

## SCIENCE NEWS

*Science Service, Washington, D. C.*

## PREHISTORIC REMAINS IN FLORIDA

*(Copyright, 1925, by Science Service)*

THAT prehistoric man lived in America at the same time as did the mammoths and mastodons, and that those now extinct elephants survived in the South 10,000 to 50,000 years later than in other parts of the continent, is indicated by remains discovered by a joint expedition of the Smithsonian Institution and Amherst College near the towns of Melbourne and Vero, Florida. These preliminary results of the expedition were tentatively announced by Dr. J. W. Gidley, of the Smithsonian Institution, who has returned from Florida. Dr. Gidley, in cooperation with Professor F. B. Loomis, of Amherst, directed the excavations which revealed a crushed human skull, together with stone arrow heads, ten feet below the surface in close association with prehistoric animal remains.

Similar deposits were found in three different places near Melbourne and at Vero showing that the remains are typical of a wide extent of country. In the more recent accumulations of limestone shells, lying above the mammoth and human bones, were found fragments of pottery, while in the sands below the elephant layer were discovered the teeth of horses, camels and saber-tooth tigers typical of the pleistocene period of 50,000 or more years ago.

Dr. Gidley states that there is every evidence that the human remains were not buried in the mammoth strata at some more recent time, but that they were deposited during the same period and in a similar way to the animal bones.

The discovery of the existence of this distinct layer of ancient elephant and human relics not only shows that man was a contemporary of the mammoth on this continent as in Europe, but reveals for the first time that the big elephants probably survived for thousands of years later than has hitherto been thought. Dr. Gidley estimates that these American elephants lived in Florida perhaps 10,000 years after those whose remains were recently discovered in the former swamps of Indiana, and which have been assigned to the late pleistocene or Ice Age.

The crushed skull found at Melbourne will be pieced together in an effort to determine whether this human contemporary of the mastodon had the same type of head as modern Indians or whether he shows the characteristics of the more primitive cave man.

Exhaustive study of all the material found is now under way and a joint report will be made by Dr. Gidley and Professor Loomis.

## THE CANCER GERM THEORY

SANITARY COUNCILLOR DR. LUDWIG M. WOLFF, the well-known German cancer specialist, was recently interviewed by the Paris correspondent of *Science Service* on the English cancer discoveries and the German counter-claims to have made the same discoveries some time before.

Dr. Wolff refused to make any statement for publication further than saying that it is an indubitable fact, whether the English workers knew it or not, that the results so sensationally trumpeted by the press had in fact been obtained in Germany some time before. "But," he said, "this is really of no importance at all, for, while these 'discoveries' have an undoubted scientific interest, they do not bring us an inch nearer the solution of the cancer problem. They aim at finding and isolating the cancer germ. That is to say, they aim at finding something which simply does not exist. There is no such thing as a cancer germ. There can be none. How do I know that? Very simply. Just think for a moment. We know many diseases that are caused by germs: tuberculosis, malaria, a whole series of affections of the skins, and so on. But these attack man at all ages. Bacilli take no account of age; they will attack an infant or a youth as readily as a mature or an old man. As you know, cancer is quite different; it never attacks any one under the age of 30 and extremely seldom under the age of 40. What does this mean? It means first that the cause of cancer is not a bacillus, though it is, of course, possible that the cancer condition encourages the propagation of a certain kind of bacillus, which would, however, be a symptom and not a cause of the disease. It means secondly that cancer is probably caused by some change, perhaps a chemical change, which the human body undergoes in the course of years.

"The last report of the Middlesex Hospital, in London, supports this view by recording the significant fact that cases of cancer there have been known to recover spontaneously. It is on this and similar facts that Professor Barton Scammell, the president of the Radium Institute at Dover, England, bases his idea, for which there is a good deal to be said, that owing to certain defects in the diet and the preparation of modern food, the civilized human being of to-day suffers from lack of potassium in the body and that this is one of the factors, if not the main factor, in the occurrence of cancer. It is, of course, a well-known fact that the primitive races do not suffer from cancer."

## VITAMIN B

RECENT experimental work by V. G. Heller, C. H. McElroy and Bertha Garlock, of the Oklahoma Agricultural and Medical College at Stillwater, to be reported in *The Journal of Biological Chemistry*, indicates that a spore-forming organism found in the intestinal tract causes a building up and storing of vitamin B which is necessary for growth and proper development.

In carrying out the experimental work, white rats were fed on a diet of food known not to contain vitamin B. Previous experiments had shown that rats fed on this vitamin B-free diet continued to grow and exhibited symptoms of vitamin B deficiency only very slowly. It was soon found that where the rats had the opportunity to reingest some of the excretion from the intestine, the

effects of the deficient diet were very slow. The cages of the rats were then arranged so that the animals would not have access to the intestinal excretion and soon the animals began to show signs of vitamin B deficiency, their growth was retarded and death followed.

