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Archaeological Excavation at the Boyd Site

Tunica County, Mississippi

by

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and

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MISSISSIPPI DEPARTMENT OF ARCHIVES AND HISTORY

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Edited by

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A land leveling salvage project conducted for
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MISSISSIPPI ARCHAEOLOGICAL SURVEY

The Mississippi Archaeological Survey was inaugurated on November 1, 1968, under the supervision of the State Department of Archives and History. Mississippi State University has contributed to the support of the Survey with the donation of part of the Director's salary and a vehicle, which was used until February, 1971.

Professor Richard A. Marshall, Department of Sociology and Anthropology, Mississippi State University, has served as the Survey Director since the inception of the program with John Connaway and Samuel O. McGahey functioning as field archaeologists.

The Survey became a part of the Division of Historic Sites and Archaeology of the Department of Archives and History on July 1, 1970, as a result of administrative reorganization within the Department.

Elbert Hilliard
Director
Division of Historic Sites and Archaeology
Mississippi Department of Archives and History

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JMC
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Land Leveling and Cultivation

The excavation of the Boyd Site by the Mississippi Department of Archives and History was the direct result of a 1969 survey of archaeological sites in Tunica County, Mississippi, which were threatened with destruction by land leveling. The problem of land leveling in the Mississippi Alluvial Valley and the resulting destruction of sites has been discussed at length in several recent publications (McGimsey 1968; McGimsey, Davis and Chapman 1969; Scholtz 1968; Williams 1968); and, therefore, will not be described in detail here. However, before continuing with a description of the Boyd Site, there are a few pertinent facts concerning Mississippi land leveling and agricultural practices that should be pointed out.

It has been stated that there are approximately 2,403,000 acres of land in the Yazoo-Mississippi Delta suitable for leveling. This constitutes more than forty percent of the total Delta land acreage. About sixty-five percent, 1,561,000 acres or 2,439 square miles, had been leveled before 1968 (Marshall 1968:3). Since most of the archaeological sites in the Delta are found on natural levees or other high ground formed by old river channels, they are most often the first areas to be cut down and hauled off by the scrapers and land planes. No matter how drastically a field may be changed by leveling the basic procedure involved in any land forming operation is the removal of high spots and the subsequent filling in of low spots. With respect to the disappearance of archaeological sites, such agricultural practices can be seen as one of the most widespread, large-scale destructive forces in the Mississippi Valley. This destruction can be illustrated in terms of the approximate number of sites to be found per square mile in the Delta.

Compared with information on the alluvial valley areas of Missouri, East Arkansas, and Northeast Louisiana, it could be estimated that there may be approximately three sites per square mile in the Mississippi Delta. This must, of course, take into consideration the uneven distribution of sites throughout the area. Using this figure as a base, an estimate can be made regarding the number of sites being destroyed by land forming, clearing, and cultivation.

A recent survey of sites in Cross and Chicot Counties, Arkansas, revealed that approximately twenty-five percent of the known sites in those areas have been or will soon be destroyed by land leveling. It has been estimated that within the next twenty-five years practically all the remaining sites in those counties will be disturbed or gone (Scholtz 1968:8). Such figures could easily be applied to every Delta county in Mississippi.

The estimate of three sites per square mile may be applied here to illustrate the rate of site destruction by leveling in Mississippi. There are approximately 7,812 square miles of land in the Delta, containing an estimated 23,436 archaeological sites. About 2,439 square miles of this area were leveled before 1968, resulting in the probable destruction of 7,317 sites or 31.2 percent of all the sites in the Delta! It was recently stated that almost 21,000 acres, or 32.8 square miles, were leveled in nine Delta counties, including Tunica, in 1969 (Taylor 1969:1). This could represent the possible destruction of over ninety-eight sites.

Land leveling, however, is only one form of agricultural procedure threatening prehistoric sites. Less dramatic, but equally, if not more destructive are the common methods of chisel plowing and subsoiling. These procedures may disturb the soil up to two or more feet deep and can completely destroy the archaeological context of most sites in a short time. There are few sites in the Delta with enough midden depth to withstand such an onslaught. In 1969, a survey of Coahoma County by the field archaeologists of the Mississippi Department of Archives and History revealed that out of 121 sites visited, one hundred (82.6%) had been subjected to deep plowing, many of which had been subsoiled as well. It is not yet known how many of these sites are completely destroyed. However, at least fourteen, of the total number of sites visited, are known to have been destroyed, primarily by land leveling. Eighteen additional sites have been partially destroyed by these practices.

An example of partial destruction may be seen at the Bonds Village Site, 22-Tu-530, where excavations in 1968 revealed the marks of a subsoiler approximately fifteen inches below the

surface. This equipment had almost totally eliminated the floor surfaces of five houses excavated on the site. The fact that most sites scheduled to be leveled have already been cultivated for some time must also be considered. Two such sites tested in Coahoma County were found to have already been destroyed by cultivation.

To add another disturbing factor, more land is being cleared and placed in cultivation every year. Approximately 500,000 acres, or 781.2 square miles, of land have been cleared in the last ten years (Staff Report, 1970, *Delta Farm Press*). This could mean the possible exposure of over 2,343 previously undisturbed archaelogical sites to the ravages of the plow and eventually the land leveler. These figures, taken together with those in the cases from land leveling and cultivation methods, seem to present a dim picture for the future of archaeology in Mississippi. A formidable task lies ahead, one of trying to salvage as much information as possible from the remaining sites in the relatively short time left. The statistics are merely estimates, but they are based on facts which cannot be overlooked. These figures, along with recognition of the vast scope of the land leveling problem, led to the Tunica County survey and the subsequent discovery of the Boyd Site.

Archaeological Survey of Tunica County

In February, 1969, the authors conducted a short-term survey of proposed land leveling activities in Tunica County. A list of landowners with properties scheduled for leveling was obtained from the county office of the Soil Conservation Service. It was estimated that approximately 2,000 acres would be leveled during the year. Contact was made with each of the property owners, and their lands were checked in an attempt to locate all archaeological sites endangered. Ten such sites were recorded, an average of one site per two hundred acres or, again, close to three sites per square mile. Of these, the Boyd Site looked most promising for excavation because a small portion of it was in pasture and undisturbed by cultivation. Permission for excavation was granted by the owner, Mr. R. B. Boyd, and the Mississippi Department of Archives and History initiated procedures for obtaining a salvage grant from the National Park Service. This grant was approved in 1970 and excavations were begun in September of that year.

The Boyd Site

The Boyd Site is located in the NE ¼, SE ¼, SW ¼, Section 36, T 5S, R 12W, as shown on the Dundee, Mississippi United States Geological Survey quadrangle map (Figure 1). It consists of a medium-sized village site situated on a natural levee and backslope formed by a relict Mississippi River channel. This old channel is presently known as Beaverdam Lake, and the site overlooks the junction of this lake with Beaverdam Bayou. More specifically, the village area is bordered by the east bank of the lake, the north bank of the bayou, and a paved road running through the small settlement of Clayton.

All but approximately ½ acre of the site, which covers nearly thirty acres, has been in cultivation for many years. This plowing revealed a heavy concentration of village debris, indicating that the site was occupied for a long period of time. Unfortunately, test boring by the excavation team and information obtained from the landowner revealed that the recent use of deep plowing and land planing has almost completely destroyed the context of the village midden. For this reason, excavations were restricted to the ½ acre of undisturbed soil at the southwest edge of the site. This area, partially overgrown with small trees and brush, had been in pasture, and portions of it were approximately two feet higher than the adjacent cultivated field. The presence of a thick and comparatively undisturbed midden, an unusual find in the agricultural Delta, was therefore indicated.

This midden, however, was not completely clear of disturbances. Besides the expected growth of tree roots and the burrowing of small animals, there was the presence of late historic posthole and pit digging on the site, a result of the occupation of a house located nearby at least as late as 1908, as shown on the Dundee, Mississippi, United State Geological Survey quadrangle of the same year. The house was probably destroyed in the 1930s or 1940s. An unusual occurrence related to this pit digging will be discussed in a following section of this report.

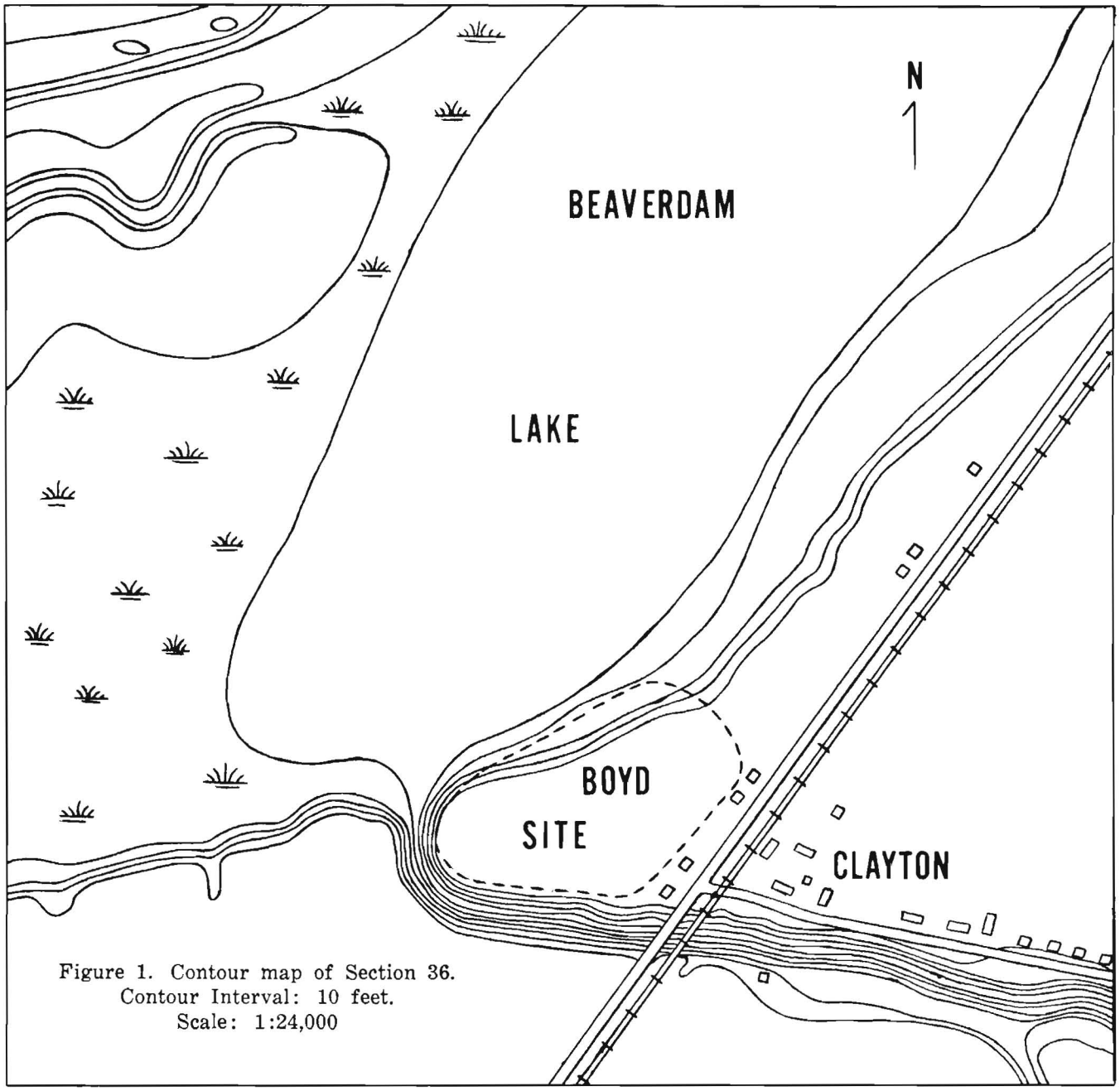


Figure 1. Contour map of Section 36.
Contour Interval: 10 feet.
Scale: 1:24,000

Adapted from
United States Geological Survey Quadrangle Map
Dundee, Mississippi
Figure 1

Objectives of the Excavation

In the preliminary survey, large numbers of daub fragments and Baytown Period potsherds were observed in the cultivated part of the Boyd Site, indicating the presence of house remains, as well as the possibility of these remains being a part of the Baytown Period occupation. What appeared to be an excellent opportunity to prove such a connection thus presented itself in the undisturbed area. It was hoped that a good house pattern would be revealed in a Baytown context during the course of the excavation. The true nature of this area was not apparent to the surveyors at the time; therefore, the proposed objectives of the project included the gathering of valuable data on the little-known culture of the Baytown Period. Hopefully, this would include information on burial practices, economic resources, tool use, and dwelling construction. It was found, however, soon after excavations began, that there were other aspects of the site which had not been anticipated, but which are important in themselves, although the data gathered may not be as broad in scope as originally planned.

Physiography

The part of Tunica County in which the Boyd Site is located consists of gently undulating natural levees and relatively level backwater areas formed by the meandering of the Mississippi River. This flood plain was subject to frequent overflow, which may account in part, for the location of so many prehistoric village sites upon natural levees. Most of the natural drainage of the region is directed into the Coldwater River to the east. The area, then, is composed mostly of river deposited sediments (United States Department of Agriculture 1956:8-9).

The soil at the Boyd Site is listed by the United States Department of Agriculture as Bosket very fine sandy loam, a well drained soil which possesses slightly more clay in the subsoil than in the surface layer (United States Department of Agriculture 1956:20-21). Such soils differ from those of the recent natural levees in that they are more weathered, more acid, contain more native plant residues, and exhibit a more pronounced difference between surface and subsurface layers (United States Department of Agriculture 1956:11).

The climate of this area is warm and humid, with an average summer temperature of 79.4° F., and average winter temperature of 44.4° F., and an average annual rainfall of 51.7 inches. Native vegetation included swamps filled with cypress; cane thickets along the banks of bayous; hardwoods such as hickory, pecan, post oak, water oak, blackgum, and winged elm in high places; and tupelo gum, sweetgum, overcup oak, willow oak, soft elm, maple, green ash, hackberry, and cottonwood in lower water-soaked areas (United States Department of Agriculture 1956:6).

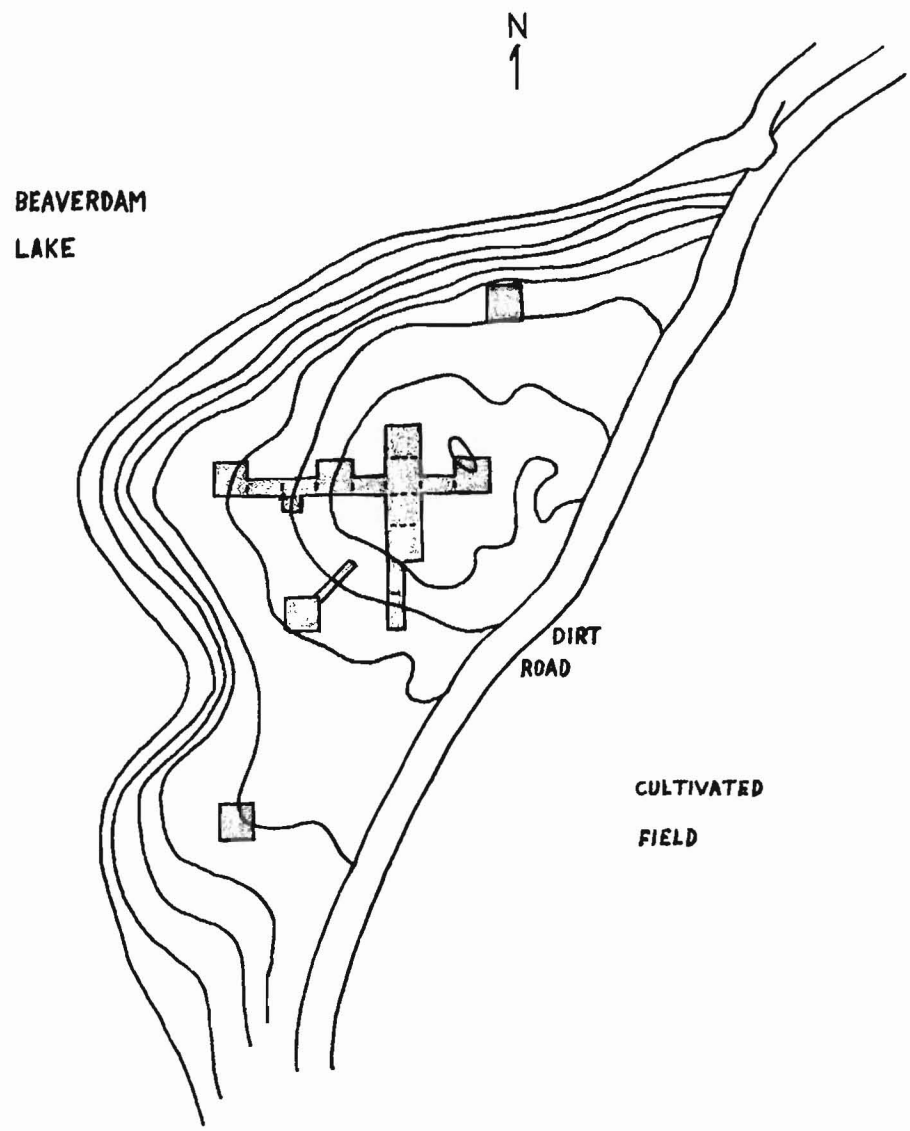
Methods and Techniques

Before the area intended for investigation was staked off and mapped, a series of datum points were established for reference in the event of future excavations. The primary datum point was located on a relatively permanent spot, the intersection of the west rail of the Illinois Central Railroad and the south edge of the paved road crossing it at Clayton (See: Figure 1). From this point, the secondary datum point (300 S-CL), a large iron spike in the east side of a large elm tree, can be reached by going south 34° west, 107 feet; then north 74° west, 1,243 feet, then south 5° west, 124 feet. The circuitous course taken was necessary because of interposing houses and trees. The tertiary datum point (O-CL) was established 300 feet due north of the secondary point in an area most accessible to the planned archaeological project (Figure 2).

The highest point on the site can be seen in Figure 2 as a small oval circle. This contour line, representing 190 feet above sea level, intersects stake number 10N-50E. Contours were correlated with those charted on the United States Geological Survey Dundee quadrangle, the highest running through the site being 190 feet. This contour is reproduced on the site in Figure 1.

From the tertiary datum, a north-south oriented grid of ten-foot squares was set up in such a way as to allow testing on the highest elevations of the site (Figure 2). These elevations were presumed more likely to contain house patterns and deep stratigraphy than any of the near-

by depressions and lower areas. No test pits were dug in the adjacent cultivated field because of the presence of a cotton crop. During the course of the excavation, two intersecting perpendicular trenches developed on the highest elevated area. These trenches provided not only most of the horizontal data collected, but two excellent north-south and east-west vertical profiles (Figure 4), which will be discussed later in this report.



Scale: ▬ = 10′
Contour interval: 1 foot

Figure 2. Contour map of excavation area.

Excavation unit numbers were designated the same as the southeast corner stake of each ten-foot square. The five by ten foot units shown in Figure 3 were given the same number as if they had been full-sized. These were dug later to connect the previously excavated full-sized units, primarily in order to complete the vertical profiles of the site.

In addition to the two trenches, three separate test pits were placed on other relatively high spots. A short trench can be seen angling off from the northeast corner of one such spot, 40S-10E (Figure 2). This trench was dug in an attempt to locate the periphery of a sterile sand layer found between two middens in the profile trenches and to find the limit of the lower midden. These layers were not present in this square, and it was hoped that the sterile sand layer could be located by trenching uphill toward the center of the excavation. It was located and will be discussed in more detail later.

Excavation began using arbitrary levels of ½ foot, a practice which continued throughout the project. Other than in washing the contents of a number of refuse pits, no screening was done since there was not sufficient time. The National Park Service contract called for two and a half months of excavation, and it was planned to get as much of the site dug as possible during that period. As a result, shovels were used to carefully scrape away the soil in approximately ¼ inch cuts, affording an opportunity to see most of the artifacts which turned up. This also allowed better control of horizontal stratigraphy by actual digging of ¼ inch levels. Of course, some of the smaller potsherds were thrown out using this method, but most of these would have been too small for proper identification.

Refuse pits were dug out separately and the contents of some were washed through 1/16 inch window screen. This method extracted most of the sherds, bones, and plant remains, except for that charred material which disintegrated. At any rate, it is believed that the procedure produced a relatively good sample of the materials discarded into such pits.

The site was cleared and staked off, and mapping was begun during the first week of September, 1970. Excavations started shortly thereafter and continued through the middle of November. The work was performed by the two survey archaeologists and a crew of three. During this period some of the crew members spent their time alternately digging, washing pit contents, and washing and cataloging artifacts. Much of the lab work was completed in this manner before the excavation was finished.

