

ARCHAEOLOGY

Decentralization Is Old In American Economics

PREHISTORIC Americans tried the economic experiment of decentralization, when Indians in Colorado about 860 A. D. left compact villages for smaller and more livable communities.

This trend in ancient America is disclosed by Dr. Paul S. Martin, anthropologist of the Field Museum of Natural History. In a report of his excavations in Colorado, he states that after about a century of the freer life, Indians were again moving to town, and forming larger communities than before.

Dr. Martin traces the economic ups and downs in this area of early America to about 1150 A. D. when lack of preparedness caught the towns, which were built in the open, undefended. Marauding enemies, he believes, forced the Indians to flee to caves where they made their homes until a serious drought about 1276 A. D. caused their final evacuation of the region.

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PHYSICS

Power of Words Is Amazingly Small

IT MAY not surprise those who use words in attempts to influence people that the power of words is amazingly small. While the physicist has not in this instance entered into the realm of propaganda, Dr. J. O. Perrine of the Bell Telephone Laboratories has computed for Phi Beta Kappa's quarterly, *The American Scholar*, interesting figures upon the physical power of words:

"The average power of words is one one-thousandth of one-millionth of a horse-power. As power this ought perhaps to be measured not in horse-power but in gnat-power. But to analogize—if the heat power radiated from an ordinary Christmas candle could be properly distributed in minute amounts to speakers, in amounts proportionate to the 'power' of their words, 100,000 people could be kept continuously talking as long as the candle burned. Word power is almost the nadir of nothingness. When people whisper, the power of their voices is about one-hundredth of normal, when they talk loudly the power is 100 times greater and when they shout their words yet another 100 times more powerful. The tones of musical instruments vary widely in their horse-power. The pianissimo of a violin may be one one-thousandth of a whis-

per; the fortissimo of an orchestra may be 10,000,000 times more powerful than the violin. The consonant sound 'th' as in 'thin' is one one-thousandth as phonetically powerful as the vowel 'a' in the college cheer 'Rah.'

"Incandescent electric lamps in the home are rated in watts. A 10-watt lamp is generally regarded as one giving a small amount of light—perhaps that of a small Christmas-tree bulb. A 75-watt lamp gives a goodly amount of light and of course a sizable amount of heat. Kilowatt hydroelectric systems are still within the realm of reasonable power. The second power of a large symphony orchestra playing a great fortissimo, however, is 75 watts."

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ARCHAEOLOGY

Find Early Rolling Pin In Armageddon Ruins

IN THE ruins of Armageddon, famed for its battles, an American archaeologist has unearthed what he believes to be a "protective instrument" belonging to a woman of the house. This early forerunner of the rolling pin of comic strip fame is described as a delicately carved ivory wand, half moon shaped, over nine inches long.

The wand, which is so remarkable a find that the Palestine Museum has claimed it for exhibition, was unearthed on the last day of digging this season, by the Oriental Institute of the University of Chicago, at Megiddo—Biblical Armageddon. The field director, Dr. Gordon Loud, who has just returned, said that the piece is the first of its kind ever unearthed in Palestine, although such ivories were known in Egypt about 1900 B. C.

The ivory wand was found in the 1400 B. C. layer of ruins at Armageddon, he explained, but it apparently was a family heirloom for about 500 years. The carvings indicate its ownership by a woman and its probable protective use.

Buildings unique in Palestine exploration have been cleared by the expedition. They are temple-like structures, similar to buildings found in Syria and reported in the annals of ancient Assyria. But these are apparently 500 years older than such buildings elsewhere, and Dr. Loud is mystified as to where Palestine builders got the idea. At the rear, the archaeologists found to their surprise what appears to be an outdoor sacrificial altar—judging by whitened bones nearby—not connected by any passage with the temple.

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IN SCIENCE

CHEMISTRY—AERONAUTICS

Try Nylon, for Parachutes, Glass for 'Chute Harness

AVIAION'S future Caterpillar Club members, men who have saved their lives by means of the parachute, may owe their escapes to a machine instead of the caterpillar that secretes the silk needed until now for the big umbrellas.

Uncle Sam's national defense experts are now trying 'chutes made from the new synthetic silk, nylon, which will appear in a few months' time in sheerer, stronger and more supple stockings and which is made from coal, air and water.

Parachutes from a new, lighter grade of mercerized cotton—cotton treated with caustic soda—are also being investigated by the Army Air Corps. Sample 'chutes of both materials have been ordered from private contractors. If either or both are successful, U. S. dependence upon the Japanese silkworm for a vital military material will be lessened.

Ordnance officers are also watching closely the possibility of making ammunition bags, at present made of real silk, from nylon, Army officers said. Sufficient quantities of nylon are not yet available, however, to warrant immediate tests. In the case of the ammunition bags, the chief requirement of the fabric, which silk fulfills, is that it burn completely and not leave any smoldering fragments in the gun breech. Otherwise a disaster would result when the next shell and charge were placed in the gun. The bags are used to contain the explosive charge that starts the shell on its way.

A strong, tough fabric made from glass fibers is also being studied for parachute harnesses. Glass fibers cannot be woven tightly enough for use in the 'chute itself, but it looks like a highly desirable material for the harness webbing, another officer declared. Nylon is also being studied for harnesses.

