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ARCHEOLOGISTS TO EXPLORE ANCIENT MEXICAN CIVILIZATION

During the next ten years American archeologists will intensively study and excavate the ruins of the ancient Maya empires that flourished before the time of Columbus in Yucatan, the Carnegie Institution of Washington announced recently, when it made public an agreement just made with the Federal Government of Mexico giving it the privilege of enlarging the scope of the archeological work that it has begun in that region during the past decade.

The first ancient city to be unearthed is Chichen Itza in Yucatan, and Dr. Sylvanus G. Morley, to be in charge of field work, is now at the site supervising a force of laborers clearing off the tropical bush from the group of structures that will be studied first.

While the work will be concentrated at the ruins of Chichen Itza during the next field season beginning in January, the archeologists will later excavate other forest-covered cities in Mexico. An arrangement already made with the government of Guatemala allows archeological work in that country as well.

Every phase of the Maya culture will be studied, Dr. John C. Merriam, president of the institution, declared in making the announcement. The engineering, architectural, and artistic construction of the ancient structures, as well as the order in which they were built, will be studied intensively, and in order to secure an understanding of the conditions under which the Maya lived, the scientists will study the location of their cities, the geologic formations of the country, the climate, the weather, and the relation of plants and animals to the food, clothing, medicine, and other material needs of those ancient people.

Expert anthropologists will compare the physique of the surviving remnants of the Maya and Aztec peoples with evidences from the ruins, and languages will also be studied to determine possible relationships between the present and the past. The testimony of the Spanish explorers who met and subdued the ancient Maya will also be used in reconstructing the life of those true Americans.

ARCHEOLOGISTS TO RECONSTRUCT CIVILIZATION FOR LIVING MAYA

By Watson Davis

It is not the mere lure of the ancient, a curiosity to know the past, or a desire to add specimens to museums that leads the Carnegie Institution of Washington to arrange with the Mexican government for ten years of excavation of the ruins of America's most advanced prehistoric civilization, the Maya empires of Yucatan.

Enticing as are those great stone ruins, now largely forest covered, Dr. John C. Merriam, president of the Carnegie Institution, is undertaking this exploration more as a sociologist than as an archeologist.

The investigators of the Institution will study the dead to help the living. They will enter our sister republic to the south to aid it and not to exploit it.

Much of present Mexico is a real part of old America. Much of its blood and outlook on life is directly descended from the true Americans who peopled Mexico before the Spanish conquerers arrived. Whether they will or not, their everyday life, their politics and government are influenced by their racial psychology and inheritance which is predominately that of the Indian, the Aztec, and the Maya, true old Mexicans. Yet Mexico is somewhat like the traveler in the desert whose tracks have been covered and lost. It knows its history well only for the last few hundred years. Its rich pre-Columbian past is lost, the modern country does not have the benefit of the guidance that a knowledge of yesterday's would provide.

Dr. Merriam hopes that the excavations and studies that archeologists of the Carnegie Institution will make will furnish the Mexican people with much of this forgotten background. Leaders in that country will be able to better interpret the popular feelings.

To Yucatan he believes that their excavations hold the possibility of bringing a re-birth. There the natives are practically direct descendents of the Maya, the creators of the empires that are to be unearthed. Gone from the memories and traditions of the present inhabitants are the glories and culture of those ancient countries; under conditions of a civilization that arose in Europe the natives of Yucatan have been at a disadvantage compared with the white man.

Yet people of the same blood once built a splendid, although in some ways barbaric, civilization. If archeologists can reconstruct the past for a race that has forgotten, Dr. Merriam hopes that the Yucatan native, with the lore and learning of the past, will live in greater enjoyment of life and in larger usefulness.

The ruins of the old civilizations of Mexico were inspected by Dr. Merriam this spring and he also visited the capital seat of the present government. He saw President Obregon and other officials of the government and enlisted their aid in the plan of the Carnegie Institution for learning about old Mexico. He and Dr. Sylvanus G. Morley, in company with Dr. Manuel Gamio, Director of Anthropology of the Mexican Government, visited the site of excavations made by Mexican archeologists in the Valley of Teotihuacan. There great pyramids rivalling those of Egypt were erected in forgotten times. The extensive program of exploration now announced was approved by the Mexican government as a result of Dr. Merriam's visit.

