REVIEW OF THE LITERATURE OF ETHNO-CONCHOLOGY PERTINENT TO ARCHEOLOGY

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Interests in the field of ethno-conchology are broad, and, due to the borderline nature of this field, knowledge of the subject can be secured only after searching through a mass of widely scattered literature. This review is intended as a service to those seeking information in this borderline field. The bibliography is probably incomplete, but a careful enough search has been made to insure the presentation of a working list containing most of the important papers. At present no similar source for gaining orientation is available. The bibliography itself is arranged to supply references.

The paper was written and the bibliography compiled in 1952 while the author was a graduate student at the University of Michigan. He is indebted to Professor Volney H. Jones of the Anthropology Department, University of Michigan, for many helpful suggestions and for reading the manuscript. The author is especially grateful to Professor Henry van der Schalie of the Zoology Department, University of Michigan, who first suggested to him the need for such a paper, and who rendered every possible assistance in its preparation.

MOLLUSKS AS TIME INDICATORS

To the student interested in problems concerning the antiquity of man in the Western Hemisphere, shells and shell artifacts offer many interesting avenues of speculation. Their use as geologic time indicators may be profitable if delicate enough techniques are developed. Eiseley (1937), in a much needed critique, cautioned against making sweeping correlations based upon mollusk forms as indices. He pointed out the pitfalls encountered in describing climatic changes in terms of changes observed in the mollusk fauna -- such as at the Lindenmier Site where the mollusks found would seem to indicate a warm period at the time the site was laid down. Eiseley revealed that the fauna might possibly be interpreted instead as indicating a dry period at the height of glaciation.

Careful ecologic studies of the mollusks are necessary before the archeologist can make cultural diagnoses on the basis of climatic change. Along with this analysis careful stratigraphic collections of the mollusks must be made from archeological sites. The importance of collecting even unworked or broken shell was stressed by Boekelman (1936: 30) "Time and again we have

heard from field workers of excavations where unworked shells, and especially broken specimens were not even removed from the sites."

Morrison (1942), in his study of the mollusks of certain archeological sites in the Pickwick Basin, observed a change in the mollusk fauna of that area. Working with a list of forms known to inhabit the region at the present he could see certain changes that have taken place since the shell mounds were deposited. An interesting note of caution along this line of investigation came from Byers (1951). He found Venus mercenaria north of its reported range in an area where it was known only from shell mounds. The shell mounds had been thought of as being deposited in a warmer period because of the southerly range of Venus. With new indications of its present distribution to the north, however, this position becomes more difficult to maintain.

Johnson (1942) in his introduction to the study of the Boylston Street Fishweir made this difficulty in the use of distribution data apparent when he said, "Changes in climate during the history of the deposit were based primarily on the evidence of the mollusks. The evidence obtained by Dr. Shimer was and is conclusive as far as it goes. However, in view of the ability of mollusks to exist under many exceptional conditions, the evidence was not over satisfactory." In the later investigations of the fishweir carried out by specialists at Johnson's suggestion still more, perhaps more complete, studies were made of the mollusks, along with complementary studies of the remainder of the fauna. Thus, in this same volume, Clench (Johnson, 1942), in reviewing the mollusks, observed that, based upon the mollusks from shell layer two, the water way may have been warmer -- warmer than at present anyway — when the strata were deposited. However, though many Ostrea, Pecten, and Venus, which indicate warmer conditions, were recovered, only a single specimen of Triphoris was found. This same Triphoris was listed by Clench as the "only example of a distinctly southern element found at the site."

An extensive literature exists on shell mounds and interpretations accounting for these middens. Gifford (1949), Kroeber (1911), Nelson (1909, 1910), Schenck (1926), and Uhle (1907) have reported on shell mounds in the California area. Cook (1946), in refining techniques used by Nelson, speculated on the length of residence of groups contributing to the shell mounds, basing his calculations upon the nutritional requirements of a certain size of population. Rouse (1951) obtained some indication of the duration of certain midden heaps in the West Indies by comparing them with historic Puerto Rican heaps which have known accumulation rates. Lovén (1935) described shell middens in the West Indies; Haag (1942a) and Moore (1893) have covered those in the American Southeast, and Holmes (1907) discussed heaps found along the Middle Atlantic coast. Alfred (1937) reported on the literature dealing with Wisconsin shell mounds, and Byers (1940) and Hadlock (1941, 1943) have written on New England shell sites.

