ARCHAEOLOGY

Mexicans Find Old Pyramid While Rescuing Art Works

MEXICAN government archaeologists have been compelled to begin excavations and restorations in the Mayan city of Acancéh, not far from Mérida, Yucatan, in order to save valuable works of art done in stucco molding.

In so doing, they have just uncovered a beautiful little pyramid strikingly like the primitive Mayan pyramid excavated by the Carnegie Institution of Washington in Uaxactun, Guatemala. This find may be another proof that Mayan culture came to Yucatan far earlier than was until recently believed.

A small stuccoed pyramid, half-buried under earth, has been excavated. Four stairways lead to the top, one on each side. Human masks of deities in stucco, more than six feet across, adorn either side of each stairway near the top, making in all eight of these gigantic faces. The corners of the pyramid are rounded, and in other ways the structure resembles the Mayan one.

Acancéh is a modern Indian town built among the pyramids, terraces and ruined temples that formed the official section of the ancient city. The people have let their ancient buildings go to ruin since Spanish Conquest times, although belatedly the governments have been taking care of them.

Science News Letter, January 27, 1934

ICHTHYOLOGY

Poor Fish Ears Hear Some Sounds Very Well

"CAN'T fish here," the sign read.

"Some say they can, and some say they can't," remarked the angler as he proceeded to fish.

However, the question was taken up in a more serious manner recently by Prof. Harry Bateman, at a physics research conference of the California Institute of Technology. Being a mathematician, Prof. Bateman has made a study of hearing from the hydrodynamic standpoint. He pointed out that the inner ear, where all the hearing takes place, is filled with a fluid; whereas the outer ear is filled with air.

Between the two is the middle ear with three little bones, the well-known hammer, anvil, and stirrup. These serve as levers by which the vibrations of the eardrum are transmitted to a window of the inner ear, also closed by a membrane, and are at the same time magnified about twenty times. This is nature's way of transmitting the sound from the air to the liquid. Without such a mechanism, Dr. Bateman said, only a thousandth part of the energy of the sound waves would get from the air to the liquid. Incidentally, he remarked that the ear is an even more sensitive organ than the eye.

This now brings us to the fishes. Anatomical investigations have shown that while fishes possess some kind of hearing apparatus, it is at best very poor. Direct tests of their hearing are very difficult, because sounds made in the air are scarcely transmitted to the water at all. If a diaphragm is placed between the air and the water and made to vibrate, or a bell is struck under water, the fish will respond.

Dr. Bateman's final advice was: "Shout all you want while fishing; the fish won't hear you. But don't stump around on the bottom of the boat; that will surely frighten them away."

Science News Letter, January 27, 1934

METEOROLOGY

The Higher the Warmer, Air Pilots Discover

TEMPERATURE inversion, that is, warmer air as one goes higher, is a more common phenomenon in winter than has been suspected, air-line pilots have been discovering lately.

On one day recently, when the ground temperature was only 10 degrees above zero at Chicago, pilots encountered a temperature of 40 degrees at 4,500 feet. On the same day, pilots leaving an 8-degree temperature at the Cheyenne, Wyo., airport found a 36-degree temperature at an elevation of 9,000 feet above sea level.

Reports on air temperature and other weather conditions are given by the pilots every twenty minutes, and are coordinated with information collected and supplied by the far-flung airway weather observation system of the U. S. Weather Bureau.

In the past, it was believed that temperatures invariably lowered as altitude increased, and observations led to the theory that temperature dropped three degrees Fahrenheit with each 1,000-foot increase in elevation above the earth. However, pilots taking off from wintry airports to encounter mild weather at higher elevations have recently supplied evidence that outmoded this belief.

Science News Letter, January 27, 1934

IN SCIEN

BIOCHEMISTRY

Palm Nuts Yield Sex Hormone Duplicate

A SUBSTANCE identical with a female sex hormone, theelin, has been obtained from palm nuts by Prof. A. Butenandt and Prof. H. Jakoby of the University of Göttingen, Germany.

Sex hormones like theelin are spread throughout the whole animal kingdom from the highest down to the lowest single-celled organisms. Similarly acting substances are also found in plants. It has been known for some time that the plant hormones could stimulate sexual activity in animals and that the animal hormones affected the plant's sexual development, stimulating ripening and blossoming.

The reason for this, it appears from the work of Professors Butenandt and Jakoby, is that the sex-stimulating hormone in both plants and animals is the same substance. While their investigation was restricted to palm nuts, it is probable that the sex hormone of all plants is the same.

Science News Letter, January 27, 1934

ASTRONOMY

Old Spots Persist In New Solar Cycle

SUNSPOTS of the old cycle which is now dying still persist in trooping across the face of the sun. Astronomers of the Carnegie Institution's Mt. Wilson Observatory report that a group of sunspots containing from five to sixteen individual spots has been visible on the sun's disc during the past few days.

The first sunspot of the new cycle was seen on October 10. Astronomers can tell whether the great disturbances in the atmosphere of the sun that constitute sunspots are of the old or new cycle by their magnetic polarity. The magnetic orientation of the spots changes at the time of sunspot minimum, which is occurring now. The persistence of spots of the old cycle after the appearance of spots of the new cycle is not unusual.

