

ARCHAEOLOGY

Folsom Type Dart Points Distributed Over Wide Area

A THESIS by a young student anthropologist at the University of Denver opens up new thoughts on America's first inhabitants.

The student, Jack Cotter, has gathered together threads of evidence dealing with human beings who seem to have lived in America before the various known types of Indian culture began to develop. The evidence is in the form of curiously shaped stone blades used by primitive Americans in hunting. No such blades were shaped for use by Basket Makers, Plains tribes, Aztecs, Incas, or other Indians of the long period of prehistory that preceded the coming of the white man. Now and again, the soil of some old river bed or buffalo wallow has yielded one or more of these old stone blades. Folsom points and Yuma points, the archaeologists call them, after the places where they first attracted signal attention. Usually, the blades are found associated with the fossil bones of mammoths, ground sloths, or other animals that departed this land near the end of the Ice Age.

Mr. Cotter has made a study of these weapons that have been turning up from time to time. He finds that no less than 343 specimens are known to anthropologists. And the record of the ancient stone weapons shows that they were found in 30 states.

From New Hampshire to Oregon across the country, and from North Dakota to Louisiana, spread the groups of ancient hunters who tipped their spears with these stone blades. Nine types of blades have been differentiated by the young anthropologist, in his inspection and measurement of the Folsom and Yuma stone points. But all nine types are, to the eye of the expert in stoneware, typical of that remote hunting age in America.

Probably few people have realized that the traces of "ancient Americans," men who inhabited this country 10,000 years or more ago, have been reported from such wide range of territory. If the story that the weapons appear to tell is the correct one, then the ancient hunters were scattered practically throughout the United States.

And that opens another door, into still more remote shadows of America's past. For if the wandering hunters and cave men of the Folsom age were so widely established, they cannot well have been new immigrants in the New World. The magnificent distances of America were surely never traversed quickly by pioneers in the Stone Ages of culture.

It begins to look as though the human history of America may stretch back into a rather longer period than is now generally assigned it. The hunters of the Folsom age seemed unbelievably old when their stone weapons first came to light. But perhaps there is a still older chapter of American habitation waiting to be discovered.

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CHEMISTRY

Medieval Greeks Knew Chemical Warfare Secrets

CONSTANTINOPLE might have become a Moslem city centuries before it did, had not the Greeks who held it during the middle ages known a secret of chemical warfare which enabled them to wipe out the Arabs' fleets and rout their land forces whenever they appeared. Only when the defenders of the city had become too soft for war and had forgotten the secret did the green banner of the Prophet rise above its walls.

At the meeting of the American Chemical Society in Chicago, Dr. Nicholas D. Cheronis, director of the Synthetic Laboratories of Chicago, told of his endeavors to find out the secret of the "marine fire" or "prepared fire" which twice wiped out besiegers' fleets and helped to defeat their armies on many occasions.

"Marine fire" was the invention of an architect named Kallinikos, who came to Constantinople from either Syria or Egypt a short time before its first siege by the Arabs in the year 670. Swift boats armed with "siphons" to discharge his secret compound swept down upon the Arab galleys, and burned them to the water's edge.

Again in 717 the Arabs came with

a fleet and an army, and again the Greeks, using Kallinikos' fire, routed them utterly. The inventors' descendants, entrusted with his secret and guarding it jealously, manufactured the fire for the Emperors of Constantinople for many years, and it never failed to bring destruction and terror to the enemy.

Kallinikos' fire was not the famous "Greek fire" of antiquity, Dr. Cheronis is convinced. The latter was used for many centuries. Its composition varied, but was basically a mixture of oils, resins, and similar combustibles with sulfur. The fire of Kallinikos was fiercer, to judge by the descriptions that have come down to us.

Some chemists have conjectured that it contained quicklime, which when it touched the water generated enough heat to set the compound afire. But Dr. Cheronis tried this, and also another chemical which had been suggested as the key to Kallinikos' secret, and found that combustion could not be started in that way.

A more probable hypothesis, in his opinion, is that Kallinikos had discovered the possibilities of saltpeter, one of the ingredients of the later-invented gunpowder, and used it with the oils and resins to make his terrible flames. The "siphons" of the ships, he thinks, may have been the nozzles of pumps for discharging the liquid, which was then ignited by throwing a flaming dart or shooting a flaming arrow.

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GEOPHYSICS

Frozen Gas Found 2800 Feet Below Earth's Surface

BORINGS for mineral water at a Polish health resort have resulted in a frozen carbon dioxide coming up from 2,800 feet below the surface.

It is claimed that this is the first time that solidified carbon dioxide has occurred without mechanical aid. This solidified gas, commonly used as a refrigerant by vendors of ice cream, freezes at minus 57 degrees Centigrade. The solidification is supposed to be due to the rapid expansion of the gas from the enormous pressures existing at this great depth.

A similar method of manufacturing "dry ice" can be accomplished by allowing compressed carbon dioxide in a cylinder to expand rapidly into a paper bag tied over its nozzle.

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