With the advancement of radiocarbon dating techniques shell material has assumed another role as time indicator. Although perhaps not so reliable as wood and charcoal, there is indication that if the shell's original carbonate atom composition has not been altered by carbon of a different age the shell sample may give a valid time record (Libby, 1952). Conch shells from Ohio Hopewell mounds (Libby, 1952: 78) have given a date of 2,285 ± 210 for that group, and clam shells from an Aleut midden (Kulp, 1951) indicate an age of 4,600 ± 80.

Another radioactive isotope, Oxygen 18, may prove useful in establishing a record of the temperatures of early geologic time. Using mollusks and other invertebrates, Urey (1948) found direct correlations between the temperature and Oxygen 18.

USE IN DELIMITING CULTURE PERIODS AND ESTABLISHING EVIDENCE OF CULTURE CONTACT

When man utilizes shell material as an artifact of his culture over a long period of time, changes in his culture may be reflected in the shell artifact. The archeologist can use these trends and the lack of them to help set off one culture period from another. Heizer and Fenenga (1939) found Haliotis and Olivella shell artifacts especially good as indicators of culture periods in central California. In describing Haliotis ornaments they stated: "These, together with shell beads, are our most consistent indicators in characterizing culture periods. Shapes are limited — circular, rectangular, ovoid, etc. Differences are found in such techniques as size, position, and number of perforations, decoration, size and species used." Beardsley (1949), commenting on technique refinement in demonstrating Californian culture sequences, remarked: "Another methodological advance was the recognition of a class of burial artifacts in pottery-less California which is able to serve the important function filled by ceramic analysis in other areas. Shell bead and ornament types supply such a class, combining frequent occurrence and comparability of form with relatively sensitive variation." Haury (1937) suggested that specialized treatment of shell — etching and types of carving — because of short duration on the scene are more useful as phase indicators than are some of the more generalized treatments which show little variation over several phases.

Shell tempering of pottery has been one of the traits used to set off the Mississippian culture phase from the earlier Woodland phase of Eastern archeology. Ford and Willey (1941) in outlining the Temple Mound I stage in the central Mississippi Valley remarked: "Middle Mississippi is a term first used by W. H. Holmes to characterize the typical shell-tempered pottery found in such great quantities accompanying burials in the central part of the Mississippi Valley." Again, in speaking of the Middle Mississippi period following the Late Baytown in eastern Arkansas and western Mississippi: "Clay-tempered polished vessels are gradually replaced by vessels of similar shapes tempered with finely ground shell." Haag (1942b) found shell-tempered pottery occurring in two groups of Pickwick pottery; one a Middle Mississippi phase and the other as components of the Moundville complex. He found that Moundville shell-tempered pottery always overlay clay-grit, limestone, sand, and fiber-tempered ware.

However, shell-tempering is not to be thought of as infallibly accompanying Mississippian traits. Griffin's (1946) discussion of the Irene Savannah Focus indicated that in the preceding more Woodland-like cultures some Mississippian traits appeared — among them style of house structure and ceremonial mound complex — believed before to be found only associated with shell-tempered pottery.

Gifford (1949) has shown the usefulness of shell types in cross-dating cultures. Certain Californian shell types were found in Southwest Anasazi sites with evidence that they were most abundant in Basketmaker III time. Using Basketmaker dates the California material can thus be given a definite minimum date and assurance of an earlier time of manufacture in California.

Culture contact between Florida and the West Indies, and possible derivation of West Indian Ciboney culture from Florida has been suggested by Rouse (1949, 1951). Among the traits substantiating it are certain shell artifact types — shell gouges and hafted conch shell picks — and a dependence upon shellfish for food with the accumulations of great midden heaps. Lovén (1935) also pointed out probable Floridian influence on West Indian culture by the occurrence of discoid shell gorget types and a general excelling in the art of carving in shell.