The ancient ruins of Mexico will not be taken to an alien land but the sites of the buried cities will become national parks in which the ancient structures will be preserved and carefully protected. Copies of the records of excavation will be left in the safe-keeping of the Mexican government in order that scientists of later generations may use them.

To the world the archeologists hope to give even more than the history of the Mexican people. Bound up in the early life of the Mayas may be many mysteries

concerning the origin of the American Indians. The relations of the Incas of Peru and the Aztecs of Mexico to the Maya must be solved. There are other races to be discovered and named. A vigorous attack is to be made on the mystery of the American past.

CHICHEN ITZA HOLDS SECRETS OF "THE EGYPT OF AMERICA"

Chichen Itza, the ancient city site in the northeastern part of the peninsula of Yucatan which has been selected for intensive excavation by the Carnegie Institution of Washington in cooperation with the Mexican government, was the political capital, the metropolis, and the "Holy City" of the Mayan people during the last great phase of their empire which has over 1,000 years of history recorded in characters as yet undeciphered by modern science. It flourished from 730 A. D. to 1540 A. D., or longer than any other city ever constructed in America, and in it have already been found many evidences of the scientific and artistic accomplishments of its builders, who have been termed both the Greeks and Egyptians of the New World.

The ruins of the temples, palaces, and other government buildings of Chichen Itza cover an area of over one square mile. Seated high on terraced platforms, these richly carved structures dominated the surrounding city which extended for five miles in every direction. The few stones left to mark the site of the less pretentious buildings and numerous private houses give mute testimony to the city's former importance.

Besides being the New York and Washington of the Maya, Chichen Itza was also their religious center or Mecca. To it the devout journeyed from hundreds of miles around. The chief shrine or holy place was a great natural well 100 feet in diameter and 70 feet in depth to the surface of the water. This sacred well was sometimes used as a place of human sacrifice, young girls being thrown down into it to propitiate the gods. More frequently, however, valuable jewelry, some of which has been recovered by archeologists, was cast into the water as an offering by the pilgrims.

From a similar natural well, the water supply of the city was secured. These two great reservoirs gave the city its name, Chichen Itza, which means "The mouths of the wells of the Itza people". They also were probably responsible for its location, as that part of Yucatan is one vast limestone plain unwatered by rivers.

When the "Golden Age of the Maya" had run its course in what is now unhealthy, tropical forest country to the south, there was a revival of the art, science, and learning of this remarkable people in this more healthful northern section with Chichen Itza as its center. This city shows some of the characteristics of both periods, as well as the influence of the Nahua people from whom the Aztecs of Mexico derived their civilization.

For this reason, thorough exploration of this site gives promise of throwing much light on the advancement made by these two greatest peoples developed on this continent before the coming of the white man.

The Maya of Central America showed a great deal of skill in sculpture, painting, and architecture, while the astronomical calculations and calendar system

surpassed the best that was done along the same lines in the Old World in ancient times. Their system of recording dates has been largely worked out, but their hieroglyphic writing is still a mystery. Chichen Itza has been regarded as the most likely spot for the discovery of some key which will aid in the reading of the recorded history of these people, as the discovery of the Rosetta stone opened the way to the reading of Egyptian hieroglyphics.

Excavation of the ruins of Chichen Itza is expected to open up the archeological wonders of the "Egypt of America" to the American winter tourist. Motor roads to connect these ruins with those of other Maya cities have been projected, while a modern road leads from the port of Progreso to Chichen Itza. Progreso is less than a week by boat from New York and less than three days from New Orleans.

NEWS OF THE STARS

By Isabel M. Lewis,
U. S. Naval Observatory

AUGUST METEORS NOW DUE

Many showers of meteors recur each year with great regularity. One of the largest and most abundant of these yearly displays of celestial fireworks, known as the Perseids, is visible for about a week in August, the maximum display taking place from the tenth to the twelfth.

