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# LAND-SNAIL SHELLS FOUND IN A KITCHEN MIDDEN OF ILLINOIAN INDIANS OF THE HOPEWELL CULTURE

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References to the shells of snails which have been associated with Indian culture of the past in Illinois are limited. Probably Frank C. Baker, who was formerly curator of the University of Illinois Museum of Natural History, has discussed them most thoroughly from the zoological aspect (1930, 1931). From collections which he had received from the Cahokia and Havana mounds, he found the aquatic forms, *Campeloma, Anculosa, Lymnaea,* and *Planorbis* (*Helisoma*). Although he assumed that they had been used as food, he presented no evidence to verify this statement. He also observed that land-snails were seldom found in mounds and that there was no indication that they had been used as food. Although his contribution was quantitative to the extent that he enumerated the various classes of mollusks which were found in the mounds, he made no attempt to establish the frequency of the various species of land-snails or bivalves which were present.

Recently, the author has been given several large collections of unionids (fresh-water mussels) and gastropods (snails) which had been removed from various Indian sites by John McGregor, Professor of Anthropology, University of Illinois. The sites were in southwestern Illinois near the Illinois and Mississippi Rivers. Up to the present, the shells found in a village which existed about 500 B.C. on McGee's Creek, a small stream flowing into the Illinois River below Meredosia, have been analyzed. This site was given priority because it seemed to represent a well established Indian community, according to the artifacts and other items obtained by Dr. McGregor and his helpers. An analysis of the unionid shells, along with a description of the creek as it must have formerly appeared when the mussels were living, has already been completed (Matteson, 1953).

The site is located on the Robert Poole farm in Chambersburg township (at north edge Sec. 5, T. 2 S., R. 2 W.). The former village contained one dwelling of considerable size which is located about forty feet from the present bank of the creek. Although broken pottery, gardening utensils, other artifacts, and the valves of mussels were found scattered throughout the village, most of the shells of mussels and land-snails were found in one compact kitchen midden located in the field back of the village.

The midden was first noticed by Mr. Poole after he had plowed up several valves of fresh-water mussels. Further examination revealed that the mass of shells extended into the ground for a considerable distance. Broken artifacts, individual beads and other items cast off by the In-

dians were present although little soil was mixed with the shells. The shells of land-snails were scattered throughout the mass. It was noticed that they were more concentrated at its surface. The remains of no aquatic snails were found. This is an interesting fact because aquatic snails were present in a midden located at another site less than a mile farther down the creek where a village had existed more recently, and at another site near its mouth which had been occupied by Indians about 5000 years ago.

An analysis of the land-snail shells revealed two genera which were represented by six species. All corresponded to the descriptions set forth by Pilsbry (1940, 1948). There is a chance that the shells of smaller land-snails might have been present but were either undiscovered during excavation or had disintegrated due to the effects of time. The following varieties were identified:

*Allogona profunda* (Say) (17)
*Anguispira alternata* (Say) (36)
*Anguispira kochi* (Pfeiffer) (31)
*Mesodon clausus* (Say) (2)
*Mesodon pennsylvanicus* (Green) (2)
*Mesodon thyroidus* (Say) (17)

As the snail-shells were mixed with mussel valves, both Dr. McGregor and the author first assumed that the Indians used land-snails, as well as fresh-water mussels, as food. Soon, divergence of opinion occurred, with the former continuing to believe that they were an item of diet. It was decided that the friendly argument should continue further in order that a logical conclusion might be made.

With few exceptions, the shells have been preserved in excellent condition. The color patterns of *A. alternata, A. kochi,* and *A. profunda* are still clear (Fig. 1). However, many of the mussel valves were badly decomposed. The shells of aquatic snails previously mentioned as being discovered at another Indian site of more recent origin were also in poor condition. No differences in composition can be noticed between the shells of living terrestrial and aquatic pulmonates. Furthermore, the heavier shells of the aquatic operculates should have been found in better condition than those in question. One is led to believe that the shells of land-snails are no better equipped than the aquatic forms to resist the effects of weathering while underground during long periods. These facts imply that the terrestrial snails from this site must be of comparatively recent origin.

All snails require substantial amounts of calcium carbonate in order that the shell may be developed satisfactorily. A piece of chalk thrown into an aquarium occupied by aquatic snails soon becomes covered by them. Living terrestrial snails will devour the shells of dead companions, and some varieties, including the genus *Anguispira,* will actually eat the shells of other living snails.

A land-snail's affinity for shell-forming material may explain the presence of the snails in the kitchen midden. They probably began wandering onto the refuse pile when it was first formed by the Indians. Many remained for an extended period of time and some of them died there. In the meantime, more discarded valves of unionids were added to the pile, covering both the previous valves and snail-shells. In time, the midden assumed its final

FIG. 1.—Shells of land-snails found in a kitchen midden located near McGee's Creek, Chambersburg Township, Illinois. First row (left to right): 1-2 *Mesodon thyroidus;* 3-4 *M. clausus;* 5-6 *M. pennsylvanicus.* Second and third rows: *Allogona profunda.* Fourth and fifth rows: *Anguispira kochi.* Sixth and seventh rows: *Anguispira alternata.*

shape and was composed mainly of mussel shells interspersed with terrestrial snail-shells. As the surface of the pile was exposed for many years, a higher concentration of snail-shells was present there.

The lip which surrounds the aperture of each shell is usually intact. If the soft parts had been used as food, the lip would have been de-

stroyed during the process of removing the body from the shell. Dr. McGregor has suggested that as boiling was employed in the preparation of certain foods by the Indians of that period, the snails were first treated in this manner which facilitated the removal of the meat from the shell. However, the body of a snail contracts farther into the shell when it is placed in hot water. Without the use of some utensil comparable with modern forceps, the body still could not be removed without breaking the shell. The logical way by which an Indian could have removed the boiled soft part is to crush the rather frail shell between the thumb and index finger.

The Indian may have had some device, not yet discovered, by which he extracted the edible parts of the snail from the shell. A former resident of Hawaii relates that the natives there place snails on rocks which are then slowly heated. The bodies of the snails gradually relax and eventually protrude from the shells at the time of death. After further heating, each soft part is torn from its shell and eaten. However, an analysis of available evidence shows that land-snails were not an item of diet of the Indians at the site mentioned herein. They became a part of the kitchen midden while seeking food. Some of them probably have died there within the last century.

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