

## PHYSIOLOGY

**Sterol Ring Seen as Possible Growth Key**

**D**OES ALL growth, cancerous as well as normal, hang on the ring-shaped group of atoms known to chemists as the sterol ring? At the meeting of the British Association for the Advancement of Science at Leicester, Sir Frederick Gowland Hopkins, president of the Royal Society, called attention to a remarkable chemical kinship that exists between three widely differing substances that produce widely differing growth effects in the body. Vitamin D has been shown to consist of a substance belonging to the chemical group known as the sterols. There are sterol "rings" also in the parts of tar that cause cancer.

Finally, oestrin, one of the female sex hormones or gland secretions, contains the same chemical structures. They are, however, differently arranged in the three compounds, and differ also in the amount and manner of attachment of hydrogen atoms.

Sir Frederick cautioned against hasty and sweeping conclusions based on this observation, but said, "It is difficult when faced with such relations not to wonder whether the metabolism of sterols, which when normal can produce a substance stimulating physiological growth, may in very special circumstances be so perverted as to produce within living cells a substance stimulating pathological growth."

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## TECHNOLOGY

**New Tool Eliminates Guess-Work in Cutting**

**M**ACHINE shop foremen and mechanics will welcome the invention of Prof. O. W. Boston and C. E. Krauss of the University of Michigan of a tool which measures the cutting properties of metals. With this device intelligent modifications of tool angle, depth of cut, feed, and type of cutting fluid used can be made to suit the particular job at hand.

The special tool-holder, for use in lathe, planer, or shaper, is fitted with a dial which indicates the vertical force on the tip of the cutting tool. By checking the readings of the dial against known loads, the force on the tool in pounds can be determined. If the tool is employed in different ways on the same

metal the proper technique for the cutting of that particular material will be apparent. On the other hand the machinist may judge accurately the machinability of different lots of material.

The inventors found that with the new device they could determine rapidly and with little expense the relative efficiencies of various cutting fluids. For example on soft rolled steel lard oil was found to be superior to heavy mineral oil under certain working conditions. Other mixtures such as mineral lard oil and various emulsions were assigned their respective places in order of desirability. For harder steels, however, the order was not necessarily the same. The shape of the tool was also shown to have a pronounced effect.

The simplicity of the device is in marked contrast with the elaborate methods usually employed in tracking down the somewhat vague and illusive property of machinability.

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## BOTANY

**Apples of Sodom Still Bear Ancient Curse**

**T**HE LEGENDED Dead Sea fruit, fair without and ashy within, has a certain factual foundation, relates Dr. Ephraim Ha-Reubeni of the Hebrew University in Jerusalem, long a student of the folk-botany of Palestine.

In the traditional region where once the wicked cities of Sodom and Gomorrah once stood, travellers can hardly avoid seeing a species of shrub with large broad leaves, violet flowers, and fruits that look rather like fine apples. But disappointment awaits him who thinks to slake his thirst on these apples, for they are filled inside, if not with ashes, at least with fluffy dry fibers of as little worth for the appeasement of a dry throat.

There is a second shrub, so thorny that it is much used in hedges, that bears bright yellow fruits resembling lemons in appearance, though the plant is botanically related to tomatoes and potatoes. These fruits also are of no value to the thirty wayfarers, for they are intensely bitter.

The Arabs say that when the wicked cities of the plain were cursed to their destruction, their fruits were cursed also. They call them, respectively, "apples of indignation" and "lemons of indignation."

*Science News Letter, September 16, 1933*

**IN SCIEN**

## PSYCHOLOGY

**Electrical Instrument Used as Dream Detector**

**H**OW CAN you tell when a sleeping person is having a dream?

A sensitive galvanometer has been used in a psychological experiment to reveal when a dream occurs. The experiment was described to the American Psychological Association by Dr. Louis W. Max, of New York University.

The sleepers were deaf-mute persons. The hands of the deaf are used for both their "speech" and their written thoughts. Perhaps for this reason, thinking in the deaf was found to be accompanied by action-currents in the muscles of the hands. Action-currents are those minute electrical currents that accompany nervous impulses.

A galvanometer and vacuum-tube amplifier provided a means for recording for scientific study these minute currents in the hands.

The emotions of worry and fear also produce the action-currents, as do many types of sense stimulation.

Further research is now in progress which may reveal whether these action-currents in the hands of the deaf are an essential part of their thinking process or whether they are a by-product.

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## PSYCHOLOGY

**Knowledge Of Grades Spurs Best Students**

**T**HE KNOWLEDGE of his grade may help a student to do better work, and then again it may not, it appears from a report of Dr. Paul J. Fay of DePauw University to the American Psychological Association.

Students who received the highest grade of "A" were spurred to better work when informed of the grade, Dr. Fay found in an experiment. "B" students achieved considerably less. Students of lower intelligence did much better when they were told of their grades than when they were not.

