

## METEOROLOGY

**Hurricane Backtracking Does Not Happen Often**

► THE FULL-LOOPED track of Ginny's storm center is unusual for hurricanes.

The seventh hurricane of the year, Ginny whirled harmlessly up the Atlantic Ocean to a point about 100 miles southeast of Cape Hatteras, and then turned back on her tracks toward Cape Canaveral. She then returned north, and finally merged into a large storm over Canada.

This circling in a 500-mile loop is different from the usual pattern of Western Hemisphere hurricanes. They generally take paths moving westward from their birthplace in the tropical seas, then veer northwest, north, and finally turn northeast up the coast of the United States or into the Atlantic Ocean.

In the particular case of Hurricane Ginny, a large mass of cool air came down from Canada, an official of the U.S. Weather Bureau in Washington said. This cool air came across Hudson Bay, then traveled southeast across Maine and eastern New England. Winds on the south edge of this cold air mass blew from the east, tending to steer the giant hurricane southward and westward.

Another hurricane that backtracked from its usual pattern hit the U.S. in 1935. This hurricane formed in the tropical seas, moved westward and northward, then turned and came down from the north to slam into Florida and the Bahamas, taking 19 lives and causing \$5.5 million in damages. It was dubbed with the nickname of the Yankee storm, for in those days the Weather Bureau had not yet established the alphabetical system of naming each hurricane after girls.

• Science News Letter, 84:296 Nov. 9, 1963

## RADIOLOGY

**Mice Bombarded With High-Energy Radiations**

► BECAUSE ASTRONAUTS are likely to be exposed to unknown amounts of radiation in space, mice are being bombarded with some of the highest energy radiations under controlled laboratory conditions.

In an effort to set values at which high-energy beams would be lethal to the mice, scientists subjected them to doses of two billion electron volts (Bev), Dr. John E. Jesseph of Brookhaven National Laboratory reported.

The high-energy beam came from the Brookhaven synchrotron, which is a doughnut-shaped machine that accelerates nuclear particles to high speeds by a system of alternating magnetic and straight sections. The Brookhaven machine is capable of accelerating protons to energies as high as three Bev.

The effect of the dosage on the body tissues of the mice as well as on their whole body responses was observed, Dr. Jesseph told a symposium on Biological Effects of Neutron Radiations in Upton, L. I., N. Y.

All of the mice died from the eleven doses they were given at approximately equal intervals.

Recent rapid advances in space technology have raised serious questions about the amount of dosages from cosmic and solar radiations, Dr. Jesseph stated. Results of these high-energy experiments will help assess the effects of protons upon biological processes. The long-range program also includes examinations of the responses of the central nervous system, including the eye.

Representatives of 18 member countries of the International Atomic Energy Agency attended the symposium, which was the first scientific meeting sponsored by the IAEA in this country. Eighty-two scientists, physicians and administrative officials represented the United States in the five-day meeting.

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## HORTICULTURE

**Rosebushes Tended Now Give More Spring Blooms**

► TRIM, spray and mound your rosebushes after the last rose has bloomed, and you will have many healthy blooms next spring.

A simple three-step system will help the plants to weather damage from freezing temperatures, winds and snow.

1. Trim the stems on hybrid tea roses, grandifloras and floribund roses to at least 18 to 24 inches. Remove all dead wood and dead leaves.

2. Clean and spray the bushes to destroy disease and insects that might carry over through the winter.

3. Mound the soil around the stalks of each plant to a height of eight to ten inches. Use soil from another part of the garden rather than from between the plants.

This advice is given by the office of the All-American Rose Selections in New York to home gardeners in regions where temperatures dip down to 15 degrees Fahrenheit or lower. If regions have really severe winters, with temperatures to zero and below, gardeners are advised to add another two to four inches of mounding, as well as a covering of evergreen, fir or pine boughs.

The cold frosty weather of fall is the best time to plant dormant rose bushes. Warm weather or premature planting may cause buds to break.

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## TECHNOLOGY

**Accurate Base Line Developed for Research**

► AN INSTRUMENTED taped base line, which is accurate to one part in two million, has been established at the Agricultural Research Center Airport, Beltsville, Md., by the U.S. Coast and Geodetic Survey. The line will be used for research and development of electromagnetic distance-measuring equipment by organizations requesting it.