Stratigraphy

Probably the most important aspect of the excavation was the presence of two distinct occupation zones separated by a layer of sterile yellow sand which varied in thickness up to .8 foot (Plates 4 & 5). This is an unusual occurrence in the Delta where on most sites stratification is not easily recognized except through seriation procedures involving materials in arbitrary levels. Figure 4 shows the profiles of those excavation units which formed east-west and north-south trenches across the site. These profiles present a general view of the stratigraphy encountered on the higher elevations of the site. It should be noted that portions of the profiles do not exhibit the sterile separation zone, primarily because of disturbances such as pit digging. Where these activities were not present, this zone is very distinct.

The upper midden, referred to in this report as Zone II, consisted of a brown sandy loam which ranged up to about three feet in depth. Although it varied considerably, this stratum was on the average between one and two feet thick. Other than discolorations from hearths and back dirt from pits, no stratigraphic changes were visible. Certain cultural changes through time were revealed within this zone and will be discussed in the section on ceramic analysis. Because of the homogeneous condition of the midden, however, these changes can only be linked with arbitrary levels and not with visible soil changes.

The lower midden, referred to in this report as Zone I, consisted of a bluish gray sandy loam with noticeably more clay in it than the later midden. This layer varied up to one foot in thickness, but averaged somewhere around .6 to .8 foot thick. It was apparently much more restricted in area than Zone II. What was evidently its southern extent was found at the south

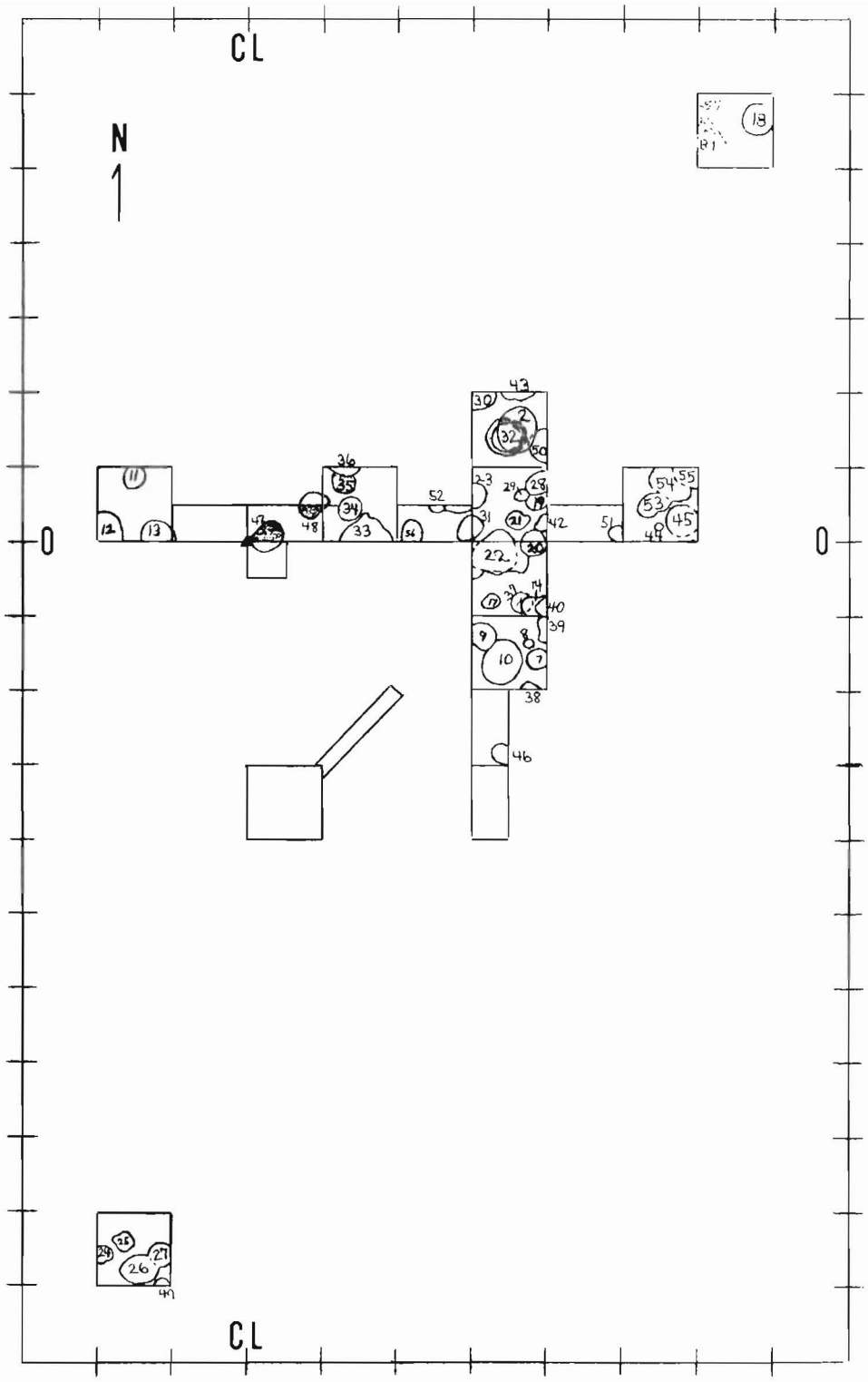


Figure 3
Boyd Site Excavation Plan and Pits

Plate 2.
Boyd Site excavation.

Plate 3.
South wall profiles facing south,
squares 20S-40E, 10S-40E, 0-40E.

Plate 4.
North wall profile,
square 20S-40E.

Plate 5.
North wall profiles facing north,
squares 20S-40E, 10S-40E, 0-40E.

end of the north-south trench on the east profile which is not shown on Figure 4. It appears likely that an extension of the trench for a few more feet southward would have also revealed this termination on the west profile (Figure 4). A short diagonal trench between stakes 30S-10E and 20S-20E revealed an abrupt termination about halfway between these two points. The north-south profile ended at 20N-30E at which point the lower zone was still in evidence. Although this zone does not appear in the northernmost square of the excavation, 50N-70E, a bore hole revealed it at 30N-60E. Its northern termination then is apparently somewhere between these two points.

The situation on the west end of the east-west profile trench was somewhat puzzling. What appeared to be an extension of the lower zone through the south profile of square 0-10W was filled with upper zone ceramics. The lower zone shown in the profile between O-CL and 0-10W had a great predominance of lower zone ceramics. The point of termination according to ceramics, therefore, seemed to be at almost exactly the spot where the east edge of F-13 was encountered. This was anything but clear, however, to one trying to see the break. The only visual indication of a separation was that the soil in 0-10W appeared to be slightly browner than that of the Zone I soil to the east.

The sterile layer between the two middens probably represents the lower portion of a sedimentary layer deposited by floods after the Zone I occupants had moved away. The upper portion of this layer became stained by midden deposit of the Zone II occupants at a later time and thus was integrated into and was indistinguishable from the upper midden. One deduction from this is that the earlier people were living on the bank of an active river channel. The river probably continued to flood and deposit natural levee sediments through a portion of the later occupation period, partially accounting for the thick accumulation of the upper midden. Since the later occupation zone continues up to the surface, it is probable that the river channel became a cut-off during this time.

Changes in stratigraphy on the site can be understood better when correlated with radiocarbon dates. Two such dates were obtained from Zone I, and three were secured from Zone II. The relationships between these dates and the stratigraphy will be discussed later in more detail.

Features

Features at the Boyd Site were primarily restricted to refuse pits. A brief study of the contents of these pits has resulted in the outlines in Tables 1 and 2. A limited but substantial contribution of data, concerning the economic resources of the two groups of people represented, has been recovered, as proposed in the original statement of excavation objectives. Materials taken from these pits have been stored for future reference.

The technique of washing pit contents through a screen was used, as mentioned earlier, to extract bones, plant remains, and other small items. Since time did not allow for the washing of all pits, a cross-section of eleven was selected, primarily ones with the most obvious content

number	description	excavation unit	extends through zone I	zone originates in	rim diameter	surface depth encountered	profile depth	bell shape	U-shape	contents						
										shell	fish	bird	mammal	plant	daub	turtle
1	stump mold?	20S-40E	no	II												
2	historic pit	10N-40E	no	II	6.5x5.3′	.8′	2.8′		X						X	
3	deer bones	20S-40E	no	II		1.2′							X			
4	hearth	20S-40E	no	II	1.4x1.5′	1.1′										
5	hearth	20S-40E	no	II	1.5x1.4′	1.2′										
6	fired area	10N-40E	no	II	4x3.5′	1′	.5′									
7	refuse pit	20S-40E	yes	II	2.7x2.8′	1.5′	1′	X		X	X	X	X	X		X
8	refuse pit	20S-40E	yes	II	1.3x1.2′	1.5′	.8′	X			X		X	X		
9	refuse pit	20S-40E	yes	II	3.8x3′	2′	1.6′	X		X	X	X	X	X		X
10	refuse pit	20S-40E	yes	II	6x5.1′	2′	2.1′	X		X	X	X	X	X	X	X
11	refuse pit	0 -10W	no	II	2.8x2.6′	2′			X							X
12	refuse pit	0 -10W	no	II		2′	.5′		X							
13	refuse pit	0 -10W	no	II	4.6′	2′	.8′		X							
14	refuse pit	10S-40E	yes	II	2.5x3.5′	1.5′	.7′	X					X			X
15	hearth	0 -40E	no	II	1.5x1.2′	1.1′										
16	hearth	0 -40E	no	II	1.8x1.8′	1′										
17	refuse pit	10S-40E	yes	II	2.0x3.0′	.6′	2.6′		X		X	X	X	X		
18	refuse pit	50N-70E	no	II	4.3x3.8′	3.4′	1.1′		X	X	X	X	X			X
19	refuse pit	0 -40E	yes	II	2x3′	2′	1′		X		X	X	X	X		
20	refuse pit	10S&0-40E	yes	II	4.2x3′	1.6′	.9′		X	X	X	X	X	X		X
21	refuse pit	0 -40E	no	II	2.7x3′	2′	.2′		X				X			
22	refuse pit	10S&0-40E	yes	II	5.8x6.5′	1.65′	3.05′		X					X		
23	refuse pit	0 -40E	no	II	3′	1.6′	.4′		X		X	X	X			X
24	refuse pit	100S-10W	no	II	3′	1.5′	1.2′		X	X	X	X				X
25	refuse pit	100S-10W	no	II	2.7x2.7′	1.5′	1.2′		X		X	X	X			X
26	refuse pit	100S-10W	no	II	3.5x3.7′	1.5′	2.5′		X							
27	refuse pit	100S-10W	no	II	3.5x4.5′	1.5′	2.9′		X		X	X	X			X
28	refuse pit	0 -40E	yes	II	3.2x3′	2′	.65′		X							
29	refuse pit	0 -40E	yes	II	1.3x1.6′	2.2′	.4′		X							
30	refuse pit	10N-40E	yes	II		1.5′	1.4′		X	X	X	X	X			X
31	refuse pit	0-30E-40E	yes	II		1	2.4′		X		X	X	X	X		X
32	refuse pit	10N-40E	yes	II	4x3.8′	3′	1.8′		X	X	X	X	X	X		X
33	refuse pit	0 -20E	yes	II	6.4′	2.5′	2.1′		X				X			

Table 1a. Features.

number	description	excavation unit	extends through zone I	zone originates in	rim diameter	surface depth encountered	profile depth	bell shape	U-shape	contents						
										shell	fish	bird	mammal	plant	daub	turtle
34	refuse pit	0 -20E	yes	II	3.4x3.3′	3′	.9′		X	X	X	X	X	X		
35	refuse pit	0 -20E		I	2.8′	3′	1.3′		X		X	X	X	X		
36	refuse pit	0 -20E	yes	II		3′	1.6′		X					X		
37	refuse pit	10S-40E		I	2.6x3′	2.7′	1.5′		X					X		
38	refuse pit	20S-40E	yes	II		1.5′	1.3′	X					X			
39	refuse pit	20S-40E	yes	II		1.5′	.7′		X		X		X			
40	refuse pit	10S-40E	yes	II		2′	1.8′		X		X		X	X		X
42	refuse pit	0 -40E	yes	II	2.3′	2′	1.3′		X				X			
43	refuse pit	10N-40E	yes	II		3′	1.7′		X		X	X	X	X		
44	pit or post	0 -60E	yes	II	.8′	2.5′										
45	refuse pit	0 -60E	yes	II	5′	2.5′	.9′		X		X		X			X
46	refuse pit	30S-40E	yes	II	2.4′	1′	1.2′	X			X	X	X			X
47	refuse pit	5S- 5E 0 -10E		I	4.9′	1.75′	1.5′		X	X	X	X	X	X		
48	refuse pit	0-10E-20E		I	4.5x3.5′	1.9′	1.4′		X		X	X	X	X		X
49	refuse pit	100S-10W	no	II		1.5′	.5′		X							
50	refuse pit	10N-40E	yes	II	4.5′	2.5′	.8′		X					X		
51	refuse pit	0 -50E	yes	II		2′	2′		X				X			
52	refuse pit	0 -30E		II	1.6′	2′										
53	refuse pit	0 -60E	yes	II	3.2x4.5′	2.5′	1.6′		X			X	X			X
54	refuse pit	0 -60E	yes	II	4x5′	2.5′	.9′		X				X			
55	refuse pit	0 -60E	yes	II	3′	3.4′	1′		X							
56	refuse pit	0 -30E		I	2.7′	2.95′	.55′		X		X		X	X		
57	historic pit	50N-70E	no	II	4′		3.5′		X							

Table 1b. Features.

Feature Number	Pecan	Persimmon	Black Walnut	Hickory Nut	Acorn	Butternut	Peppervine	Unidentified	Zone	Radiocarbon Dates	Cane	Vine	Red Oak	White Oak	Elm	Juniper (Cedar)	Hickory (Pecan)	Baldcypress	Ash	Willow	Maple	Black Cherry	Tupelo	Basswood	Sugarberry (Hackberry)
7	X	X	X		X				II		X	X	X	X	X	X									
8			X		X				II		X				X		X								
9	X	X	X	X	X			X	II							X	X								
10		X	X		X	O		X	II	250 A.D.			X	X	X		X	X	X	X					
17		O							II																
19				X					II																
20			X		X				II																
22		X	X		X				II	450 A.D.															
31					X				II																
32	X	X	X	X	X		X	X	II		X		X	X		X	X	X			X				
34				X	X				II					X			X		X			X	X	X	
36	X								II					X		X	X		X						
40		X			X				II																
43	X				X			X	II																
50					X			X	II																
35	X	X	X		X		X	X	I						X	X			X						
37			O		X			X	I	85 A.D.															
47	X	X	X						I	220 B.C.			X		X	X						X			X
48	X	X	X	O	X		X		I					X	X	X			X		X				
56	O		X		X		X	X	I																

X: Identified
O: Tentatively Identified

Table 2. Floral remains from pits.

potential. Of these pits, seven originated in the upper zone and four in the lower zone. This technique allowed for a more extensive collection of minute remains, especially plant seeds, fish bones and fish scales.

The general results, as outlined in Tables 1 and 2, may be summarized as follows. Both the earlier and later inhabitants of the site appear to have been eating approximately the same foods, with the possible exception of hickorynut and butternut, which may have been limited to the later period. They evidently both consumed a variety of shellfish, fish, birds, mammals, and turtles. A preponderance of fish remains from both zones would indicate a heavy reliance on fishing in the river channel bordering the western edge of the village. No apparent evidence of agriculture was found; the economic base, therefore, evidently still revolved around hunting, gathering, and fishing. A detailed study of the faunal remains by Stanley J. Olsen has been included as the final section of this report.

In an attempt to obtain some data on the environmental setting of the site during its occupation, small pieces of charred wood were collected from pits in both zones and were sent to the U. S. Forest Service's Forest Products Laboratory for identification. The results of this analysis are outlined by feature number in Table 2. In most cases only the genus could be identified, thus prompting the following discussion of possible species which could have grown in the vicinity of the Boyd Site.

Woods identified from Zone I were:

Ulmus sp. (Elm): this could include *U. fulva Michx.*, *U. alata Michx.*, *U. crassifolia Nutt.*, or *U. americana L.* *U. crassifolia* is found in the Sunflower River valley. (Sargent 1922:309-315).

Juniperus sp. (Juniper): this is probably Red Cedar, *Juniperus virginiana L.* (Sargent 1922:88).

Fraxinus sp. (Ash): this could be *F. americana L.* (Sargent 1922:841-2).

Celtis sp. (*Sugarberry*): this is probably Hackberry, *Celtis laevigata Willd.* (Sargent 1922:323-4).

Quercus sp. (Red Oak): this is probably *Q. rubra* var. *pagodaefolia Ashe.*, which is found in the river swamps of the Yazoo Basin. (Sargent 1922:256-7).

Prunus serotina Ehrh. (Black Cherry).

Acer sp. (Maple): this could include *A. saccharum Marsh.* var. *glaucum* (not common), *A. rubrum L.*, *A. rubrum* var. *Drummondii Sarg.*, *A. rubrum* var. *tridens Wood*, or *A. Negundo L.* var. *texanum Pax.* (Sargent 1922:688-701).

Quercus sp. (White Oak): this is probably *Q. alba L.* (Sargent 1922:301).

Woods identified from Zone II included all of the above-mentioned types except Celtis (Sugarberry or Hackberry). Zone II also contained the following woods not found in the Zone I pits:

Carya sp. (Hickory): this could include *C. pecan Engl. & Graebn.*, *C. aquatica Nutt.*, *C. myristicaeformis Nutt.*, *C. ovata K. Koch.*, or *C. leiodermis Sarg.* (Sargent 1922:177-190).

Taxodium distichum Rich. (Baldcypress).

Salix sp. (Willow): this is probably *S. longifolia Muehl.* (Sargent 1922:152-3).

Nyssa sp. (Tupelo): this is probably *N. aquatica Marsh.* (Sargent 1922:783-4).

Tilia sp. (Basswood): this may include *T. nuda Sarg.*, *T. floridana* Small, or *T. heterophylla* var. *Michauxii Sarg.* (Sargent 1922:734-746).

Cane, perhaps *Arundinaria gigantea.*

Vine, perhaps *Vitis* (grape).

Although there are too many possible reasons involved to give a satisfactory explanation, it is of interest to note that three of the types found only in Zone II, Baldcypress, Willow, and Tupelo, are trees which are usually found in swampy areas and shallow water. This could possibly indicate certain environmental changes in the Boyd Site vicinity during the period between the two occupations or a change of preference in wood-use, such as a technological change requiring different types of wood than were used earlier. This, of course, is mere speculation and no definite conclusions can be reached with presently available data.

Fifty-six features were recorded in the excavation. Of these, two were historic trash pits and four were hearths. All the hearths were associated with Zone II and contained no charcoal for dating. Of the forty-nine refuse pits, forty-two originated in the upper zone; five were found in the lower zone, while two were historic (Figure 3). Thirty of the Zone II pits intruded into the lower zone, probably accounting for the presence of some earlier ceramic types in the upper levels, as well as certain lenses of yellow sand and blue-gray soil appearing in Zone II profiles.

All five pit profiles in Zone I were U-shaped. In Zone II, thirty-four were U-shaped, while seven were bell-shaped, indicating a strong preference for U-shaped pits during both time periods.

One unusual occurrence in pit digging was observed beneath Feature 2, a recent pit, which had completely obliterated the upper portion of Feature 32, a Zone II pit. Upon realization of this and after further excavation into Feature 32, it was also noticed that the Zone II pit in turn had intruded into an earlier pit originating in Zone I. Feature 32 was somewhat smaller than this lower zone pit and a border of bluish-gray soil was thus exposed around it. In effect, this amounted to a succession of intrusive refuse pits directly on top of one another. This may account for the presence of a few pig and chicken bones identified and described by Olsen in his report on faunal remains.

The only other material recovered from the pits included potsherds, several bone, antler, and shell tools, small fragments of fired clay which probably came from cooking fires, a variety of flint flakes, and numerous fragments of charred wood. The pottery and the bone, antler, and shell tools will be discussed presently in another section of this report. Most of this material appeared in the washing process. In those pits which were dug out but not washed, only potsherds and larger visible remains were recovered.

As previously emphasized in the objectives of the excavation, it was thought that the area to be investigated might yield some evidence of dwelling remains and certain data connected with house construction. Unfortunately, no such evidence definitely attributable to aboriginal activities turned up. Numerous scattered postmolds were found, but some were square and many of those dug out yielded square nails. These were most likely fence posts associated with the recent tenant house that once stood nearby. There was no pattern to the remaining ones which could be likened to any prehistoric dwellings. The only recorded evidence that such houses once stood on the site was one large chunk of daub found in Feature 10 (Plate 36) and several questionable pieces found in the historic pit, Feature 2. The latter were probably raked in from the surface and may be attributable to a brief Mississippi occupation which left little in the way of artifacts.

