

The Teeth and Bones of the Mound Builders as Related to Their Diet

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ABSTRACT

For the past two years, through the courtesy of Curator Frank C. Baker, of the University of Illinois Natural History Museum, the writer has had the privilege of examining and studying the skeletal material reposing in the Archeological Laboratory—material collected in central and southern Illinois over a period of several years, by Drs. A. R. Kelly and Warren K. Moorehead, formerly of the University. The study of this material was supplemented by similar work done on material available at the Dickson Mounds near Lewistown, and at the Field Museum in Chicago. The writer was also granted access to several excellent private collections in various parts of the State. The entire project involved the observation and measurement of hundreds of skulls and thousands of teeth.

Throughout the course of the investigation two noteworthy observations remained predominant. Evidence of dental caries, or decay of the teeth, was practically non-existent and was almost totally confined to teeth of aged individuals. This latter fact is established by the fact that such jaws had lost teeth before burial, the remaining teeth were tipped or spaced, or both, thus creating pockets wherein food material was easily retained. Subsequent fermentation caused the formation of organic acids that tended to soften the enamel rods, allowing the ingress of destructive mouth fluids. In spite of the fact that caries seemed to be a characteristic of the skulls of the elder individuals, they made up a total of only seven per cent of the skulls studied. In addition to the fact of comparative freedom from caries, the skulls showed remarkably fine development of the alveolar arches. The arches exhibited almost ideal proportions of length, breadth and height. The mandible was correspondingly well developed.

The problem of satisfactorily explaining this immunity from caries, and the marvelous development of the osseous structures of the mouth, was attacked from the standpoint of the influence of diet on such conditions.

Extensive excavation of village sites, camp sites, kitchen middens, refuse mounds, etc., carried on in recent years, has given us a wealth of

knowledge regarding what must have comprised the bulk of the diet of the aboriginals of Illinois. A noteworthy example of this type of study is the careful work done by the members of the Peoria Academy of Science, in excavating the Kingston Pits. The material collected at this site was forwarded to the University of Illinois and to the Smithsonian Institution for examination and classification. At the 1930 meeting of the Academy Dr. Baker presented the results of his work on it, revealing that the Mound Builders ate certain specific types of mollusca, fish, birds and mammals. He identified, among other things, the bones of the Sand Hill crane, the trumpeter swan, the whooping crane, the Virginia deer, black bear, and beaver; now, for the most part, extinct in the Illinois Valley region. The dog was evidently eaten to some extent, as well. A large percentage of the bones were found to have been cracked open, showing that the bone marrow was eaten after the meat was consumed.

The Mound Builders also practised agriculture in a crude sort of fashion. The early French explorers, during their voyages along the streams of Illinois, noted fields of corn adjacent to the Indian villages. Pumpkins were also grown. In their planting procedure they poked a sharpened stick into the soil, dropped the seed into the hole thus formed, and then covered it up, leaving it to germinate and produce crops without further human aid. When the game supply became depleted in any one area, the tribe would move to another locality. Thus their agricultural efforts were always carried on in virgin soil. Recent studies have shown conclusively that agricultural products derived from virgin soil possess a much higher mineral content than those secured from soil that has been utilized for a number of years. This fact is important in the study of dietary results.

Vegetable foods prepared from corn and pumpkins were supplemented in season by wild strawberries, gooseberries, blackberries, wild plums, wild onions, and undoubtedly, other tree and plant produce as well. The Mound Builders prepared their cooked foods by only brief exposure to fires of low temperature; hence the victuals retained most of the natural mineral and vitamin content. This fact is also important. Furthermore, the common method of cooking resulted in the addition of more mineral matter derived from the abrasion and decomposition of the heated stones used to supply the necessary heat, and from the unfiltered water which was used. Gritty materials were introduced into their cornmeal, also, as the stone grinding implements wore down during use.

Taken as a whole, then, the diet of the Mound Builders was exceedingly rich in the minerals and vitamins necessary for the proper growth and development of the teeth and bones. Compared with the average diet of the modern American it was more than five times richer in calcium and phosphorous compounds, and more than fifteen times richer in copper, magnesium and iodine-containing substances.

The above facts seem to supply an adequate explanation for the well-developed teeth and oral bones that characterize the skulls of the Mound Builders, taking for granted the fact that the skulls examined in the current study were typical of the race. Not only were their foods rich in important basic substances, but the introduction of gritty materials tended to remove scale from the teeth, and to scour out the fissures of the occlusal surfaces, thus preventing the retention of food at such spots. It is true that such involuntary tooth-cleaning was more effective than necessary, thus resulting in extreme wear of the teeth with age. The proximal surfaces of the teeth in time became squared off, inducing packing and subsequent decay of the teeth of the older members of the tribes.

The dentition of the Mound Builders was markedly superior to that of the present day civilized person. The differences in dietary practices undoubtedly accounts for the contrast. The average forty-year-old individual of today, if he does not have "false teeth", has, or should have, in most cases, more or less bridgework. Otherwise, his mouth exhibits typically numerous fillings and crowns. His alveolar arch is typically high, short, and narrow—imperfectly developed. His teeth are usually crowded; the third molars are commonly impacted, and his teeth more often than not show incipient or active pyorrhea. Our modern diets, rich in carbohydrates and starches, are generally poor in mineral and vitamin content. They do supply food for the flesh of our bodies, but they should also supply food for thought and corrective action.