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# CE FIELDS

## BIOCHEMISTRY

## Analysis of Fingernails Clue to Arthritis Cause

**C**YSTINE, a sulfur-containing organic compound, is deficient in the fingernails of persons suffering from arthritis, often known as "rheumatism of the joints," Dr. M. X. Sullivan and Dr. W. C. Hess of Georgetown University told the American Chemical Society at its Chicago meeting.

The two research men tried injecting colloidal sulfur into the blood stream of six arthritis patients. They found that the cystine in their subjects' fingernails returned to normal, and at the same time the symptoms of arthritis abated.

Drs. Sullivan and Hess are now working on the problem of the relation of certain microorganisms to arthritis. They state that the lowering of the cystine content of body tissues implies the presence of injurious substances resulting from the activity of such microbes.

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## PUBLIC HEALTH

## Many People Volunteer For Sleeping Sickness Tests

**H**UMAN volunteers for the test of encephalitis, the sleeping sickness now prevalent in the region around St. Louis, will not be lacking if the investigation into its cause and mode of transmission reaches a phase where such heroic experimentation is justified. Dr. J. P. Leake, U. S. Public Health research worker in charge of the Government's forces in the St. Louis area, informed Science Service that many letters have already come in from persons willing to risk their lives and health in the battle against the malady by permitting themselves to be inoculated with its dangerous virus. However, he added, the investigation has not reached a point where such sacrifices would be of any practical benefit.

The "inclusion bodies" found by Dr. Margaret G. Smith of the Washington University School of Medicine are not

the cause of encephalitis, but are among its effects, Dr. Leake explained. They are small specialized particles that appear within the cells of persons or animals afflicted with diseases caused by filterable viruses, and are regarded as quite characteristic symptoms of such diseases. Discovery of these inclusion bodies in the tissues of persons dying of encephalitis in the present epidemic confirms the suspicion which medical scientists have held about the disease for a long time: that its cause is a filterable virus.

The actual area which the outbreak now occupies would be hard to define, Dr. Leake said. There is always a little encephalitis all over the country, and these scattering "normal" cases make the boundary of the outbreak itself difficult to trace. However, he stated, the incidence of encephalitis seems to be at least a little higher this year as far west as Wichita, Kansas.

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## GEOPHYSICS

## Wind May Affect Geyser Activity

**T**HAT THE ACTION of wind affects the intervals between eruptions of geysers of the open or pool type, is the opinion of Ranger-naturalist Herbert T. Lystrup of Yellowstone National Park, following a careful study and check-up of approximately fifty eruptions of the Daisy Geyser, in the Upper Geyser Basin or Old Faithful sections of the park.

During this period the average interval between the Daisy's eruptions was 111 minutes, while the longest and shortest intervals were 153 and 90 minutes, respectively. Observation showed that the time of longest interval was characterized by strong winds blowing over the geyser from the north or the south.

Mr. Lystrup suggests that the factors that might bring about the delay in eruption by strong winds sweeping over the open geyser are quite obvious. The wind quickly carries away the vapor and steam and greater evaporation takes place. Greater evaporation affects distinctly the cooling of the water.

The Daisy is a powerful little geyser that plays frequently and comparatively regularly. During the past few years it has been increasing in frequency and power.

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## ZOOLOGY

## Herds of Wild Asses Still Roam Mongolian Plains

See Front Cover

**W**ILD asses, that still roam the vast plains of Mongolia in great herds, are marvels of speed and endurance, according to Roy Chapman Andrews of the American Museum of Natural History, who has hunted and photographed them in the course of his many years of scientific exploration in interior Asia. One full-grown animal he pursued in a motor car reached a top speed of forty miles an hour, and would not own itself beaten in the chase until it had been pursued for more than twenty miles, most of the distance at an average speed of thirty miles an hour.

The little colt shown on the cover of this issue of the SCIENCE NEWS LETTER was lassoed from the car after a short chase during which he put on a burst of speed at twenty miles an hour, although he was then only about three days old. Taken into camp, he proved to be intractably wild, and made friends only with "Buckshot," the Chinese assistant who fed him evaporated milk from a bottle. His Chinese friend he would follow like a dog, even into the cook-tent, but he never let any other person lay a hand on him. After six weeks, Mr. Andrews states, he was even wilder than he was when newly captured.

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## PSYCHOLOGY

## New Test Determines "Motor Age" of Children

**A** NEW TEST to measure children's "motor age" was described at the meeting of the American Psychological Association in Chicago this week by Dr. Madga Skalet Skeel, of Western Reserve University.

It will delight the children. In this test they do not need to answer questions. They jump, balance, and step over hurdles. This is to test the large muscle coordination. As a test of small muscle coordination, the youngsters are allowed to cut, sew, and wind. Over 300 children have already taken the test to determine what scores can be expected at different ages. The test is intended for youngsters from 2 to 5 years old.

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