. Swann, Medical Officer of Health for the Port and City of London, told the Royal Society of Health Congress at Eastbourne.

Dr. Swann said that there is also the added special risk from meat being on display at the counter.

The diversity and quantity of meat served and handled means that the contamination could spread widely through a variety of products by the use of slicing machines or knives for cutting.

The habit of storing unsold portions in a refrigerator during the night also means that various products are cross-infected. They are then redistributed on display counters to incubate at room or warm window temperatures, unless special refrigerated display counters are provided.

There is also the danger of various employees handling different kinds of meat, and some of them even becoming symptomless carriers.

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## AGRICULTURE

## Weed Increases Wheat Growth, Say Scientists

► SEEDS of the cockle weed mixed with wheat grains increased the wheat harvest in some cases by 75%, according to Yugoslav scientists at Belgrad's Scientific Research Institute of Biology.

The cockle, member of the pink family, is a weed with purplish-red blossoms and seeds bearing a poisonous substance saponin, the scientists reported in *Nauka i Zhiznj* (Science and Life), April 1965.

The scientists isolated a very active, unnamed substance from the cockle seeds. One seed contains about three-billionths of an ounce of the substance, reported the scientists who also stated that it takes only about three-hundredths of an ounce to stimulate about two and a half acres of wheat.

• Science News Letter, 88:8 July 3, 1965

# IN SCIENCE

## PUBLIC SAFETY

## Forecast of Lake Surges Now Made Possible

► PREDICTIONS of water surges in the southern basin of Lake Michigan can be made "with high certainty and accuracy."

Although such surges are relatively rare, they can cause many drowning deaths to unaware non-swimmers on the shore. The accurate forecasts are now possible because of the cooperation of many meteorologists at the U.S. Weather Bureau in Chicago and the University of Chicago.

They have devised a system for predicting the sudden rise in lake waters that sometimes occurs when a squall line crosses the southern part of Lake Michigan.

The surge does not occur with the rapidity or power of a breaking water wave created by the wind. Because of this, the threat to life is mainly to non-swimmers, such as fishermen on a pier or breakwater, or children wading or playing at the water's edge.

The surge-forecast system was devised by Drs. George W. Platzman and Shirley M. Irish of the University of Chicago, and Lawrence A. Hughes, formerly of the Weather Bureau's Chicago office and now in Kansas City, Mo., who reported details in *Monthly Weather Review*, 93:275, 282, 292, 1965.

• Science News Letter, 88:8 July 3, 1965

## BIOTECHNOLOGY

## Biomedical Computer Requires Mastering

► THE TIME REQUIRED to learn the computer "languages" and the expense of the machines are keeping many life science investigators from taking advantage of them, a meeting at the New York Academy of Sciences was told.

Some dedicated bioscientists have had to disrupt their research for more than a year in order to master the new technology, Dr. Bruce Waxman of the National Institutes of Health said in his keynote address at the conference on advances in biomedical computer applications.

Many have mastered it, however, he added, and it has proved indispensable in some instances.

Dr. Seymour Pollack of the University of Cincinnati in Ohio said that "after a decade of concerted effort to introduce computers to the life sciences, many competent investigators still process large masses of data on desk calculators, or not at all."

The University of Cincinnati, as well as the National Institutes of Health, the Mayo Clinic and other institutions have developed techniques that can be applied clinically.

The conference is sponsored jointly by the Academy and the Association for Computing Machinery.

• Science News Letter, 88:8 July 3, 1965

# CE FIELDS

## SPACE

### Titan III-C Is Powerful Space Launch Vehicle

► THE MOST POWERFUL space launch vehicle yet assembled, even stronger than the ones that just orbited two astronauts in a Gemini spacecraft, is the Titan III-C rocket, successfully launched June 18.

The III-C is a perfect example of how to build numerous different rockets from a set of interchangeable parts.

First to a two-stage Titan II, was added a special third stage which can be re-started in flight. This package is called the Titan III-A.

Then two solid-propellant booster rockets consisting of five 40-ton, 10½-foot segments were fastened to the sides of the III-A to form III-C. This number can be varied from two to seven for different size payloads. At the bottom of each "tower" of booster segments are two end closures, containing nozzles, shut-off valves, and a substantial amount of propellant of their own.

The Titan III-C is one of the most important launch vehicles in this country's space "arsenal," since it will be used to launch the Air Force's Manned Orbiting Laboratory (MOL) in 1967 or '68.

The side boosters of the modular launch vehicle reach their peak thrust of 2.4 million pounds within three-tenths of a second after the button is pressed.

But the Titan III-C will not be the biggest rocket for long. Just about the time that the MOL is put into orbit (or perhaps before), the huge Saturn V rocket of Project Apollo will make its appearance. It will be two and a half times as powerful as the III-C.

