

## ASTRONOMY

## Flash of Novae May Be Due to Action in Cepheids

► NOVAE may owe their sudden flash of brilliance to the union of the small dense cores of Cepheid stars, those variables of the heavens which increase and decrease in brightness with clock-like regularity, according to a theory developed by two British astronomers.

The two center cores whirl around each other within a large, tenuous atmosphere, which cloaks the cores so that the star does not appear double. The cores get closer and closer together until finally they unite into a single body.

At this point some of the stellar material may be thrown out into space in an attempt of the star to restore its stability, Dr. R. A. Lyttleton and F. Hoyle report in the *Monthly Notices of the Royal Astronomical Society* published in London.

As the dense center cores unite, the main body of the star may be torn away and the extremely hot surfaces underneath be exposed. The star would therefore shine for a time with much greater brilliance than its real surface temperature warranted, the Cambridge University astronomers explain.

Novae would be just another stage in the development of these Cepheid variable stars, according to the authors, who think it possible for a star to flare up in brightness enough to be called a nova more than once in its lifetime.

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## PSYCHOLOGY

## Child's Behavior Defects Should Be Corrected Early

► MANY PARENTS make the mistake of expecting school to make over a youngster and enforce the discipline they have neglected or to correct the behavior defects that have developed at home.

If Junior has been extremely sullen, unruly, or given to temper tantrums, or if Sister has been an overly docile child with no playmates or interest in children's games, the advice of a doctor, child psychiatrist or child guidance clinic should be sought. Such abnormal behavior is a sign of emotional difficulty that needs correcting just as much as poor eyesight or impaired hearing. If the trouble is deep-seated and serious, school routine and discipline are not likely to correct it. Instead, the

child may turn truant from school and get into trouble that might bring him into the courts.

Much of the responsibility for the child's ability to handle emotional problems, or lack of such ability, rests on the parents, the way they train him during his early years, and the home environment they provide for him. Schools also have some responsibility in seeing that the needs of the child, especially the teen-age child, are met.

The child from a home shadowed by misery and destitution may go to school hungry in body and insecure and fearful in his mental and emotional life. Even if his home is good in a material way, it may not provide him with a feeling of security and an opportunity to develop his self-confidence. The child who is over-protected by too anxious parents, or neglected by too busy ones, or misunderstood by parents who are careless of his needs may have serious difficulty in adjusting at school.

Scolding, punishments, stricter discipline at home or in school will only make matters worse. Instead, the child should be taken to a doctor or guidance clinic to have the cause of the trouble discovered and corrected.

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## GEOLOGY

## Giant Mud-Crack Patterns Puzzle Geologists

► PUZZLING patterns in the earth, like the polygonal mud-cracks formed when a bare river-bank or pond-bottom dries out but a hundred times larger, have been traced in a playa, or seasonal mud-flat, in the Animas valley in New Mexico by Dr. Walter Lang of the U. S. Geological Survey. (*Science*, Dec. 31, 1943)

Dr. Lang does not suggest what may have been the cause of the curious phenomenon. Ordinary mud-crack polygons are usually eight inches to a foot in diameter, with intervening chinks less than an inch wide. These giant patterns are 80 or 90 feet across, and the cracks that separate them, now filled in, weed-grown, and almost wholly obscured, are about three feet wide, but only an inch or so deep.

From ground level the patterns are practically undiscernible, Dr. Lang states. First knowledge of their existence came from air photographs, and confirmation was obtained by other similar pictures taken at his request by the Army Air Forces.

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# IN SCIEN

## PUBLIC HEALTH

## Birth and Death Rates Increase In 1943

► MARRIAGES and fatal accidents declined, births and deaths increased in the United States during 1943, it appears from the *Statistical Bulletin* (December 1943) issued by the Metropolitan Life Insurance Company.

When all the 1943 babies are finally counted by the Census Bureau, their number will probably be 3,200,000, the largest for any year in the history of the nation.

The war apparently can be credited with the increase in births, decrease in marriages by about 75,000 from the previous year to 1,725,000 in 1943, and the decrease in fatal accidents. The latter numbered about 91,000, which is 2,000 fewer than the previous year. The decrease is due almost entirely to the falling off in deaths in motor vehicle accidents.

The increase in births and birth rate was gratifyingly accompanied by a decrease in infant mortality. The general death rate for 1943 will be about 10.9 per 1,000 population, an increase of only 5% over 1942, which was the best health year on record. A large part of the increase in mortality is the result of a sizable increase in deaths at older ages.

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## AERONAUTICS

## Gyroscope Principle Used To Prevent Plane Spins

► AN INGENIOUS use of the gyroscopic principle, to prevent planes from going into dangerous flat spins, is proposed by J. D. Wilhoit of Chicago and N. F. Huber of Louisville. Anyone who has ever played with a toy gyroscope knows how difficult it is to push such a fast-spinning wheel out of its original position. The two inventors convert the landing-wheels of a plane into gyroscopes by attaching motors to rotate them rapidly in the reverse of their usual direction. This, they claim, tends to get the spin-threatened plane out of its dangerous position. Their invention has been granted patent No. 2,338,699.