The Perseids are yellowish in color and move with a velocity of about twenty-five miles a second which is about the average meteoric speed. They receive their name from the fact that their "radiant", that is the point from which they all appear to radiate, is in the direction of the constellation of Perseus which will now be found in the northeastern part of the heavens about ten o'clock in the evening. The meteors should be seen from this time on during the night but if one sees as many as three or four in an hour he is doing very well. Only in exceptional displays is a greater number than this to be seen in a single hour at any one point on the earth's surface.

The brilliant little particles that we call meteors, or so inappropriately "shooting stars", since they resemble a star about as much as a candle resembles the sun, weigh on the average less than a single grain. Their brilliant but transient light is due to the heating of the particles to incandescence as a result of friction produced by their rapid passage through the atmosphere. Before they enter the atmosphere they are but minute particles in a cloud of cosmic dust, the remnants of some comet that has become disintegrated and scattered along its orbit in this form. The older the comet the more uniformly is this debris distributed along its path. If the comet is comparatively new its fragments are more irregularly distributed in dense clouds or knots of meteoric particles. In years when the earth strikes the orbit of such a disintegrated comet in the midst of one of these denser clouds of particles there is a most gorgeous display of fireworks staged for our benefit with the expenses charged up to the account of the solar system.

It is to the Leonids that we look for our most spectacular exhibits.

Due to return each year about November 15 they are sollocated in their orbit with respect to the earth that we run into one of the denser clouds about once every thirty-three years. At such times the earth is deluged with a veritable rain of meteoric sparks. Such showers occurred in 1833 and 1866 and struck terror to the hearts of the ignorant who believed they were looking upon the final display of fireworks that heralded the end of the world. Another return of such a display was anticipated for 1900 but the shower was of little greater than average intensity in that year. The failure of this predicted display to materialize was charged up to Jupiter, the mischief-maker of the solar system, who is particularly prone to interfere with the motions of such small fry and who had as it chanced been in a position to do so most effectively in this case.

The Perseids are very uniformly distributed around their orbit and as a result there is very little difference in the nature of the display from year to year. They are the "Old Reliables" among meteors who may always be counted upon to appear when expected. The comet of which they represent the remnants is probably an old one that has become thoroughly disintegrated. It is an interesting fact, though, that the orbit of the Perseids coincides with that of the bright comet of 1862 known as Tuttle's comet.

In addition to such well-known meteoric showers as the Leonids and Perseids and a few others of equal strength and importance there are, according to Dr. Denning, the English astronomer who has for years made a special study of meteors and who has probably observed them more continuously than any other living astronomer, something like three thousand less conspicuous but well-defined meteoric swarms. Interplanetary space is, apparently, fairly well filled with cosmic dust particles and the earth is continually encountering swarms of such particles and treating its inhabitants to a free display of fireworks.

READING REFERENCES- Lewis, Isabel M. Astronomy for Young Folks, New York, Duffield and Company, 1921. Dyson, F. W. Astronomy. New York, E. P. Dutton and Co. 1918.

Dr. Edwin E. Slosson
C H A T S O N S C I E N C E

PHOSPHATES AS STIMULANTS

During the war we heard all sorts of wild rumors about the German soldiers being given some secret chemical that endowed them with supernormal energy as they charged the trenches or endured forced marches. Doubtless various things were tried, including that old and unreliable stimulant, alcohol, and the newer and less exciting energizer, sugar.

But it has now been disclosed that most remarkable results in the increase of muscular power and endurance were obtained from the use of a well known salt, called by the chemist, "sodium dihydrogen phosphate". This was given to the shock troops as they entered battle or during long marches in the form of a drink. To avoid the influence of psychological suggestion, which has invalidated so many tests with "poison squads" and experimental subjects, other battalions were served

with a sham drink sweetened and flavored the same but acidulated with tartaric instead of phosphoric acid. At the end of a hard hot day the troops that had been treated with the phosphate were fresher in spirit and less fatigued in body than the others for some reason mysterious to them.

