

three-quarters pounds each, and are in a good state of preservation.

Edgar B. Howard, of the Academy's museum, identified the specimens as belonging to *Elephas primigenius*, one of three species of genuine elephants that roamed North America during and immediately after the Pleistocene, or glacial period. Although this species was the smallest of the three, it was still huge, the beasts averaging nearly ten feet high at the shoulders, with tremendous curving tusks bigger than those of any living elephant. It was protected against the cold by a thick coat of wool, overhung with long hair.

When this great animal lived in North America, its kindred were hunted by cave men in Europe, who also drew and sculptured their likenesses on the walls of their caverns and on ivory of their own tusks. Whether such hunters existed also on this continent has not yet been definitely determined.

*Science News Letter, October 22, 1932*

#### PALEONTOLOGY

### Monkey-Like Animal Found In German Lignite Mine

**T**HE SKELETON of an exceedingly primitive lemur, a lower form of monkey-like animal, has been found in one of the great lignite or brown-coal mines in the valley of the Geisel, by Prof. Johannes Weigelt of the University of Halle. It is quite small, its length without the tail being only about four centimeters (1 3-4 inches), of which one-third is skull. The structure of the animal, especially of its skull, offers support for the theory of Prof. William K. Gregory of the American Museum of Natural History, that all ape-like animals evolved from tree-shrews. Because the mine in which it was found bears the name "Cecilie," Prof. Weigelt has named his new genus *Ceciliolemur dela saucei*.

The skeleton was found in one of two great masses of animal bones, which probably represent deep places in some long-lost stream bed. Into these the bodies of drowned animals sank, and in them water animals like crocodiles, perishing of summer drought, found their last refuges. The deposits are of middle eocene age, dating back approximately fifty million years.

Prof. Weigelt has reported the details of his find to the German scientific journal *Forschungen und Fortschritte*.

*Science News Letter, October 22, 1932*

#### PHYSICS

## Super-Atomic Bullets Smash Lithium Atoms for Americans

### California Physicists Confirm Work of British With New Machine That Promises to Blast Atoms of Any Element

**U**SING ATOMIC BULLETS speeding with the energy of over 700,000 electron-volts, Prof. E. O. Lawrence of the University of California and his associates have succeeded in smashing the lithium atom into two alpha particles or ionized atoms of helium gas.

Prof. Lawrence thus confirms work done by British physicists who used lower energy protons as the bombarding projectiles. They found that protons shot at the lithium atoms combined with them and released energy.

A special apparatus that imparts high energies to atomic particles by whirling them in a magnetic field was used by the University of California investigators.

With this machine, designed by Prof. Lawrence and Dr. M. Stanley Livingston, serving as a source of proton bullets or hydrogen atom nuclei endowed with high energies, the physicists bombarded a crystal of lithium fluoride with a stream of some ten billion of these sub-atomic bullets per second.

In the first test proton bullets with energies of 360,000 volt-electrons were used. Then the energy of these tiny projectiles was raised to 510,000 volt-electrons, and finally to 710,000 volt-electrons. In each case the number of lithium atoms disintegrating under the bombardment was obtained by counting the helium ions which shot out of the crystal. The number of disintegrating atoms increased as the energy of the proton bullets was increased.

With the equipment now on hand, Prof. Lawrence and his associates, Dr. Livingston and Milton G. White, believe they are in a position to carry these disintegration experiments to a further point than has yet been possible. The machine now in use is capable of producing protons with energies as high as 1,200,000 volt-electrons. Although this is a higher limit of energy than has ever been officially reported, Prof. Lawrence says that he has a larger machine of the same type which will record a still higher limit of energy. This machine, which contains one of the world's

largest magnets, is now producing hydrogen molecule ions with an energy of 3,600,000 volt-electrons.

The highest energies previously reported were those obtained in the department of terrestrial magnetism of the Carnegie Institute of Washington. The limit was about 1,000,000 volt-electrons, and the number of protons with this energy was very small. In comparison, the University of California machines produce projectiles at the rate of about ten billion per second, and reach energies well over one million volt-electrons.

With such means available it is believed that it will be possible to blast apart any atom in the table of chemical elements. This will in effect open a new field of physics, and far-reaching discoveries may be anticipated in the future.

*Science News Letter, October 22, 1932*

#### PUBLIC HEALTH

### Discarded Batteries Caused Lead Poisoning Outbreak

**D**ISCARDED casings of storage batteries now appear as a new source of lead poisoning. Thirty-six cases of poisoning from this cause were reported to the City Health Department of Baltimore. The casings had been given away by junk dealers of the city to be used as fuel after the lead plates had been salvaged from them. Lead, which is usually deposited in the form of lead sulfate, vaporized into poisonous fumes when the casings were burned.