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# CE FIELDS

## ENGINEERING

## Edison Medal Awarded Dr. Vannevar Bush

► THE EDISON MEDAL, one of the highest honors in the field of electrical science and engineering, has been awarded to Dr. Vannevar Bush, president of the Carnegie Institution of Washington and director of the Office of Scientific Research and Development of the U. S. Office of Emergency Management.

The 1943 award was given to Dr. Bush "for his contribution to the advancement of electrical engineering, particularly through the development of new applications of mathematics to engineering problems, and for his eminent service to the nation in guiding the war research program."

The Edison Medal, founded in honor of Thomas A. Edison, is awarded annually. Formal presentation will take place at the meeting of the American Institute of Electrical Engineers on Jan. 26.

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## ENGINEERING

## Washington Scientists Oppose Dam Project

► PROPOSALS to build a high dam across the Potomac above Washington, due to be launched in Congress soon, are encountering the hostility of scientists in Washington, even in advance of their formal presentation. Latest to join the ranks of the opposition is the Biological Society of Washington, which has passed a set of resolutions condemning the scheme not only because the impounded waters would drown out the best nature preserve and recreation area in the Washington area, but also because the dam would constitute a military menace of the worst kind.

Calling attention to the devastation wrought in the Ruhr valley by the blasting of the Moeche and Eder dams last May, the resolution points out that the mass of water which would be loosed by the breaking of a dam in the Potomac gorge would surge over practically all government buildings except those on top of Capitol Hill, as well as the White House, the Navy Yard, the Pentagon

Building, the National Airport and the Army and Navy airfields situated near the river. If the wrecking of one industrial valley in Germany was worth the gamble of a few dozen planes, it is argued, the chance to do such vast damage to the very center of power in this country would be worth the stake of a hundred, or even a thousand, of the bigger, longer-ranged bombers which can be expected in any possible future war.

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## AGRICULTURE

## Cold Winter Winds Kill Enemies of Stored Grain

► COLD winter winds spell doom for potential attackers of stored grain, scientists of the U. S. Department of Agriculture report.

Few insect eggs or other forms of insect life, enemies of the granary, can survive low winter temperatures. And, as grain is an excellent insulator, even the summer heat takes a long time in making its way into the main body of the grain. The autumn chill usually arrives before any harm can be done, the entomologists explain.

To make the most of this natural refrigeration, they recommend painting the outer surfaces of granaries and grain tanks white in order to reflect the sunlight and absorb a minimum of heat.

Mild winters in the South make the problem much more difficult in that area. Granary enemies must be attacked in the balmy climates by means of fumigation, oiling or heating.

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## ORDNANCE

## Gyroscope-Controlled Glider Torpedo Invented

► A GYROSCOPE-controlled glider torpedo is the subject of patent No. 2,339,011, granted to H. A. Gurney of Encino, Calif. Once launched, automatic controls take over and hold the winged missile on a true line against the enemy ship or other target.

A feature of the torpedo is its suspension beneath the carrying plane in such a manner that its wings provide the necessary lift during flight. This, the inventor claims, will enable light, fast planes to carry relatively heavy explosive missiles into action, and be free to function as fighters as soon as they have released them.

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## BOTANY

## Russian Plant Scientist Honored by Americans

► A NOTED Russian research worker in plant physiology, Prof. N. G. Cholodny of the now war-battered University of Kiev, has been voted a new honor by his American colleagues, in the award of the Charles Reid Barnes Life Membership in the American Society of Plant Physiologists. This award, given only once every five years, always goes to some outstanding foreign plant physiologist.

Prof. Cholodny's investigations have been principally on the reasons why roots go down and stems go up in response to the stimulation of gravity. They have involved the study of plant hormones or chemical messengers, which are formed in one part of the plant and transported to the growing zones, there to produce changes in rates and direction of growth.

At the same time, the Society's awards committee voted American life membership to Dr. W. W. Thomas of Pennsylvania State College, who has done outstanding work on mineral nutrition of plants, which is basic to a more accurate and economic adjustment of fertilizer supplies.

Announcement of the awards was made by the chairman of the committee, Prof. R. B. Harvey of the University of Minnesota.

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## ENGINEERING

## Water Injection Method Conserves Reservoir Oil

► WATER can be used to conserve oil by means of a newly developed procedure described by W. L. Horner and D. R. Snow of the Barnsdall Oil Company at a meeting of the American Petroleum Institute in Chicago. By injecting water into underground oil reservoirs as withdrawals are made, the speakers explained, the original oil pressure is kept up to par.

Both newly discovered and partly depleted oil pools may use this method of maintaining underground pressure, providing that reservoir conditions are such that artificial water drive can be applied, the speakers added. Water injection has been used only on wells that are growing old; the method has hitherto not been considered suitable for pools in early stages of production.

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