

ARCHAEOLOGY

Mixtec "Family Album" May Hold Secret of Lost Language

Less Known Than Mayas, Mixtecs Wrote in Hieroglyphics; Accompanying Spanish Script May Prove Key

A KEY to the as yet unread Mixtec hieroglyphs of ancient Mexico may be contained in an ancient Indian "family album" written on deerskin.

This codex, or manuscript, was brought to light by Miss Emma Reh of Washington, D. C., student of Mexican archaeology, who hopes an attempt will be made to decipher the imperfectly legible family history of a line of ancient Mixtec chieftains recorded in the deer-skin book.

Because the unread native hieroglyphs are accompanied by Mixtec handwriting in the Spanish alphabet, there is hope that study of this manuscript will provide means of understanding the symbols in which Mixtec Indians wrote.

Mixtec culture thrived in Mexico well before the better known Aztec civilization which existed at the time of the Spanish conquest in 1521. Even less is known about Mixtecs than the Mayas who built great stone cities farther south in the Yucatan peninsula of Mexico.

The document has added value because its origin is known. The majority of Indian picture writings now existing in museums have been rediscovered in forgotten European archives where they were sent as curiosities of the New World centuries ago, or have been bootlegged out of Mexico in secret, contraband trade in antiquities.

The new-found Mixtec manuscript, now in the National Museum at Mexico City, comes from Oaxaca, in southern Mexico. It folds into a book of eleven accordion pleats, and is read from back to front. Writing, pictures and glyphs are in black.

The "album" begins with a line of three Indians seated before a house, the elegance of which attests to their noble standing. They wear the regal Indian headband, and their name-signs above their heads show that they are called Two Alligator, Four Deer, and Nine Dog, respectively.

Their story begins in the Indian year "Three House." The Spanish date 1300 occurs on page two.

On this page begins a long line of marriages between Indian nobles and native women. Bigamy is performed on page three, where a chief marries two wives at once. Town names in hieroglyphs accompany each married couple.

Great-great-grandfathers and grandmothers pictured on the first eight pages dress as Indians and wear the queer hieroglyphs above their heads which tell their personal names.

On page nine, however, a significant change takes place. The native men and women acquire Spanish names, even Spanish clothes. Christian crosses appear. This happens in 1610. It is known that the Spanish crown allowed Indian nobles to be called "Don" and "Dona." From this page on, these "civilized" Indians wear Shakespearean hats.

The family record ends in 1684. It may have served as "proof of nobility" in some Indian legal claims before the Spanish Viceroy, Don Luis de Velazco, who is mentioned within.

Indian codices had various functions.

Some were family records such as these. Others were religious or historical. Certain ones were "maps," or agreements between Indian towns as to their hereditary land limits.

Of the latter, some still exist in Oaxaca. Indians believe if they lose these "pergamins" they lose the right to their lands. None but the Indian elders ever see them.

A half-breed of Tlaxiaco described such a "map" to Miss Reh. It belongs to a nearby Mixtec town and is brought out only during local cornfield wars over boundaries, which rage fiercely and frequently there. Fighting is largely done with stones, as in pre-Spanish times.

This document is said to have shrines, human figures and roads painted in black and brown on deerskin, the roads being indicated by human footprints. The "map" is kept rolled around a cylindrical green stone, the whole folded in another deerskin for protection.

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PHYSICS

Dust Storms "Make Air Blue" By Light-Scattering Effect

BLUE LIGHT during a dust storm has no necessary connection with the color of the dust itself, but is an effect of the scattering of light that strikes the microscopically tiny particles that fill the air. This explanation of a phenomenon often noticed this spring is offered by



MIXTEC FAMILY RECORD

Prof. W. J. Humphreys, physicist of the U. S. Weather Bureau.

Daylight does not always turn blue during a dust storm, but only when the air is densely filled with particles of the right size, Prof. Humphreys said. Then the effect is not the blue haze of distance, but a bluishness of the light falling on objects near at hand: the letters on your desk will look as though you were working at night by the light of a dim blue lamp.

The light turns blue, rather than another color, because of all the wavelengths that combine to make up ordinary white daylight, blue is most sharply scattered, upon striking a reflecting surface. Other wavelengths are scattered also, but to a less extent than the blue,

so that blue comes to predominate. A similar bluing of the light occurs when a cloud of wood smoke, which is made up of very small particles, comes between the observer and the sun.