A culture of the spore-forming organism was then made and this was incorporated with their food. Almost at once the symptoms of vitamin lack disappeared, the growth of the rats returned to the normal rate and they began to thrive again. As a later refinement it was found that the addition of roughage in some form to the diet to increase the bulk of food in the intestine aided the process in the intestine whereby vitamin B is built up and stored by means of the spore-forming organism.

### METHANOL

METHANOL, the synthetic alcohol which is now being made cheaply in Germany, is just as poisonous as the similar wood or methyl alcohol, despite claims that the foreign product, because of its high purity, is harmless. This statement is made by Dr. Reid Hunt, of the Harvard Medical School, in a recent issue of *Industrial and Engineering Chemistry*, following a series of experiments.

"The results with the German (synthetic) methanol were the same as those obtained with pure methyl alcohol obtained from wood distillates," says Dr. Hunt. "It can confidently be predicted that the use of the synthetic methanol as a beverage or as an adulterant will be followed by the same disastrous effects to life and vision as have characterized such uses of wood alcohol. Those who are circulating the report that the synthetic methanol is not poisonous are not only stating an untruth but are assuming a grave responsibility, for death or blindness will inevitably be the fate of a number of those who may be misled by such statements and attempt to use synthetic methanol as a beverage."

As a result of his experiments on animals, Dr. Hunt finds that small doses of either methanol or ordinary wood alcohol are not as poisonous as the same amount of ethyl, or grain alcohol; but when the doses are repeated a few times at 24-hour intervals, the methanol has the most harmful effect. This is because the animal develops a tolerance to the ethyl alcohol. Methanol, however, works differently, as it has a cumulative action, a number of small doses having the same effect as a similar amount given at once.

Man, however, is sensitive to both, and, according to Dr. Hunt, a small dose of methyl alcohol is more harmful than a similar dose of ethyl alcohol. "The more highly developed nervous system of man is more seriously affected by methyl alcohol than is that of the lower animals, and permanent blindness has often been reported from single, sometimes small, doses of methyl alcohol, whereas such results are unknown in the case of ethyl alcohol."

### PLAN FOR THE ELECTRIFICATION OF PALESTINE

A NEW engineering scheme which will use the sun's energy to provide electrical power for all Palestine, make

water available for the irrigation of thousands of dry acres and provide a new interior port for ocean shipping and canals for inland transportation, has been suggested by a French engineer, M. Pierre Gandillion, and accepted for execution by several French business men.

The project consists in utilizing the falls that can easily be created between the Mediterranean and the Dead Sea by carrying the water of the Mediterranean over a 260-foot ridge by means of canals, pumps and a great siphon and then letting it drop to the Valley of the Jordan and from there down into the Dead Sea, a total vertical distance of more than 1,500 feet. The Dead Sea is an inland lake and only as much water as the sun can easily evaporate will be thrown into it.

M. Gandillion estimates that the sun now evaporates all the water that the Jordan carries into the Dead Sea at the rate of about 92 cubic yards a second. That it used to evaporate much more is shown by a series of terraces at different levels on its borders, formed when the water was higher and the surface exposed to evaporation by the sun's heat therefore greater. The new plan will raise the level of the Dead Sea and evaporation by the sun will take care of the additional and regulated inflow. It is believed that evaporation of 135 cubic yards a second is easily possible and the inflow from the Jordan is to be augmented by that amount.

The scheme will necessitate the building of a sea-level canal from the port of Haifa, on the Gulf of Akka, to a point about four miles inland. It will end in a great basin where ocean steamers can turn. From there on, either navigable canals with locks or ascensional water pipes will be built to reach the ridge at Afoule, a way station. At that point a one and one half mile tunnel will be bored through the rock and the water will run into chambers at about 262 feet above the level of the Mediterranean and about 1,125 feet perpendicularly above the Jordan, where a hydraulic turbine will be built. Another drop of 394 feet is available between the Jordan and the Dead Sea, making a total drop of over 1,500 feet.

In all, a crude force of 617,000 horse power will be generated, said M. Gandillion. Of this, 190,500 horse power will be used to lift the 135 cubic yards of water a second from the Mediterranean over the 260-foot ridge, leaving enough power for the electrification of the entire Holy Land with its railroads, industries and agriculture.

The fresh waters of the Jordan and the Sea of Galilee need not be poured into the Dead Sea with the salt water of the Mediterranean, but can be diverted and used to irrigate thousands of acres of dry land.

### FIREPROOF GAS TANKS

AN aeroplane gasoline tank which may be completely riddled by incendiary or explosive bullets without bursting into flames, or even leaking, is the latest development in the aviation field which comes from Vienna. The tank is the usual metal type, but with a peculiar interior coating, the composition of which is a carefully guarded secret with the inventor, probably on the order of the liquid gums placed in automobile tires to make them puncture-proof. There is also, according to the claims of the

patentee, a special mechanism inside the tank which eliminates all the effects of explosion, either of bullets or of gas fumes.