The line is 1,800 meters, or 5,906 feet, long over basically flat terrain. Precise base lines are used to provide scale and geographic positions for reference maps and distances across the country.

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**IN SCIEN**

## PUBLIC HEALTH

**Mercury in House Paint Causes Neuritis Trouble**

► PAINTS containing mercury should be labeled and limited to outdoor use, a team of researchers reported in the New England Journal of Medicine, 269:889, 1963.

A five-year-old boy from New Hampshire, who had helped his mother paint part of the kitchen and bedroom, was brought to Massachusetts General Hospital with acrodynia, a type of peripheral neuritis in which the hands and feet become pinkish red. Acrodynia, called the "pink disease" in medical journals, is a disease of infants all over the world. Since 1948, sensitivity to mercury has been blamed as a cause, but this is believed to be the first time paint has been found to be the source of the trouble.

An organic compound, phenyl mercuric propionate, had been put into the house paint to prevent growth of molds. Mercury was found in the child's urine, a condition that could have been caused either by the child having inhaled the vapor of the paint or eaten it, the researchers said.

Treatment was with n-acetyl-d, 1-penicillamine, which markedly increased the urinary elimination of mercury.

Discovery of mercury in the water-based paint gave a new and potentially common cause for mercury poisoning, the investigators stated.

Drs. Shalom Z. Hirschman and Murray Feingold of Massachusetts General Hospital, and George Boylen, industrial chemist, Massachusetts Institute of Technology, reported the study.

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## NUTRITION

**Monkey Gets Coronary From High Fat Diet**

► FORTY MONTHS of a high fat diet, similar in fat content to that of humans in the United States, caused the death of a female monkey.

She was the first monkey known to die of myocardial infarction—damage to the heart muscle after coronary occlusion, or blocking off of the blood supply.

A Northwestern University team fed the animal a daily diet consisting of 42% butterfat, 43% carbohydrates and 15% protein in addition to 1.5 grams of cholesterol.

The monkey died of a massive heart attack after 40 months.

In the meantime she had developed excess cholesterol in the blood, known as cholesteremia, and yellow fat tumors of the skin and tendons.

Drs. C. Bruce Taylor and George E. Cox, with Dorothy E. Patton, reported the study in Archives of Pathology, 76:66, 1963.

• Science News Letter, 84:296 Nov. 9, 1963

# CE FIELDS

## NATURAL RESOURCES

### Water Problems Due to Man's Use, Not Supply

► THE WATER SUPPLY in the United States is abundant—but man must learn how to use it.

The U.S. total water supply is not decreasing, Charles J. Robinove of the U.S. Geological Survey believes. But man's heedless diversion and consumption is upsetting the balance of the natural water system.

In order to obtain the greatest benefit from our water supply, man must learn to develop its resources in individual areas, he stated in the annual report of the Smithsonian Institution in Washington, D. C.

Each particular area goes through three stages in the development of water resources. First stage is the unplanned use of water, without thought for the future. Second stage begins when low supply or pollution become serious problems. Third stage is when man learns to manage the water supply properly. This includes comprehensive planning and development of an area's water resources to the point where there is enough water for modern man's requirements.

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## MEDICINE

### Modern Math Seen As Disease Fighter

► DOCTORS WHO HELP their children with modern math homework are sharpening powerful tools for their own study of human diseases, Dr. Alvan R. Feinstein of Yale University School of Medicine believes.

A grasp of the new abstract math is as important to today's clinician as an understanding of grammar is to the language student, said Dr. Feinstein, who also is chief of clinical pharmacology at West Haven (Conn.) Veterans Administration Hospital.

"Physicians may be startled to discover that they think in mathematical sets and with symbolic logic," he reported in the *New England Journal of Medicine*, 269:929, 1963. But such thinking occurs every time a doctor makes a medical judgment, he said.

"The physician who has already established a good system of clinical classification and reasoning may suspect that formal mathematical analysis will only bring confusion and esoteric complexity to what he already does well, almost instinctively," Dr. Feinstein granted.

Such an attitude, however, is obsolete with the development of the electronic computer, he said.