The same phenomenon is responsible for the blue haze of distance. There are always large numbers of reflecting dust and water particles in the air, though fortunately not nearly so many as during a dust storm. Where their density is relatively low, you have to look a long way to see a blue horizon, as in the Rocky Mountains. Where the particle density is high, as it is in the East, comparatively nearby objects assume the hazy appearance that have given Eastern mountains such characteristic names as the Blue Ridge and the Great Smokies.

Science News Letter, April 6, 1935

land suitable for grazing if not for grain."

Hazards of living on these marginal lands can be reduced by various methods of amelioration, such as dam building and tree planting, Dr. Bowman points out. The effects of these, he says, "encourage us to believe that we are on the right track when we extend these beneficent operations in places or within areas where scientific studies indicate the greatest possibilities of success and where the population can profitably remain if the risk be reduced."

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PHYSIOLOGY

Heavy Water Molecules Trace Water in Body

WHEN YOU take a drink of water half of it is still in the body after nine days. And the average time a water molecule stays in the body is thirteen days.

This is the summary of investigations making use of heavy water for physiological studies of the water content of the human body developed by Prof. Georg von Hevesy and E. Hofer of the University of Freiburg in Germany.

Heavy water is the combination of oxygen and the isotope of hydrogen known as deuterium. For deuterium's discovery Prof. Harold C. Urey of Columbia University recently was awarded the 1934 Nobel Prize in Chemistry.

Because heavy water molecules can be distinguished by physical tests, although inseparable chemically from ordinary water, they can act as "tracers" in studying how the body eliminates water. Previously physiologists have never been able to make exact tests of how long the water in any particular "drink" stayed in the body.

Half the original quantity of water taken into the body is lost in from eight to ten days, report the scientists. The average time a water molecule spends in the body is from eleven and one half to fourteen and one half days.

"To explain this comparatively long time," state Prof. von Hevesy and Mr. Hofer, "we have to assume that most of the water taken becomes completely mixed with the water content of the body."

The scientists were able to make estimates of the amount of water in the body. Their value of from 59 to 67 per cent. is in fair agreement with known data.

Science News Letter, April 6, 1935

GEOGRAPHY

Not "Going to Prairie-Dogs" Drought Cycles an Old Story

FARM distress in the Western drought belt, compelling a population retreat to better-favored lands, has also caused in some quarters a pessimistic belief that that part of the country is now going permanently to the prairie-dogs. The West, think these gloomy ones, is "drying up," going desert.

This pessimistic view is subjected to damaging scholarly dissection by Dr. Isaiah Bowman, director of the American Geographical Society and vice-chairman of President Roosevelt's Science Advisory Board. (*Geographical Review*, Jan.) He cites evidence from many angles—glacier retreats, lake levels, tree rings, sunspot numbers—that the drought period of recent years has been only another downswing in a long, long story of climatic ups and downs.

Dramatic among evidences that "it hath been already of old time" are wagon tracks made by the Forty-Niners and others across the bed of Goose Lake, on the Oregon-California boundary, revealed now for the first time since the other earlier drought that permitted this American Exodus to cross, dry-shod, the southern end of this barrier sea.

Cycles there undoubtedly are in our climate, but as yet no man knows their beat, so that any but the most general predictions are unreliable. Nevertheless, says Dr. Bowman, "it can be predicted with complete assurance that members

of Congress will rise thirty, forty or fifty years from now and declaim against the shortsightedness of the legislatures and leaders of 1934-1935 who talked as if the whole West were becoming a desert once more."

Whether we are in the distressful phase of retreat or in the optimistic phase of a re-advance on the climatic upswing, it is a mistake, in Dr. Bowman's opinion, to over-simplify our problem, to try to understand it and solve it without taking all factors into consideration. He says:

"It is sometimes assumed that the answer to the question of so-called permanent settlement in areas of risk is to be found in economic conditions alone or in physical conditions alone. Only the amateur can think this way. Physical conditions and economic and social conditions dovetail. All economic opportunities rest in the last analysis on the land and its wealth in the form of agricultural soil fertility, minerals, grass and forest growth, and water supply.

"The climatic facts alone are not going to decide which parts of the West will be permanently inhabited. Those sub-marginal areas that have lowest reliability of rainfall and that have the poorest soil and the roughest surface and lie farthest from transportation lines should be abandoned first of all.

"The word 'abandoned' is used only in a relative sense. Such areas may have