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## PUBLIC HEALTH

### Water From Deep Wells May Need Chlorination

► EVEN CRYSTAL CLEAR drinking water from deep wells may be dangerous and need to be chlorinated. This is the lesson learned from violent gastro-intestinal attacks among thousands of men, women and children in Riverside, Calif., a city of more than 306,000 population. The epidemic has been traced to a system of deep wells, the Public Health Service's Communicable Disease Center reveals in the Morbidity and Mortality weekly report.

The system has never before given signs of contamination, and has been considered so pure that it has not been systematically chlorinated. The water is piped to a reservoir that serves the main part of the city in which the illnesses occurred. Suburban areas with separate water supply have not been affected.

No deaths have been reported but fever cases, mainly among children, have ranged from 102 to 103 degrees, with some going as high as 106. *Salmonella typhi-murium* is the organism responsible. It is a parasite of rodents, especially of mice, causing mouse typhoid and food poisoning in man. In this situation, water alone caused the outbreak. It has now been chlorinated, thus stopping the illnesses.

Numerous blood transfusions were required before the epidemic reached its peak on May 26 after suddenly beginning May 17-19.

• Science News Letter, 88:9 July 3, 1965

## BIOTECHNOLOGY

### X-Ray Equipment Used In Cell Membrane Study

► SPECIAL X-RAY equipment is being used to study the underlying molecular patterns of cell membranes. Known as an X-ray diffractometer, the machine operates on the principle that every type of molecule will scatter X-rays directed at it in a characteristic pattern.

Crystallized groups of molecules are X-rayed from many angles and the diffraction patterns are recorded. Consequently a "picture" of the atomic structure of a typical molecule is determined.

This research is being carried out by Dr. Albert Hybl of the University of Maryland School of Medicine in Baltimore. The molecular mechanisms that control transport of molecules and ions through the surface of cell membranes, and nerve impulse propagation along the cell surface are still major biological mysteries.

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## PHYSIOLOGY

### Electrical Current Relaxes Body Muscles

► ELECTRICAL CURRENT in the body causes muscles to relax.

Prof. Carl F. Cori of Washington University, St. Louis, Mo., reported in Philadelphia that myofibrils, which are ribbon-like filaments packed closely together in a muscle cell, are triggered by electrical current and activated by heat, which regulates energy processes during muscle work and causes relaxation.

The biochemist told the meeting of the American Philosophical Society that most muscle work is done at the expense of carbohydrates. One of the carbohydrates, glycogen, called animal starch, can be used immediately, after which it breaks up.

If enough oxygen is available, the glycogen goes to pyruvate, a salt of pyruvic acid. If no oxygen is available, the pyruvate goes to lactate, an enzyme in the small intestine.

"In either scheme," Dr. Cori explained, "adenosine triphosphate, or ATP, is used during contraction of muscles and is regenerated.

Dr. Cori won the Nobel Prize for Medicine and Physiology jointly with his wife, Gerty Theresa, in 1947. Mrs. Cori died in 1957.

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## VITAL STATISTICS

### Many Industrial Nations Have Falling Birth Rates

► ALTHOUGH BIRTH RATES are decreasing in many of the more industrialized nations, the pattern is not consistent throughout the world.

The birth rate in the United States has been falling moderately, but continuously, since 1957. Canada, Puerto Rico and Argentina have also experienced a downward trend.

The Soviet Union and almost all the European countries within its sphere of influence have likewise reported reductions in the birth rate, Metropolitan Life Insurance Company statisticians reported.

In some Asian countries—especially Taiwan and Malaya—the birth rate has also diminished. However, birth rates in England and Wales have recently exhibited the most rapid rise of 39 countries studied. Italy, Ireland, Sweden and Switzerland are also experiencing increasing birth rates.

It appears that India has no fewer than 18 million births a year, and that the annual number of births in China is even greater, the statisticians said.

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## BIOTECHNOLOGY

### Radio, Neon Can Upset Vital Heart Pacemaker

► WARNINGS to patients wearing certain types of internal heart pacemakers have been sounded. Some types are even sensitive to neon lights six inches away.

If the pacemaker has an electric circuit sensitive to radio-frequency-wave interference, the patient is in danger of death from ventricular fibrillation, a twitching condition of heart muscles preventing coordinated contractions, three researchers reported.

The hazard is most likely to occur when surgical diathermy, or heat, is used in operations for implanting pacemakers, or in any following operation.

The warning comes in the British Medical Journal, June 12, 1965.

"Disasters may also occur with the seemingly innocuous use of short-wave diathermy for treating lesions distant from the heart, such as a painful limb, or when using certain types of ultraviolet-ray apparatus," the investigators said. "There are dangers, too, near a radio transmitting station, or certain types of industrial electronic control equipment."

Safe pacemakers on the market that are free from this dangerous sensitivity include Medtronic, Devices, and Corbin-Farnsworth brands, the researchers have found.

Drs. I. Lichter, J. Borrie and W. M. Miller of Dunedin Hospital and the University of Otago Medical School, Dunedin, New Zealand, reported the findings, which were based on case reports and animal experiments. So far no patient has died.

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