



PROF. E. B. RENAUD

Examining the stone artifacts believed to resemble tools of Old Stone Age man.

ARCHAEOLOGY—GEOLOGY

When Did Early Man First Reach America's Shores?

UNEXPECTED discovery in America of crude stone tools, resembling 500,000-year-old handiwork of Europe's Stone Age, was reported by Prof. E. B. Renaud of the University of Denver.

The find revives the almost abandoned theory that the New World may have been inhabited, after all, in early stages of man's slow climb toward civilization.

Prof. Renaud reported his discovery to anthropologists attending the meeting of the American Association for the Advancement of Science.

Emphasizing that age of these American tools can be determined only after geologists have studied the site, and paleontologists have given an opinion, Prof. Renaud nevertheless declared that resemblance between the Old World's famous types of Stone Age tools and these now found in America "is striking and may be very significant."

The specimens amounting to nearly 1,100 were discovered this summer, the archaeologist stated, when the second Denver-Wyoming Expedition was exploring in southwestern Wyoming. There they found (*Turn to Page 46*)

BELIEF that man lived in America hundreds of thousands of years ago was challenged by Dr. Ernst Antevs at the meeting of the American Association for the Advancement of Science. Man could not have lived in America more than 20,000 years ago, he said, because ice sheets would have blocked his passage.

Only one chance in a million exists that human beings came to this continent at about 40,000 years ago, but no scientific evidence, truly verified, has ever been found to show that he did.

This estimate of Dr. Antevs, based on geological studies of climate of past ages, is much higher, however, than scientists would have accepted a few years ago.

But it discounts the idea that because stone tools of ancient man found in America resemble paleolithic artifacts thought to be 500,000 to 250,000 years old found in Europe, man may have existed in America at such an early time.

Early man developed in dry climates, and so it is that the first signs of man in America are found in the Southwest. Dating of these remains is a problem

for the geologist and the paleontologist, who use the rocks and clays and fossil remains of plant and animal life as clues to what happened on the earth during past ages.

Soil Calendar

For Europe and the northeastern part of the United States a sort of calendar has been worked out based on the tree-ring-like layers found in clay soil, and formed during the disappearance of the ice sheets. This is supplemented by similar layers in the soil in only one place in the world—on the Baltic in northern Sweden—formed by spring floods and summer flows of water and continuing the calendar up to the present day.

This sort of calendar does not exist for the Southwest where the traces of ancient man have been found, but complicated mathematical methods have been worked out for comparing the evidences of ancient climate that are found there with the calendar of northeastern America and Europe and thus gaining approximate dates for these early Americans.

The traces of Folsom man found by Edgar B. Howard at Clovis, New Mexico, for example, were located in an ancient lake bed, long since dry. From the high water mark levels in this region, it is known that they must date to a period of very heavy rainfall that came about 12,000 to 13,000 years ago during the time when ice was disappearing from other parts of the world.

Dates Folsom Man

This places Folsom man, most ancient American known to science, as living in 10,000 or 11,000 B.C.

Records of summer temperatures in past ages are another clue used to apply the "clay-layer" calendar to the Southwest region. Remains of plants and animals in regions far north of their usual habitat tell of a period of warm weather some 7,500 to 4,000 years ago. This post-glacial epoch of warm climate can be placed on the known calendar.

But the old method of telling geological time by the wearing away of Niagara Gorge, although still quoted in modern textbooks, must be abandoned, Dr. Antevs indicated, for the Whirlpool Rapids Gorge has been found to be very much older than it was supposed and was there before the last ice age.

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The European spruce sawfly has devastated thousands of acres of spruce forests in Canada, and this year has attacked evergreens in Connecticut.



Batty Notions

SILENT, mysterious, flying only by dusk or moonlight, inhabiting caves, and abandoned dwellings, bats have gathered a veritable aura of awe about them. Bat superstitions, originating in early times and among primitive peoples, have persisted to this day. And moderns have added a few false notions of their own, which apparently did not occur to the peoples of antiquity and prehistoric times.