The inflammatory bullet, upon entering the tank, is immediately enveloped with a coating of some sort of material that extinguishes the flame and at the same time prevent the phosphorus-coated bullet from leaving a deposit.

In the test made by expert army witnesses, a series of twenty bullets were fired through the experimental tank, which was filled half with gasoline and half with inflammable gas. The bullets were fired in a series of one explosive, one phosphorous and one solid, in rotation. After the twenty rounds had been fired, with no bad results, the tank was set in an aeroplane, which then made an hour's flight using only the gasoline from the apparently perforated tank. No leak or fire occurred, and no other trouble of any kind.

The invention is arousing great interest in the war department, as the figures of the past Great War taken from the German war office show that 80 per cent. of the planes brought down in flames were fired either from phosphorous bullets or caught fire from tank leaks.

### REST PERIODS FOR FACTORY WORKERS

"INDUSTRIAL workers doing routine or monotonous work will steal time to rest on the job whether or not the management makes provision for rest periods," says Rex B. Hersey, of the Wharton School of the University of Pennsylvania, in urging the establishment of authorized rest periods and instruction of workers in the art of complete relaxation as a means of promoting efficiency and better production.

In an article in the *Journal of Personnel Research*, Mr. Hersey calls attention to investigations that have shown workers in certain munition plants to average seven or eight minutes of unauthorized rest out of each working hour and that in a department of a large textile plant employing about fifty girls, the bane of the production foremen's existence was the time lost through unauthorized rest.

In order to determine the value of supervised rest periods in a large factory two fifteen minute rest periods were provided, one at ten o'clock and the other at three in an eight-hour working day. During the rest periods the workers left their machines and gathered in comfortable rest rooms. Many would lie down on couches and others would sit quietly in easy chairs. Others by conversation, dancing or music would gain a relaxation that freshened their mental attitude and caused them to return to their work at the end of the period fresh and ready for the next stretch.

A comparison of the morale of both men and women workers in this factory with that of men and women in a plant where conditions were similar, except for the rest periods, showed a marked difference. Those workers who had the rest periods were more alert and on the job and were better satisfied with general working conditions.

It has been found that the rest periods promote better health, less absence from work and better spirit on the

part of employees. These are important factors in increasing efficiency of production. Mr. Hersey predicts that the employer who does not authorize rest periods, no matter what wages he may pay, will soon be paying for the rest periods authorized by his competitors.

### ITEMS

M. DE FORCRAND, of the French Academy of Sciences, has announced that he has obtained the heretofore inert gas, xenon, in crystalline form combined with 6 or 7 molecules of water. It was made in a Cailletet apparatus when pure xenon in the presence of a little water was subjected to a pressure of several atmospheres. The crystalline form of krypton had been obtained by him two years before, and the French scientist, M. Villard, discovered that of argon. But the xenon compound is the most stable of these. Three of the six known "inert" gases still remain obdurate, and among these is helium, the non-inflammable balloon gas.

THE heavy earthquake reported from observatories at Chicago and other cities, on August 19, occurred under the sea off the coast of northeastern Asia, according to calculations made by Commander H. N. Heck, of the U. S. Coast and Geodetic Survey. Data were sent in by observatories of the survey at Tucson, Ariz., and Cheltenham, Md., and by the Dominion Observatory at Ottawa, Canada. The calculations showed that the epicenter, or point of greatest disturbance, of the quake was located at latitude 55 degrees north, longitude 165 degrees east, in the neighborhood of the Kamandorski Islands, off the coast of Kamtchatka. Commander Heck said: "In this region there is a tremendous undersea trough, 18,000 feet deep, which is a famous location for earthquakes. The most violent quakes in the world happen here, but they do little damage, for there is nothing to damage." The earthquake reported on the same date from Porto Rico was an insignificant local affair, Commander Heck stated, and had nothing to do with the big quake of the north Pacific region.

THE return of Borrelly's comet to within one degree of the position predicted for it by Dr. A. C. D. Crommelin, of Greenwich Observatory, England, on its last visit to the nearer parts of the solar system, seven years ago, is announced by Dr. Harlow Shapley, of the Harvard Observatory, who received the news through the great international clearing house for astronomical happenings at Copenhagen. The rediscoverer of this comet, which comes back once in approximately seven years, is Dr. A. Schaumasse, who detected it at the astronomical observatory at Nice, France. It was at this observatory also that it was first detected at its most recent return in 1918. France also claims the honor of its first discovery, which was made in 1889 at Marseilles, by the noted astronomer Borrelly. The comet, which is still too faint to be seen with the naked eye, was located at right ascension 5 hours, 4 minutes, 24 seconds, and declination plus 2 degrees, 4 minutes. This places it in the neighborhood of the well-known constellation of Orion, which rises this month at about two o'clock in the morning.