

ASTRONOMY

**Faint Comet Returns
For Visit To Sun**

GIACOBINI'S comet, a periodic visitor to the sun's neighborhood, has returned on schedule. The Central Bureau of Astronomical Telegrams has been notified of its rediscovery by Dr. R. Schorr, director of the Hamburg Observatory at Bergedorf, Germany. It is a faint object that holds no promise of being visible to the public, since powerful telescopes are necessary to see its fifteenth magnitude brilliance. When discovered on April 23 it was very close to the position in the skies predicted for it on the basis of its past performance. Every six and two-thirds years the comet makes a return.

When last reported it was east of the constellation of Delphinus, the dolphin, in early morning skies. Its astronomical coordinates were right ascension 21 hours 36 minutes and declination north 15 degrees 18 minutes.

Science News Letter, May 6, 1933

CHEMISTRY

**Heavy Water Made
In Princeton Laboratory**

ABATTERY of electrolytic cells for the production of heavy water and hydrogen of mass 2 was announced to the American Philosophical Society by Prof. Hugh S. Taylor and Henry Eyring of Princeton University.

With this battery of 270 units, each holding 200 cubic centimeters of potassium hydroxide solution, it has been found possible in somewhat over seven days to concentrate by electrolysis the heavy hydrogen present in twenty-five gallons of old alkali solutions which have been used for a period of years as a source of electrolytic hydrogen and oxygen. In this way the heavy hydrogen has been concentrated to yield about three-quarters of a glassful of water containing 7 per cent. of the heavy hydrogen. A weekly production on this scale can now be maintained.

The further enrichment of this water to yield the 100 per cent. pure heavy isotope of hydrogen of mass 2, or water of mass 1.1, is being effected by a combination of further electrolysis coupled with a new process of fractionation of the hydrogen isotopes from gas adsorbed on gas-mask charcoal at the temperature of liquid air. It has recently been shown by Professors Taylor, Gould

and Bleakney that this method can secure a several-fold enrichment of the hydrogen in a single operation.

The hydrogen of mass 2 produced at Princeton will be employed to trace the differences in speeds of reaction of the light and heavy isotopes at surfaces and with various gases. In this way fundamental advances in our knowledge of the speed of chemical processes are expected.

The water already attained represents a two-thousand-fold enrichment of the heavy-water and it is calculated that 150 gallons of ordinary water must be decomposed to yield the residual three quarter glassful of water exhibited at Philadelphia.

Science News Letter, May 6, 1933

BIOCHEMISTRY

**Formaldehyde Shown As
Step in Sugar Formation**

STRONG evidence that green plants make sugar by first making formaldehyde has been produced by a woman worker, Dr. Anna L. Sommer of the Alabama State Experiment Station. Using on living one-celled plants the magneto-optical method invented by Prof. Fred Allison of Alabama Polytechnic Institute for the detection of extremely minute amounts of chemical substances, she has shown the presence of this intermediate compound in the chemical evolution of sugar.

Prof. Allison of Dr. Sommer's work when he appeared before the meeting of the National Academy of Sciences to tell of his own researches in the more strictly chemical field. Dr. Sommer, he said, took pure water which she examined by means of his method, proving that there was no formaldehyde present in it. Then she added a quantity of algae, minute one-celled green plants, and again examined the suspension. The test indicated the presence of formaldehyde. Finally she filtered out the algae and re-examined the water, proving that the formaldehyde had disappeared with the plants.

Because formaldehyde has a chemical structure that might be called a fraction of sugar, plant physiologists have conjectured that it might be an intermediate stage in the upbuilding of sugars and other carbohydrates, but until Miss Sommer concluded her researches the evidence that such a process actually takes place in active green plants was exceedingly scanty and inconclusive.

Science News Letter, May 6, 1933

IN SCIEN

PSYCHOLOGY

**Pets May Develop
Sympathy in Children**

HAVING a kitten, a live puppy, bird, or other pet to play with and care for makes a measurable change in the character of a child, members of the Southern Society for Philosophy and Psychology learned from the report of Dr. J. E. Bathurst, of Birmingham-Southern College.

The possession of pets increases sympathy in children very significantly and decreases their "contrariness" somewhat, Dr. Bathurst found in experiments with 73 children ranging in age from a year and a half to five and a half. On the other hand, the type of home and neighborhood in which the child lived had little effect on either of these qualities.

Science News Letter, May 6, 1933

ORNITHOLOGY

**America's Falcon Poses
Against Perfect Background**

See Front Cover

RARELY is a perfect bird photographed against so perfect a background as the duck-hawk, or American falcon, shown on the front cover of this issue of the SCIENCE NEWS LETTER. The photograph is by Dr. A. A. Allen of Cornell University, and the magnificent catarract plunging in the background is Taughannock Falls, one of the greatest of the scenic beauties of New York State.

To call our duck-hawk a falcon is no pretentious effort to thrust a New-World parvenu into an Old-World aristocracy. The duck-hawk is a falcon by right of his own eminent birth, for he belongs to the same species as the peregrine falcon that provided noble sport for the lords and ladies of the Middle Ages. The American bird represents a separate variety, distinguishable mainly by slight differences in feather marking. But the bird of Taughannock Falls is an undoubted falcon, with every right to the proud carriage he displays.

