ARCHAEOLOGY

Mayan Throne Discovered In Guatemalan Wilderness

ARCHAEOLOGISTS exploring in the Maya country in Guatemala have discovered something new, the real throne where a ceremony recorded in Mayan art took place.

Word of the unusual discovery has just been received at the Museum of the University of Pennsylvania. The expedition is one sent out by the Museum under direction of Dr. J. Alden Mason. The archaeologists are exploring ruins of the old Mayan city of Piedras Negras, meaning "black stone."

Last year the same expedition found a masterpiece of Mayan carving in the form of a door lintel covered with picture writings and groups of Indians. The artist had made a sculptured record of some important ceremony at a throne.

Now, digging at the same ruins where the masterpiece was found, Dr. Mason has discovered the very throne, with its beautiful, ornate background, which the Mayan Phidias portrayed. There is no doubt, he reports, that the ceremony portrayed on the lintel was performed at Piedras Negras upon this throne.

The throne had an impressive setting. At the top of a long, fine stone stairway stood a colonnaded structure. And against the back wall of this structure, was the throne.

The expedition has been excavating at the pyramid where the lintel was unearthed last season, and also at another pyramid. Under this latter pyramid two temples have been located. The nature of these hidden temples is still to be determined.

Science News Letter, May 14, 1932

MEDICINE

Two Farmers Contract Rare Fungus Disease of Tongue

TWO CASES of a rare fungus disease of the tongue have been reported by Dr. Olin J. Cameron of the University of Michigan to the American Medical Association. The disease corresponds to "lumpy jaw" in cattle, and both Dr. Cameron's cases were contracted by farmers as a result of chewing straws of grass, hay or grain.

The technical name for the disease is actinomycosis. Only 55 cases of the disease occurring primarily in the tongue have been reported since the first case was identified in 1885. The disease gets its popular name from the lumpy tumors which form in the tongue and jaws, though it has been found that the fungus may develop in other parts of the body.

The disease is more common in men than in women, and so far as is known occurs only in adults. It has been successfully treated by opening the tumor formed by the growth of the fungus, and by application of X-rays of radium, and certain drugs taken internally.

According to one theory, the fungus lives normally inside husks or sheaths of barley or other grains and grasses. Another theory explains that the fungus lives normally in the human mouth, lying dormant in decayed teeth, and that it enters the tissues of the mouth when they are pierced by a jagged tooth, a splinter of wood, or a grass stem or grain beard.

Science News Letter, May 14, 1932

PHYSICS

New Instrument Detects Single Cosmic Rays

COSMIC rays plunging to earth from the depths of outer space are recorded unambiguously in a fifteen-foot iron tube detector, Drs. W. F. G. Swann and J. C. Street of the Bartol Research Foundation of the Franklin Institute, announced to the American Physical Society.

About four times each hour the cosmic rays travel the whole length of the nitrogen-filled tube and cause a spurt of electrical current that Drs. Swann and Street find is twenty times that caused by the passage of an alpha particle or heart of a helium atom. They have thus obtained direct evidence that the cosmic radiation occurs in individual packets and that it might be considered a series of bullets with high energy.

In their measurements of the cosmic rays with the fifteen-foot tube, Drs. Swann and Street found evidence of radiations that are even more electrically exciting than the cosmic rays. Spurts of ionization current larger than those caused by the cosmic rays were consistently recorded. They seem to be caused by something that happens inside the tube. Dr. Swann suggested that these unknown radiations may be the same as the rays discovered by Prof. G. Hoffmann, German physicist, and attributed by him to the breaking down of the hearts of atoms in the wall of the iron tube.

Science News Letter, May 14, 1932

IN SCIENC

PHYSIOLOGY

4 in 100 "Sensitive" To Vital Sulfur Compound

BETWEEN three and four out of every hundred individuals, whether men, mice or rats, are "sensitive" to sulfhydril, the chemical group consisting of one atom of sulfur and one of hydrogen which has been called the key-compound to life itself, Dr. Stanley P. Reimann of the Lankenau Hospital Research Institute of Philadelphia has reported to the American Association of Pathologists and Bacteriologists.

It is the sulfhydril group which makes possible the growth of plants and animals by cell division, and consequently their very life, Dr. Frederick S. Hammett says. When this same group becomes oxidized, that is, when it adds oxygen to itself, it loses its power to stimulate cell division and actually checks it. The discovery that certain individuals are "sensitive" to sulfhydril may throw light on many problems of cell division now unsolved, among them cancer, which is a state of riotous cell division. Dr. Reimann suggested further study along this line.

Science News Letter, May 14, 1932

BACTERIOLOGY

Typhus and Spotted Fever Germs Grow Differently

THE GERMS of typhus fever and of spotted fever are very much alike, but differ in the important respect of growing in different parts of the cells they invade, Dr. Henry Pinkerton of Peter Brent Brigham Hospital, Boston, and Dr. G. M. Hass of Children's Hospital, Boston, reported to the American Association of Pathologists and Bacteriologists.

The spotted fever germs grow and multiply massively in the nucleus of the cells, but infect the surrounding part of the cell only sparsely, they found from studying how the germs grow on animal tissues. Typhus fever germs, on the other hand, do not invade the nuclei of cells, but grow on the cytoplasm in another part of the cell.