The victims were all children, with the exception of one woman, mother of one of the children. All the patients were Negroes and, with three or four exceptions, all lived in the same neighborhood. Apparently they had all obtained the battery casings from the same dealer.

The Baltimore Health Department has warned junk dealers that the bat-

tery casings are a source of danger and must not be distributed for use as fuel. Discovery of the cause of the outbreak, which occurred within a two-week period, was made by Dr. Wilmer H. Schulze of the Baltimore City Health Department. The outbreak was reported to the health department by Drs. Miriam Brailey and H. B. Rothchild of the children's department of the Johns Hopkins Hospital and by Dr. Frank R. Smith, Jr., of the Provident Hospital.

*Science News Letter, October 22, 1932*

## ENGINEERING

## Huge Airplane Tires Used on Tractors

**R**OUGH-RIDING, steel-wheeled tractors are being tamed into smooth-going, comfortable mounts by super-balloon tires.

This is one of the latest applications of pneumatic tires and was described by Burgess Darrow of the Goodyear Tire and Rubber Company at the meeting of the Society of Automotive Engineers in Toronto. Mr. Darrow called it a startling development, because the full airwheel, practically the same tire developed for airplanes with the addition of a non-skid tread, is used. They are 20 inches wide and are inflated at from three to five pounds pressure.

"The demand came first from the orange groves of Florida where sand hindered the usual operation and steel tires sometimes damaged tree roots," Mr. Darrow stated. "The drawbar pull that can be exerted by the tractor with such tires is astonishing; in most cases it exceeds that with the steel tires."

*Science News Letter, October 22, 1932*

## ARCHAEOLOGY

# "Oldest American House" Dated by Tree Calendar

## Annual Rings in Corner Post Give 784 A. D. as Date Of Cutting Timbers for Pueblo Pit House in Arizona

**T**HE "OLDEST" houses built by the white invaders of the present United States which are historical exhibits at such places as Sante Fe, N. M., and St. Augustine, Fla., become veritably modern when compared with dwellings of the Indians who lived centuries ago in the American Southwest.

Archaeologists can now confer with some assurance the title of "oldest dated house in the United States." Like many records, the title has changed hands frequently since research made a decision possible.

Less than three years ago, this new sort of rivalry for antiquity began, when Dr. A. E. Douglass of the University of Arizona announced the completion of tree-ring research making it possible to find out the exact age of old Indian habitations in the Southwest. Since that announcement, the dating of prehistoric pueblos and cliff dwellings has gone busily on. The interest that attaches to the "oldest" dated house in this country has shifted from place to place as new dates are authenticated.

Dr. Douglass' method of making prehistoric, abandoned ruins of houses reveal their precise age is so ingenious that it has attracted wide interest. The device is a calendar formed of

the annual growth rings of trees.

The calendar's success hinges on the fact that tree rings are not alike. In 1930, for example, growing trees in many parts of the United States received very little rain. As a result, the ring added to the girth of one of those trees was conspicuously narrow and meager. Thus each calendar year sets its characteristic stamp on the wood, and a series of unusually dry or rainy years forms a pattern of tree rings which is not likely to be repeated.

Using the unusual sequences of years as guides, Dr. Douglass matched tree rings on older and older cross-sections of timber. In 1929 he had a complete tree ring calendar, with rings matched to calendar dates from 700 A. D. on.

When the calendar was complete, the ages of some forty Southwestern settlements were at once revealed. Oldest of them all was Pueblo Bonito, which contained a beam of timber cut and used in house-building in the year 919 A. D.

Pueblo Bonito's record stood unchallenged until a few months ago. Then an Indian settlement two miles away proved its priority. In this ruin known as Una Vida a beam was dated 861 A. D.

This record stood a short time, and then gave place to an Arizona record. A pueblo near Allentown, Arizona, was being excavated, and four timbers were found in the floor of a house. The wood was cut by the builders in the year 797.

Now comes a new announcement, and a new "oldest dated house in the United States." The Museum of Northern Arizona has excavated a burned Pueblo pit house, which was occupied for about a hundred years, back in the prehistoric times. The Indians who built it unwittingly established a cornerstone just as authentic as any tablet of chiseled stone. The corner posts of the house were the "official records." One of these has been examined for its date in the tree ring code, and the reading gives a new depth to United States "history"—784 A. D.

*Science News Letter, October 22, 1932*



AIRWHEELED STEEL MULE