The computer, which "thinks" in set theory and algebraic symbolism, offers physicians the potential for rapid, easy correlations of enormous amounts of background information on diseases.

Dr. Feinstein said clinicians should not suspect that attempts to tabulate their methods of reasoning will create "further withdrawal" of the doctor from his patient.

The data needed actually require much more "humanistic attention" than is now given in many medical investigations, he said.

Set theory contemplates collections of objects having common properties, rather than single objects. These collections, called sets, cannot be subjected to the same addition, subtraction, multiplication or division used in the algebra learned by most persons, including doctors.

The laws and methods for manipulating such sets of information are found in Boolean algebra and Venn diagrams, both developed during the latter half of the 19th century and only now finding their way into standard school studies.

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## BIOCHEMISTRY

### Three-Hearted Hagfish Has Valuable Chemical

► A PURIFIED CHEMICAL from the three-hearted primitive hagfish was reported at Los Angeles as holding promise for human heart treatment.

The chemical that acts as the pacemaker for the nerveless hagfish hearts has been isolated and purified, Dr. David Jensen, Scripps Institution of Oceanography of the University of California, La Jolla, told an American Heart Association meeting in Los Angeles. He has named it "eptatretin" after the scientific name of the Pacific hagfish, which is *Eptatretus stoutii*.

In studies on isolated hearts of various species, Dr. Jensen said eptatretin started a spontaneous rhythm beat in quiet bits of heart tissue. It also restored a normal beat to isolated frog hearts that were beating irregularly.

When injected into the veins of dogs, eptatretin could increase heart work, blood pressure and blood flow. Eptatretin is not adrenalin or one of the other "stress" hormones known to improve heart performance, Dr. Jensen said.

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## TECHNOLOGY

### Computer Helps Study Complex Atom Structure

► A U. S. COMPUTER-CONTROLLED system for determining the complex atomic structures of materials was demonstrated to scientists at the International Union of Crystallography in Rome.

In a typical experiment, thousands of measurements were made quickly and automatically on a crystal having the diameter of a hair. The experimental system was developed by International Business Machines Corp. for use in X-ray crystallographic examinations.

Traditionally, scientists have relied on a photographic method coupled with visual judgment and painstaking manual computations for these examinations.

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## STATISTICS

### College Grads Married, Working Two Years Later

► THE MAJORITY of any year's college graduates will be married and employed on a full-time basis two years after they graduate, the National Science Foundation reported.

A survey of some 41,000 who graduated in 1958 showed the majority were already married, most of the marriages having taken place shortly before or after graduation. More than one-third had done some graduate work, although only one-third of these had actually attained an advanced degree.

Three-fourths were full-time employees, the remainder being in the military, still in school or doing housework. Of those employed, the greatest number were serving as teachers—one-fourth of the men and two-thirds of the women—while business, engineering and sales also claimed large percentages of the men.

Almost all of these employed in a professional or semi-professional capacity were working in a field quite closely related to their major in college, and the vast majority of these said that they would choose the same major if given the chance to go back and go through college again.

Most of the employed men worked for private industry, while most women were employed by schools, usually public elementary schools. About 10% of the graduates were working for the government, mostly Federal Government.

Median salaries in most occupations ran from \$5,000 to \$6,000 for men, somewhat lower for women. Earnings were higher for scientists, engineers and business executives, the survey showed.

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## PSYCHOLOGY

### An Only Rat Is a Lonely Rat

► SOLITARY CONFINEMENT makes rats nervous, but those who live in pairs stay normal, a team of Canadian scientists has found.

Studies on more than 350 baby rats by Anita Hatch, Tibor Balazs, G. S. Wiberg and H. C. Grice of the Food and Drug Laboratory, Ottawa, Ontario, revealed disturbances in the single rat.

"At three months the isolated rat is a nervous, aggressive intractable animal," the investigators said. "The tendency to bite is so pronounced that normal handling procedures are not feasible."

The isolated rats also develop "scaly tail" or caudal dermatitis, and disturbances of the endocrine system.

Rats kept in pairs stay normal, however, the investigators reported in *Science*, 142:507, 1963.

The company of other rats helps restore the temperament and body functioning of previously isolated rats, the researchers said. After 19 days of community life, the isolated rat begins to behave normally again.

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