Burial No. 1

Very little can be said about Burial No. 1 because of its condition. The bones themselves were in good shape, but practically all of them had been broken and about half were missing as a result of the intrusion of a recent pit (Feature 57). The burial was found lying on its back in an extended position at approximately three feet below the surface in square 50N-70E (Figure 3). The lower left leg was crossed over the right. It is presumed from the position of remaining bone fragments that the arms lay straight by each side (Figure 5). Very few of the bones of the skull and upper body remained, since they were directly under the intruding pit (Plate 6). Although the leg bones were not within the most evident area of pit digging, they too were badly broken, probably due to this same factor or to tree roots.

The only long bone which could be restored for use in estimating stature was the right femur. Using Dupertuis and Hadden's general reconstruction formula for stature in the male (Cornwall 1956:236), it can be concluded from the measurement of this one bone that the individual stood approximately 5 feet, 5.8 inches high. The sex of this person cannot be determined because of insufficient skeletal evidence. The result of the same formula for a female would have been 5 feet, 4.1 inches. It is unfortunate that no other bones could be restored and used to calculate a more accurate and average figure.

Concerning the age of the individual, there was likewise very little to go on. The presence of a single loose third molar would indicate an individual older than seventeen years (Anderson 1962:138). The only other teeth present were the lower right second premolar and first molar, both of which exhibited considerable attrition, with complete loss of enamel from the occlusal surfaces. The third molar just mentioned was only slightly worn. Since the first molar and the

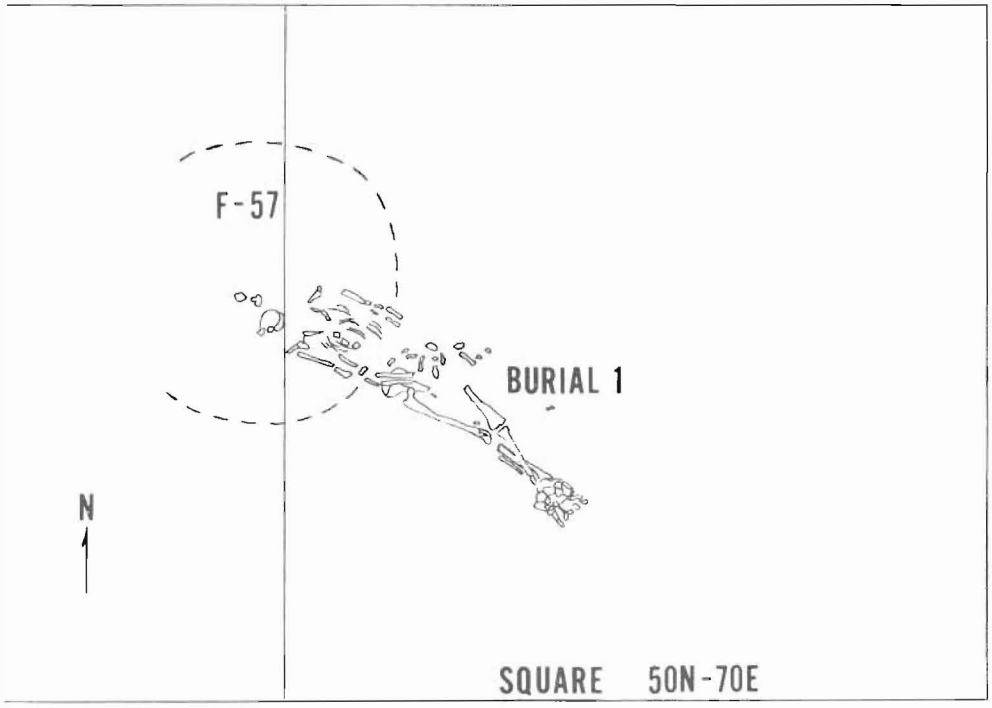


Figure 5

—— = 1 FT.

Burial Number One

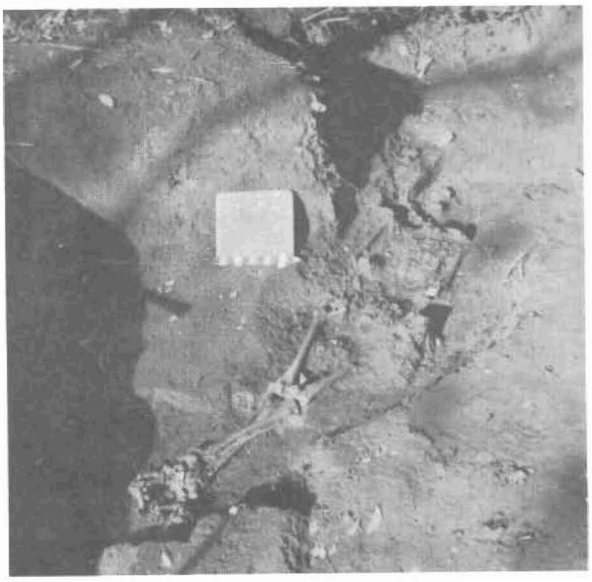


Plate 6

second premolar usually erupt around the ages of six and ten respectively, it does not seem unusual that they would be so worn, especially when one considers the apparent rough nature of the diet (Anderson 1962:138).

Sutures exhibited in the only remaining skull fragments included about two-thirds of the lambdoid and coronal, as well as two short segments of the sagittal. Although the accuracy of using suture closure for age determination is debatable, a general estimate can be made from those present in Burial No. 1. Since no fusion appears in any of these, the individual was probably under twenty-one years of age (Anderson 1962:136). Therefore, taking into account both the sutures and teeth present, it can be concluded that the individual's age at death was somewhere between seventeen and twenty-one years.

No burial pit was found. Evidence of one, if it existed, was obliterated by the dark color of the soil and extensive disturbances in the area, such as pit digging and the growth of tree roots. Other than a few potsherds which were in the surrounding midden, no artifacts were found in association with the burial.

Type-variety Concept as Applied to the Boyd Ceramics

Where possible, pottery types from the excavation have been broken down into the varieties named by Philip Phillips from work conducted in the southern part of the Yazoo Basin (Phillips 1970). In many instances, the excavated material seemed to fit these varieties, so they were used to describe the Boyd ceramics. No attempts were made, however, to force any of the categories at the Boyd Site into this nomenclature, since there is considerable distance between Boyd and the area where most of Phillips' work was done.

This distance may be taken as an indication that further splitting of certain types is in order. Another such indication is that, according to radiocarbon dates, each zone at the Boyd Site was occupied for around 300 years. Varieties ideally represent smaller segments of time and space than seem to be involved here. The system is flexible, however, and will allow more splitting as the necessary information becomes available.

The time duration at Boyd was especially noticeable in Zone II in the Baytown Plain and Mulberry Creek Cord-marked types. There was considerable variation within these types which, in the case of Mulberry Creek, was demonstrated to be correlated with time change. In this case the earlier sherds show a strong resemblance to an early variety, Porter Bayou (Phillips 1970: 138). The later ones are very similar to a more recent variety, Edwards (Phillips 1970:137).

If both the earlier and later occupations had been brief, the material would no doubt have been more homogeneous and possibly specifiable as to one variety or another. As it was, any division would have been an arbitrary one of a gradually changing pottery type. Some of the minority types doubtless would have presented the same problem had there been larger collections of them.

Some of the varieties named by Phillips are much more inclusive than others, a fact which makes variety classification easy in some cases. Larto Red Filmed, variety Larto (Phillips 1970: 78) and Evansville Punctated, variety Evansville (Phillips 1970:99), for instance, are practically the same as the original type descriptions.

In spite of the time involved in the two occupation zones, two varieties have been named from the Boyd excavation. This was done because they appear to be significant variations from established types. These two categories may be changed by further investigation in the area as their distribution through time and space are better understood. Each will be discussed later in detail.

Ceramics

Ceramics are discussed below by zone. Each type or variety is listed with appropriate comments where they differ from the original type or variety description, or where comment is otherwise deemed necessary.

The types present in Zone I which were considered to be intrusive from Zone II are not listed here as a part of this complex. They are listed, however, in Table 4. An examination of Table 9 will likewise reveal the presence in the levels of Zone II of sherds not assigned to that complex, but which are considered to be intrusive from Zone I. Although it cannot be proven that at least some of these sherds do not belong to both complexes, it seems unlikely in view of the following facts:

FEATURE NUMBERS:	F47	F48	F35	F56	F37
Baytown Plain, var. Bowie	205	136	73	17	20
Withers Fabric-impressed, var. Withers	97	78	42	11	9
Cormorant Cord-impressed, var. Cormorant	5	8	6		1
Twin Lakes Punctated, var. Twin Lakes	3	6	2		
Twin Lakes Punctated, var. Crowder	7	4	1		
Churupa Punctated, var. Boyd	2		4		1
Zone I paste, red-filmed	3	15	8	2	
Unidentified	18	2	4		3

Table 3. Ceramics of the Zone I pits.

	40S-40E	30S-40E	20S-40E	10S-40E	10N-40E	0-CL	0-10E	0-20E	0-30E	0-40E	0-50E	0-60E	5S-5E
Baytown Plain, var. unspecified	20	18	4	28	9	4	1	12		14	9		4
Baytown Plain, var. Bowie	43	111	89	133	49	71	58	14	30	150	22	33	34
Mulbery Creek Cord-marked, var. unspecified	16	19	4	25	3	16	2	6	6	18		3	9
Larto Red-filmed, var. Larto		2		2	3		2	4		1		2	1
Indian Bay Stamped, var. unspecified		10		2						8	1		
Marksville Incised, var. unspecified											1		
Salomon Brushed, var. Salomon		1		1						2			
Withers Fabric-impressed, var. Withers	21	59	41	107	56	23	17	9	20	111	23	40	7
Cormorant Cord-impressed, var. Cormorant			1	5	1	1	2	2	5	1			
Twin Lakes Punctated, var. Twin Lakes	1	1	2	2	2	2	1		1	1			1
Twin Lakes Punctated, var. Crowder				1			1	1					
Churupa Punctated, var. Boyd	1					1			3	3			
Cross-hatched rim									1		1		
Zone I paste, red-filmed		3	2	1	4	2	3		1	4	1	4	1
Unidentified	3			12	3			2				1	

Table 4. Distribution of Zone I ceramics by square.

1. The Zone I Complex types are definitely in the majority in Zone I where comparatively few Zone II sherds appear. They are in a definite minority in the later Zone II. It would seem likely, therefore, that if sherds of each complex actually were made by the people who occupied each zone, then the Zone I sherds would show a pattern of decreasing popularity in the levels of Zone II. Actually, no pattern at all is discernable concerning the relative strength of the two complexes.

2. It would be expected that, for the same reason, the Zone I Complex content of the three dated Zone II pits would show a decrease in percentage from earliest to latest. This does not occur. F10, the earliest, had the smallest Zone I Complex percentage at under five percent. F22, the pit with the middle date, had over twelve percent, and F28, the latest, contained ten percent.

3. The square at the greatest distance from the present periphery of Zone I (100S-10W) yielded the smallest percentage of Zone I Complex sherds (levels and pits combined). The original extent of Zone I is not known, although it could have extended closer than it does now to square 100S-10W. Even if it extended no closer than it does at present (approximately seventy feet), there would have been numerous possible ways for some mixture to occur. Although the northern limit of the Zone I midden was not located, a bore hole revealed that it extended to within twenty feet of square 50N-70E, and it may have been even closer. This possibly accounts for the presence of the Zone I sherds found there.

4. Several lenses of typically blue-gray Zone I soil were found in the excavation of Zone II. These had apparently been thrown out in the process of pit digging by the later inhabitants. The ceramic contents of these lenses were always predominantly Zone I Complex sherds. No doubt there were numerous other cases where this redeposited soil, having been scattered and spread too thinly, was not recognized. Some of it was probably also used to refill the pits, thus mixing the two complexes in the Zone II pits.

5. Although some Zone II Complex material is seen in all of the squares in Zone I, this did not hold true for the Zone I pits, as no sherds of the upper zone were found in these features. This is probably because they were not recognized as features until the bottom of Zone I was reached. At this point, they were considerably further removed from Zone II than most of the Zone I midden.

6. Not mentioned so far as the usual excuses for mixture are rodent burrowing and root action. Some of this was observed during the excavation, especially brown, upper midden spots extending through the separating sterile sand layer, which varied considerably in thickness. It goes without saying that all such disturbances were not detected.

7. Finally, the pastes of the ceramics of the two zones were distinctively different. Sherds could almost be sorted on their texture alone, with Zone I material being softer and its surface much easier to rub away.

Withers Fabric-impressed, variety Withers
Plate 7.
Reference: Phillips 1970:174.

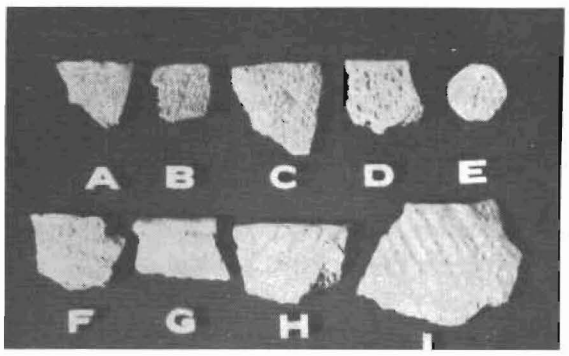


Plate 7.

Cormorant Cord-impressed, variety Cormorant
Plate 8.
Reference: Phillips 1970:77

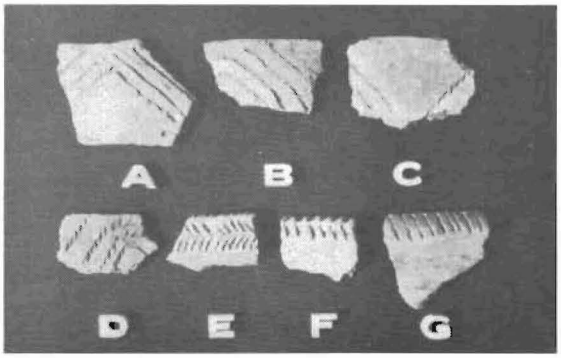


Plate 8.

The "high incidence of reddish tones" referred to by Phillips should also include red filming for an adequate description of the cord-impressed sherds from the Boyd Site. In some cases, the red appears in zones bordered by cord impressions.

Twin Lakes Punctated, variety Twin Lakes
Plate 9.
Reference: Phillips 1970:166.

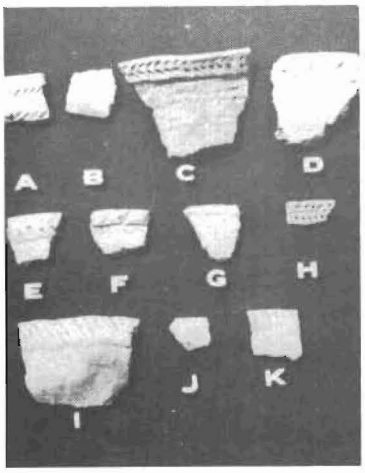


Plate 9.

Occasional sherds are red filmed although with less frequency than in the Cormorant Cord-impressed group. One other possibly significant variation should be mentioned; and, that is in addition to the typical chevron or herringbone rim design, there is an occasional row of single punctations oblique to the rim (Plate 9F, I, J and K). Such rim sherds, not exhibiting the chevron and herringbone designs, are occasionally found on early Marksville sites in the area. Additional survey work and excavation may serve to elevate this variation to variety status.

Twin Lakes Punctated, variety Crowder
Plate 10.
Reference: Phillips 1970:166.

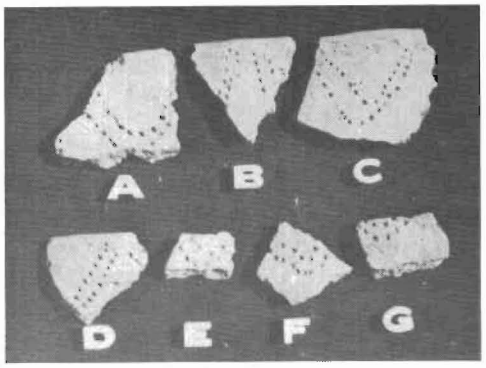


Plate 10.

According to the reference cited, the two parallel rows of punctations on this variety occasionally dip down onto the body of the vessel, but the pattern cannot be reconstructed because of insufficient data. The collection of this material from Boyd exhibits a pattern consisting of two parallel rows of punctations, which dip down about two inches onto the body of the vessel forming a zig-zag pattern.

Churupa Punctated, variety Boyd
Plate 11.
Reference: This paper.

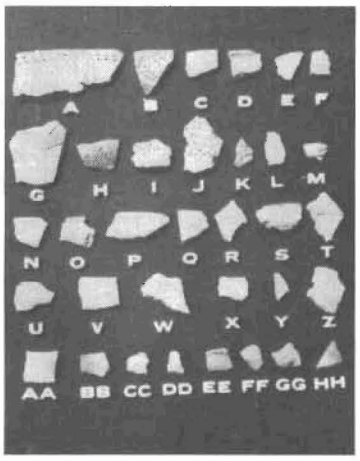


Plate 11.

Size of Sample: 37 sherds.
Average thickness: 6.7 mm.
Range of thickness: 5.0-9.0 mm.

Paste: Most examples are either clay tempered or appear not to be tempered at all. Comparable material from the Tidwell Mound in Lafayette County is very sandy with large coarse grains of sand being visible. One sherd from the Boyd Site is also heavily sand tempered.

Surface treatment: Punctations, varying considerably in size, shape and technique of application, are bordered by incised or occasionally cord-impressed lines into curvilinear or rectilinear patterns. There is occasional red filming with the red being restricted to the smoothed, as opposed to the punctated zones. The punctations may or may not have been done by a drag and jab technique. They generally are not random, however, being usually arranged in rows. The punctations were made with round hollow instruments held at different angles leaving hemiconical or doughnut-shaped holes, or with sharpened or blunt-ended instruments also held at variable angles.

There is also considerable variation in the incised lines, with sharp, narrow lines leaving some burr on sherds from most sites to broad U-shaped lines with no burr on sherds from the Norman Site. At Norman, sharp narrow lines are part of a continuum with broad U-shaped lines

being on the opposite extreme. Various modes of decoration on these sherds suggest relationships to Cormorant Cord-impressed; Twin Lakes punctated, varieties Twin Lakes and Crowder; and, Lake Borgne Incised.

Distribution: Sherds of this variety have so far been found at the Boyd, Sterling, Melancholy, Tidwell, Norman, McClintock, Fant and Dickerson sites (Figure 22).

Chronological Position: Specimens occurred in both Zone I dated pits with dates of B.C. 220 ± 90 (UGA-166) and A.D. 85 ± 100 (UGA-164). The ceramic assemblages of all the sites listed above, with the exception of Fant and Dickerson, include most of the types found in Zone I of the Boyd Site. These two sites are both multi-component with the earliest material being Early Marksville (unless the few sherds of the variety under discussion represent the first traces of a deeply buried earlier component to appear).

Cross-hatched rim
Plate 12.

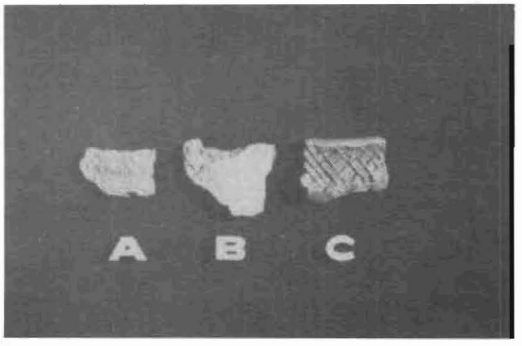


Plate 12.

The sherds of this category do not fit into any named type of which the authors are aware. Only three were found, one in a Zone II pit, one in Zone I and one in a stump hole with a mixed collection. The paste of these three specimens does not differ significantly from that of the other Zone I sherds. The cross-hatching is coarser and more carelessly applied than is usually the case with the "Hopewell rim." Also lacking is the row of hemi-conical punctations beneath the cross-hatched area. Three similar examples are pictured by Phillips, Ford and Griffin (1951: Figure 77S-U) and are merely labeled as cross-hatched rims, although two of them exhibit what appears to be punctating similar to that used on Twin Lakes Punctated, variety Twin Lakes. It seems likely that these rims belong in the Zone I complex.

Baytown Plain, variety Bowie
Plate 13.
Reference: Phillips 1970:49.

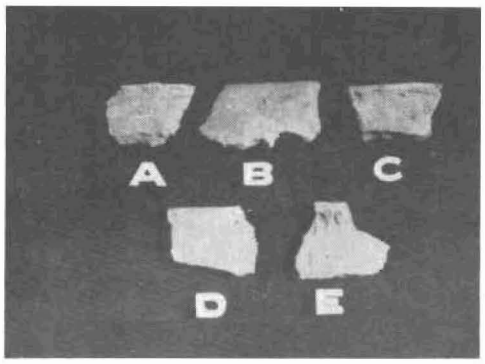


Plate 13.

