

ARCHAEOLOGY-ENGINEERING

**Adobe House Gets Steel
And Concrete "Umbrella"**

CONSTRUCTION work has been started on a steel and concrete "umbrella," to protect the famous adobe Indian ruins of Casa Grande, the "Big House," near Coolidge, Arizona.

"This is the first time the National Park Service has attempted to protect a prehistoric pueblo ruin by building a modern steel and concrete structure over it," Robert H. Rose, Park Naturalist of the Southwestern Monuments, stated to Science Service.

"The task is unusually difficult, since every precaution must be taken to prevent damage to the prehistoric ruins.

"The ruins are the remains of a building constructed by prehistoric Indians probably 700 to 800 years ago, and abandoned 500 to 550 years ago. Any damage that might be done to the walls by dropping one of the immense steel trusses could never be repaired without permanent injury to the value of the structure as a relic of Upper Stone Age architectural achievement."

Some engineering problems of constructing the new shelter are unique, Mr. Rose stated. In most structures, footings and columns are designated primarily to hold the structure up. At Casa Grande, the big problem is to hold the structure down against the enormous lifting force created by a vertically upward wind velocity of 34 miles an hour.

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PHYSICS

**Solid Structure Discussed
At Soviet Conference**

EMINENT scientists from many countries recently met in Leningrad with Soviet scientists to discuss the latest theories devised to explain the structure of solid bodies.

Prof. P. A. M. Dirac of Cambridge, England, pioneer in the quantum theory, joined in the discussion of his own electrodynamic theory and the conference devoted to nuclear phenomena, especially the analysis of atomic structure in terms of protons and neutrons, and the repercussion of those phenomena upon the law of conservation of energy.

The unexplained behavior of the energy distribution in the beta ray emission of radioactive bodies did not appear to shake the confidence of the scientists in

the utility of the postulate of the conservation of energy when applied to subatomic phenomena. Prof. R. Fowler of Cambridge, England, Prof. E. Tamm of Moscow, Prof. J. Frenkel of Leningrad and others participated.

Prof. W. L. Bragg of the University of Manchester, England, reported that it is now possible to use X-rays to determine the structure of complicated compounds like the silicates that build rocks. X-ray analysis heretofore has shown the structure of simple compounds and crystals.

That the more perfect a crystal is the less resistance it offers to distortion was the curious fact pointed out by Prof. A. F. Joffe of Leningrad.

Prof. J. Frenkel of Leningrad analysed the concepts "solid" and "liquid" and observed that many properties which used to be considered characteristic of solids are shared to some extent by liquids, and vice versa. Liquids, for instance, have a measurable rigidity under high frequency mechanical vibration.

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PALEONTOLOGY

**Extent of Mastodon
Bone Pit Sought**

BY MEANS of bore holes, a test is being made to show the extent and position of mastodon remains in the great bone pit along the bank of Bayou Manchac, Dr. H. V. Howe, director of the school of Geology at the University of Louisiana, has informed Science Service.

Bones and teeth of several well preserved mastodons, found in the bone bed, have led to an intensive investigation of the site. Wide extent of the ancient bone deposits is indicated by exposed bones found for a hundred feet along the bank of the bayou which is a mile west of Hope Villa. The bones lay in marl rich in clams, snails, fish, and ostracods.

The mastodon bones are scientifically important, Dr. Howe explains, due to their location in the youngest coastal terrace and their possible association with an old lake fauna.

Evacuation of the deposits will require considerable time because of the heavy load of sediment lying above the mastodon layer.

No evidence of man has so far appeared in the layer of earth that represents the mastodon age.

Science News Letter, October 22, 1932

IN SCIENCE

SEISMOLOGY

**Series of Earthquake Shocks
Felt in California Region**

EIGHTEEN small earthquake shocks from a source about 200 miles from Pasadena, Calif., were registered at the Seismological Laboratory between Friday, Oct. 7, at 11:47 p. m. and Monday, Oct. 10, at 7 a. m. Pacific standard time. H. O. Wood, in charge of the observatory, estimated that five of the shocks were possibly strong enough to cause slight damage near their origin but that they were probably not centered near any town. Brawley, Calif., in the Imperial Valley, reported shocks felt locally.

The tip of the peninsula of Lower California was shaken by an earthquake on Tuesday afternoon, Oct. 11. On July 12, three months previously, the same region felt a similar shake. The last earthquake was located by scientists of the U. S. Coast and Geodetic Survey, using data collected from five seismological stations by Science Service. They gave the epicenter as in latitude 24 degrees north, longitude 110 degrees west, and the time of origin as 2:08.2 p. m., eastern standard time.

Science News Letter, October 22, 1932

CHEMISTRY

**Pecan Found to Be
Good Source of Vitamin A**

WHEN YOU MUNCH salted pecan nuts at a dinner party, you are not only enjoying a tasty tidbit but getting a considerable amount of vitamin A tucked into your system, it appears from recent studies of Harold Levine of the South Carolina Food Research Commission. Feeding experiments with pied rats showed that the delectable pecan is a good source of vitamin A, which prevents infections, promotes growth and appetite and maintains health and vigor, he reported to the *Journal of Home Economics*.

