

somewhat related to the eland, and also to the smaller bushbucks. As in the eland, horns are present in both sexes. The horns are black with white tips, and spirally curved. The bongo has unusually large fringed ears, black feet, and a long ox-like tail. The brilliance of its rust-red color does not detract from the protection afforded, because the broken pattern made by the white stripes has a concealing effect against a background of vines, branches, and alternating light and shade, as does the striped pattern of a tiger or a zebra. For years the museum authorities have hoped for specimens of the animal, which was one of the very few important large African mammals lacking in the institution's collections.

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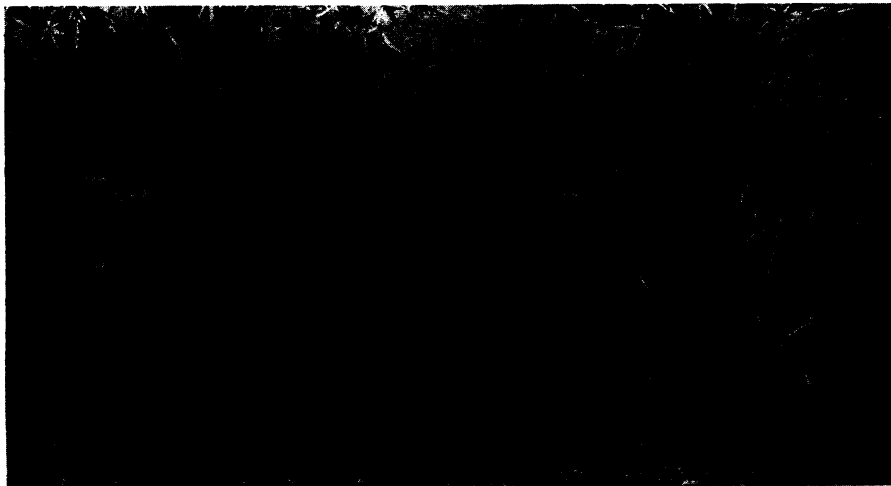
CHEMISTRY

Zinc-Acid Reaction Yields Heavy Hydrogen

A NEW method of concentrating the double-weight or heavy hydrogen, the essential constituent of heavy-water from which remarkable developments are expected, is reported in the scientific periodical, *Nature*, by Drs. A. and L. Farkas, expatriate German chemists now working in the Colloid Laboratory of the University of Cambridge, England.

The new method is chemical and consists in dissolving metals such as zinc in a dilute solution of sulfuric acid. Under proper conditions the lighter or ordinary hydrogen is displaced faster than the double weight variety, in the ratio of four to one, so that the liquid becomes richer in the heavier or double weight variety of hydrogen.

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BONGO FAMILY "AT HOME" TO MUSEUM VISITORS

ASTRONOMY

Only American Observer Of Eclipse Tells Plans

Dr. Cohn, Now Guest of Japanese Government, Gives Exclusive Report of Studies He Expects to Make

By **DR. WILLI M. COHN**, Leader of American Eclipse Expedition to Losap Island

THE Japanese government invited me to travel to Losap Island in the Carolines in company with the Japanese astronomers who will view and study the year's only total solar eclipse on Feb. 14. The Japanese Navy ship Kasuo Maru carried us to Losap, a small coral island. No American observatory is sending an expedition but I shall be aided in my researches by cameras from the Lick and Harvard Observatories which supplement my own equipment.

I am carrying with me:

Two cameras of about 60-inch focus, each equipped with a fine quartz, double-image prism, for photographing the inner and the outer corona.

Polariscope for measuring the polarization of the sky light close to the sun.

Two cameras for direct photography of the corona through color filters, one of them equipped with four plates, and the other with a plate for infrared photography, allowing a comparison of the color of the corona and that of the sun.

Camera with an objective prism to be used for photographing the continuous spectra of the photosphere, or the layer close to the surface of the sun,

and that of the sun itself. The comparison of these spectra may show whether there are any differences in the two continuous spectra as shown by the presence of more than one maximum in the spectral energy curves.

Hilger grating spectrograph to measure the change in the spectrum of the skylight during the entire eclipse.

Full equipment for printing standard squares and comparison spectra on all plates which will allow a reduction of the plates as necessary for photometric work.

All instruments are mounted on a polar axis. This is driven by a clock and it will follow the apparent motion of the sun during the period of totality.

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ARCHAEOLOGY

Lion's Tooth Called First Musical Instrument

WHAT is believed to be the oldest musical instrument in the world has been discovered on the slopes of the Pollau mountains in Czechoslovakia. It is a musical pipe made of a lion's tooth. It sounds a signal in the notes of D and G which can still be played perfectly after some 30,000 years.

Prof. Karel Absolon of the Brno University, discoverer of the pipe, claims that the very origin of musical instruments, and painting and sculpture as well, is traced to these mountains. His excavations, continued through a number of years, have brought to light many objects made by the mammoth hunters of Central Europe. The lion-tooth pipe is his latest find.