Since the war it has been found that giving phosphate drink to coal miners and farm laborers increased their monthly output without extra exertion. Horses and oxen given an ounce of the salt a day did more work and gained flesh. Here there could be no deception due to the imagination.

This practical and promising method of increasing human and animal efficiency came from the investigations of one of the foremost of German physiologists, Professor Gustaf Embden of Frankfurt University, on the chemistry of nutrition. According to this theory muscular energy comes from the breaking down of a substance called "lactacidogen", which he regards as a compound of sugar and phosphoric acid. This breaks down, when the muscle contracts, into lactic acid and phosphoric acid. Lactic acid, as it has long been known, accumulates in a fatigued muscle and has to be recombined or oxidized before the muscle can work again. So Embden reasoned that adding phosphate to the diet would hasten the combination of phosphoric acid with more sugar and so relieve the fatigue. The war gave him the chance to experiment on whole regiments at a time and the results seem to confirm his theory.

The new stimulant has the advantage over alcohol or the alkaloids in that it is a natural factor in bodily process, and also in that there is no danger of intoxication from an overdose or of forming a habit. Doses up to a quarter of an ounce a day were given to the soldiers and laborers. More than this, and for some people much less than this, has a laxative effect.

The report of these experiments is likely to multiply calls for phosphate drinks at the soda fountains, but the anticipated increase of muscular vigor may fail to be felt, for when the man behind the marble counter mixes a phosphate he throws a dash of a very dilute solution of phosphoric acid, and a person would have to take some fifty such drinks to get the amount used by the soldiers.

READING REFERENCE - Slosson, E. E. Creative Chemistry. New York, Century Company, 1920. McCollum, E. V. The Newer Knowledge of Nutrition, New York, Macmillan Company, 1922.

INFANTILE PARALYSIS TREATED BY SERUM

A new method of treating infantile paralysis worked out at the Research Laboratory, Burlington, Vt., and at the Johns Hopkins University and Hospital, is described in the journal of the American Medical Association for August 11. It is a unique combination of previous medical methods for the control of diseases affecting the spinal column and the nervous system.

It has for some time been known that in many instances patients with infantile paralysis may be benefited during the acute stage of their disease by the injection of large doses of blood serum taken from patients who have recovered fairly recently from the disease. This method of treatment is based on the belief that such patients have developed in their systems substances which are specifically able

to combat the infecting material of infantile paralysis. On the other hand, it has been known that serums injected into the body do not easily reach the tissues of the spinal column. Not long ago workers at the Johns Hopkins Hospital showed that the injection of large amounts of concentrated salt solutions into the veins would cause a reduction in the volume of the brain and spinal cord because the spinal fluid would be drawn out of its usual place and into the tissues of the brain and cord. Drs. W. L. Aycock and H. L. Amoss therefore decided to inject monkeys that had been infected with infantile paralysis with the serum of convalescing human beings, both into the veins and into the spinal cord and then to give these animals large doses of concentrated salt solution into the veins. In this way the healing serum was brought directly into contact with the infected regions and tissues. The results indicated that the method had value and that theoretically it is sound. It was therefore decided to test it out on a patient. A boy four years old with acute infantile paralysis was treated in the Johns Hopkins Hospital by this method. His condition was considered at first practically hopeless because paralysis of his breathing apparatus was developing, and yet, under the new method of treatment, he made a good recovery.

PLAN DAWN TO DARK AMATEUR RADIO RACE

Amateur radio operators will race the sun across the continent on Sunday, September 23, in a daylight transmission test as important to amateur radio as Maughan's attempts at a dawn to dark continent crossing were to aviation.

The minute that the sun appears above the horizon that morning ten crack stations on the Atlantic coast and ten on the Pacific coast, selected by F. H. Schnell, American Radio Relay League traffic manager, will start transmitting messages. These have been sent to all of the twenty operators in sealed envelopes. The stations taking part in these tests are unknown to the other amateurs. As the messages are sent out on the air, they will be relayed by intervening amateurs, who have been instructed to receive and forward them as quickly as possible in order than they may reach the farther coast by the time Old Sol settles down behind the hills.