An exception to the description in the reference cited is that the vast majority of Boyd rims of this variety are plain.

Zone I Paste, Red-filmed

These sherds are similar in paste characteristics to the other material from Zone I. No rims of this group were found, which probably means they are sherds from the lower portions of the occasionally red filmed or zoned red minority types. The decoration on these minority types is restricted mostly to or slightly below the rim.

The reader should consult Table 4 for the distribution of Zone I ceramics by square. Ceramic contents of the Zone I pits are shown in Table 3. Three of these pits seem to be coeval at B.C. 220 ± 90, the date from F47, since various sherds from the remaining two fit others from F47.

Relation of the Zone I Complex to Other Sites

The sites which have yielded ceramic assemblages that include material similar to the Zone I complex at Boyd are listed in Table 5. The geographic location of these sites may be seen on the site distribution map (Figure 22).

It will be immediately apparent to all who are familiar with collections from these sites that the list is selective. Most of the sites possess earlier and/or later material. Ceramic categories at the top of the chart are based on four excavated sites: Boyd, Tidwell (La-517), Clear Creek (La-542), and Bynum (Cs-503). The Lake Cormorant Site, where two cuts were put down by Griffin in 1941, yielded much useful information on the general chronological order of pottery types in the area; however, it was badly disturbed (Phillips, Ford, and Griffin 1951:248). No doubt some of the types occurring in the lowest levels along with the Withers Fabric-impressed material were not that early on the site, but a question remains as to just which of the types present make up the complex in its initial form.

Site Number	Site Name	Withers Fabric-impressed	Cormorant Cord-impressed	Twin Lakes Punctated	Crowder Punctated	Churupa Punctated	Mulberry Creek Cord-marked	Baytown Plain	small round clay balls
22-Tu-531	Boyd (Zone I)	X	X	X	X	X		X	
22-Tu-539	McClintock #1	X	X	X	X	X		X	X
22-Tu-535	Sterling #2	X	X	X	X	X	?	X	
22-Qu-518	Norman	X	X	X	X	X	?	X	
22-La-517	Tidwell	X	X	X		X	X	X	
22-Qu-526	Twin Lakes	X	X	X	X		?	X	
22-Co-537	Melancholy	X		X		X	?	X	
22-Qu-527	White	X		X	X		?	X	
22-Ds-515	Withers	X	X		X		?	X	X
22-Ds-510	Turkey Ridge	X	X				?	X	X
22-Ds-516	Irby	X	X				?	X	
22-Ds-501	Lake Cormorant	X	X				?	X	
22-Cs-503	Bynum (Miller I)	X	X			?		X	
22-La-542	Clear Creek	X	X				X	X	X

Table 5. Distribution of Zone I ceramics by site.

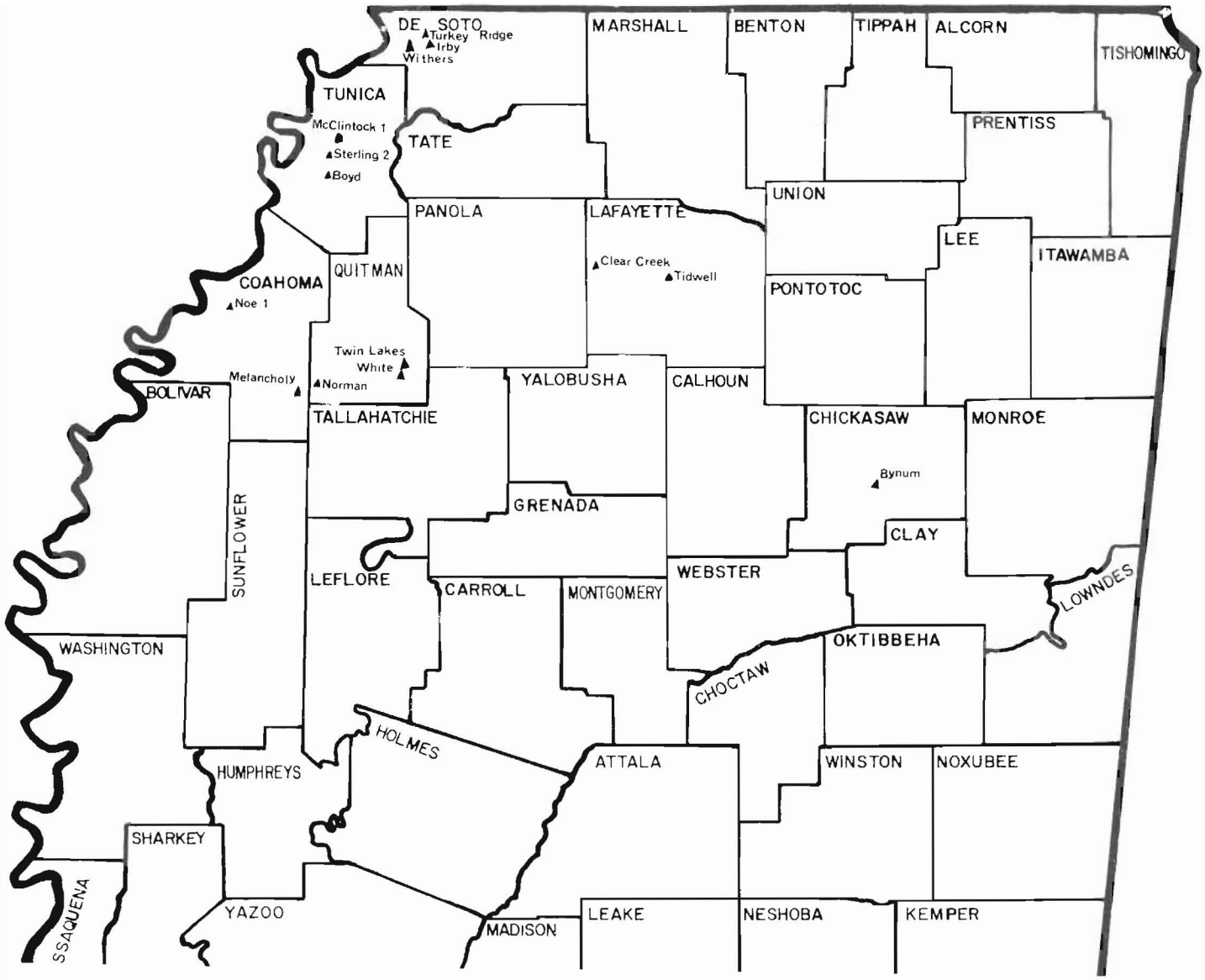


Figure 22

Distribution of Sites Related to the Boyd Site

Neither sherd counts nor variety designations are available for many of these sites. For the sake of uniformity, neither appear on the chart. In fact, further liberties have been taken with the nomenclature for the same reason. The Withers Fabric-impressed and Baytown Plain categories are used to designate material from the Bynum Site classified by the authors of the report as Saltillo Fabric-impressed and Baldwyn Plain (Cotter and Corbett 1951:17-18). The cord-impressed material unclassified by Cotter and Corbett is designated on our chart as Cormorant Cord-impressed.

The Boyd Phase

The sites nearest to Boyd geographically, which yield ceramics comparable to Zone I, are McClintock (Tu-539) which is seven miles to the north-northeast, and Sterling (Tu-535), three and a quarter miles due north. Sterling, like Boyd, is also situated on Beaverdam Lake.

Early pottery from these two sites differs in no discernable way from that of Zone I. The percentages of the varieties present are approximately in line with about a two to one ratio of plain to fabric-impressed and small minorities of the other varieties. These sites and Boyd seemed to meet the requirements for designation as a phase; and they are therefore designated as such with the expectation that other components can be located in the near future. Both Sterling and McClintock have other components. McClintock has a Mississippian component and Sterling has considerable Baytown material with a trace of Marksville including a Hopewell Cross-hatched rim.

Other Related Sites in the Yazoo Basin

All of the Zone I varieties appear in the large surface collection from the Norman Site (Qu-518), although with greater variation in most cases. This variation is especially noticeable in the Churupa Punctated, variety Boyd, and Cormorant Cord-impressed types. The variation of the Churupa material has already been discussed under the description of that variety. The cord-impressed material, in addition to sherds similar to those found in Boyd Zone I, includes some exhibiting zones of cord-impressed lines bordered by broad clean U-shaped lines. These specimens are similar to some cord-impressed sherds from the Clear Creek Site with the difference being that the cord-impressed area on the Clear Creek sherds is usually bordered by another cord-impression. Norman, too, is a multi-component site with material dating earlier and later than that dealt with in this paper.

A small collection from the Melancholy Site (Co-637) contains related material, though not all of the Zone I types are present. This, however, may be due to the small size of the sample. Forty-eight of sixty-three sherds were of types occurring Zone I. The others were Mississippian and Baytown.

Information in Table 5, concerning other sites in the Yazoo Basin, was taken from Phillips, Ford, and Griffin (1951, Figures 19, 20, 25 and 27). These sites have not been visited by the authors of this report.

Phillips has recently included the Twin Lakes and Crowder varieties of Twin Lake Punctated from the White and Twin Lakes Sites in a Twin Lakes Phase of the Marksville Period (1970:891). No mention is made of the minority of Cormorant Cord-impressed from Twin Lakes, which appears on the seriation graph for the upper Sunflower area (Phillips, Ford, and Griffin 1951:Figure 19). It would seem that the lower zone at Boyd, which also contains these varieties, is pre-Marksville. If this is true, then it seems likely that the material from White and Twin Lakes would also be pre-Marksville.

The sites to the north near Memphis (Irby, Lake Cormorant, Withers and Turkey Ridge) are included in what has been named the Turkey Ridge Phase of the Tchula Period (Phillips 1970:878). They are clustered around a point about twenty miles northeast of Boyd. Evidently the main difference between the Boyd and Turkey Ridge Phases is the complete absence of Twin Lakes Punctated, variety Twin Lakes in the latter. The Crowder variety, however, appears at Withers and the Twin Lakes variety does occur to the north of these sites in Shelby County, Tennessee (personal communication, Gerald Smith, Chucalissa Museum, Memphis).

Related Sites to the East of the Yazoo Basin

Three of the sites listed in Table 5 are situated in the hill country to the east of the alluvial valley.

Probably the most closely related of these three to Zone I is the Tidwell Mound near Oxford. This site, located in the drainage of the Little Tallahatchie River, was destroyed several years ago by construction work on Mississippi Highway 6. A salvage excavation yielded a considerable volume of pottery, largely in the form of whole vessels, reconstructable vessels, as well as partially reconstructable specimens. Twin Lakes Punctated, variety Twin Lakes (Plate 14); Cormorant Cord-impressed (Plate 15); Churupa Punctated, variety Boyd; and plain vessels make up this category. The bowl shown in Plate 14 is the only variation of this nature with which the writers are familiar. The zoning seems to relate it to the variety termed in this paper as Churupa Punctated, variety Boyd. The other types listed in Table 5 for this site are sherds.

Besides the presence at Tidwell of vessels as opposed to sherds, there are other differences from Boyd Zone I. A minority of cord-marked sherds is present, and a considerable amount of sand occurs in the paste of most of the ceramics. Varieties established by Phillips on the basis of sand tempering would apply to this collection. His variety designations are: Withers Fabric-impressed, variety Twin Lakes (1970:175); Mulberry Creek Cord-marked, variety Blue Lake (1970:136); and, Baytown Plain, variety Thomas (1970:54). Twin Lakes Punctated, variety Twin Lakes is considerably more elaborate at Tidwell than at Boyd with most of the rims exhibiting a herringbone design rather than the simple chevron common at Boyd.

The Clear Creek Site is also situated in the Little Tallahatchie drainage near Oxford. It, too, is a mound, but unlike Tidwell, yielded no whole or reconstructable vessels. Of the minority

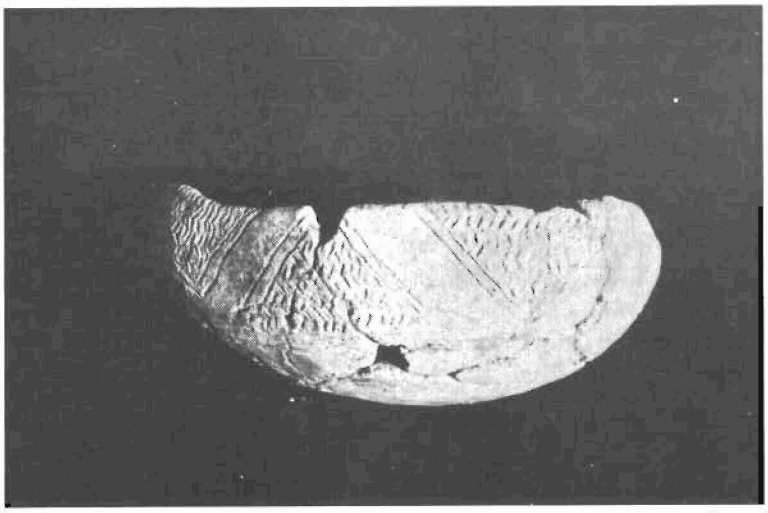


Plate 14.

Twin Lakes Punctated, variety Twin Lakes, bowl.
Tidwell Mound.

Plate 15.

Cormorant Cord-impressed bowl. Tidwell Mound.

types present in Zone I at Boyd, only Cormorant Cord-impressed was found there (Thorne and McGahey 1968:32). Many of the cord-impressed sherds are more elaborately decorated than those at Boyd and resemble some from the Norman Site, as was previously mentioned. A minority of cord-marked pottery also occurs there (Mulberry Creek Cord-marked, variety Blue Lake), as well as some sand tempered, fabric-impressed (Withers Fabric-impressed, variety Twin Lakes). Most of the fabric-impressed, which is in the majority, conforms to the description of Withers, variety Withers. A date of A.D. 350 ± 90 (UGA 167) from this site was considerably later than had been anticipated. The ceramic complex was thought to be later than Zone I of the Boyd Site on the basis of its strong showing of cord-marked pottery. It would appear to be earlier than Zone II, however, where fabric-impressing had apparently gone out of style by approximately 250 A.D. One possible explanation for this apparent anomaly is that the mound was built by people, using mostly or wholly cord-marked pottery, who were living on an older village site and using mixed component midden within the village for mound fill. The mound, however, was found to have a larger proportion of fabric-impressed sherds in the lower level than in the upper, a situation which would be expected if they were using pottery which was gradually losing favor to the cord-marked.

The Bynum Site, the greatest distance from Boyd of any of the sites listed in Table 5, is in Chickasaw County in the edge of the Tombigbee drainage. The earliest years of its occupation fall within the Miller I Period (Cotter and Corbett 1951:33). The Miller I Complex at Bynum, consisting mainly of fabric-impressed and plain sand tempered material also includes a small minority of cord-impressed sherds. One small incised punctated sherd found in a Miller I mound may possibly represent the new category Churupa Punctated, variety Boyd (Plate 4, Figure 16). Notably absent from Miller I is cord-marked pottery, which appears in the later Miller II Period.

The gradual replacement of fabric-impressing by cord-marking has been demonstrated at several points over North Mississippi. This was found to be true at Bynum (Cotter and Corbett 1951:30), Lake Cormorant in the Yazoo Basin (Phillips, Ford, and Griffin 1951:250), the Womack Mound (Koehler 1966-34) and the Clear Creek Mound (Thorne and McGahey 1968:28). Mounds are less reliable for checking such trends, since the fill used in them may have come from older village debris, although the Womack Mound shows a definite trend in each of its four

stages with percentages of fabric-impressing decreasing through time. That such a trend exists, however, does seem to be established, and it appears likely on this basis that the Tidwell and Clear Creek Sites are more recent occupations than Miller I at Bynum, since they both have cord-marked minorities.

Although the same trend occurs in the Yazoo Basin, it has been suggested that both cord-marking and fabric-impressing came into the area from the hills to the east (Phillips, Ford, and Griffin 1951:75, 78). If this is true, considering the distance and unknown amount of time involved, it might not be feasible to include sites in the Yazoo Basin in a seriation scheme together with those from the hills. The Boyd and McClintock complexes evidently did not include cord-marked pottery and would probably be older than complexes in the area which did. Unfortunately, without further stratigraphic testing, the question of cord-marking in the early occupations of the other sites must remain. Even with testing, the problem might not be completely resolved on most sites, since the clear stratigraphic situation at Boyd is unusual for sites in the alluvial valley.

Since the first part of this report was written, the authors have visited Turkey Ridge Phase sites previously mentioned. Small collections were gathered at these sites but they have not yet been cleaned and classified. One result of that survey, however, does seem to merit mentioning in this report. Small, round clay balls were found at Withers (Ds-515) and Turkey Ridge (Ds-510). Only a few such items have been found, three at Turkey Ridge, two at Withers, two at McClintock and one at Clear Creek. They range from about 3/4 inch to about 1 1/4 inches in diameter. These objects have been found on the surface of two other sites in the Sardis Reservoir near Clear Creek. Two were found at La-548, and two at La-561. Each of these sites has evidence of occupation from Early Archaic to Middle Woodland.

Other such finds have been made in the Tombigbee drainage. Two were found at the Brown No. 1 Site in Tishomingo County (Ts-506). These balls occur in much greater numbers on sites of Poverty Point Period age in West Tennessee (personal communication, Gerald Smith, Chucalissa Museum, Memphis). Occasional specimens of that shape are found on Poverty Point sites in the Yazoo Basin but they tend to be much larger on the average. Those from the sites mentioned above are the only ones which the authors have located. It would appear that their connections lie with the hills to the north and east, and since they seem to be associated with the pottery complex under discussion in this section of the report, the chances are increased that the origin of that complex itself is in that area.

Zone II Types

Baytown Plain, variety unspecified
Plate 16.
Reference: Phillips, Ford, and Griffin 1951:76.

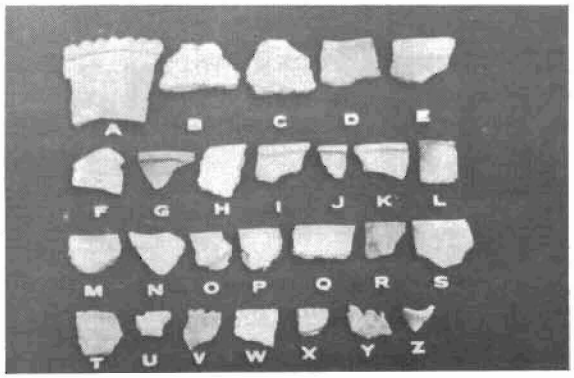


Plate 16.

Next to Mulberry Creek Cord-marked, this was the most common type of pottery found during the excavation. There is considerable variety within the collection, with no definite dividing point. Attempts to sort on the basis of smoothness versus roughness were made but to no avail. Unfortunately, no trends were detected in analysis by level that would indicate a change through time. This is somewhat surprising since, according to radiocarbon dates, there is a time range of ca. 300 years in this zone.

Mulberry Creek Cord-marked, variety unspecified
Plate 17.
Reference: Phillips, Ford, and Griffin 1951:82.

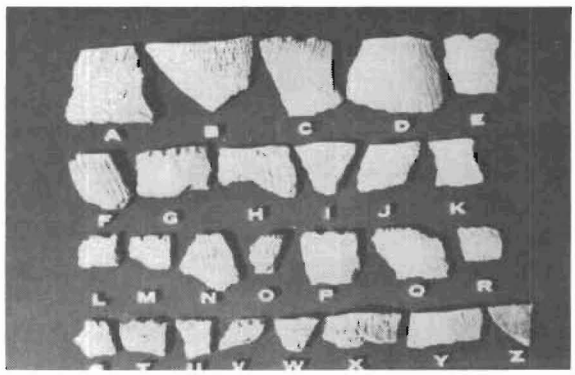


Plate 17.

This type, like Baytown Plain, exhibited a wide range of variation and also could not be divided logically. Results from analysis of this material, however, were much more informative than was the case with Baytown Plain.

According to Phillips, Ford, and Griffin (1951:82) and Phillips (1970:138), the size of cord-markings is of possible chronological significance. With this in mind, and noticing considerable variation in the size of the markings on the upper zone cord-marked, an attempt was made to sort for cord size. All cord-marked sherds except those from pits, or those on which the cord-marks could not be clearly seen, were assembled and ordered according to cord size. No gaps were discernable and there appeared to be a gradual change from the very large to the very small marks. An arbitrary division was made with each end of the continuum, the large and the small cords being separated from the middle-sized. To be sure that there was no overlap, the largest and smallest were separated, leaving the bulk in the middle. Large cords ranged from 3 mm. to 5 mm. across. Small cords were under 1.5 mm.