Science News Letter, January 27, 1934

CE FIELDS

PHYSICS

Heavy Hydrogen-Lithium Bombardment Yields Helium

WHEN the metal lithium is bombarded with ions of the heavy, mass two isotope of hydrogen, deuteruium, alpha particles are ejected with a speed considerably greater than swiftest alpha particles from radioactive substances, experiments at Cavendish Laboratory, Cambridge, under the direction of Lord Rutherford have shown.

The research shows that a deuterium particle occasionally enters the kernels or nucleus of a lithium atom of mass six and that the nucleus that is formed then breaks up into two alpha particles, which are kernels of helium atoms. These two alpha particles escape in nearly opposite directions.

The capture of a particle by a lithium nucleus of mass seven causes a breakup of the system into two alpha particles and a neutron whose maximum energy is equivalent to fifteen million volts.

Lord Rutherford has received a private communication from Prof. Hertz in Germany which states that he has obtained small quantities of deuterium or heavy hydrogen by applying a special diffusion method of separation to ordinary hydrogen. Such deuterium is so pure that it is impossible to detect the alpha line of ordinary hydrogen in its spectrum.

Science News Letter, January 27, 1934

ORNITHOLOGY

Young Swans Had Human Foster-Father

HOW a National Park Ranger sacrificed sleep, recreation, even meals so that a brood of young trumpeter swans might "get a break" has been told, somewhat belatedly, now that his charges have grown up and flown away to their winter feeding grounds.

The hero of the tale is Ranger Ben Arnold. Last summer a pair of the rare and beautiful trumpeter swans nested in a lake near his bailiwick. Swans had built nests in the Park before, but always some predatory animal or other got the eggs or the helpless cygnets soon after hatching. This time Ranger Arnold vowed he would see them through.

For the first few days he stood guard over the young in the nest practically day and night. Any bird, beast or fish that approached with a carnivorous look in its eye was promptly and vehemently driven away.

Later, he was able to substitute a series of colored flags as "scare-crows," and relax his vigilance somewhat. With his assistance, the swan pair was able to rear five of their six offspring to maturity.

And now, with his erstwhile charges safely somewhere south for the winter, Ranger Arnold has relaxed his silence as well, and allowed the story to come out.

Science News Letter, January 27, 1934

CHEMISTRY

Starfish and Sponges Possible Food Sources

FOOD and vitamins from starfish and red sponges, among the most abundant, most useless and most unappetizing of all sea life along the Atlantic coast, are possibilities hinted at by researches in the Sterling Chemistry Laboratory of Yale University, under the direction of Prof. Treat B. Johnson.

One of the interesting things discovered about starfish is the presence in its tissues of considerable quantities of free amino acids, which are the chemical building-blocks of proteins. In other animals these acids are for the most part bound up in proteins, and before another animal can make use of them it must break the proteins apart by digestion. Just what the scientific significance of uncombined amino acids in starfishes may be, and what practical advantage can be taken of the phenomenon, are points awaiting further investigation.

Red sponges have been found to contain the vegetable pigment carotene, which is the raw material used by animals in making vitamin A. Only red sponges contain this pigment. Getting it out constitutes a terrific laboratory job: a ton of wet sponges yields a hundredth of a pound of carotene.

One of the things hoped for from the researches is further light on the relationship that may exist between vitamin A, which prevents an eye disease, and vitamin D, preventive of rickets.

Science News Letter, January 27, 1934

PHYSIOLOGY

Magnetic Iron Oxide Used in Blood Studies

GAMMA ferric oxide, which is chemically like common iron rust but physically unlike it because it responds to the pull of a magnet, is being used at Yale University in the study of the makeup and migrations of blood cells. When it is injected into the blood stream, it is promptly taken up by the corpuscles, and its subsequent location, learned by magnetic search, shows where iron is stored in the body. Among the other things being investigated by this new method is the function of certain hitherto puzzling cells of the liver.

Gamma ferric oxide has long been known as a chemical curiosity, but it was not until Dr. Oskar Baudisch, a research fellow working with Prof. Treat B. Johnson, began making it up in quantities sufficient for research purposes that its possibilities as a scientific tool began to be appreciated.

This peculiar oxide of iron is of use to the physicist as well as to the physiologist, for it is being employed in the investigation of minute cracks in steel, and also in the study of the relation between magnetism and the internal structure of molecules and atoms.

Science News Letter, January 27, 1934

PALEONTOLOGY

Wyoming Had Its Eagles 15,000,000 Years Ago

WYOMING had its eagles fifteen million years ago as it has them today. Fossil bones of a large eagle, found in Wyoming rocks by George F. Sternberg, have been examined by Dr. Alexander Wetmore, assistant secretary of the Smithsonian Institution of Washington, and prove to be a new species. Dr. Wetmore has named the extinct eagle in honor of Mr. Sternberg. It was a bird resembling the modern golden eagle in many respects, although it had a shorter tail. The fossil bones constitute the most complete representation of an individual bird of its geologic period yet found in America.

Other birds of a less remote past recently identified by Dr. Wetmore include pelicans, ducks, geese, swans, cormorants, grebes, gallinules and rails. These fossils were collected in Idaho by the late Dr. J. W. Gidley.

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