There is a real scientific value connected with the daylight tests since they will determine to what extent the light interferes with radio transmission, officials of the League explain. Even the listener, who has been interested in radio only a short time, knows that reception is difficult in the daytime and that distant stations come in strongest on a clear, cold night. The present feat will show just how far and easily one can depend on effective transmission when both summer static and daylight are encountered simultaneously. Members of the League are determined to win the contest against both adversaries and prove conclusively that they can cross the continent while the sun beams down on their antennae. Everyone will have the same chance of picking up a message and relaying it along the line to the next man.

Mr. Schnell has asked all amateurs to keep a record of everything they hear and send records to the American Radio Relay League Headquarters.

To remove tarnish from silver easily, place it in a solution made by pouring a quart of boiling water on a teaspoonful of salt and a teaspoonful of soda in a bright, new aluminum pan.

'POSSUM PROBLEM SOLVED BY TEXAS SCIENTIST

The great marsupial mystery has been solved. In the recently issued annual report of the Smithsonian Institution, Dr. Carl Hartman, zoologist of the University of Texas, tells how the new-born Virginianpossum gets in its mother's pouch, incidentally, he upsets the fascinating theories which old woodsmen and nature students have fabricated to explain this puzzling phenomenon.

Throughout the country, among whites and negroes, there has been a conflict of explanations. The more credulous have held that the young are born directly into the pouch which serves as their incubator during the first several weeks of their lives. Others have maintained that the mother seizes the baby (possum with her mouth and thrusts it into the pouch herself. Dr. Hartman is one of the few who claim to have actually seen what really happens. He was lucky enough to watch the birth of a litter of eighteen. The process is as simple as it is remarkable, he says.

The new-born 'possum just climbs hand over hand up into the pouch without the aid of the mother. The coordination of nerves and muscles necessary to find the pouch in a maze of hair and attach themselves for their two months stay at this haven of food and shelter is little less than marvelous, Dr. Hartman declares. He also found that the opossum has an extremely early birth, the entire development of the embryo within the mother's body being only about eleven days.

SOFTWOOD FORESTS HOLD FATE OF WOOD SUPPLY

Although one-fifth of the earth's surface is still covered with forests and there are over four acres of woodland for every man, woman and child on the globe, yet Raphael Zon and William N. Sparhawk, economists of the U. S. Forest Service, Washington, in a survey of the forest resources of the world just published, point out that the coniferous "softwood" forests of the northern hemisphere hold the fate of the world timber supply problem in their depths.

"Whether these coniferous forests that now supply more than three-fourths of all the lumber of the world will be able to meet the demands of the next two or three generations depends upon what steps shall be taken in the next few years to put them on a permanently productive basis," they declare.

Only 80 per cent. of the pine, spruce, and other softwood timber cut each year is being replaced by growth. Softwoods, because of their light weight and ease of working are particularly adapted for construction use and a multitude of industrial uses for which the harder, heavier woods are not as suitable.

The best of the hardwoods of the temperate zone, including oaks, maple, ash, walnut, birch, beech, and other kinds, are also being rapidly depleted. But the forest economists find that in the tropics there are vast reserves of hardwoods which can be substituted for any of those now used and that the extreme rapidity of tree growth in the tropics makes it exceedingly unlikely that these supplies will be inadequate for centuries, if ever.

Fifty-six billion cubic feet of wood a year is used by the world, according to their estimates. Almost half, or 26 billion feet, is saw-timber, and nearly 30

billion feet is firewood. The firewood is equivalent in heating value to approximately one-fifth of the world's consumption of coal.

READING REFERENCE- Zon, Raphael and Sparhawk, William N. Forest Resources of the World. New York, McGraw-Hill Book Company, 1923.