In a further sorting effort, the rims from each of these groups were examined with the result that the large cord group had the highest percentage of rim decoration, consisting mostly of notching and punctating directly into the lip. Other forms of alteration were fingernail punctating just beneath the lip and cord-marking on the lip, a process which left an uneven rim in most cases similar to the effect left by notching from the top. The large group of the middle sized category yielded a smaller percentage of rim decoration, with the small cord category yielding the smallest percentage. Although occurring in much smaller and possibly unreliable numbers, the trait of rim folding showed a reverse trend (Table 6).

Following the completion of this analysis, testing was done to ascertain if these variations had chronological significance. This was the most difficult part of the operation. With two exceptions (40S-10E and 50N-70E), all excavation units had been extensively disturbed by pit

digging. The former showed no evidence of disturbance, while the latter, although showing considerable disturbance, was probably less disturbed than any of the remaining units. In these two squares, the expected results were realized with a definite trend for larger cords and more rim decoration to be found in the lower levels and less toward the surface (Figures 6, 7, 8 and 9). The change was more even in square 40S-10E, as would be expected from the apparent lack of

	RIM TREATMENT			
CORD SIZE	folded	decorated	plain	SHERD TOTALS
large	2 (1.7%)	74 (61.2%)	45 (37.1%)	121
medium	11 (4.2%)	114 (43.7%)	136 (52.1%)	261
small	8 (8.2%)	38 (38.8%)	52 (53.0%)	98

Table 6. Relation of rim treatment to cord size on Mulberry Creek Cord-marked sherds.

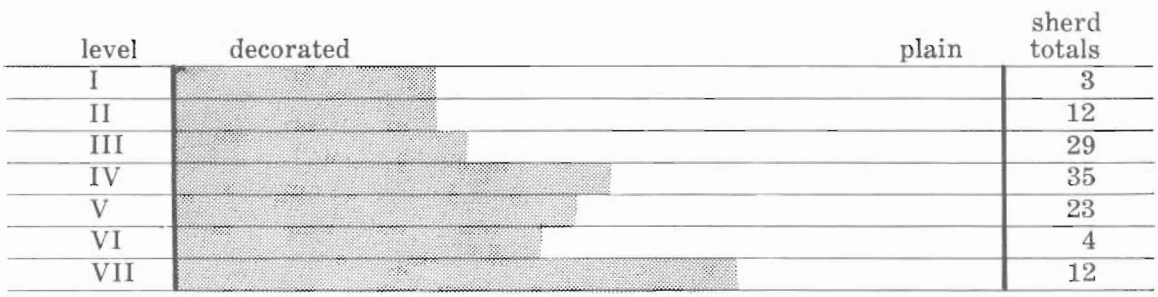


Fig. 6. Ratio of Mulberry Creek Cord-Marked decorated to plain rims by level in square 50N-70E.

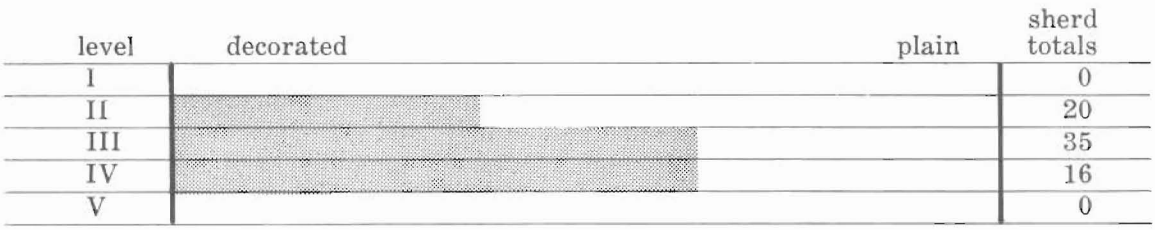


Fig. 7. Ratio of Mulberry Creek Cord-marked decorated to plain rims by level in square 40S-10E.

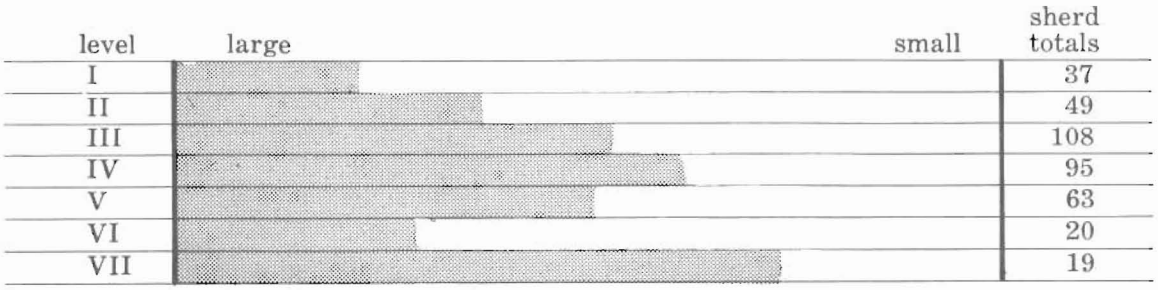


Fig. 8. Ratio of Mulberry Creek Cord-marked large to small cords by level in square 50N-70E.

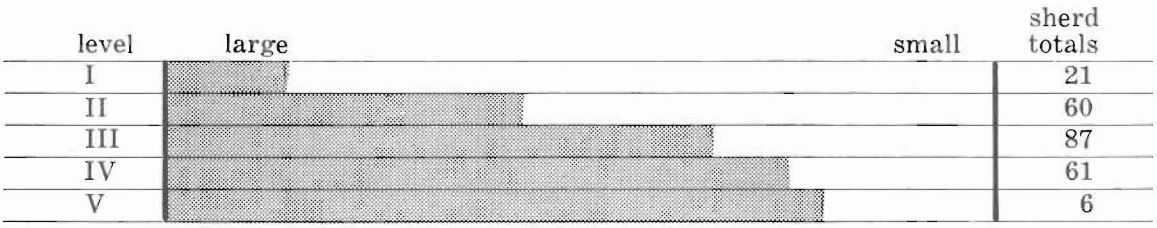


Fig. 9. Ratio of Mulberry Creek Cord-marked large to small cords by level in square 40S-10E.

pit digging activity there. The graphs for 50N-70E concerning rim decoration and cord size are remarkably similar. The only burial encountered in the excavation rested immediately below a modern trash pit at the 3.4 foot level. A large pit initially recognized at the 3.4 foot level and extending only 1.1 feet below that point, probably originated at a higher level. The poor showing in both rim decoration and large cord size in level VI is probably accounted for by these intrusions with such material being displaced upward into levels III and IV and showing up in the graphs at those positions.

The weakest part of this analysis is in the small size of the samples, especially where rims are concerned. In an attempt to remedy this situation, the decision was made to combine the material in question from all squares. Since the deposit varies in thickness and slopes from the highest point in all directions (Figure 4), there was a problem in determining the equivalency of levels in the various squares. They were combined in two different ways. Initially, all first levels were combined, then second levels, etc. toward the bottom (Method A, Figures 10 and 13). The alternative used was to combine the basal levels of Zone II, the next highest, etc. toward the surface (Method B, Figures 11 and 12). Method B was tried on the theory that most of the site had been fairly level at one time and had subsequently eroded around the periphery.

The calculations were performed again, this time excluding squares 40S-10E and 50N-70E to see what degree of influence they had on the overall results (Figures 14, 15, 16 and 17).

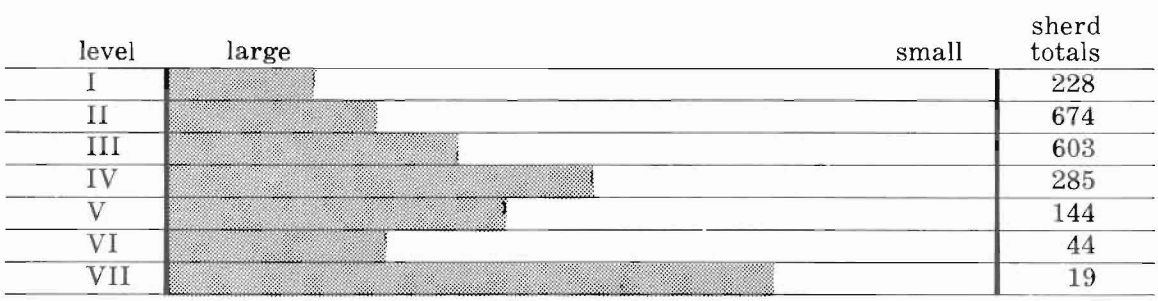


Fig. 10. Ratio of Mulberry Creek Cord-marked large to small cords by level for the entire site. Method A.

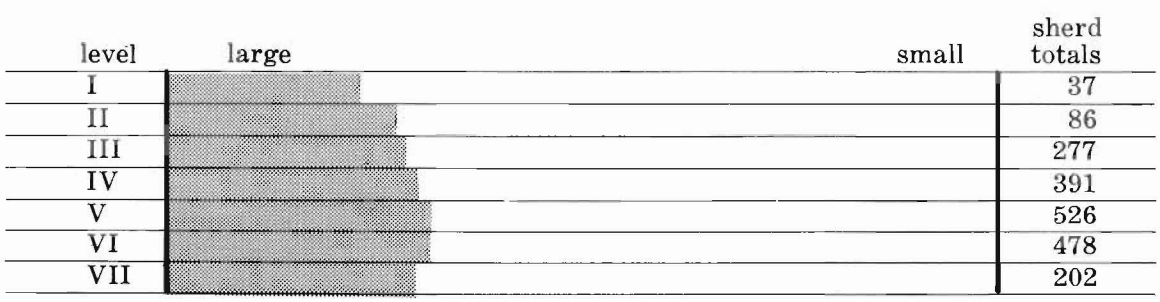


Fig. 11. Ratio of Mulberry Creek Cord-marked large to small cords by level for the entire site. Method B.

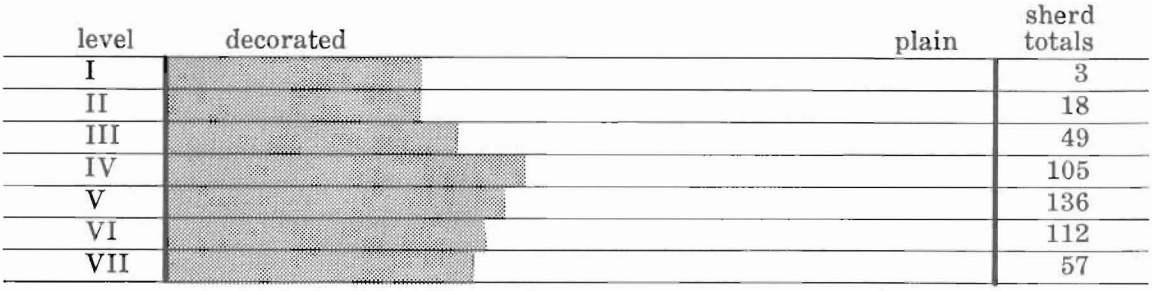


Fig. 12. Ratio of Mulberry Creek Cord-marked decorated to plain rims by level for the entire site. Method B.

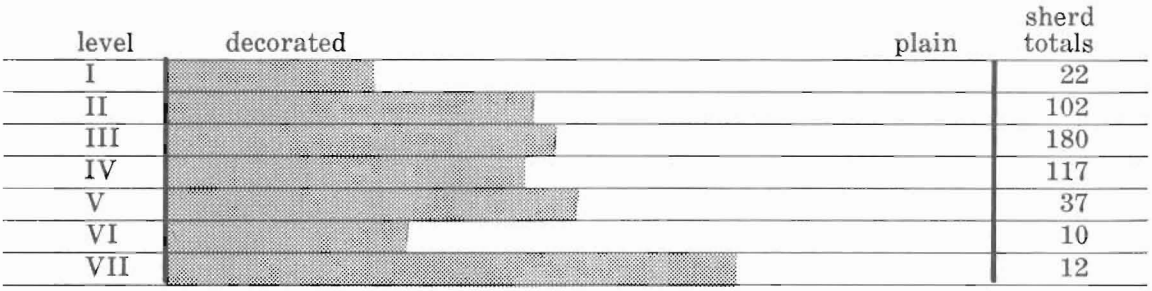


Fig. 13. Ratio of Mulberry Creek Cord-marked decorated to plain rims by level for the entire site. Method A.

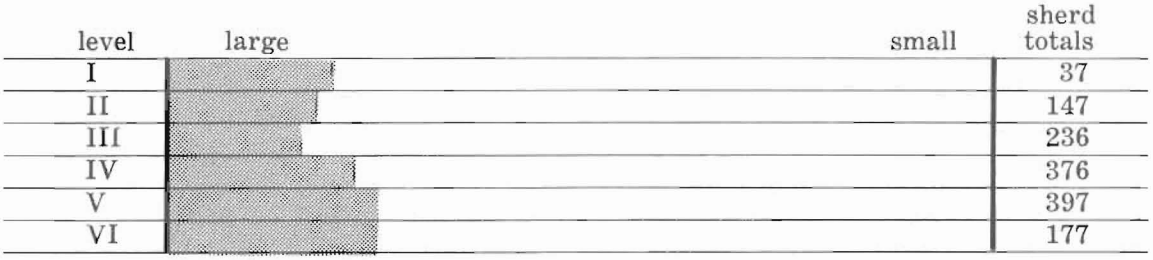


Fig. 14. Ratio of Mulberry Creek Cord-marked large to small cords by level for the entire site except squares 50N-70E and 40S-10E. Method B.

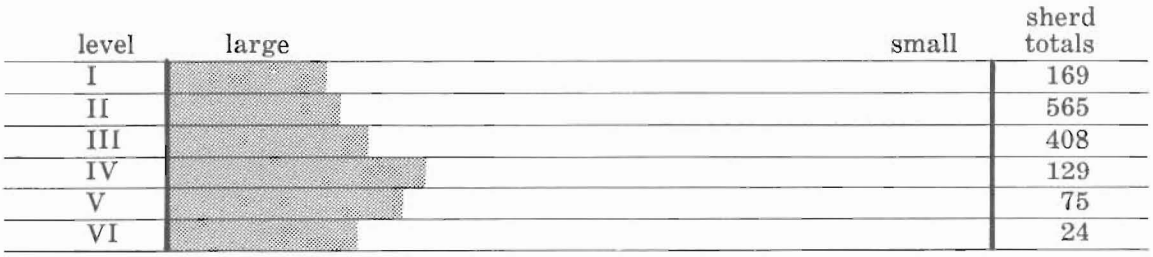


Fig. 15. Ratio of Mulberry Creek Cord-marked large to small cords by level for the entire site except squares 50N-70E and 40S-10E. Method A.

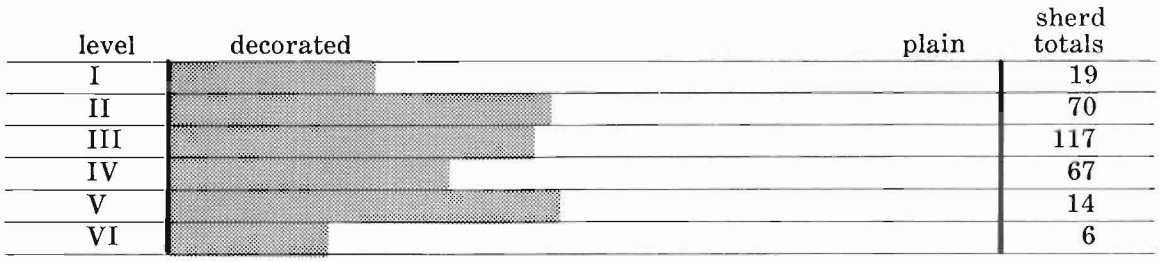


Fig. 16. Ratio of Mulberry Creek Cord-marked decorated to plain rims by level for the entire site except squares 50N-70E and 40S-10E. Method A.

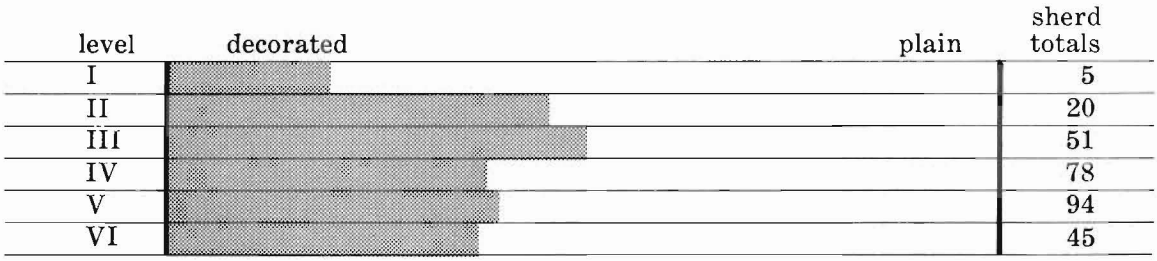


Fig. 17. Ratio of Mulberry Creek Cord-marked decorated to plain rims by level for the entire site except squares 50N-70E and 40S-10E. Method B.

The results are clearer in the case of the cord size analysis. Apparently, there was a tendency for cord size to diminish through time. It appears likely that the amount of disturbance over most of the site accounts for much of the deviation from a gradual transition in the graphs. Although not as obvious, there was also an apparent trend towards less rim decoration.

In a further attempt to verify these trends, material from the three dated Zone II pits was examined. Cord size and rim comparisons were made. Unfortunately, the cord-marks on sherds from F22, the pit with the middle date, could not be seen clearly enough for inclusion. Comparison of the earliest, F10, and the latest, F28, however, yielded the expected results. The same procedure was followed with these two pits as with the analysis of the same material by level. Once again, there was a sample size problem in rim decoration comparisons. The earliest pit, however, with a collection of sixty-seven rims of Mulberry Creek Cord-marked sherds, had over eighty percent decorated rims of this type; and, as expected, none were folded. Two plain and one folded rim occurred in the latest pit; whereas, two notched and one plain appeared in the pit with the middle date. Rim folds again were too scarce to give any useful information. There are much greater percentages of this trait at later sites in the vicinity, however, which seems to indicate that at least locally the trait tends to be later.

Of the sherds in the large and small cord categories from the early pit, F10, fifty-nine percent were large and forty-one percent were small. Of the sherds in the large and small cord categories from the late pit, F28, only nineteen percent were large while eighty-one percent were small.

There are resemblances between the Mulberry Creek Cord-marked at Boyd and the Porter Bayou and Edwards varieties of that type named by Phillips (1970:137, 138). The sherds with the large cord imprints are similar to the Porter Bayou variety. Of the nine examples of that variety illustrated by Phillips, all show rim decorations common in the cord-marked collection at Boyd. Many of the sherds lacking such rim treatment and having smaller cord imprints seem to fit into the Edwards variety which is considered later.

Larto Red Filmed, variety Larto
Plate 18.
Reference: Phillips 1970:99.

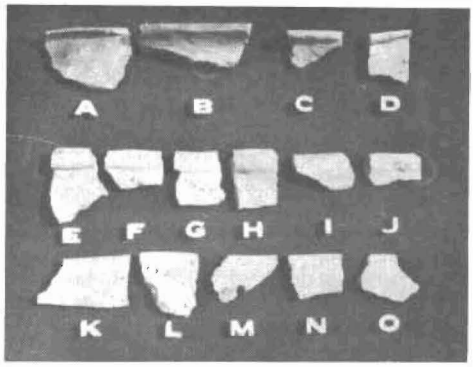


Plate 18.

Indian Bay Stamped, variety unspecified
Plate 19.
Reference: Phillips, Ford, and Griffin 1951:88.

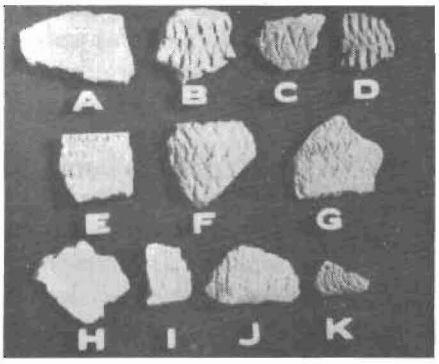


Plate 19.

Marksville Stamped, variety unspecified
Reference: Phillips, Ford, and Griffin 1951:91.

Marksville Incised, variety unspecified
Plate 20.
Reference: Phillips, Ford, and Griffin 1951:94.