The notion that bats delight in getting themselves tangled in women's hair, for example, seems to be of modern origin. Necessarily so, perhaps, for in ancient and medieval times women usually kept their heads covered in public places. If a bat got tangled in a feminine coiffure, it would have to be set down to sheer accident; for the consequences would obviously be much harder on the bat than on the lady. But bats have an astonishing ability to avoid obstacles of all kinds, even in light that is little better than darkness to the rest of us; and there is not a single really authenticated case of a hair-tangled bat in all scientific literature.

Bats are Clean

Another modern superstition is that bats carry bedbugs and other disagreeable vermin. Bats do have their undesired "inhabitants," like all other mammals including man, but the species that infest them are not the same as our own domestic "pets." As a matter of fact, bats are among the cleanliest of animals, with probably fewer vermin per head than most other mammals. It is injustice to consider them poor housemates on that score.

"Blind as a bat" is an older false be-

lief, based probably on the desperate headlong efforts at escape on the part of bats that accidentally fly into a house. But a bird under the same circumstances dashes against blank walls in exactly the same fashion, and nobody rates birds as blind. If bats look down from the roofs of caves at human beings stumbling about in the semi-darkness of their depths, they might mutter something about being "blind as a man."

To most of us, a bat is simply a bat. That is natural, for they are very hard to catch, and most of us have no particular desire to make their closer acquaintance anyway, harmless and interesting though the little flying beasts are. Actually, however, there are many different bat species—fifty or sixty of them in temperate North America alone.

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what appear to be prehistoric workshops. Stone tools, rejected pieces, scraps, and pebbles litter what Prof. Renaud tentatively describes as ancient river terraces. The principal sites are along the valley of Black's Fork.

Prof. Renaud, who specializes in study of prehistoric man's stone craftwork, has divided the stone objects into five classes. The oldest he pronounces like scrapers and axes made in Europe in the Chellean era of the Old Stone Age. In Europe, this stage of skill and invention in stone work was attained about half a million years ago.

Like Other Cultures

Others of the tools found in Wyoming are like things made in Europe in successive periods of the Old Stone Age. Some fit in with stone techniques of Europe's Acheulian culture, 100,000 years old. Others resemble stone tools made in the Mousterian period, which was the age of Europe's ugly and ungainly Neandertal Men, at least 50,000 years back.

Pointing out that the Wyoming tools match Old World industry through a succession of stages, covering several hundred thousand years, Prof. Renaud said this is the first time such a complex of prehistoric stone industry has come to light in this country.

The Wyoming array of tools is especially significant, he said, in resembling a similar complex of stone craft in Western Europe, which he studied there. The tools also are similar to some made in the Old Stone Age in Egypt, and unearthed along the Nile Valley.

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MINING

\$1,000,000,000 In Gold To Come From Earth Yearly

GOLD, worth more dollars per ounce, and piling up in vaults, is stimulating the taking of more gold from the ground. A few years ago even able experts felt that the gold production of the world "seems to have passed its zenith" and would decline. During the World War gold production began to fall alarmingly.

Now the new price of gold has changed the situation, and Dr. Adolph Knopf, Yale professor of geology, predicts that the world output in a few years will exceed \$1,000,000,000 and will remain at that figure for some years. (*Scientific Monthly.*)

The history of gold production, during the past twenty years, according to Prof. Knopf, appears to demonstrate that the main factor in determining production and reserves is the purchasing power of gold.

Billion-dollar-a-year production will produce an equilibrium between production and the present purchasing power of gold and if and when gold's purchasing power declines the world output of gold will decline with it.

Output of gold will be aided to some extent by improvements in mining methods and metallurgy, Dr. Knopf foresees, although these have been brought to a state of very high efficiency.

Improvements in transportation facilities, as exemplified by the airplane, which has accelerated the opening up of such inaccessible regions as the interior of New Guinea and the area of 2,000,000 square miles of Pre-Cambrian rocks north of the Great Lakes, known as the Canadian shield, will lead to new discoveries. Rich placers can not be expected to be found, but lodes will be found, which will at least counterbalance the exhaustion of those now being mined. Geophysical methods of prospecting will help in finding new deposits, as brilliantly demonstrated by the discovery of the first-class deposit at Boliden under the glacial drift of northern Sweden.

From the Russian placers, as the result of the present energetic campaign of the Soviets in mechanization and modernization of equipment, may be expected a steadily increasing output.

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The ice plume that blows away from the peak of Mount Everest has been called the highest dust cloud of the earth.