Chief requirements of a parachute material are a high strength-to-weight ratio (it must be strong and light), durability, ability to take a tight weave and resistance to moisture. Nylon's makers claim it meets these to a marked degree.

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E FIELDS

CHEMISTRY

Uncle Sam's Rubber Will Keep 25 Years

BY the proper inspection of the crude rubber which the United States will exchange with Great Britain for cotton under the new trade agreement just signed, Uncle Sam need have no fears that he is exchanging a permanent commodity for one which rapidly deteriorates.

Dr. A. T. MacPherson of the National Bureau of Standards says that properly selected crude rubber, properly stored, will last 25 years without suffering a decrease of its valuable properties.

The two dangers in rubber are the elements copper and manganese which quickly make rubber become soft, sticky and virtually worthless. The manganese may come from the water and soil of a rubber plantation, while copper and brass may appear in the equipment of the plantation.

By proper standards for the rubber it receives by the exchange agreement, the United States can easily overcome these potential hazards. Storage in a dark, cool warehouse will be all that will be necessary.

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ARCHAEOLOGY

Tree Rings Tell Age Of Viking Ruins

THE AMERICAN idea of making tree-rings tell the age of Indian pueblos is now used to reveal Viking dates.

One famous Viking mound 60 feet high, in southern Norway, is believed to have been constructed in 931 A. D. By tree-ring evidence, Norsemen chopped trees to build a wooden burial chamber here and cover it with earth in 931.

The impressive burial mound is one of Norway's mysteries, for when it was probed in 1868 only wooden wreckage and remains of a horse were found.

Ebba de Geer, a leading investigator of the possibilities of dating Scandinavian ruins by tree-rings, is dating ruins like this by aid of California's venerable Sequoia trees and clay varves from northern Sweden.

The Sequoias offer a long record of growth rings. The alternate light and dark layers, or varves, of clay deposited in the wake of retreating glaciers also mark time for long eras. Miss de Geer puts together three-way evidence and gets her Scandinavian dates.

A Swedish fort in Gotland is a pre-Viking ruin dated by aid of Sequoia rings. It was built in the fifth century A.D.

Roundabout methods are used because no complete tree-ring calendar has been made using northern Europe's own trees. The principle of such a calendar is to start with the pattern of rings in a freshly cut tree, then match and overlap series of rings in older and older timber fragments until an unbroken record for centuries is formed. Since each growth ring has its assigned calendar year, timber of the same kind and region can be matched to the tree-ring calendar to learn its age.

Rainfall causes Arizona pines to form wide or narrow rings in good or bad growing years. In Scandinavia, growth records are apparently affected more by temperature, and other solar radiation effects, which accounts for the Sequoias proving a help in dating.

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RADIO

New Television Tube Improves Detail of Image

A NEW television pick-up tube which improves the detail of the image sent out over the radio waves by ending "splashing" of electrons has been developed by Radio Corporation of America engineers, Harley A. Iams and Albert Rose of the RCA Laboratories at Harrison, N. J., told the Institute of Radio Engineers.

In much the same fashion as the stream of water from a garden hose played against a garage door splashes and wets neighboring portions of the door, the stream of electrons played upon the photoelectric cell mosaic which picks up the image to be broadcast splashes into neighboring parts of the mosaic and interferes with a properly detailed image, the two engineers explained.

But now a means of controlling the electron stream so that it has just enough force to hit the mosaic without splashing has been worked out, they said. Hence there is no interference with neighboring portions of the mosaic and greater detail is provided.

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PSYCHOLOGY

Things Are Seen as They Are Not as They Appear to Eye

CAMERA enthusiasts are shocked during their learning days by the difference between what the camera sees and what they see.

The finished picture contains many surprises. Backgrounds pop up where none were noticed. Trees seem to sprout from the best girl's shoulder. Dainty hands have become enormous in the foreground. Stately elms are suddenly dwarfed by the towering figure of a three-year-old who has run uninvited into the picture.

Psychologists are not surprised that we fail to see these things that the camera picks up. Instead, they marvel that the human brain is able to ignore the images on the retina of the eye and see only objects as they actually are, making complicated corrections for distance, color of light, and point of view.

The value for practical purposes of this ability of the human to register directly in terms of objective facts rather than in terms of the wave frequencies received by the senses was stressed by the psychologist Dr. Robert S. Woodworth of Columbia University in a recent address before Sigma Xi.

You may not even understand the cues received by your senses, yet you can interpret them correctly. Physicists know, Dr. Woodworth pointed out, that a violin and saxophone differ in their overtones. The listener can scarcely identify these overtones, except after special training, but he can use them to distinguish the instruments.

In the open air where echos do not confuse, a blindfolded person asked to face toward the source of a sound does so with an error of only a few degrees. He is able to do this because the sound reaches one ear a minute fraction of time sooner than it reaches the other or because the intensity varies almost imperceptibly in his two ears. Yet he is completely unaware of these cues.

Even mind-reading is possible to a certain extent, Dr. Woodworth said, by means of such elusive cues from face, voice, gestures or expressive body movements. But you must beware, he warned, because "the human being is not a perfectly unbiased registering instrument.

"His own preferences and prejudices often prevent him from seeing the truth where the truth is really very well revealed."

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