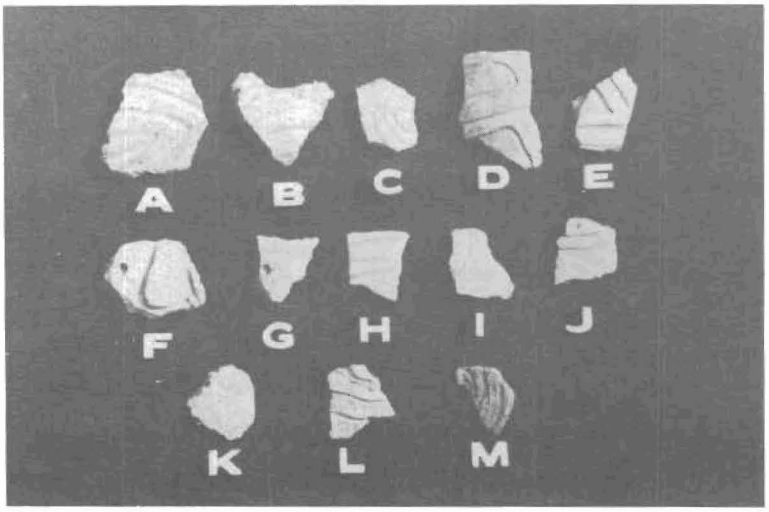


Plate 20.

Marksville Stamped, variety Troyville
Plate 21.
Reference: Phillips 1970:125.

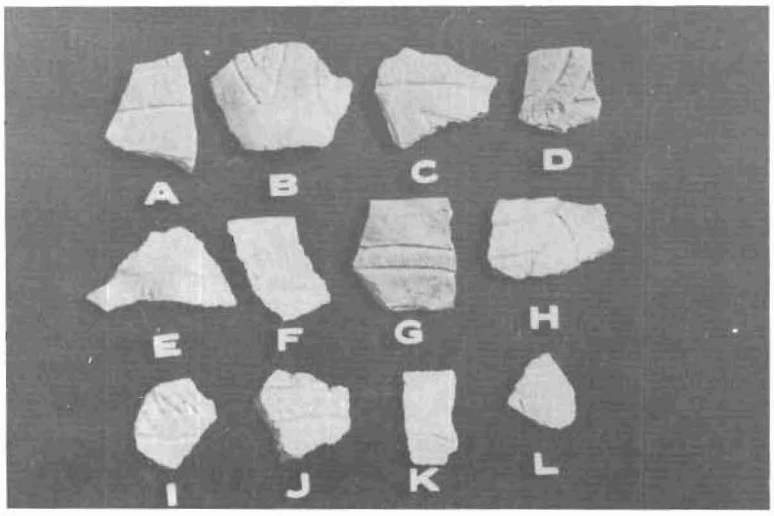


Plate 21.

Marksville Stamped, variety Manny
Plate 22.
Reference: Phillips 1970:123.

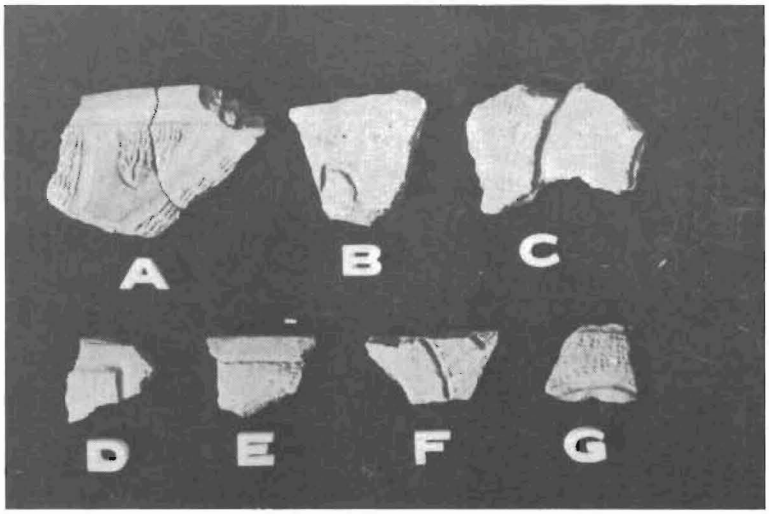


Plate 22.

Hollyknowe Ridge Pinched, variety Hollyknowe
Plate 23 A-E.
Reference: Phillips 1970:89.

Wheeler Check-stamped, variety Green River
Plate 23 F-I.
Reference: Phillips 1970:171.

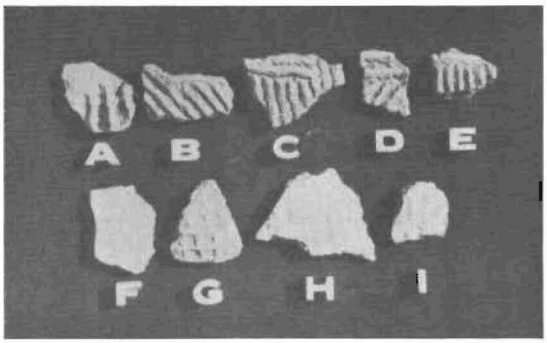


Plate 23.

Salomon Brushed, variety Salomon
Plate 24.
Reference: Phillips 1970:158.

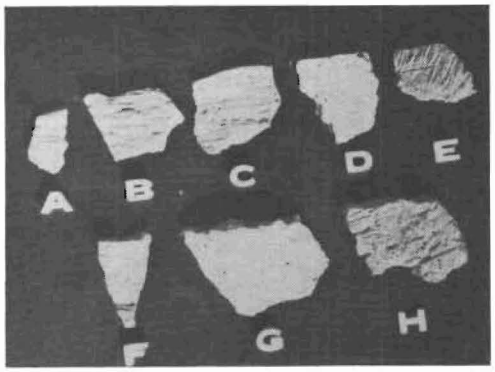


Plate 24.

One of these sherds (Plate 24B) is sand tempered.

Alligator Incised, variety Alligator
Plate 25.
Reference: Phillips 1970:39.

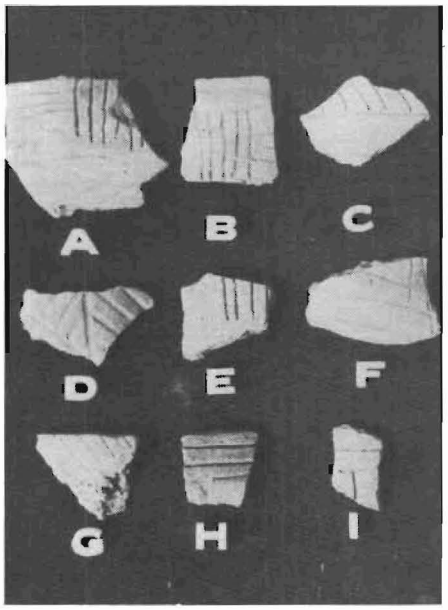


Plate 25.

Alligator Incised, variety Oxbow
Plate 26.
Reference: Phillips 1970:39.

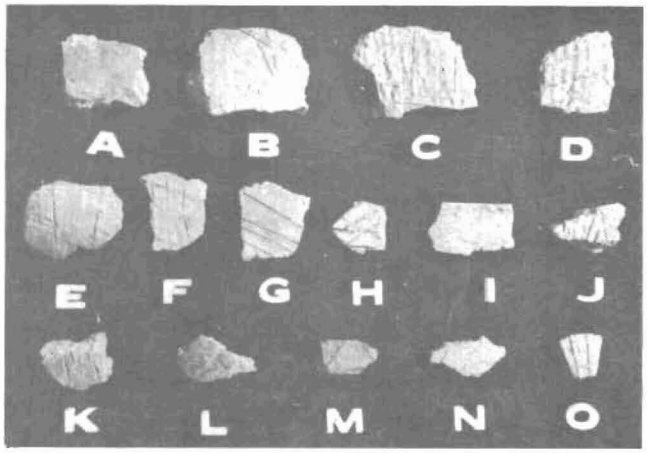


Plate 26.

Alligator Incised, variety Clayton
Plate 27.
Reference: This paper.

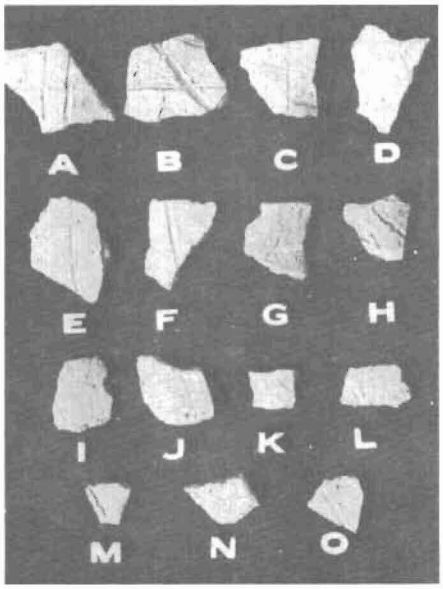


Plate 27.

Sample size: 14 sherds.
Average thickness: 6.5 mm.
Range of thickness: 6 mm. - 8 mm.
Paste: Not noticeably different from that of the Baytown Plain on the Boyd Site.

Surface treatment: Broad, U-shaped incised lines averaging 3.5 mm. across, criss-crossing at irregular intervals and at different angles as in the Oxbow variety of this type, on which the lines are much narrower. The surface was not smoothed prior to this operation; and on some sherds the incising was done over cord-marking (Plate 27 I, J and L).

Distribution: Other than those present at this site and three from the Norman Site, none have appeared in collections made by the writers.

Chronological position: One of these sherds was found in F10 which has a radiocarbon date of A.D. 250 ± 80 (UGA 158). Even if it can be assumed that the date is correct, the appearance of one sherd cannot be considered adequate evidence. There is always the possibility of its being intrusive. The largest concentration of this variety was in square 40S-10E, where ten were found. Three were found in level three, six in level four and one in the bottom level, level five. This square has already been mentioned as apparently being the least disturbed excavation unit, and it would seem from this meager evidence that the type was early in its initial use in Zone II. Perhaps the best clue to its chronological position is the similarity of the incising to that of some of the later varieties of Marksville Incised.

Evansville Punctated, variety Evansville
Plate 28 B-G.
Reference: Phillips 1970:78.

Evansville Punctated, variety Braxton
Plate 28 A.
Reference: Phillips 1970:79.

Churupa Punctated, variety Churupa
Plate 28 H.
Reference: Phillips 1970:67.

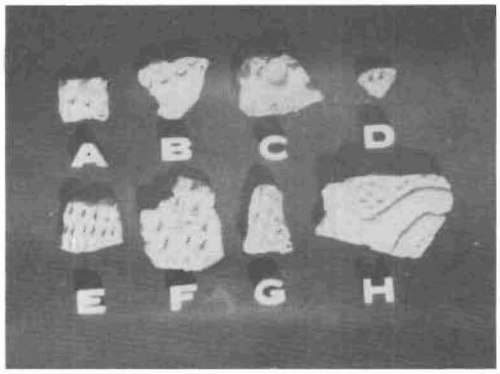


Plate 28.

Barton Incised, variety Barton
Plate 29 A.
Reference: Phillips 1970:44.

Mississippi Plain, variety unspecified
Plate 29 B-K.
Reference: Phillips 1970:130.

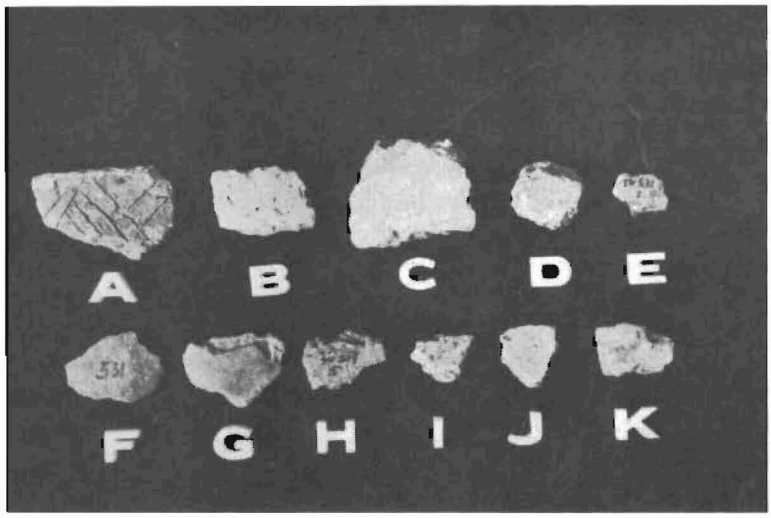


Plate 29.

This category and that of Barton Incised are included in the listing of Zone II materials, but are not believed to belong to that complex, since they are obviously intrusive from a later very brief Mississippian occupation.

Other than comparisons between the variations of the majority types, the only other analysis which was performed was of the ratios of Baytown Plain to Mulberry Creek Cord-marked. This was first done for squares 50N-70E and 40S-10E, again since they seemed to be the least disturbed units (Figures 18 and 19). Calculations were then made on these ratios for the entire site (Figures 20 and 21), using methods A and B again for combining levels in the various squares.

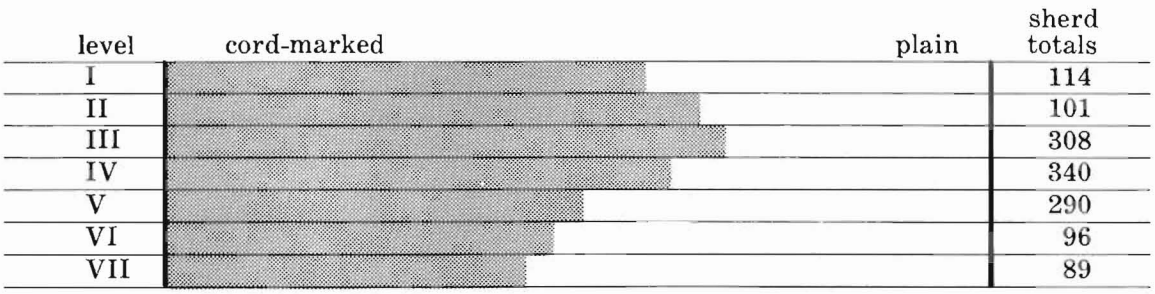


Fig. 18. Ratio of Mulberry Creek Cord-marked to Baytown Plain by level in square 50N-70E.

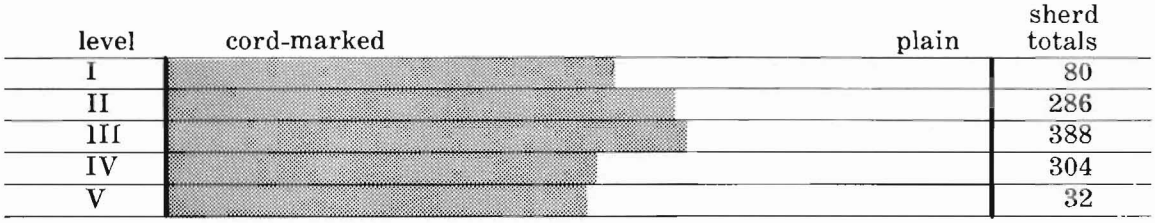


Fig. 19. Ratio of Mulberry Creek Cord-marked to Baytown Plain by level in square 40S-10E.

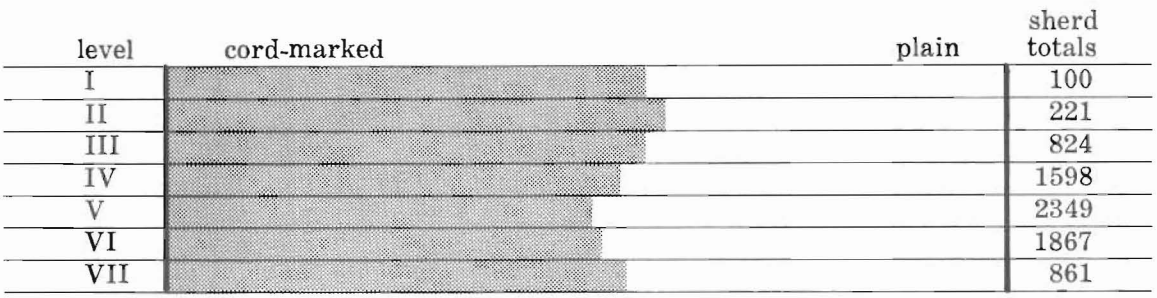


Fig. 20. Ratio of Mulberry Creek Cord-marked to Baytown Plain by level for the entire site. Method B.

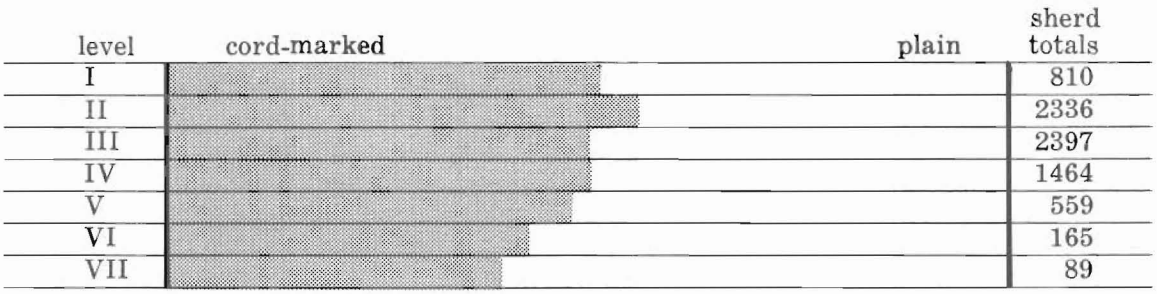


Fig. 21. Ratio of Mulberry Creek Cord-marked to Baytown Plain by level for the entire site. Method A.

The results seemed to show a general trend for cord-marking to gain in popularity over plain pottery through time, although the evidence is not entirely conclusive.

Two approximately whole vessels were found in Zone II. One, shown in Plate 36 B, is small and flattened; the other (Plate 36 C) was highly polished, broken at one end, and apparently bath tub-shaped. Zone II type distribution by square and level is shown in Table 7. The ceramic inventories of the various pits originating in this zone are shown in Table 8.

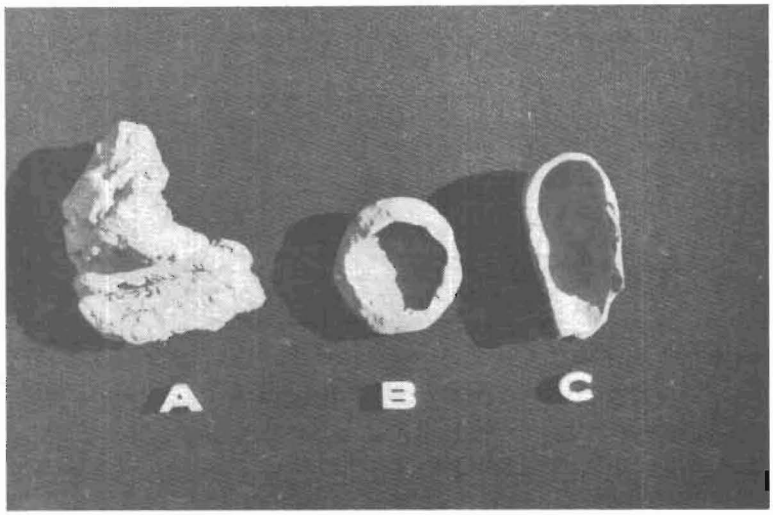


Plate 36.

A. Daub.
B-C. Small pottery vessels.

SQUARE:	20S-40E				10N-40E						
LEVEL:	1	2	3	4	1	2	3	4	5	6	7
Baytown Plain, var. unspecified	41	146	149	80	36	101	92	71	61	19	
Baytown Plain, var. Bowie	12	36	18	18	14	28	1	11	15	8	
Mulberry Creek Cord-marked, var. unspecified	35	161	103	69	61	137	84	92	51	23	
Larto Red-filmed, var. Larto	4	9	6	1	5	5	4	3	1	1	
Indian Bay Stamped, var. unspecified				1		3			2		
Marksville Incised, var. unspecified		2	1		2			1			
Marksville Stamped, var. Troyville			2	1		1					
Marksville Stamped, var. Manny		1				1					
Hollyknowe Ridge Pinched, var. Hollyknowe					1						
Wheeler Check-stamped, var. Green River											
Salomon Brushed, var. Salomon		1	1								
Alligator Incised, var. Alligator											
Alligator Incised, var. Oxbow			1		3	1	1				
Alligator Incised, var. Clayton			1	2							
Evansville Punctated, var. Evansville					1						
Evansville Punctated, var. Braxton											
Churupa Punctated, var. Churupa											
Churupa Punctated, var. Boyd											
Mississippi Plain, var. unspecified	2					1					
Barton Incised, var. unspecified											
Withers Fabric-impressed, var. Withers	2	14	7	10			3	12	6	3	2
Cormorant Cord-impressed, var. Cormorant	1										
Twin Lakes Punctated, var. Twin Lakes						1			1		
Twin Lakes Punctated, var. Crowder											
cross-hatched rim							1				
unidentified					1	1	2	2	1		

SQUARE:	0-40E					10S-40E				0-CL	
LEVEL:	1	2	3	4	5	1	2	3	4	1	2
Baytown Plain, var. unspecified	35	123	146	25	1	61	151	135	34	15	23
Baytown Plain, var. Bowie	18	20	15	10		21	35	7	6	8	24
Mulberry Creek Cord-marked, var. unspecified	84	169	212	62	5	79	179	75	96	17	54
Larto Red-filmed, var. Larto	4	2	3	1		4	10	6	3	1	1
Indian Bay Stamped, var. unspecified		3	4	4	1		8	2			1
Marksville Incised, var. unspecified		1					3		1		
Marksville Stamped, var. Troyville							2				
Marksville Stamped, var. Manny											
Hollyknowe Ridge Pinched, var. Hollyknowe		1									
Wheeler Check-stamped, var. Green River							1	1			
Salomon Brushed, var. Salomon	2	1					1				
Alligator Incised, var. Alligator											
Alligator Incised, var. Oxbow			3	1				3			
Alligator Incised, var. Clayton							1				
Evansville Punctated, var. Evansville	1										
Evansville Punctated, var. Braxton											
Churupa Punctated, var. Churupa											
Churupa Punctated, var. Boyd											
Mississippi Plain, var. unspecified							1			1	
Barton Incised, var. unspecified											
Withers Fabric-impressed, var. Withers	2	6	10	6		6	10	7	2		3
Cormorant Cord-impressed, var. Cormorant									1		
Twin Lakes Punctated, var. Twin Lakes		1	1					1		1	
Twin Lakes Punctated, var. Crowder											
cross-hatched rim											
unidentified		2	1	5		1	2				2

Table 7a. Distribution of Zone II ceramics by level and square.

