

ASTRONOMY

Periodic Comet Discovered By Yerkes Astronomer

BROOKS' COMET, a periodic visitor to the vicinity of the sun, last seen in 1925, was sighted by Prof. George Van Biesbroeck of Yerkes Observatory, the astronomical clearing house at Harvard College Observatory has been notified.

It has reappeared in the heavens very close to the place that has been predicted for it from its past history. On Sunday, Sept. 25, the comet was in the constellation of Pisces, the fishes, which is in the southeastern evening sky. With a magnitude of 12, it is too faint to be seen without a fair sized telescope and its past history indicates that it will not become visible to the unaided eye.

Brooks' comet has a period of 7.1 years in its travel around the sun. It was last seen in 1925 when a Russian astronomer was the first to find it. It was discovered in 1889 and its number in astronomical records is 1889 V. It was seen in 1896, 1903, 1910 and 1925. This comet is famous for an encounter with Jupiter, before which its period was 29.2 years. At the time of its first appearance it was accompanied by four faint companions which appear to have separated from it later.

Brooks' comet is one of nine periodic comets that were expected this year. Of these five, including Brooks', have been seen so far. In addition, six new comets have been discovered so far. All of these have been too faint to be seen with the naked eye. Not for years has a spectacular, brilliant comet arrived for the entertainment of the public.

Science News Letter, October 8, 1932

METALLURGY

Gold in Small Percentages Detected by New Method

GOLD can be separated from silver alloys in which it is present as only one part in 300, by a new method devised by Dr. Heinz Borchers of the Electrometallurgical Institute of Aachen, Germany. This is a great improvement over the method at present in use, which cannot be relied on for accuracy when the ratio falls below one part of gold to three of silver.

Both methods depend on the fact that gold resists the action of acids that dissolve silver. The present method is to put the alloy to be analyzed into nitric

acid, and weigh the gold residue after the silver is dissolved. But gold in low percentages breaks down into a fine powder, exceedingly difficult to recover.

Prof. Borchers discovered that at moderately high temperatures the atoms of gold recombined into solid crystals of the metal. But high temperatures could not be used with nitric acid because of its low boiling point, which is only a little above that of water. However, sulphuric acid, which is easily able to dissolve silver, has a boiling point about three times higher, so that it can be used with good success.

Dr. Borchers' results are of practical interest to jewelers, dental technicians, and other metallurgical craftsmen, as well as of importance from the standpoint of pure chemistry.

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MEDICINE

Cancer Linked with Change in Centrosomes

CANCER may be linked with permanent changes in cell centrosomes rather than with abnormal behavior of chromosomes, in the opinion of Mrs. Margaret Reed Lewis and Dr. Warren H. Lewis of the Carnegie Institution of Washington and the Johns Hopkins Medical School in Baltimore. The studies on which this opinion is based were made with the aid of a special moving picture camera devised by Dr. Lewis, and are made public in the current issue of the *American Journal of Cancer*.

Centrosomes are tiny granules which are known to play such an important part in cell division that they are considered by some scientists to be the center of activity for that process. Scientists have held for some time that the difference between cancer cells and normal cells lay in the abnormal multiplication of the cancer cells. By studying moving pictures of the actual process of cell multiplication, or division, which is the same thing, in both normal and cancer cells, the Lewises hope to throw light on this phase of the problem.

Besides the change in the centrosomal apparatus, they saw the irregular behavior of chromosomes in cancer cells which other investigators had observed. They do not agree that the chromosome abnormalities are the cause of cancer, but suggest that these are one result of it.

Their studies were made on a rat cancer, known in scientific circles as Walker Rat Sarcoma No. 338.

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IN SCIENCE

MEDICINE

Leprosy Remedy Tried in Experimental Tuberculosis

CHAULMOOGRA OIL, used in the treatment of leprosy, is being tried as a remedy for tuberculosis induced experimentally in guinea pigs. Surprisingly good results in checking the course of the disease are reported by the investigators, Dr. Erik Ohlsson and G. Glimstedt of the Agricultural High School at Alnarp, to the *Swedish Chemical Journal*.

The experiments are still in progress and the scientists warn that it would be unjustifiable and objectionable to try the method on human beings before the investigations on animals have been definitely concluded.

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GEOLOGY

Only Speck of Rock Now Needed for Age Analysis

AMERE SPECK of rock, half of a crystal weighing a thousandth of an ounce, can now be microanalyzed to determine the age of the rock, Prof. Alfred C. Lane of Tufts College, chairman of the National Research Council's committee on the measurement of geologic time, has reported.

From Dr. Friederich Hecht of the University of Vienna he has received a report of a complex analysis of a tiny crystal sent by Prof. W. G. Foye of Wesleyan from a quarry near Middletown, Conn. Only 33 milligrams of material were used. Hundreds of times that quantity would be needed for an analysis made by ordinary methods. Such an analysis has already been made by Dr. C. N. Fenner, of the Geophysical Laboratory, of a different mineral, presumably about as old, and the late Dr. W. F. Hillebrand, formerly chief chemist at the U. S. Bureau of Standards, analyzed crystals of the same mineral.

The age of the quarry was determined as Devonian, an invasion of granite some three hundred million years ago.

