



IN MEDIEVAL FRANCE

Ornate without, this house was rather bare and inconvenient within. It contained only four rooms and an attic.

PALEOBOTANY

Seed-Like Objects 300,000,000 Years Old

WHAT may be the oldest known seeds in the world were described before the meeting of the Botanical Society of America by Dr. Chester A. Arnold of the University of Michigan. They are small, round, petrified objects that have all the appearance of seeds, and they were found close to the fossils of an extinct plant known as *Archaeopteris*, or "most ancient fern," in a rock stratum belonging to the Upper Devonian period. This geologic subdivision of time was roughly 300,000,000 years ago.

It has always been suspected that this plant, in spite of its fern-like leaves, was really a seed-bearer. Dr. Arnold has produced the strongest bit of evidence yet available in favor of this interpretation.

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The leaf fish of the Amazon very much resembles a floating mottled leaf.

A giant cactus of the Southwestern desert may live for several years on the water stored in its thick stem.

ARCHAEOLOGY

Museum Enterprise Remembers Antiquity's "Forgotten Men"

Small Cardboard and Wood Houses to be Used in Schools Demonstrate Living Conditions in Ancient Times

MODEL houses—not the real estate man's variety, but models on a miniature, doll house scale—are the clever idea of one big museum to teach young people what good homes were like in ancient Egypt and in medieval France.

The University Museum in Philadelphia reasons that archaeologists give the public a clearer notion of how kings lived and how people were buried in ancient times, than of everyday living habits.

Hence, the model cardboard and wood houses. The museum is publishing and selling the carefully scaled houses in knock-down form for school classes to paint and assemble.

Ancient Egypt lived more comfortably than medieval France, it appears.

The Egyptian house chosen for reproduction, explains the architect of the models, George B. Roberts, is an official's home excavated at El-Amarna. This home had 17 rooms and halls. Its flat roof was a pleasant outdoor living room, shaded by awnings or arbors. Cooking was done in a separate nearby building.

Egyptian Bathrooms

Near the master's bedroom were elaborate bath and toilet rooms. To insure ventilation while he slept, there was an opening in the roof over his bed, much like ventilators used on ships.

In contrast, is the medieval French house of a cloth draper of Rouen, superficially more like modern homes to look at, yet far less modern in its conveniences. This house has just four rooms and an attic, the whole building high and narrow, as if to take as little space as possible inside the crowded, walled town.

The fifteenth century furniture is not unlike many modern pieces. But chairs and benches are bare of upholstery. And the absence of wardrobes, hanging closets, and drawers in chests and tables would dismay a modern housewife.

"The shop on the ground floor," says

Mr. Roberts, "is typical of the age before the Industrial Revolution when trade and manufacture were always carried on at home."

Eventually, the museum hopes to show what city homes have been like in all civilizations that the world has known—not life in the palaces, nor yet in hovels,—but in the "better homes."

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PHYSICS

X-Ray "Bounce-Back" Tells Secrets of Crystals

A SIMPLIFIED and speedy method of studying atom layers in metal crystals, expected to cut markedly the time necessary for crystal structure studies in metallurgy, has been developed by Alden B. Greninger of Harvard University.

The new method is a variation of the classical scheme of the German scientist Max Laue for "fingerprinting" atoms in a crystal by making the atoms diffract X-rays and having them fall on photographic plates in characteristic patterns.

Such knowledge is vital for studies of metal weakness and, hence, is intimately bound up with problems of strength in such things as railroad rails, armor and boiler plate, and metal automobile chassis frames.

Instead of making X-rays pass through the crystal, which had to be cut in fairly thin sections in the former Laue method, Mr. Greninger cuts a hole in the photographic plate, passes X-rays through it, lets them fall on the surface of the crystal being studied and finally catches them on the plate as they are diffracted backward.

From the characteristic pattern thus obtained the arrangement of atom layers in the crystal can be calculated with relative simplicity.

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The seventeenth layer of the oil fields of Baku, supposed to contain only gas, recently yielded an oil gusher.



HOME COMFORTS IN ANCIENT EGYPT

Spacious, well-planned, with plenty of rooms, this house of an Egyptian official of 3300 years ago had bathrooms and other modern conveniences.

BOTANY

Tree-Ring Evidence Sure as Fingerprints

CHARACTERISTIC as fingerprints, and as impossible to duplicate, are the tree-ring markings on which the State of New Jersey has placed much dependence in its effort to prove that essential parts of the fatal Lindbergh ladder were made of a piece of lumber taken from the attic in Bruno Richard Hauptmann's house. If the tree-rings match point for point in the cut ends of two pieces of wood there can be but one conclusion: the two pieces of wood were originally one piece.

Duplicating details of tree-rings can belong only to one piece of wood, and only to one place in that one piece, because tree rings record the whole life story of the tree. Each spring, when water is plentiful in the soil, the living cells beneath the tree's bark lay down a layer of large tubes (large in a microscopic sense, at least) to carry the rising sap. Each summer, when water becomes scarcer, or for other reasons the tree slows down its growth rate, a layer of smaller tubes is formed. The next spring's sudden beginning of a new cycle lays down another layer of large tubes appear as "grain"; their cut ends making a sharp contrast.

When the tree trunk is turned into finished lumber, the sides of these alternating bands of large and small sap

tubes appear as "grain"; their cut ends as "rings."

No tree ever produces a set of rings exactly like those of another tree, not even its nearest neighbor of the same species. There will be tiny differences in width here and there, according to the depth of the mass of tubes laid down in response to slight variations in water supply or other life-experiences of the tree. It is these slight variations in width and shape of rings that makes them as sure as means of identification of the particular piece of wood as are the ridges and grooves on the finger-ends of a man.

But the unique identity of each tree-ring group goes further than that. Just as the arrangement of pores, tiny hairs and other microscopic details among the ridges and grooves of a fingertip belong to exactly that ridge on that fingertip and to no other, so the minute pore-pattern on the end of a piece of wood belongs to just that spot on that ring and cannot be reproduced anywhere else in the universe. This is partly because the sap tubes in a tree are not evenly round like water-pipes, but crowded by the pressure of their neighbors into a somewhat irregular honeycomb pattern, which never repeats itself.

Thus it becomes possible to match

not only wood rings or parts of rings, but within any given ring to count numbers and compare shapes on the cut ends of the crowded sap tubes. An identification of a piece of wood reached by these means is as certain as anything that was ever done with human fingerprints.

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ANIMAL HUSBANDRY

Soviets Start Chain of Arctic Reindeer Ranches

SOVIET authorities have taken steps to get more use out of the vast reaches of treeless tundra that slopes to the Arctic, across the whole of Eurasia, from the White Sea to Bering Straits and beyond to Kamchatka. Seventeen reindeer breeding ranches have been established, with a total of 167,000 head of stock.

Among the students at these ranch schools, there are many members of the hitherto backward northern peoples, including Evenkes or Tungus, Nentzi and Komi.

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