ALFALFA'S FUTURE THREATENED BY PARASITE IMMIGRANT

Prompt and aggressive action to save America's alfalfa and other crops from tremendous damage from the eel-worm disease was urged in an appeal issued recently by the United States Department of Agriculture through its Bureau of Plant Industry. Agents throughout the country were warned to be on the lookout for the tiny crop criminal which annually causes immense losses in South Africa and from which damage in several states of this nation has already reached alarming proportions.

The eel-worm is an organism which is scarcely a twentieth of an inch long when fully grown; but causes a disease which shortens the life of the crop by several years, makes frequent plowings and replanting necessary, and reduces the yield. Under favorable conditions, experiments indicate that the alfalfa eel-worm may injure red, white, and alsike clovers, buckwheat, English peas, turnips, and even potatoes, as well as alfalfa.

As many as 200 eggs may be laid by one eel-worm, the young being about a tenth the size of the adults. Under moist conditions these migrate or are carried by irrigation water or other means to new plants. They penetrate the tender parts of these plants and grow to maturity within the plant tissues, causing swellings and abnormal growths.

Finally the parasites become so numerous that they completely kill the plant. When this happens they leave it and go into the soil to attack other plants they may be able to reach. A poor stand of dwarf plants is frequently the result.

The presence of the alfalfa eel-worm disease was first noted in America in 1921, when it was discovered in a single field in eastern Oregon. Since then it has been found more widely distributed in that general locality than was at first thought. It has also been found in California and Colorado and it is considered possible that it may occur in other parts of the country. Efforts will be made by the Department to secure a complete survey over the entire country during the present growing season in order to spot all infestations and to eradicate the disease before it becomes too generally established.

NEW PEARL BEDS FOUND IN INDIA

Twenty miles of pearl oyster beds that will begin to yield in 1926 have been discovered in the Gulf of Mannar, at the lower tip of India, according to information reaching London. Government officials in India predict that the largest pearl fisheries of a century will develop. The new beds are directly opposite the ancient fisheries of Ceylon exploited by the Greeks and Romans.

DOCTORS DECLARE REJUVENATION UNPROVED

A vigorous attack on claims of human rejuvenation advanced by Steinach, the Vienna professor and his adherents, is made editorially by the Journal of the American Medical Association in its August 11 issue.

Steinach has announced, the Journal explains, that old men can be rejuvenated by an operation performed on the duct leading from the sex organs, and stimulation of the interstitial cells.

The editorial claims that the evidence indicates that these cells are not the only factor responsible for virility. It calls attention to reported failures with the Steinach method, and cites particularly the case of Prof. Zeissl of Vienna, a man aged 69 years, who has published his personal experience with the Steinach method and who found himself less virile after than before.

"There is then, in support of this so-called rejuvenation method", The Journal says "only a mass of poorly supported, uncontrolled clinical evidence and some laboratory evidence not bearing directly on the point concerned. Certainly there is not as yet any actual proof that rejuvenation has been accomplished in a single individual, or any basis for the belief that it ever will be accomplished."

READING REFERENCE- Harrow, B. Glands in Health and Disease. New York, E. P. Dutton and Company, 1922.

TABLOID BOOK REVIEW

CONSCIOUSNESS, LIFE AND THE FOURTH DIMENSION, by Richard Erikson, New York: Alfred A. Knopf. \$3.00.

A study of the non-Euclidian conceptions of space and time from a psychological standpoint. The author, a lecturer in philosophy in the University of Christiana, endeavors to connect the fourth dimension with the stream of consciousness and the chain of organic life.

DUCTLESS AND OTHER GLANDS, by Fred E. Wynne. New York: Alfred A. Knopf. \$1.50

A brief and convenient guide to the new knowledge of the glands and their influences on bodily and mental characteristics. Very clear and not at all sensational.

The Royal Agricultural Society of England is conducting experiments with pits dug in the ground for the storage of fodder as a substitute for the more expensive tower silos.

Research by scientists in medicine and surgery in Germany is reported to be practically at a standstill because of lack of financial support.

Revenues from the New Zealand State forests pay all the expenses of the forest administration and research.