

## OBSTETRICS

**Most of Maternal Deaths Found to be Preventable**

**N**EARLY two-thirds of the mothers dying in childbirth could have been saved if they had had proper care, a committee of the New York Academy of Medicine has found after a three-year survey. Physicians were held responsible for three-fifths of the preventable deaths. The patients themselves were responsible for more than a third of these deaths and midwives for about two in every hundred. Lack of judgment, lack of skill or careless inattention to the demands of the case were faults of the physicians. The patients' fault was failure to take advantage of facilities at hand for safeguarding them.

The committee believes that the number of deaths can be reduced by reducing the amount of surgical interference during birth. Surgical procedures are resorted to four or five times oftener than actually necessary. The death rate is five times as high as in spontaneous births.

Comparing the number of deaths of hospital births with home births, the committee found that the increase in hospitalization failed to reduce sickness and deaths as much as had been hoped for. However, it was observed that generally only normal, uncomplicated births take place in the home.

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## ASTROPHYSICS

**Most of Atmosphere Lost When Earth Was Young**

**C**OMPARED with the totally airless, arid moon, the earth is richly endowed with atmosphere; nevertheless the air and clouds it has are a mere remnant of its original birthright. So declared Prof. Henry Norris Russell, Princeton astronomer, who reported before the National Academy of Sciences on researches he conducted jointly with Dr. Donald H. Menzel of Harvard College Observatory.

"There is a fairly general agreement of cosmic and terrestrial abundances of metallic elements, but a large discrepancy in the abundances of the permanent gases, in particular hydrogen, helium, nitrogen and neon," Prof. Russell told the Academicians. "The obvious inference is that the earth has lost most of these gases initially present, as the moon has lost its atmosphere.

"An examination of the conditions of escape shows that this could have occurred only if the original temperature of the earth were very high, 5000 degrees Centigrade or greater. The cooling would have been very rapid and the conclusion seems unavoidable that most of the loss occurred during the first few years if not the first few days of the planet's independent existence, with the loss of hydrogen practically immediate. For substances such as water and carbon dioxide, which may enter into the composition of molten magma, no difficulty arises."

With the earth as cool as it is now, no atom can escape for temperature reasons alone, Prof. Russell continued. But electrically excited oxygen atoms colliding with hydrogen and helium atoms could impart to the latter velocities to enable them to escape from the earth's grip. That such excited atoms exist is shown by certain lines in the spectrum of the aurora; so it is possible that the earth may still be losing a little of its atmosphere.

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## PSYCHOLOGY

**Brain Behind Temples Directs Many Activities**

**W**HEN Paderewski ripples his fingers over the keys, when the massed thousands in the stands sway their bodies in unison with the gyrations of the cheer leaders, when you yourself perspire or blush, it is one definite area on the surface of the fore-brain that is responsible for all these varied activities. Skill with the fingers, major postural adjustments of the body, and the regulation of such involuntary actions as sweating and blood-vessel adjustment, have been traced to that part of the brain just behind the temples, by Prof. J. F. Fulton of Yale University, who reported his studies before the National Academy of Sciences.

Prof. Fulton conducted experiments on monkeys and chimpanzees, partly by directly stimulating the brain part concerned, known as the "pre-motor area," and partly by studying the defects in the activities of animals in which this area had been damaged. Since the brains of monkeys and apes are similar to those of human beings in a general sort of way, it is legitimate to infer that this little patch of the brain has the same functions in ourselves as it proved to have in Prof. Fulton's animals.

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**IN SCIENCE**

## PHYSIOLOGY

**Same Chemical Structure Affects Body Differently**

**W**IDELY different effects may be brought about in the body by substances having the same chemical structure, is the suggestion found in research just reported by Drs. J. W. Cook and C. L. Hewett, of the Cancer Hospital Research Institute, and Prof. E. C. Dodds and W. Lawson, of the Courtauld Institute of Biochemistry, to the Royal Society of London.

An effect similar to that caused by a female sex hormone may be produced in animals by substances known to chemists as condensed carbon ring compounds. Some of these are structurally similar to and others differ considerably from the oestrus-producing hormone itself. Two of the compounds, in addition to their ability to awaken sexual desire in animals, are potent cancer-producing substances, and one of them is calciferol, crystalline form of rickets-preventing vitamin D.

These synthetic compounds with the widely different effects on the body changed the male plumage of capons to female plumage when injected into the bird's body, Drs. Cook, Dodds and A. Greenwood reported.

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## ANATOMY

**Eyeball Does Not Pivot Exactly on Its Center**

**T**HE HUMAN eyeball does not pivot itself exactly on its center as has always been supposed, Prof. Walter R. Miles, of Yale, has discovered and reported to the National Academy of Sciences.

He found that both when the eyeball rolls upward and when it swings from side to side, as in reading, it rotates on a shifting pivot. This may be only a small fraction of an inch off its exact center, but it is of considerable importance both as a point in "pure anatomy" and as a matter of practical optical mechanics for eye specialists.