The artistic work of this Aurignacian culture is shown by such pieces as the head of a wild horse, admirably modeled. The stone horse's head is identified as copied from the little horse, *Equus ferus*, which was thickly covered with hair and roamed in Europe during the Ice Age. The species was re-discovered only in the eighteen eighties, by a

Russian explorer in the Central Asiatic steppe lands. A reindeer head is another art work by the mammoth hunters.

Most striking of the art exhibits is the statue of a mammoth complete. The prehistoric sculptor captured the characteristic form of the shaggy giant, the back drawn upward, its plump and heavy legs, all familiar to science from reconstruction of real mammoth remains.

The ancient hunters made "combination tools," Prof. Absolon's collection shows. One three-fold implement is a blunt stiletto at one end, a notched trowel at the other, while from beneath it is a chisel. A saw with serrated teeth is another tool of this Old Stone Age.

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GEOLOGY

Whetstones Contain Ancient Climate Record

WHEN a farmer leans upon his scythe while he whets its blade, he may be unconsciously sharpening his modern tool with a record-in-stone of an ancient climate. For the widely used banded whetstones made from a peculiar type of gritstone quarried in Orange and Perry Counties, Indiana, tell of alternating seasonal abundance and scarcity of rainfall during the early Pennsylvanian geologic age, a quarter of a billion years ago, when "slimy things did crawl with legs" out of the water and onto the land, laying the foundation of the since proud line of land-living vertebrates.

The dark bands in the stone indicate the presence of abundant organic matter, the light bands point to its scarcity or absence. There were good seasons and bad in those remote times, and their traces were left in the sands deposited under water, that have since turned into stone.

This is the story read in the banded stones of Indiana by Dr. David White, associate in geology of the U. S. National Museum.

Similarly layered under-water deposits of other geologic periods have been interpreted as showing series of mild and severe seasons in cyclic succession. Thus far, however, the banded gritstone material examined by Dr. White has been too scanty to justify any definite conclusions regarding seasonal cycles during the Lower Pennsylvania.

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ENGINEERING

Is One-Rail Train Next Step For Land Transportation?

THE VISION of a train or car rushing along on one rail, kept from falling over by a spinning gyroscope, has been pursued by a number of inventors and engineers since the turn of the century.

Now with railroads going modern, streamlining their locomotives, lightening their rolling stock, using single car trains diesel-electric propelled, it may be that serious thought will be turned to the monorail for land transportation. It may be a method of allowing the railroad to follow not too far behind the increasing speed of the passenger and freight carrying airplane.

Bicycle Shows Safety

The problem of using gyroscopic stabilization has been investigated by a British engineer, Dr. J. F. S. Ross, and his inquiry is reported in a book: "The Gyroscopic Stabilization of Land Vehicles." (Edward Arnold & Co. in London; Longmans, Green & Co. in New York.)

"To the sceptic who distrusts the practical safety of the monorail I would commend the object-lesson of the bicycle," Dr. Ross says. "Who now, apart from a small minority of invalids and eccentrics, regards the tricycle as a better means of locomotion than the bicycle, or casts aspersions on the latter as unsafe in itself and liable suddenly to flop over? So it may well be with the monorail; if once the arduous (and expensive) stage of experiment is successfully surmounted, we may look back upon double-rail traction as antiquated and clumsy, and marvel that people ever thought the monorail unnatural or unsafe."

Seems Contrary to Nature

Even the spinning top, which is a form of gyroscope with which all are familiar, gives a vague feeling of distrust, Dr. Ross observes.

To the ordinary, non-expert person, the behavior of a gyroscope is apt to seem contrary to the laws of nature. He cannot understand why, being top-heavy, it does not fall over, nor why, when pushed in one direction, it moves in a quite different direction. He can-

not quite believe that its behavior is perfectly normal and explicable, and he has a lurking suspicion that, if he were to rely on the gyroscope as a monorail mechanism, sooner or later it would let him down by suddenly ceasing its eccentricities and behaving in what he would consider a more normal way.

Though there are no good grounds for such views, in Dr. Ross' opinion, it must be admitted that there are considerations which may serve to excuse them. In the first place, no one has yet produced a large-scale monorail car which gives evidence of that complete reliability in all circumstances which is essential for commercial success; and, in the second place, the explanation of gyroscopic phenomena, and the calculations necessary in connection with gyroscopic apparatus, involve a certain amount of mathematics of a somewhat specialized character.

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ENGINEERING—ARCHAEOLOGY

Model Shows Building Of Famous Appian Way

FAMOUS highway construction of a distant day and how the ancient road was used are illustrated with an elaborate model of the Appian Way which has been built by the U. S. Bureau of Public Roads for the National Museum. More than one hundred carefully designed figures of men and animals, with their tools and vehicles, are working on the highway or passing over the newly finished surface.

The chief difference between the ancient Roman road and the modern highway is that the present-day engineer relies upon the soil to bear the load; the pavement should act as a wearing surface and a roof to protect the supporting subgrade soil. The Romans relied solely on massive construction. Using modern ideas, the roadbuilder of today has been able to build more extensive highway systems at a small part of the cost of Roman roads.

This road, which endures after twenty centuries, was 16 feet wide with 2-foot