Science News Letter, May 14, 1932

E FIELDS

MEDICINE

Lack of Sulfur May Be Cause of Arthritis

INDICATION that in arthritis, popularly called rheumatism, the sulfur balance of the body is disturbed appeared in a study reported by Dr. M. X. Sullivan of Georgetown University at the meeting of the Federation of American Societies for Experimental Biology. Dr. Sullivan examined tiny bits of fingernails of arthritics and normal persons. In the arthritic fingernails he found much less cystine, which is the chief sulfur-containing building block of the body. Dr. W. P. Argy of Georgetown University and Dr. J. Wheeldon of Richmond are following up this discovery by treating arthritic patients with injections of very finely divided sulfur.

Science News Letter, May 14, 1932

PLANT PHYSIOLOGY

Solidest Tree Is Twenty To Forty Per Cent. Gas

THE SOLIDEST and soundest kind of wood is not really solid at all. It is full of air—twenty to forty per cent. of its total bulk consists of gases, trapped in the minute tubes and cell cavities that all wood is made of.

This appears from the researches of Dr. D. T. MacDougal of the Carnegie Institution of Washington, who reported them before the meeting of the American Philosophical Society. Dr. MacDougal has been at work on the problem of the gases in trees for over seven years.

The gases he extracted from various kinds of tree trunks were made up of the same constituent parts as air, but in greatly different proportions. Oxygen, making up slightly over a fifth of atmospheric air, is sometimes entirely lacking, and never makes up as much as a fifth of the "atmosphere" of a tree trunk. Carbon dioxide, on the other hand, is far more abundant in tree-trunk gases than it is in the air. The normal atmosphere contains only three or four tenths of one per cent. of carbon dioxide, while the carbon-dioxide content of tree-trunk gases runs as high as 26 per cent., and the proportion rarely falls below one per cent.

The gases imprisoned in cavities in trunks of living trees are in contact with the wet walls of vessels conveying water up to the leaves. Naturally, they pass into solution in this sap, and are presumably used over again in the life processes of the tree. This would account for the low oxygen content. It is probable also that the carbon dioxide, by-product of vital processes, is reabsorbed, carried to the leaves where food-making is in progress, and used over again to build up sugars and starch.

Science News Letter, May 14, 1932

PALEONTOLOGY

Fossils Show Aardvark Had Relatives in America

AARDVARKS, which now live only in Africa and are about the queerest-looking mammals that walk, had relatives in America fifty-odd million years ago. Fragmentary remains that probably represent a Lower Eocene "ant-bear," found in Wyoming, were described before the meeting of the American Philosophical Society by Dr. G. L. Jepsen of Princeton University.

The two existing species of aardvark look like something out of the geologic Dark Ages. It is a clumsy-bodied animal about the size of a pig, with huge ears, long snout and claw-armed feet which it uses for digging into ant-hills for its favorite insect food. It can also retreat into the ground with amazing digging speed when threatened; whence its name, which is Boer-Dutch for "earth-pig."

Aardvarks occupy an order of mammals by themselves, due, in large part, to the curious structure of their teeth which are composed of hundreds of "tubules" of dentine, each "tubule" having its own slender nerve tube. This is a character of great contrast to the single pulp or nerve cavity in teeth of ordinary mammals. Teeth of *Tubulodon taylori,* the new Eocene fossil, already foreshadow the modern structure of aardvark teeth by having both a central cavity and numerous tubules.

Chemical examination of the fossil lumps of undigested food remains found with the Wyoming fossil bear out the evidence furnished by bones and teeth that it was a relative of the aardvark. They contain chitin, which is the hard horny substance of which the outer skeletons of insects are formed.

Science News Letter, May 14, 1932

BOTONY

Dove Orchid Makes Fitting Flower for Whitsunday

See Front Cover

SUNDAY, May 15, is the Feast of Pentecost, or Whitsunday, when many of the churches commemorate the descent of the Holy Spirit. In the lands of tropical America, where delicate orchids can be had by anybody, many an imaginative Latin will mingle poetry with his piety as he looks upon the Dove Orchid, with the little brooding figure of the symbolic bird hovering at its heart. Throughout the warm countries where it grows, this exquisite blossom is known as the "Flower of the Holy Ghost."

The "dove" and the two structures on either side, which might be considered uplifted hands or tongues of flame as one prefers, really have to do with the sending and receiving of pollen. The poetic figure is therefore appropriate from a botanical point of view also, for the brooding "dove" is instrumental in perpetuating the life and insuring the distribution of the species.

The photograph of the Dove Orchid reproduced on the cover of this issue of the SCIENCE NEWS LETTER appears through the courtesy of the Missouri Botanical Garden.

Science News Letter, May 14, 1932

HISTORY

Yucatan History Published After Wait of 300 Years

A HITHERTO unpublished history of Yucatan, written in 1639, is being printed by Luis Rosado Vega, director of the Yucatan Historical and Archaeological Museum.

This history of Yucatan, where the Spanish conquerors found the remarkable Mayan Indian civilization, was compiled by order of the Spanish king. Only three hand-written copies were produced. Of these three, only one is known to exist today. It is in the British Museum. This rare manuscript is signed by its author, Francisco de Cardenas y Valencia, a priest in Sotuta, Yucatan.

The book describes the military and religious subjection of the Mayan Indians, records many valuable details about the land and its people. This Mayan history is nearly 50 years older than the famous history of Yucatan written by the monk Cogolludo.

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