Science News Letter, May 6, 1933

CE FIELDS

PSYCHOLOGY

Three Dimension Effect Due To Apparent Movement

THE THREE-DIMENSION effect given to specially prepared pictures by looking through a stereoscope is caused by the apparent movement of parts of the picture as the image in one eye becomes dominant over that of the other eye. This feeling of movement is an important though unrecognized factor in the ordinary vision of solids as well as in stereoscopic vision, Dr. Margaret F. Washburn, of Vassar College, said in an address before the National Academy of Sciences.

"Since solidity is itself primarily a motor experience, involving movements of handling and grasping an object, it seems natural that it should be suggested not by a static fusion of retinal images but an apparent movement," Dr. Washburn pointed out.

As you look at a solid object such as a box, the image of it seen by one eye is slightly different from the image of the other eye, because of the different positions of the eyes. These two images rival each other for dominance in your attention. The resulting change in the appearance of the box is identical with the change that would be produced if part of the box actually approached or receded in the third dimension, Dr. Washburn said.

Science News Letter, May 6, 1933

GENERAL SCIENCE

12,000 Scientists Released From Research Since 1930

WHILE OVER 55 per cent. of the research laboratories serving America's industries have either maintained their staffs of scientists at the same level or actually increased their workers, there has been a decrease of over 12,000 in the staffs of other industrial laboratories in the past three years. However, at least 90 per cent. of the concerns reporting have maintained at least a skeleton research organization.

This is revealed in a survey just completed by Dr. C. J. West and Miss Callie

Hull of the National Research Council's Research Information Service.

This year 1,467 laboratories reported 21,464 scientists on their staffs, while in 1930 there were 33,596 scientists on the staffs of 1,420 laboratories.

This is taken to mean that at least 10,000 highly trained industrial research scientists are not engaged in scientific research due to the economic depression. The potential value of the lost services of these scientists must run into millions of dollars annually. Some of these scientifically trained workers have been transferred to plant and sales jobs, it is believed.

The 500 laboratories that reported decreases in staff employed 23,783 in 1930 and now have only 9,686.

The 628 laboratories that reported no change employ 5,268 scientists. In 186 laboratories the staffs were increased from 3,768 in 1930 to 5,338 in 1933. The number of laboratories discontinued during the three-year period between the National Research Council surveys numbered 106 and they employed 775 scientists in 1930.

In the course of the survey 153 laboratories now employing 1,172 scientists were included in the survey for the first time. Some of these may be new laboratories but most are small research organizations that were not discovered in the course of the 1930 survey.

Science News Letter, May 6, 1933

SOIL SCIENCE

Wormholes Let Out Air As Water Enters Soil

THE HUMBLE earthworm has a far more important role in the world than to be impaled on a hook for the snaring of fish. At the meeting of the American Geophysical Union, R. E. Horton, noted engineer, paused in the midst of a scientific discussion of how rainwater gets into the soil to pay his respects to "that most excellent good fellow, the earthworm."

Earthworms make endless tunnels through the upper soil, and as every golfer knows, they come to the surface once in a while. These tunnels, as well as other animal burrows, Mr. Horton explained, are of the greatest importance when rain begins to fall, because they permit the air to escape from the soil as the water soaks in, thereby making it possible for the ground to take up much water that would otherwise run off the surface in destructive waste.

Science News Letter, May 6, 1933

BOTANY

Hybrid Oak Bears Two Kinds of Acorns

A HYBRID OAK that bears two different kinds of acorns, each like one of the parent species, was described before the American Philosophical Society by Dr. William Trelease, for many years professor of botany at the University of Illinois.

The tree is a cross between white and bur oak. On certain of its branches, it bears acorns like those of the bur oak, on others, acorns more nearly like those of the white oak. Dr. Trelease is of the opinion that the tree is a "chimaera," belonging to the strange class of hybrid plants that preserve separate identities in their parts rather than a mixture of characters throughout, as in most hybrids.

Science News Letter, May 6, 1933

PHYSIOLOGY

Acidosis Not Caused by Acids, Scientist Reports

ACIDOSIS is not caused by formation of too much acid in the body, studies by Prof. Yandell Henderson and Dr. Leon A. Greenberg of Yale University show.

The theory that acidosis is intoxication by acid is definitely contradicted by facts, and some other theory will have to be developed, Prof. Henderson declared in reporting the studies.

Lactic acid is the acid said to be chiefly concerned when, according to current theory, acidosis results from formation of too much acid in the body, Prof. Henderson explained. In the Yale investigations, animals were treated with a drug which a Danish scientist has recently found makes animals incapable of producing lactic acid. The animals were then subjected to a condition of oxygen deficiency such as has been found to induce a state of so-called acidosis. The result was that all the features of that state were developed but without the formation of any increased amount of lactic acid.

The conclusion that the state called acidosis is not due to intoxication by excessive formation of acid, Prof. Henderson pointed out, is in accord with the fact that giving alkalis to patients with acidosis, in diabetes, for instance, has not been found beneficial and has been generally abandoned.

Science News Letter, May 6, 1933