SQUARE:	0-10E				0-20E					
LEVEL:	1	2	3	4	1	2	3	4	5	6
Baytown Plain, var. unspecified	2	19	12		6	15	15	15	29	5
Baytown Plain, var. Bowie	5	9	13		5	7	4	5	5	
Mulberry Creek Cord-marked, var. unspecified	9	18	9	1	13	19	25	36	41	13
Larto Red-filmed, var. Larto		1	3		1		1		2	
Indian Bay Stamped, var. unspecified							1			1
Marksville Incised, var. unspecified			1			1		1		
Marksville Stamped, var. Troyville							1			
Marksville Stamped, var. Manny						1				
Hollyknowe Ridge Pinched, var. Hollyknowe										
Wheeler Check-stamped, var. Green River										
Salomon Brushed, var. Salomon								1		
Alligator Incised, var. Alligator										
Alligator Incised, var. Oxbow		1						1		
Alligator Incised, var. Clayton										
Evansville Punctated, var. Evansville										
Evansville Punctated, var. Braxton										
Churupa Punctated, var. Churupa										
Churupa Punctated, var. Boyd										
Mississippi Plain, var. unspecified			1		1					
Barton Incised, var. unspecified										
Withers Fabric-impressed, var. Withers		7	4		1	3	3		2	5
Cormorant Cord-impressed, var. Cormorant	1						1			
Twin Lakes Punctated, var. Twin Lakes		1								
Twin Lakes Punctated, var. Crowder							1			
cross-hatched rim										
unidentified			1				2			

SQUARE:	30S-40E			40S-40S			0-10W			
LEVEL:	1	2	3	1	2	3	1	2	3	4
Baytown Plain, var. unspecified	5	9	9		6	3	6	20	78	12
Baytown Plain, var. Bowie		2	5	1	2	1	3	5	23	3
Mulberry Creek Cord-marked, var. unspecified	2	5	7	1	2	3	11	49	117	18
Larto Red-filmed, var. Larto		1				1	1	2	6	
Indian Bay Stamped, var. unspecified		1								
Marksville Incised, var. unspecified		1						1		
Marksville Stamped, var. Troyville										
Marksville Stamped, var. Manny										
Hollyknowe Ridge Pinched, var. Hollyknowe										
Wheeler Check-stamped, var. Green River									1	
Salomon Brushed, var. Salomon									1	1
Alligator Incised, var. Alligator										
Alligator Incised, var. Oxbow			1					1	1	
Alligator Incised, var. Clayton										
Evansville Punctated, var. Evansville	1									
Evansville Punctated, var. Braxton										
Churupa Punctated, var. Churupa										
Churupa Punctated, var. Boyd	1									
Mississippi Plain, var. unspecified	1									
Barton Incised, var. unspecified										
Withers Fabric-impressed, var. Withers	2	6	4		1	3		3		
Cormorant Cord-impressed, var. Cormorant		1								
Twin Lakes Punctated, var. Twin Lakes										
Twin Lakes Punctated, var. Crowder							1			
cross-hatched rim										
unidentified			3							

Table 7b. Distribution of Zone II ceramics by level and square.

SQUARE:	0-30E					0-50E				
LEVEL:	1	2	3	4	5	1	2	3	4	5
Baytown Plain, var. unspecified	18	56	86	19		7	14	9	5	1
Baytown Plain, var. Bowie	2	9	16	7	3		1	3	3	1
Mulberry Creek Cord-marked, var. unspecified	13	76	58	30		11	25	17	6	3
Larto Red-filmed, var. Larto	2	5	6	4			2			
Indian Bay Stamped, var. unspecified			1	1						
Marksville Incised, var. unspecified	1		1							
Marksville Stamped, var. Troyville		1			1					
Marksville Stamped, var. Manny						1				
Hollyknowe Ridge Pinched, var. Hollyknowe										
Wheeler Check-stamped, var. Green River										
Salomon Brushed, var. Salomon										
Alligator Incised, var. Alligator				1						
Alligator Incised, var. Oxbow		1								
Alligator Incised, var. Clayton										
Evansville Punctated, var. Evansville										
Evansville Punctated, var. Braxton										
Churupa Punctated, var. Churupa		1								
Churupa Punctated, var. Boyd										
Mississippi Plain, var. unspecified										
Barton Incised, var. unspecified										
Withers Fabric-impressed, var. Withers	1	10	11	6			1	2	5	1
Cormorant Cord-impressed, var. Cormorant										
Twin Lakes Punctated, var. Twin Lakes					1		1			
Twin Lakes Punctated, var. Crowder										
cross-hatched rim										
unidentified			1	1						

SQUARE:	50N-70E							100S-10W		
LEVEL:	1	2	3	4	5	6	7	1	2	3
Baytown Plain, var. unspecified	41	27	72	105	134	50	49	28	75	70
Baytown Plain, var. Bowie	31	21	26	20	45	29			20	5
Mulberry Creek Cord-marked, var. unspecified	73	74	236	235	156	46	40	16	270	148
Larto Red-filmed, var. Larto	10	5	21	13	22	2	1	3	5	8
Indian Bay Stamped, var. unspecified			1	3	4	1		1		1
Marksville Incised, var. unspecified		1	1		3					
Marksville Stamped, var. Troyville		1			4	2		2	1	
Marksville Stamped, var. Manny				1	1					
Hollyknowe Ridge Pinched, var. Hollyknowe	1		1						2	
Wheeler Check-stamped, var. Green River									1	
Salomon Brushed, var. Salomon					1				2	1
Alligator Incised, var. Alligator		1				1				
Alligator Incised, var. Oxbow	1		1						1	2
Alligator Incised, var. Clayton					1					2
Evansville Punctated, var. Evansville			1	1					1	
Evansville Punctated, var. Braxton		1								
Churupa Punctated, var. Churupa										
Churupa Punctated, var. Boyd										
Mississippi Plain, var. unspecified	1		1							
Barton Incised, var. unspecified	1									
Withers Fabric-impressed, var. Withers	7	2	6	13	24	15			5	2
Cormorant Cord-impressed, var. Cormorant						1				
Twin Lakes Punctated, var. Twin Lakes				1		1				
Twin Lakes Punctated, var. Crowder						1				
cross-hatched rim										
unidentified				3		2				

Table 7c. Distribution of Zone II ceramics by level and square.

SQUARE:	40S-10E					0-60E					
LEVEL:	1	2	3	4	5	1	2	3	4	5	6
Baytown Plain, var. unspecified	32	91	160	133	14	2	12	16	85	27	13
Baytown Plain, var. Bowie	10	25	12	6	1		1	3	4	5	1
Mulberry Creek Cord-marked, var. unspecified	48	195	228	171	18	2	15	23	61	28	6
Larto Red-filmed, var. Larto	8	32	40	24	1			1	3	3	2
Indian Bay Stamped, var. unspecified		3	8	5					5		
Marksville Incised, var. unspecified		2	5	1							
Marksville Stamped, var. Troyville		1	3				1				
Marksville Stamped, var. Manny	1	2	1	3	1						
Hollyknowe Ridge Pinched, var. Hollyknowe											
Wheeler Check-stamped, var. Green River											
Salomon Brushed, var. Salomon		1		5	5						
Alligator Incised, var. Alligator		1	5							1	
Alligator Incised, var. Oxbow		1	1								2
Alligator Incised, var. Clayton			3	6	1						
Evansville Punctated, var. Evansville		1									
Evansville Punctated, var. Braxton											
Churupa Punctated, var. Churupa											
Churupa Punctated, var. Boyd									1		1
Mississippi Plain, var. unspecified											
Barton Incised, var. unspecified											
Withers Fabric-impressed, var. Withers	2	6	5	4	1		2	2	7	8	
Cormorant Cord-impressed, var. Cormorant											
Twin Lakes Punctated, var. Twin Lakes								1	1		
Twin Lakes Punctated, var. Crowder											
cross-hatched rim											
unidentified	2		4	3							

Table 7d. Distribution of Zone II ceramics by level and square.

FEATURE NUMBERS:	F2	F3	F6	F7	F8	F9	F10	F11	F12	F13
Baytown Plain, var. unspecified	8	3	13	142	1	107	459	4	2	18
Baytown Plain, var. Bowie	2		1	6		12	30	1	2	2
Mulberry Creek Cord-marked, var. unspecified	10		4	106	2	127	493	32	6	71
Larto Red-filmed, var. Larto		2	1	14		5		1		4
Indian Bay Stamped, var. unspecified	1					1	4			2
Marksville Incised, var. unspecified				8						
Marksville Stamped, var. unspecified										
Marksville Stamped, var. Troyville				2						
Marksville Stamped, var. Manny										
Wheeler Check-stamped, var. Green River						1		1		
Salomon Brushed, var. Salomon						1	2			
Alligator Incised, var. Alligator										
Alligator Incised, var. Oxbow										
Alligator Incised, var. Clayton							1			
Evansville Punctated, var. Evansville										
Withers Fabric-impressed, var. Withers		1	2	4	1	9	15		1	2
Cormorant Cord-impressed, var. Cormorant							1			
Twin Lakes Punctated, var. Twin Lakes										
Twin Lakes Punctated, var. Crowder										
Churupa Punctated, var. Boyd										
Zone I paste, red-filmed										
unidentified				2			30			

FEATURE NUMBERS:	F14	F17	F18	F19	F20	F21	F22	F23	F24	F25
Baytown Plain, var. unspecified	34	16	73	46	57	4	62	17	10	16
Baytown Plain, var. Bowie		10	26	10	9	1	11	2		2
Mulberry Creek Cord-marked, var. unspecified	31	15	99	23	77	4	36	40	33	59
Larto Red-filmed, var. Larto	3		1	1	1	1	2			
Indian Bay Stamped, var. unspecified	1		3	1					1	
Marksville Incised, var. unspecified										
Marksville Stamped, var. unspecified										
Marksville Stamped, var. Troyville										
Marksville Stamped, var. Manny										
Wheeler Check-stamped, var. Green River					1					
Salomon Brushed, var. Salomon		1			1					
Alligator Incised, var. Alligator										
Alligator Incised, var. Oxbow										1
Alligator Incised, var. Clayton										
Evansville Punctated, var. Evansville										
Withers Fabric-impressed, var. Withers	2	1	9	2	7	2	3	1		1
Cormorant Cord-impressed, var. Cormorant										
Twin Lakes Punctated, var. Twin Lakes										
Twin Lakes Punctated, var. Crowder										
Churupa Punctated, var. Boyd										
Zone I paste, red-filmed										
unidentified	1	1	7	5	8	1		6	1	4

Table 8a. Ceramics of the Zone II pits.

FEATURE NUMBERS:	F26 &27	F27	F28	F29	F30	F31	F32	F33	F34	F36	F38
Baytown Plain, var. unspecified	30	97	22		51	40	145	57	28	43	9
Baytown Plain, var. Bowie			6		24	13	28	4	3	9	
Mulberry Creek Cord-marked, var. unspecified	55	138	73	7	59	52	92	74	32	61	21
Larto Red-filmed, var. Larto	1	1	2			1	3	10		5	1
Indian Bay Stamped, var. unspecified							8		8		
Marksville Incised, var. unspecified			1		1	1		1			1
Marksville Stamped, var. unspecified											
Marksville Stamped, var. Troyville											
Marksville Stamped, var. Manny						1					
Wheeler Check-stamped, var. Green River											
Salomon Brushed, var. Salomon											
Alligator Incised, var. Alligator											
Alligator Incised, var. Oxbow										1	
Alligator Incised, var. Clayton							1				
Evansville Punctated, var. Evansville							2				
Withers Fabric-impressed, var. Withers			4	1	17	13	23	2	5	2	
Cormorant Cord-impressed, var. Cormorant										1	
Twin Lakes Punctated, var. Twin Lakes			1								
Twin Lakes Punctated, var. Crowder											
Churupa Punctated, var. Boyd									1		
Zone I paste, red-filmed									1	1	
unidentified		5	7		3	5	14	3	2	3	1

FEATURE NUMBERS:	F39	F40	F42	F43	F44	F45	F46	F51	F53	F54	F55
Baytown Plain, var. unspecified	2	16	1			37	40	9	17	31	6
Baytown Plain, var. Bowie	1	3	6			7	9	6	3		
Mulberry Creek Cord-marked, var. unspecified	1	20	7			40	37	6	20	25	7
Larto Red-filmed, var. Larto			1		4	3	3		1	3	
Indian Bay Stamped, var. unspecified											
Marksville Incised, var. unspecified											
Marksville Stamped, var. unspecified										1	
Marksville Stamped, var. Troyville											
Marksville Stamped, var. Manny											
Wheeler Check-stamped, var. Green River											
Salomon Brushed, var. Salomon											
Alligator Incised, var. Alligator											
Alligator Incised, var. Oxbow											
Alligator Incised, var. Clayton											
Evansville Punctated, var. Evansville											
Withers Fabric-impressed, var. Withers		10				8	4		3	2	
Cormorant Cord-impressed, var. Cormorant											
Twin Lakes Punctated, var. Twin Lakes			1			1					
Twin Lakes Punctated, var. Crowder						1					
Churupa Punctated, var. Boyd		1									
Zone I paste, red-filmed											
unidentified	1	1	3			4			1		

Table 8b. Ceramics of the Zone II pits.

Relation of the Zone II Complex to Other Sites

Although sites with Marksville Period components are plentiful in the area around Boyd, none have been found with ceramic assemblages comparing closely with Zone II. The site which seems most similar in this respect is Noe (Co-587), where some testing was done by the authors in 1969. Although no stratigraphy remained, three circular pits showed up in sterile soil after the plow zone had been removed. These pits are considered to be practically the same age since sherds from all three were united on several occasions in the attempted reconstructions of vessels.

On the basis of ceramics present at each site, Noe appears to be somewhat earlier than Zone II at Boyd. A minority of Withers Fabric-impressed occurs in each of the three pits and one sherd of Jaketown Simple-stamped was found in one of them (Table 9). An argument could be made that perhaps these early sherds are there for the same reason as those early ones considered intrusive at Boyd in the Zone II pits, and that is that they had been thrown back into a pit as fill after having been taken out in the original excavation of the pit. Also to be considered at Noe, however, is the fact that the paste of the vast majority of the sherds, including the fabric-impressed, was homogeneous, while at Boyd, there was considerable difference in the paste characteristics of the ceramics of the two zones.

CERAMIC TYPES	SHERD TOTALS	%
Baytown Plain, var. unspecified	167	19.28
Baytown Plain, var. Thomas	1	.12
Larto Red-filmed, var. Larto	49	5.65
Withers Fabric-impressed, var. Withers	62	7.16
Mulberry Creek Cord-marked, var. unspecified	366	42.26
Mulberry Creek Cord-marked, var. Blue Lake	2	.23
Indian Bay Stamped, var. unspecified	17	1.96
Marksville Stamped, var. unspecified	3	.35
Marksville Stamped, var. Manny	6	.69
Marksville Stamped, var. Troyville	2	.23
Marksville Incised, var. unspecified	13	1.50
Evansville Punctated, var. Evansville	2	.23
Salomon Brushed, var. Salomon	2	.23
Churupa Punctated, var. Churupa	1	.12
Jaketown Simple-stamped, var. unspecified	1	.12
unclassified	172	19.87

Table 9. Ceramics of the Noe Site pits.

Other than these differences, apparently placing the Noe Site at an earlier date, is the fact that more types frequently considered later are found in Zone II and do not appear at Noe, such as Wheeler Check-stamped and Alligator Incised, varieties Alligator and Oxbow.

No site visited to date by the writers, other than Boyd, has yielded such a high percentage of decorated rims on cord-marked sherds as the Noe Site. Ten of thirty-one rim sherds from the pits were notched. The cord sizes from these tended to be much larger than the average at Boyd. Of the three hundred cord-marked sherds from the Noe pits, fifty-eight percent fall into what would be classified in the large cord category at Boyd; whereas, the small cord category comprises only ten percent. It should be pointed out again that the bulk of cord-marked sherds at the Boyd Site were left in a middle-sized grouping and not even in the lowest levels did the large corded specimens reach fifty percent of the level total for cord-marked pottery.

The large multi-component Dickerson Site (Co-502) may have a similar component. Some later varieties of Marksville Stamped and Incised occur there together with some cord-marked pottery which has large cord marks and notched or punctated rims.

Lithic Material
Zone I

The stone artifacts from the lower zone are divided into six categories which are listed and discussed below. Where names implying function are used, it is because objects with similar physical characteristics have traditionally been referred to by these names and not because their actual functions have been established.

1. Projectile Points.

The term "projectile point" is used here mainly as a convenient name for this group of artifacts. It is apparent that two of the three found in this zone (Plate 30, B, F) were once used for something other than the tip of a dart or spear. Their dulled edges suggest cutting or scraping functions. Specimen A (Plates 30, 31) is the remaining point from Zone I. The other points pictured in Plate 30 are from the McClintock Site. They are shown here for comparison with the Boyd Zone I material on that site. This assumption is not as risky as many made concerning surface associations, since they must belong either to that early component or to the Mississippian component on the site. When Mississippian sites in the area yield any points at all, they are usually small arrow points. Of those pictured from the McClintock Site, (Plate 30, C, D. E, G and H) all except H, for which the blade is missing, show signs of use on the blade edges. C, D and E have smoothed areas on the blade indicating cutting or scraping use, while G has been reworked into an end scraper. Other than use signs along the blade edges, the points from these sites have some characteristics of form in common. The stems of all except F slope slightly from shoulder to base.

Specimens B, C, E, G and H have or once had square bases.

Specimen C is beveled on one side of each face.

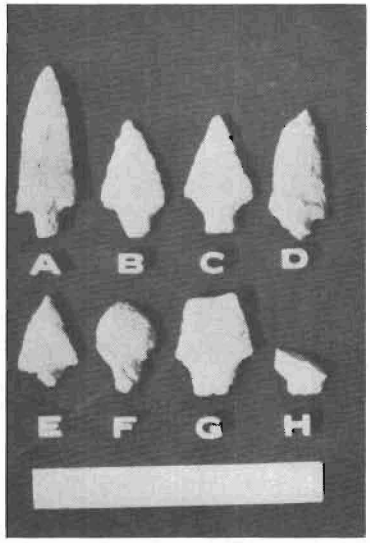


Plate 30.

Projectile points
from the
Boyd and McClintock sites.

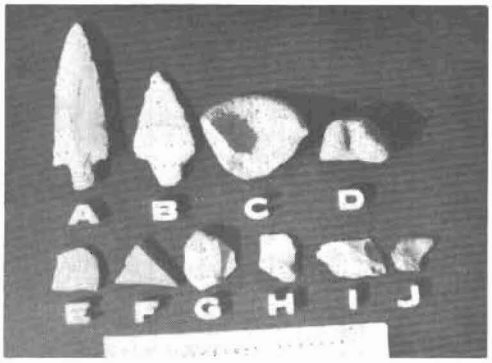


Plate 31.
Zone I lithic artifacts.

2. Flake Scrapers.

Two of the three specimens shown in Plate 31, H and J, appear to be utilized waste flakes. The specimen pictured in Plate 31 I is possibly made from a segment of a deliberately manufactured blade.