Science News Letter, October 22, 1932

E FIELDS

BACTERIOLOGY

Bacteria in Oil May Aid Oil-Dwelling Insects

BACTERIA that appear to be able to get a living out of crude-oil are being studied by Dr. W. H. Thorpe of the University of Cambridge. Similar bacteria are found in large numbers in the digestive system of a strange insect whose larval stage is found in oil pools, and it may be that the bacteria predigest some fraction of the oil, making it available for the insects' nutrition. This is one of the points which Dr. Thorpe is endeavoring to determine.

Dr. Thorpe reported the progress of his experiments to *Nature*.

Science News Letter, October 22, 1932

ARCHAEOLOGY

Monte Alban Ruin Called America's Most Important

MONTE ALBAN, which gained wide fame last spring when a treasure tomb was opened there, has new distinction conferred upon it. A neglected mound at Monte Alban is now pronounced America's most important ruin, by Mrs. Zelia Nuttall, well-known authority on Mexican archaeology.

The mound in question contains an interior rotunda with an opening in the ceiling. Four corridors lead out in the cardinal directions. Mrs. Nuttall concludes that the structure was used by prehistoric Mexican Indians for astronomical purposes.

Mayan Indians of Yucatan, who were learned in astronomy, built curious underground structures called "chultunes." These are shaped like a long-necked decanter with a circular opening at the top. Mrs. Nuttall has long held the view that astronomer-priests of the Mayas descended into these dark "bottles" and there in secret watched for the time when the sun's rays would enter the vertical shaft and fall on the center of the floor. That was the signal that the sun had passed through the zenith, and the priests came out to tell the people that they could sow their corn and other

food crops, for the season of rainfall was approaching.

The Monte Alban astronomical observatory is superior to the Mayan chultunes, Mrs. Nuttall finds. The presence of this type of building in Oaxaca, Mexico, proves that there was intellectual unity among the ancient cultures of tropical America, she points out.

Although Monte Alban is known as an old Zapotec fortress-city, the builders of the observatory, unknown to modern science, are believed not to have been Zapotec Indians.

Science News Letter, October 22, 1932

MEDICINE

Army Post Reduces Cost of Medical Care

THE CIVILIAN population can take a lesson from the U. S. Army post at Fort Benning, Georgia, on how to cut down the costs of medical care, it appears from a study of the situation there made by Dr. I. S. Falk. Dr. Falk's report was announced by the Committee on the Costs of Medical Care.

The cost for each person for the practically unlimited medical service available at Fort Benning is \$40.90 per year, Dr. Falk computed. Certain procedures could be eliminated in adopting the system to civilian life, which would reduce the per capita cost to about \$35 or even \$30 per year. The average cost for a maternity case cared for at Fort Benning hospital was \$129.24. Elsewhere this would have been \$246.17 for families whose total medical costs were similar to those of the Fort Benning group.

Dr. Falk attributed the lower costs for medical, nursing, dental and hospital services to organization and efficient utilization of resources, reducing to a minimum wastes arising from lack of coordination, emphasizing preventive measures, and reducing "many useless and unwise expenditures common in the spending habits of people who purchase their medical care from uncoordinated agencies."

Nearly 8,000 persons at Fort Benning were eligible to receive care under the post's organized medical service in 1930, the year studied. Almost half of this number consisted of family groups—military heads of families and their dependents and servants—comparable to any normal civilian population.

Science News Letter, October 22, 1932

ENGINEERING

Niagara Still Greatest Power Generation Center

THE COMPLETION of the huge Dneprostroy power project in the U.S.S.R. calls attention to the fact that, although this plant will have the largest installed capacity under one roof, the greatest concentration of generating equipment is at Niagara Falls.

When all its power units are installed, Dneprostroy will have a normal generating capacity of 756,000 horsepower. The combined ratings of generators that obtain power from the falls at Niagara and are housed in separate plants total 1,605,850 horsepower. The largest capacity under one roof is 562,000 horsepower in the Queenston-Chippewa plant of the Hydro Electric Power Commission of Ontario, and the next largest is 452,000 horsepower in the Schoellkopf plant of the Niagara Falls Power Company. The capacity at Niagara Falls was erroneously given in an article in the SCIENCE NEWS LETTER for August 27, page 137.

A more complete index of the value of a plant than installed capacity, is annual output of electricity. Engineers of the Soviet plant expect the annual output to be about three billion kilowatt hours. In contrast with this figure is 7,400,000,000 kilowatt hours that is actually obtained from Niagara Falls each year by the different plants. Dneprostroy is planned to be Europe's largest electro-chemical center.

Science News Letter, October 22, 1932

INVENTION

Neon in Electric Lamps Signals Which Bulb Fails

NEON, the rare gas that fills the red-dish electric advertising tubes, is now used to tell when a Christmas tree bulb burns out. Eight 15 volt lamps are burned in a series on a Christmas tree string and when one lamp burns out all are extinguished.

An ordinary vacuum lamp when burned out must be discovered by trial, but when the lamps are filled with neon instead the current passing through makes this gas glow with its characteristic red when the filament is broken. Not enough current is let through to light the other lamps and the bulb with a glow is the one to be replaced.

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