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Stephen L. Whittington and David M. Reed, eds. *Bones of the Maya: Studies of Ancient Skeletons*

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Stephen L. Whittington and David M. Reed, eds. Bones of the Maya: Studies of Ancient Skeletons. Washington, D.C.: Smithsonian Institution Press, 1997.

The chapters of Bones of the Maya are based on papers presented at a conference in April 1994 at the Disneyland Hotel in Anaheim, California. Those attending the conference were archeologists and osteologists specializing in excavation of Mayan sites who believed that studies of Mayan skeletal remains could shed light on Mayan culture and, perhaps, explain why its brilliant and powerful civilization collapsed in the early 8th century A.D.

One school of thought is that Mayan society collapsed for social and political reasons. Hieroglyphic records give evidence of dynastic struggles which may account for population loss. Other evidence, however, lies in the bones of Mayans gathered from various sites whose study might help to prove or disprove theories that food shortages, nutritional deficiencies, or disease reduced populations in the late Classic stage.

With respect to nutrition, it is known that 55% to 60% of the ancient Mayan diet consisted of maize, perhaps eaten in the form of tamales, supplemented by beans, sweet potatoes, manioc fish, and other foods where these were available. Populations living near the sea coast of modern Belize tended to have a richer diet than those in the interior such as Copan in Guatemala. Social elites, of course, have tended to eat more meat. Archeological evidence does not support the theory that expanded maize cultivation seriously depleted the supply of wild game or that a Malthusian growth of populations exceeded the food supply.

On the other hand, there is evidence of deteriorating health in the form of increased numbers of persons suffering from porotic hyperostotis, an anemic condition linked to iron deficiency. Maize contains chemicals that interfere with absorption of iron. Dental studies show increasing enamel defects and deformities that suggest stress from disease or nutritional deficiency.

The average height of Mayan people dropped signif icantly between pre-Classic times and the present — men, by about four centimeters; and women, by about two centimeters — based on extrapolations from measurement of the femur, tibia and ulna bones. Today's Mayans are short in stature with disproportionately long arms. Such changes in height may be due to migrations and intermarriages or, as suggested here, to increased environmental stress.

Several chapters concern practices characteristic of Mayan culture which are apparent in bone residue but are not necessarily significant in

terms of population changes. It was common for Mayan adolescents, both male and female, to file their teeth in a pointed shape for ceremonial purposes. In the Classic period, teeth were often inlaid with pyrite or other brightly colored stone material. In tooth deposits excavated at Chau Hiix, the two filed incisors fit together to form a "T", which resembles the glyph, Ik, associated with the Mayan 260-day calendar. Mayans also practiced skull deformation, flattening the back of the head, either to create a more fearsome appearance in battle or to facilitate carrying heavy loads on the top of the head.

"Bones of the Maya" illustrates in some detail how modern technologies, including isotropic or DNA analysis of bone tissue, can help to answer who the Mayan people were, what they ate, and how they died. DNA studies reveal, for instance, that all native Americans originate in four ancestral groups having distinctive genetic signatures. The Mayans of ancient Copan fall into what authors Merriwether, Reed, and Ferrell call Lineages C and D. They share this genetic heritage with other peoples living in Siberia and South America, but not in Alaska or Canada. On the other hand, modern Mayans living in the Yucatan peninsula of Mexico are predominately linked to Lineages A and B.

Readers looking for dear, conclusive answers to questions concerning the rise and fall of the ancient Mayan civilization will be disappointed in this book, which goes out of its way to point out the ambiguities and uncertainties in the study of skeletal remains. A big problem is always to obtain a statistically significant sample. In the wet, hot climate of Central America, human remains are subject to rapid degradation.

The roots of tropical plants have cut through many graves as have previous diggings, both for archeological and Mayan burial purposes. Much of the book concerns classification of bones into groups which may or may not be significant: male or female, urban or rural, elite or commoner. The age of the bones, considered either from the standpoint of the individual life cycle or the stage of Mayan culture, may also have a bearing on questions relating to the fate of this ancient people.

"Bones of the Maya" presents a thorough explanation of techniques used in its studies, suggesting that further advancement in those techniques may yield the desired answers, especially when combined with archeological or written evidences. While a bone-by-bone assessment of the evidence may be tedious for the average reader, that is, indeed, where the truth lies. As such, the book makes a substantial contribution to our knowledge of civilizations.

—William Mcgaughey