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E FIELDS

ASTRONOMY

Third Most Speedy Tiny Planet Discovered

A TINY PLANET, probably not over ten miles in diameter, that makes a trip in its orbit around the sun in 2.023 years, has been discovered independently by American and Russian astronomers. Of the 1,500 or more of these bodies, called asteroids, that revolve in the space between the orbits of Mars and Jupiter, only two encircle the sun in shorter periods, according to calculations made in Berlin by Dr. A. Kahrstedt, of the staff of the Astronomisches Recheninstitut at Berlin-Dahlem. The newly identified member of the solar system is designated as, 1932 PB.

Though the first observation of the asteroid to reach the Recheninstitut was made on August 4 by Dr. G. Neujmin, at the branch of the Russian Central Observatory at Simeis, in the Crimea, it was found previously by Dr. George Van Biesbroeck, of the Yerkes Observatory in Wisconsin, who first recorded it on July 30. Dr. Kahrstedt's computation of the orbit was made with the aid of four observations by Dr. Van Biesbroeck. At present the planet is in the constellation of Capricornus, in the southern evening sky, but is of the 12.7 magnitude, too faint to be seen except with a big telescope.

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PLANT PHYSIOLOGY

Autumn Leaf Colors Due To Complex Chemistry

GORGEOUS autumnal colors in woods and along roadsides are due to two general classes of chemical compounds in the ageing leaves: carotinoids and anthocyanins. The carotinoids are responsible for the yellows, and the anthocyanins for the reds and purples.

Dr. Charles E. Sando of the U. S. Department of Agriculture has summarized the process by which leaves turn from green to gay, when promises of frost begin to cool the air.

Carotinoid pigments are present in

all leaves, but are masked most of the time by the more abundant green coloring matter, chlorophyl. Chlorophyl is always being both formed and destroyed in leaves, but in autumn destruction goes on faster than formation, finally reducing it to a low point which permits the yellow carotinoids to be seen. If no other masking pigment is present, leaves become pure yellow or orange, like tulip-tree, willow and sassafras.

The other class of pigments, the anthocyanins, are dissolved in the cell sap. With the exception of a few purple-leaved or bronze-leaved plants, these pigments are also concealed by the more abundant chlorophyl, and show themselves only when it has been sufficiently broken down. At the same time, certain changes in the carbohydrate content of the leaves may cause an actual increase in the amount of the anthocyanins present. Thus we get the strong reds and purples of sumac, blackberry, sweetgum, the oaks, etc.

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CHEMISTRY

New Cheap Source of Vitamin A to Aid Research

CAROTENE, from which the body derives vitamin A, is now available to physicians and scientists at about half its former cost as a result of research conducted by Dr. A. F. O. Germann and Dr. Harold M. Barnett of the S. M. A. Corporation research laboratory in Cleveland.

Efforts to isolate vitamin A itself have been hampered by the scarcity and high cost of pure crystalline carotene, the provitamin A. This substance once cost approximately \$11,000 a pound. By the new process it is possible to sell it for research use at less than \$15 a gram. There are over 450 grams in a pound.

Besides providing scientists with a cheaper source of carotene for investigation, the new method of producing crystalline carotene will enable physicians to give it to their patients in addition to the vitamin A in the diet, as they now can give viosterol.

Vitamin A is necessary for normal growth, prevents the development of a certain type of eye disorder and has lately been said to have power to increase resistance to infections such as colds. It is found in cod liver oil and in a number of foods, chief among them being butter, carrots, cream, eggs, milk, spinach and watercress.

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ENTOMOLOGY

Butterflies Born in Cold Hairier than Warmer Kin

SWALLOW-TAIL butterflies born in the cold are hairier than insects of the same species that first see the light of day under kindlier skies. Thus reports Austin H. Clark of the U. S. National Museum, who has made a lifetime study of butterfly life in the Middle Atlantic States.

The common yellow swallow-tail butterfly has two or more broods a year in the region around Washington, one in early spring, one in late spring and possibly one in summer. The early-spring brood, which emerges while the air is still chilly, differ from their later brethren in size, form and color. They are smaller, slenderer, darker, and have a pronounced growth of hairs, which is lacking in the late-spring brood. Similar differences are observed also in the blue swallow-tail.

Across the northern half of the continent, from Alaska and British Columbia to Newfoundland, there is a variety of the yellow swallow-tail that has only one brood a year, and that brood is indistinguishable from the early-spring swallow-tails of the Washington region, in size, color and hairiness. Thus there seems to be a correlation between cold and form in butterflies.

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METEOROLOGY

Puerto Rican Hurricane Is Season's Most Intense

THE 120-MILE winds that ravaged Puerto Rico were a part of the most intense tropical disturbance of a season during which such West Indian hurricanes have become plentiful. Though its winds were fierce, they damaged only a comparatively small area, the forecaster at the U. S. Weather Bureau pointed out.

The present storm is the fifth West Indian hurricane of this season, according to the Weather Bureau. Three such disturbances usually occur in a year. The only other severe storm of this season did not strike land. It headed directly for southern Florida; but veered sharply from this course when only about 200 miles off land, and spent itself over the Atlantic. In contrast with the present hurricane, its force was felt over a wide area.

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