

AGRICULTURE

First Farmers

Were They in Egypt, or Did Agriculture, Foundation Of all Civilization, Originate in the Americas?

By DR. FRANK THONE

IS CIVILIZATION older in America than it is in the Old World? Were there temples and cities in Mayaland and Peru before men built such mighty works in Egypt and Babylonia? Did Indian farmers raise crops of corn and tobacco centuries earlier than white and yellow cultivators had harvests of wheat and rice and grapes?

The very idea is upsetting to all the orthodox ancient history we learned, back in high school days. Civilization originated in Egypt, or maybe across the way in Mesopotamia—the book was a little vague about that. The native American cultures of Mexico, Yucatan, and the South American highlands were assumed to be considerably later. Anyway, they didn't count, because they couldn't be fitted into the nice sequence of Greece, Rome, the Middle Ages, and Modern Times. They were pretty much a side issue, unimportant because the unmannerly Spanish *conquistadores* had "destroyed" them.

But history changes as the world grows older and scholars dig more carefully into the past. We now know of other centers of culture in the Old World, older perhaps than Egypt. More important still, we have learned a great deal more about the early native civilization of our own continent, that in spite of its supposed "destruction" contributed important and lasting elements not only to the composite culture that has grown up in modern America, but has made its effects felt in the Old World, too—even in deepest Africa and the heart of Old China.

Oldest Agriculture

Even the naive earlier teaching acknowledged American sources of a number of important crop plants—potato, corn, tobacco, beans—and of such drugs as cocaine and commodities like rubber. But now comes the really revolutionary suggestion that the whole business of agriculture, which is the foundation of all civilization, may be older in the Americas than it is in the Old World.

As yet, the idea is no more than a suggestion; those who offer it have not

even called it a formal theory. But it has had the sponsorship of two distinguished and careful botanists, who are not given to loose speculation, so that it at least rates respectful attention and further examination.

One of these scientists is Dr. Merle T. Jenkins of the U. S. Department of Agriculture, specialist in the breeding and improvement of corn. Writing on his subject in the new Yearbook of Agriculture for 1936, he says:

Corn Most Ancient

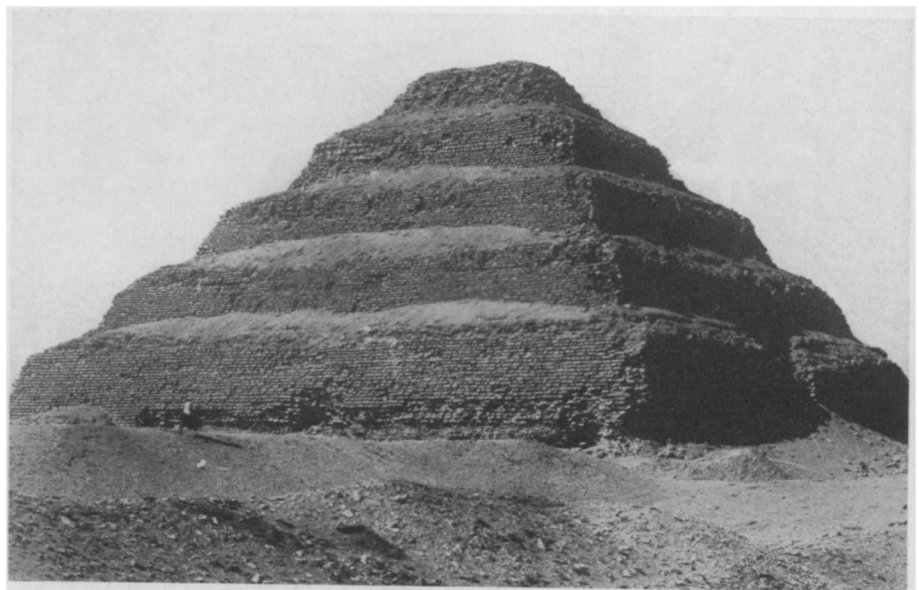
"If we may judge from purely botanical evidence, corn is probably the oldest of cultivated cereals, if not of all cultivated plants. In its present form it is totally unsuited to exist in the wild. In order to reach its present condition of apparent helplessness from the standpoint of self-perpetuation, corn must have been grown by human beings ever since it has been enough like the present plant to be classified as corn. The time required for corn to reach its present development cannot be estimated with any accuracy, but it must have taken many thousands of years."

For many thousands of years, there-

fore, there must have been corn-raising farmers in America, for there must be a well-developed agriculture, capable of producing a surplus of food for city dwellers, before there can be any cities. The tremendous pyramids of Mexico, greater than the greatest pyramids of Egypt, were piled up by human muscles that got their strength from corn, just as the Egyptian pyramids were similarly muscle-founded on the wheat-and-barley surpluses piled up by the farmers of the Nile. And far to the north, the great earthen pyramids and other monuments which we call Indian mounds were reared by corn-raising tribes, who learned their agriculture from the older and more advanced cultures in the warmer lands of Mexico. And it must have taken a long time for this information to diffuse over such great distances; for that was before the days of rapid publication and travelling scholarships and exchange professors from other universities and experiment stations.