The finding in widely scattered parts of the world of quite similar uses of shell, such as close similarity of elaborate ritual surrounding it, or styles of decoration, has led some people to speculate about the transmission of such traits. This speculation led Jackson (1917) to believe that the high pre-conquest cultures of the Americas were derived from Egypt and India. In spite of the many close resemblances most anthropologists today hold the view that early American cultures developed independently, without direct cultural influence.

However, shellfish undoubtedly helped stimulate trade and commerce at an early time in man's history. Johnson (1850) in describing the Tyrian purple industry of the Mediterranean area said, "This discovery is presumed to have been made 1400, or, at the most, 1500 years before the Christian era; and it was perhaps the principal commodity of Tyre when its 'merchants were princes and its traffickers the honorable of the earth'."

The tracing of early trade routes may often provide the archeologist with concrete information concerning contacts between cultures. Trade items of sufficiently stable composition to resist complete disintegration will, upon recovery from their final resting place, shed light on the movements of those early peoples and the diffusion of their artifacts. Marine shells are especially useful as such trade items even though in many instances disintegration has proceeded so far as to make accurate species identification impossible. It is, however, this correct identification which is so important in enabling the investigator to determine the locality from which the shell started its journey. Henderson (1930) made this point clear in connection with Haliotis fulgens and Haliotis rufescens from sites in the state of Washington. He reasoned that if the material were correctly identified it would indicate a longer trade route than expected or perhaps an earlier extended range for the species. Leechman (1942) also pointed out the possible confusion arising from misidentification of species which superficially resemble each other, such as the several species of abalones.

A knowledge of the techniques available to the archeologist in tracing old trade routes, and the limitations he may encounter, as presented by Colton (1941), aids greatly in defining the archeologist's objectives. One of these limitations, the identification of mollusk specimens, has already been mentioned. A mollusk, which under the best of conditions is difficult to identify, becomes, in the fragmentary or disintegrated state presented to the archeologist, unidentifiable except to a specialist who has long acquaintance with that species and its relatives. So in going over his material the archeologist soon finds that he must call upon the specialized knowledge of the malacologist.

After the shell is identified and has a known starting place, it next becomes of interest to know by what means it reached its final resting place. Martin, Quimby, and Collier (1947), in a chapter on trade and commerce, outlined methods of shell transport, and suggested possible dispersal routes in various sections of the country. Tower (1945) brought together many of the sources on trade routes in the Southwest, and looked at suggested trade routes in the light of additional shell material.

In this short paper I have been trying to integrate some of the rather diversified papers dealing with a special area of ethno-conchology, mollusks and their bearing on archeology. It is apparent that I have made no mention of the vast literature of ethno-conchology dealing with more general aspects of ethnology, e. g. the role of molluśks in the technology and philosophies of man. I have, therefore, imposed an artificial boundary; for those first and most important uses of mollusks as food, utensils, and ornaments must be studied and their role in the society determined if the archeologist is to come up with an accurate tracing of the culture. Thus, the archeologist can tell us that he finds no shell trumpets in sites along the Mississippi River, but to

understand why there are none may require examination of ethnographies to see if some hint may be found in the customs, beliefs, or technology of the people.

In this artificial segment, then, that I have chosen for consideration, the following points seem to stand out as integrating factors:

1) Mollusks, if properly utilized, can provide us with an added tool in pinning down the facts of early man and his culture.

2) The use of mollusks calls for cooperation among specialists. As Colton (1941) remarked: "The study of ancient Indian commerce is the most highly technical branch of archeology and requires the services of technically trained investigators in many fields of science. Archeologists themselves can only formulate the problem because all the material has to be accurately identified so that the source can be determined." Other papers reviewed indicate that cooperation comes from such specialists as paleontologists, who determine the strata and ecological associates of fossil mollusks, physicists who develop methods for dating material, and oceanographers who can describe the myriads of sea organisms found with mollusks.

3) Along with all the specialized work goes the need for overall integration of the material into a unified picture of the progress being made in the unraveling of man's past.

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