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# CE FIELDS

## STATISTICS

## Most Pedestrians Killed Walking Along Roads

USE EXTREME caution on the country highway, and when crossing city streets cross at the intersection with the signal! These warnings for pedestrians may be gathered from a study of fatal accident statistics just completed by the Travelers Insurance Company.

About 13,500 persons were killed last year in collisions between automobiles and pedestrians. The rate of death from these accidents was highest for those walking on country roads and much worse during dusk and darkness than in daylight hours. Crossing an intersection against a signal is nearly half again as hazardous as crossing with a signal. Crossing at the middle of the block is still more dangerous.

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## BIOLOGY

## Protozoan's Severed Trunk Keeps on Gathering Food

WHAT WOULD you do if you saw an elephant's trunk with no elephant attached, going about picking up peanuts and hay, and trying to put them into a mouth that wasn't there?

This was, in miniature, what Jerome Metzner of Columbia University saw through his microscope, when he amputated the proboscis from a one-celled animal known as *Dileptus*, and turned it loose where food was to be had. Mr. Metzner reports his observations on a number of such operations in *Science*.

*Dileptus* has a long proboscis, almost as long as its minute body, which it uses in capturing smaller organisms which serve it as food and conveying them to its mouth-opening. When Mr. Metzner cut off several of these proboscides and put them where food was available, they continued to attack the food-organisms and pass them on to the back ends of the amputated organs, where the mouth used to be situated. Then they lost interest in them, and went on to attack and pass back more

victims.

Mr. Metzner also amputated some of the proboscides along a line a little farther aft on the owners' bodies, leaving the mouth-opening attached. In these cases the wandering "trunks" captured food-organisms and passed them back and into the mouths, just as though the whole original animal were still there to be fed. Not only that, but the food particles were held in cavities formed in the protoplasm in the body-fragment back of the mouth. The whole thing, Mr. Metzner remarks in conclusion, shows that a small specialized portion of the organism is capable of the same complicated response characteristic of the total organism.

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## PHYSIOLOGY

## Normal Tissue Extract Checks Growth of Tumors

CERTAIN types of cancerous tumors have their growth checked by the injection of an extract made from normal growing animal tissues. At the meeting of the National Academy of Sciences in Cambridge, Mass., Dr. James B. Murphy of the Rockefeller Institute for Medical Research, New York City, told of the latest work on this substance, whose effects are partially known but whose chemical composition is still wholly in the dark. Dr. Murphy has worked with tumors in mice and his research is not yet ready for application to human cases.

The tumor-inhibiting substance has been found in tumors themselves, and an inhibitor, which may be the same or may be a different substance producing similar results, has also been found in placental tissues and embryo skin. When these normal tissue fractions were used on natural or spontaneous cancer of mice, "their inhibiting action is evident not only on local post-operative recurrences of the disease and on the growth of autografts where there is direct contact between the extract and the cancer cells, but is definitely observable when the test fluids are injected at a distance from established tumors," said Dr. Murphy. "While the results seem to substantiate the suggestion that the inhibitor from tumors is similar to the balancing factor of normal tissues, and would give a possible insight into the mechanism involved in malignancy, the materials involved are too complex to justify a conclusion at this time."

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## ELECTROCHEMISTRY

## Freshness of Fish Measured Electrically

DETERMINING the freshness of fish by electricity is the latest achievement of the U. S. Bureau of Fisheries. Maurice E. Stansby and James M. Lemon, at the Bureau's Gloucester laboratories, needed a quick, accurate method for telling just how long a fish had been out of water.

They found that the fish, soon after being caught, became stiff, then as time went on, relaxed and became more and more limp till finally it began to decay. They knew that the stiffness was caused by the production of lactic acid, the "sour" of sour milk, which caused the muscles to become rigid. Then, as this disappeared and the muscles were attacked by their own juices, they became limp.

How to follow this process more exactly than was possible by simply seeing how limp a fish became was the problem. Stansby and Lemon solved it when they found, as was predicted by theoretical chemistry, that they could pass more electricity through a fresh fish than through one that had been caught some time.

The apparatus they use is one that is familiar to radio men and telegraph engineers. It is called a Wheatstone bridge, and is an instrument that measures just how much resistance is offered to the electric current by the material being tested; in this case, some of the fishes' muscles ground up with water

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## BIOLOGY

## Baby Rattler Dies From Self-Inflicted Bite

SNAKES are not immune to venom of their own or of other species of snakes, it appears. A baby rattlesnake in the zoological laboratory of the Fort Hays Kansas State College bit itself accidentally during a fracas in the cage where it lived with its mother and brothers and sisters. Before it could release its fangs from its own body, it had apparently injected enough of its own venom to cause its death a few hours later. Reporting the incident to *Science*, Prof. L. D. Wooster recalls that another investigator reported the death of a rattlesnake from water moccasin venom.

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