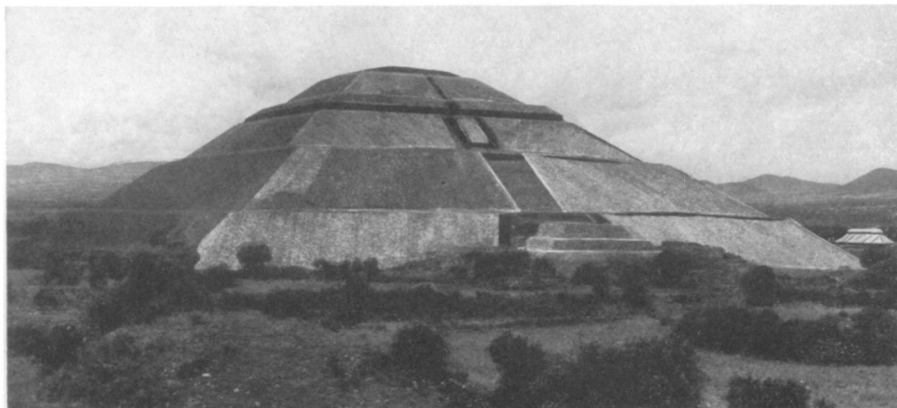
Many Others

But corn was not the only indefinitely ancient thing the pre-Columbian Indians had on their farms. Dr. E. D. Merrill, professor of Botany at Harvard University, called attention to a whole series of other crop plants originated from native American wild sources, in



FROM OLD WORLD

Built by wheat eaters: the famous "step pyramid" at Saqqara, Egypt.



FROM NEW WORLD

Built by corn eaters: the great "stepped" Pyramid of the Sun, at Teotihuacan, Mexico, is larger than any of the pyramids of Egypt.

an address at the recent Harvard Tercentenary celebration. He gave a most impressive catalog: corn, potato, sweet potato, all varieties of field and garden beans, tomato, pepper, sunflower, Jerusalem artichoke, squash, pumpkin, arrowroot, peanut, tobacco, pineapple, avocado, and a score of tropical fruits which we North Americans scarcely know even as names.

Botanical Orphans

Some of these, particularly tobacco and several kinds of beans, are "botanical orphans" like corn; that is, they are known only in cultivation. Their wild ancestral forms have never been found. Either these crops have been under cultivation so long that the ancestral wild species have become extinct; or they have been changed so much that the wild forms, if existent, are not recognizable as relatives; or the wild forms exist only in some obscure, out-of-the-way spot that explorers have never discovered. But any of these three alternatives requires a great deal of time for the development of the cultivated forms to their present state, and for their distribution all the way from Patagonia to Canada.

Contrast this collection of highly developed "orphan" plants with the cultivated plants of Europe, Asia, and Africa. You are at once confronted with the startling fact that all of the important Old-World crop plants—wheat, rice, oats, barley, rye, apples, pears, cherries, etc.—have easily recognizable wild-ancestral relatives still living in the old ancestral homes. Plant breeders still go into those lands to study the wild forms, and to get seed for hybridizing purposes. That cannot be done for the American plants. It constitutes the strongest support for the idea that Amer-

ican agriculture is so old that its wild ancestral species are clear out of the picture.

Moreover, this "civilization" of native American wild plants, unknown hundreds or thousands of years ago, took place in a few places only—very likely in or near the areas where arose the great Indian empires which the white men found when they came: the Mexican and Andean uplands, and Central America. For the Indians of our more northerly lands used as cultivated plants only the things they had received from the Southwest: corn, tobacco, pumpkins and squashes, beans. They did not tame a single wild plant native to temperate North America, though later-coming white men found at least a few of these worth the trouble: the eastern grapes, blueberries, cranberries, and raspberries. Our Indians were satisfied with the "alien" crops, just as white men were when they found them.

Few Animals

In odd contrast to the ancient Indian farmers' success with plants is his exceedingly limited list of domestic animals. The dog he brought with him when he arrived from Asia as a hunting nomad; and the dog was literally the only importation from the Old World, either animal or plant. As he established himself as a settled agriculturist in the new land, he acquired exactly three domestic animals: the turkey in Mexico, and the llama and the Muscovy duck in the Peruvian region.

This may be due partly to the unsuitability of most American animals for domestication: bison, antelope, deer, elk, bighorn, and similar animals all existed in the Old World, too; and nowhere in the Old World did prehistoric man ever tame them. They are probably

simply unsuited to domestication. And the Indian's ancestors did not find here the more tractable and domesticable of Old-World animals, like cattle, horses, sheep, swine, poultry. So in taming only three American animal species, the primitive New-World farmer was probably doing all he could with available materials.

Hunters

Prof. Merrill stressed the fact that America's first immigrants were not farmers. They brought neither seed nor knowledge of farming with them. They were savage hunters, having only their dogs. All their agriculture, which reached such a high state of development, was worked out of their own resources of intelligence, as brought to bear on the food plants which they found here. First they gathered and ate them as they came upon them in fields and woods, later on they learned how to plant and tend and harvest them, for a more bountiful and dependable supply. And living with them year after year, they slowly improved them, until they had several varieties apiece of the more important ones, particularly their one grain, corn.

A Riddle

That riddle of corn's origin continues to intrigue botanists in spite of its unsolvability—or perhaps just because of that. There is one wild relative of corn, native to southern Mexico and Central America, that persistently gets into their eye: teosinte. Teosinte is a tall, rather coarse-stemmed grass with corn-like leaves and tassels, and corn-like husks around its seed-clusters.

But that is as far as it gets. Those seed-clusters are as unlike real corn-ears as you could imagine in a half-day's hard trying, and the seeds themselves, angular and hard and flinty, are utterly unfit to eat. Yet, it has been pointed out, the shift of a single mendelian factor would remove that flintiness and make the seeds into tolerably grindable grains. Did some archancestral red-skinned farmer, by a lucky break, find such a soft-seeded teosinte mutant, realize the importance of his discovery, and carry on the line? It is a tantalizing speculation.

Another important line of evidence for the real antiquity of American agriculture is the high technical development it had achieved. Though it started from scratch, under the crude hoes and planting-sticks of savages who had to teach themselves everything, it had all the essential elements that mark success-



AN OLD STORY

Very ancient Peruvian vase representing the corn god, decorated with four ears of corn.

ful agriculture everywhere: preparation of the soil, destruction of weeds, use of fertilizers, terracing in steep terrains, irrigation in dry areas, development of special varieties and strains of plants through selective breeding. These things take time, and lots of it.

Some speculative souls, fascinated by certain parallels developed independently by American and Old-World cultures, have tried to trace a common origin through the mythical "lost continents" of Atlantis or Mu. For these suggestions Prof. Merrill has scant patience. If there ever had been a mass emigration from some old, high civilization, in a land that now lies beneath the ocean, it would be only reasonable to expect that the migrants would have driven their flocks and herds before them, and would have carried stocks of seed to plant in the Promised Land of their exodus. But what do we find? Native man in America had but one animal of Old-World animals, the dog—exactly what a nomad hunter would be expected to have along with him. He had no Old-World flocks and herds at all, and not a single Old-World crop plant of any significance. There was not one American plant in Europe, Asia or Africa until Columbus and his successors brought them; not one Old-World crop raised in America until European colonists brought the seed in.

The evidence, then, seems overwhelming: agriculture, and the civilizations dependent on it, was developed along somewhat parallel lines in the two hemispheres, but in each independently of the other. And with its array of "orphan plants" in cultivation, Amer-

ica seems to have at least an admissible claim to the honor of having started farming first.

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Science News Letter, November 14, 1936

PUBLIC HEALTH

Russians Trace Tularemia Outbreak to Infected Water

AN EPIDEMIC of rabbit-fever in Siberia has taught scientists that water can carry the dread tularemia infection, Drs. S. I. Karpoff and N. I. Antonoff of the Institute of Epidemiology and Microbiology report (*Journal of Bacteriology*, September).

Engaged in harvesting wheat, a whole community of farm workers took up residence in a field "between the cities of M. and T." As drinking water they used that from a river and from a small brook which emptied into it below the point where the river water was obtained. A few days later a large number of cases of a disease which resembled somewhat the plagues of the Middle Ages broke out among the farmers. In all cases there was swelling of the glands about the mouth and throat, the liver "stood out the thickness of a finger's breadth," and the spleen was swollen and sensitive. The doctors diagnosed the disease as rabbit-fever, but were puzzled about how it could have been spread.

In the United States doctors had discovered the disease to be spread by infected rabbits; in Norway the wild rat was the culprit, while in Russia water

rats were guilty. But in this epidemic only a few rats had been seen, and the doctors knew definitely that the affected people had picked up the disease from something eaten or drunk.

Then another fact became apparent. Those who had drunk unboiled water from the brook became ill, but those who drank similar water from the river were quite healthy. Bacteriological analysis solved the problem. The brook water was loaded with tularemia germs, that from the river was clean.

An epidemic of tularemia, acquired from water rats, broke out in the Ural region of Russia in 1928 when a commercial demand for the water rat pelts turned the entire population to the job of catching and skinning them. A lot of infected rats may have been in the brook that was found infected with tularemia germs, although scientific investigators, one month later, did not find any rats in the brook.

Avoiding the newly discovered danger of acquiring tularemia from water is simple enough: Only water that is bacteriologically clean must be used for drinking.

Science News Letter, November 14, 1936

MEDICINE

Whooping Cough Vaccine Must be Given in Large Doses

THE SECRET of successful vaccination against whooping cough may lie in the amount of vaccine given to each child, it appears from results obtained at the experimental whooping cough clinic being conducted by WPA experts under supervision of the New York City Health Department.

The value of whooping cough vaccination has not yet been settled to

the satisfaction of physicians generally.

At the clinic a study is being made of the value of the various whooping cough vaccines used in the prevention of this disease. Within recent years whooping cough has been responsible for more deaths than any other infectious disease of childhood.

Seven different vaccines are used in the clinic upon groups of children