3. Core.

Plate 31 G shows part of a small core. Although not clearly visible in the picture, portions of five parallel blade scars are seen on one side. The striking platform is missing but what remains resembles cores from the Jaketown Site (Hu-505).

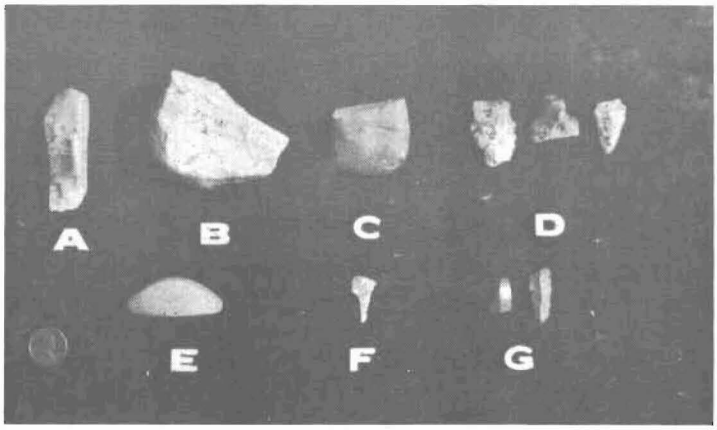


Plate 32.
Surface lithic material.

4. Perforator.

Pictured in Plate 32 F is a microlithic tool, which is similar to the class of artifacts known as Jaketown perforators (Ford, Phillips, and Haag 1955:140). This item is a surface find and its original context is uncertain. It is included in the discussion of Zone I material, however, since its similarity to specimens from the Jaketown Poverty Point occupation would make it more likely to belong to the earlier Zone I occupation.

5. Gorget Fragments.

Two of these pieces, both of limonite, were found in Zone I (Plate 31 E, F). Specimen E appears to be the end of an expanded center type. The original form of F is indeterminate although it was possibly reel-shaped. Limonite gorgets are not nearly so common in the Yazoo Basin as they are in the hills to the east. Of the sites in the northern portion of the Yazoo Basin visited by the writers, they have been found at Norman, Garner (Co-521), Tackett (Qu-567), and Boyd. The Garner, Norman and Tackett sites have Poverty Point and Tchula components. It thus seems possible that these items are restricted to components of the Tchula Period and earlier.

6. Cone.

Approximately ½ of this object shown in Plate 31 C is missing. Evidently, the original form was that of a truncated hollow cone. It is well smoothed considering the roughness of the sandstone material from which it is made. This is the only cone located so far by the authors in the North Delta area. Cones have been reported in connection with the Poverty Point culture. One approximately the form and size of the Boyd specimen is pictured by Webb (1968:311; Figure 4G and G′).

7. Shaft Smoother.

This is a small piece of sandstone with a groove worn in one side (Plate 31 D). Similar specimens are found on Baytown and Mississippian sites in the area.

Zone II

Considering the small size of the sample and the amount of disturbance at the site, it seems unnecessary to present a distribution chart for this material. Where mention of provenience, other than its being of Zone II context, is considered necessary, it will be made.

1. Projectile Points.

Specimens F - K in Plate 33 were all found in Zone II. K is a short, thick specimen which has been reworked, leaving an apiculate tip. F has also been reworked near the tip where it takes on a rhomboidal cross section. G, of which only the basal section survives, is similar in cross section and flake scar pattern to F. H is missing both stem and point. It exhibits

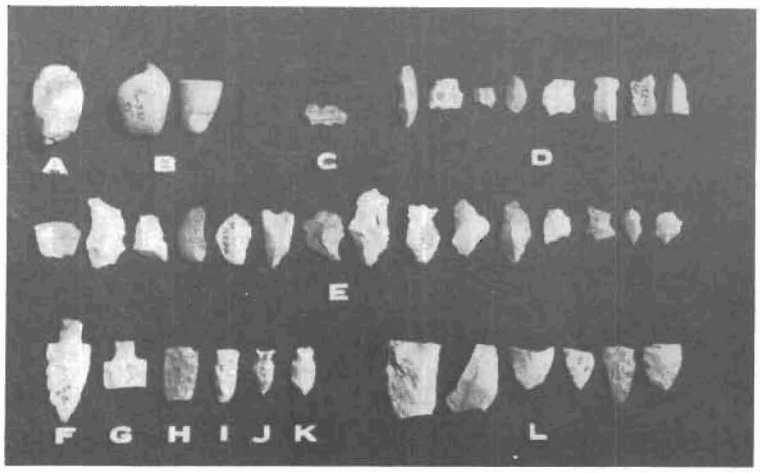


Plate 33.
Zone II lithic artifacts.

flaking much like F and G but is much thinner in cross-section and has apparently been used on both blade edges as a knife or scraper, leaving dulled edges. J is small, side notched; and, judging from its size, it could possibly be an arrow point. It, too, has been reworked from a longer, wider specimen. Specimen I has been reworked by percussion along both edges of the blade, leaving only the central portion of the original surface intact. Its base and stem sides are ground. The base, originally expanded, has small portions of each corner missing and does not appear to be strongly expanded in the photograph. The grinding and expanded base are characteristic of many point types of the Early Archaic over most of the Eastern United States. Several of these types occur in the hills to the east of the Alluvial Valley (McGahey:1968) and to the south on old land surfaces near Leland in Washington County. This specimen could possibly have been picked up in one of those areas, brought to the Boyd Site and reworked there.

Other than Specimen I, which may be a reworked early point, points comparable to the other specimens occur regularly on sites in the North Delta area. Unfortunately, little has been done toward classifying them and sorting out their cultural connections. The two points shown on the left in Plate 32 D were found on the surface and may have been connected with the Zone II complex. The point on the right in Plate 32 D is what remains of a small stemmed arrow point which possibly is part of a Mississippian component also represented by occasional shell tempered sherds on the surface and in Zone II.

2. Flake Scrapers.

These artifacts are shown in Plate 33 E. They appear to be utilized waste flakes.

3. Lamellar Blades.

These tools (Plate 33 D) were apparently all struck from prepared cores. All of them were found in Zone II. Two others pictured in Plate 32 G were surface finds. Blades of this nature have occurred on most of the Marksville Period sites located by the authors in the North Delta area.

The two surface specimens and the first specimen on the left in Plate 33 D are of an excellent quality of blue-gray flint which is rarely found in this area. It is possibly the same kind of material from which the cache of blades in the Helena Crossing Site is made. This material is referred to by James A. Ford as Harrison County Indiana flint (1963:45). Most of those illustrated in this report have been broken and about half show evidence of use.

4. Ground Celts.

The items shown in B of Plate 3 are probably both parts of ground celts or adzes. They could be either; their bits are missing and it is impossible to say. The bit portion of a small celt, which may belong to the Zone II complex, was found on the surface (Plate 32, C).

5. Boatstone.

The boatstone (Plate 32 E) is a surface find. It is assumed to belong with the Zone II complex, since others like it are often found on Marksville and Baytown sites in the area. This specimen, unlike many others, is not hollowed out.

6. Gorget Fragment.

This fragment (Plate 33 C), like the two found in Zone I, is of limonite. Using the argument presented concerning the two fragments from Zone I, this one should have originated in the earlier Zone I occupation.

7. Grinding Stones.

Three of these objects were found. One was found in Zone II and two were surface finds. The Zone II specimen is shown in Plate 32 B. They are all made of a white, fine grained sandstone and are only fragments of the originals. All show evidence of use for grinding, as well as being worn on both faces. Two are worn very thin and may have been worn through before being discarded.

8. Choppers. These tools are all made of gravel of a type which is available on gravel bars in the Mississippi River today, and usually show some of the cortex of the original pebble surface. They are crudely flaked along the bit and sides but occasionally not flaked on the poll. Most of them exhibit some polish from use, as well as impact scars on the bit.

   Similar artifacts are illustrated in the Jaketown report (Ford, Phillips and Haag 1955: Figure 46 D - E). They are considered to be from a Mississippian context on that site (Ford, Phillips, and Haag 1955:119). A wider variety of these items is illustrated by Phillips (1970, Figure 79 J, Page 267, Figure 130 E - G and Figure 151 H - L) where they are considered to belong in a Deasonville context. They are found in the North Delta area, mostly on sites where surface ceramics show strong resemblances to the Deasonville complex, but also appear in collections from Marksville sites. Only one from the Boyd Site excavation approaches being whole (Plate 33 A). The others, all found in Zone II except for the one pictured in Plate 32 A, a surface find which is split approximately in half, are only fragments of the bit portions of the tools.

9. Miscellaneous Broken Bifaces.

   The four pieces on the left in Plate 33 L appear to be fragments of projectile points. The other two possibly are as well, although they are fairly large, crude and exhibit no retouch along the edges. These two may be broken blanks.

Bone, Shell and Antler Tools

No tools of bone, shell or antler were found in Zone I, although a quantity of such materials were recovered from the pits of that zone. Apparently the soil conditions cannot be blamed for this absence since the unused material has survived.

Zone II

Bone and antler objects are pictured in Plate 34 as follows:

1. Antler Objects.

   Specimen I is a small section of cut antler, which has been whittled on the outside; individual whittle marks are clearly visible. The spongy core is almost completely gone. No tool marks are visible on the interior, so this portion may have rotted out. Specimen H is a large section of the lower portion of an antler. It, too, has been cut. Part of the spongy core has been removed from the distal end, but again no tool marks are visible and it may have decayed. The hole would easily accommodate many stemmed projectile points or knives, and the specimen could easily have served as a handle.

   Specimen J appears to be about 2/3 whole, with the missing 1/3 having been split off longitudinally. The complete object would have probably been oval in cross-section. Two grooves are cut around it, dividing it into three sections approximately equal in length. A short groove has also been cut in one end.

   Specimen M is the end of an antler tine which has been honed to a very sharp point and polished. It may have been a projectile point, but, if so, what would have been the socket portion is missing.

2. Bird Bone Objects.

   Three of these items may be classified as awls (B, C and E). Specimen E is almost identical to the other two but is only the sharpened end of the artifact. Specimen K is part of a section of bone tube.

3. Deer Bone Objects.

   Specimens A and F are ulna awls. Specimen F represents only the sharpened end of one; whereas, D is an awl fashioned from a long bone of a young deer. The portion of the articular end remaining shows that it had not yet fused.

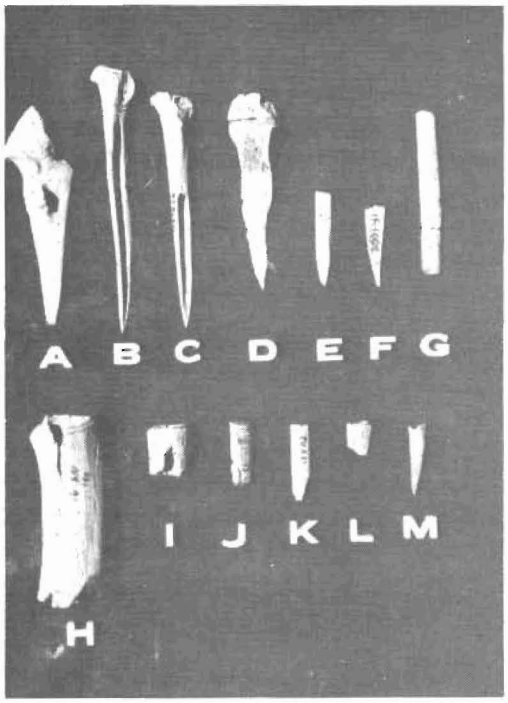


Plate 34.
Bone and antler tools.

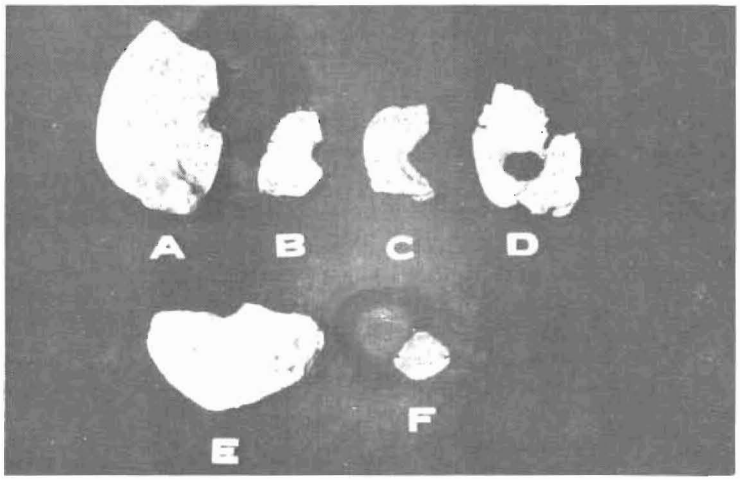


Plate 35.
Shell artifacts.

4. Miscellaneous Bone Objects.

Specimen L is a small fragment of cut bone. Not enough remains for the tool or species of animal to be determined. Specimen G is a fragmentary bone tool, beveled on one end and highly polished. It seems to have been cut from a fairly thick long bone, but none of the original surface has survived the wear of manufacture or use.

5. Shell Ornament.

Specimen F (Plate 35), which is thin and delicate, appears to be an ornament or button. Grooves, which are cut in opposite sides, could have held an attaching thread.

6. Shell Hoes.

The word "hoes" as used here should not be taken to imply an agricultural use. Five were found, all in Zone II. Substantial portions of only three of them remain (Plate 35 A, D and E). All were made from the shells of fresh water mussels. There is a central perforation in each and a worn spot on the edge near the hinge. This arrangement would easily accommodate a forked stick handle with one prong fitting into the central perforation and the other against the worn spot. Similar objects were plentiful at the Bonds Site (Tu-530), in a Baytown context apparently somewhat later than the termination of the Boyd Zone II occupation.

Miscellaneous Artifacts

1. Copper.

One small piece of copper was recovered from Zone II. It was found at a depth of 1.65 feet from the surface in what appeared to be an undisturbed context. Considering its small size, approximately 1 x 4 mm., however, and the fact that there has been considerable activity on the site in recent times, it could be intrusive from a modern occupation. It seems quite possible that its proper context is Zone II where it is at home with a few other Hopewellian-like traits such as zoned rocker stamped pottery, lamellar blades and the sheet mica mentioned below.

2. Mica.

One small piece of sheet mica about 4 mm. square was recovered from a position near the bottom of F10. Objects of art made of mica are often found in Hopewell or Marksville sites.

Radiocarbon Dates

The testing of five charcoal samples by the University of Georgia Geochronology Laboratory has provided some much needed information for the chronology of the Yazoo Basin. These are the first dates obtained in the North Delta from pre-Mississippian sites.

The samples were all taken from refuse pits. They were collected one small particle at a time until it was felt that a sufficient quantity had been obtained. It seems likely that this material is the debris of cooking fires, since much of the volume of pit contents was food remains.

DATE	SAMPLE NUMBER	PROVENIENCE
A.D. 540±70	UGA-159	F-28 Zone II Boyd
A.D. 450±75	UGA-163	F-22 Zone II Boyd
A.D. 250±80	UGA-158	F-10 Zone II Boyd
A.D. 350±90	UGA-167	Clear Creek Mound
A.D. 85±100	UGA-164	F-37 Zone I Boyd
B.C. 220±90	UGA-166	F-47 Zone I Boyd

Table 10. Radiocarbon dates.

Some obvious questions concerning these dates are discussed below:

1. Do they actually date the features from which they were taken? As far as can be determined, the answer seems to be yes. The charcoal used in dating Zone I was taken from deep within the two pits, neither of which gave any evidence of intrusion from the later Zone II. It would seem that the only possibility for error would be if material from the central portion of large logs were included in the sample, which would make the dates earlier than the actual dates of the pits. While possible, this seems unlikely if the charcoal represents the remains of cooking fires.

Since the three pits from which the Zone II samples were obtained intruded into or through Zone I, there is the possibility that earlier Zone I charcoal was mixed into the fill of the Zone II pits. This, of course, would tend to make the dates earlier than the actual dates of the use of the pits. This type of contamination seems unlikely, however, since the only charcoal of any kind observed in Zone I was in the pits where it was not especially plentiful. Naturally, there is the possibility of one of the Zone II pits having been dug into an earlier Zone I pit, which completely obliterated it, and that part of its contents were reused as fill. Two situations were recorded where Zone II pits did intrude into pits of Zone I. Fortunately, however, in these two cases, the distinct difference in soil color signaled this. As for the Zone II dates being affected by more recent material, this also appears unlikely since no intrusions were seen and care was taken to retrieve samples from an area well within the pits.

2. Are the dates consistent with the context in which they were found? Concerning the Zone I dates, this may be said to be true only to the extent that they both date earlier than either of the three dated features from Zone II. Which of these two pits should be earlier according to stratigraphic or ceramic evidence is not known. As is often the case with pits originating in dark midden soil, the points of origin were surely missed. Neither showed up until the midden had been completely excavated and they were left exposed in a matrix of sterile yellow soil. The small collection of sherds from one of these two pits, F37, with the later date, yielded only thirty-one classifiable sherds. This makes ceramic comparison difficult. The ratio of plain to fabric-impressed is almost exactly the same (Table 3), and this is the major point of similarity. The main difference is the absence of two of the minority types from F37. Considering the generally small percentages of these minority types throughout Zone I and the small number of sherds involved here, these absences are not surprising.

The same difficulties were encountered in recognizing the points of origin of pits in Zone II; and, likewise, no stratigraphic correlations can be made with the dates from features in this zone. The ceramic evidence is considerably better than that of Zone I, however. The earliest and latest of the three dates seem to be in the proper order according to the seriation of Mulberry Creek Cord-marked, discussed at length under the heading of Zone II ceramics. As was mentioned in that discussion, the ceramics of pit F28, the feature with the middle date, could not be used in that analysis.

3. How do these dates fit current ideas about the chronolgy of the area? The dates from the Boyd Site fall partly within the ranges of three of the periods recently listed by Phillips for the Lower Mississippi Valley (1970:7, Figure 2). It seems appropriate to discuss the dates of each zone separately.

Dates from the Zone I midden appear to place its occupation span from about the middle of the Tchula Period (350 B.C. - 100 B.C.) through almost half of the Marksville Period (B.C. 100 - A.D. 300).

Data presented by Phillips concerning radiocarbon dating in the Alluvial Valley includes four dates from sites of the Tchula Period. There are two from the Pontchartrain Phase in Louisiana, B.C. 270 ± 200 (M-243) and B.C. 250 ± 110 (0-30). The other two are from the Burkett Phase in Southeast Missouri. Their dates are B.C. 190 ± 250 (M-438) and A.D. 70± 200 (M-585), (1970:957, Table 18). The earliest dates listed for the Marksville Period are those from the Helena Crossing Site which is only about twelve miles from Boyd. Three of these dates, B.C. 150 ± 75 (M-1197), A.D. 20 ± 75 (M-1199) and A.D. 325 ± 75 (M-1198), are from Mound C. The fourth, A.D. 210 ± 75 (M-1196), is from Mound B (Phillips 1970:957, Table 18), (Ford 1963: 46).

The dates aside, Ford is of the opinion that Mound C was built in a relatively short period of time. Since three of the dates from the site, the two latest from Mound B and the one from Mound C, were taken from the central portion of large logs, there is a good possibility that the dates obtained are earlier than the actual date of mound construction (1963:46).

It seems quite possible on the basis of the above discussion that the B.C. 150 ± 75 date is in error and that the entire occupation of the Helena Crossing Site post-dates the termination of the Zone I occupation at Boyd at ca. A.D. 85.

If there had been a Marksville culture in the vicinity at the time of the Boyd Zone I occupation, it would seem that some such influence would be noticeable there. The bird motiff and the Hopewell Cross-hatched rim, which are generally considered as being indicative of Early Marksville, are present at the Helena Crossing Site (Ford 1963:38, Figure 53;39, Figure 34). Phillips considers the Helena Phase, of which Helena Crossing is the type site, to be an Early Marksville Period Phase, although not necessarily the earliest Marksville Phase in the area. The Dorr Phase, centered around Clarksdale in Coahoma County, is thought to be earlier (Phillips 1970:890).

There are some slight similarities between the Zone I complex and assemblages of sites of the Dorr Phase and of other Early Marksville sites closer to Boyd. Already mentioned are the crude cross-hatched rims found at Boyd (Plate 12) and the variation of Twin Lakes Punctated where there is only a single row of punctations oblique to the rim. Many of these sites show a substantial percentage of fabric-impressed pottery. One of these is Allen (Co-629), a small apparently short term, one component site. Here the majority surface treatment was fabric-impressing, with no cord-marking present.

Following the discussion above concerning the dates from Helena, and considering the A.D. 85 ± 100 date from Boyd Zone I and the A.D. 70 ± 200 date from the Burkett Phase, it would appear that the Tchula-Marksville dividing line now set at 100 B.C. (Phillips 1970:7, Figure 2) may need revising to a later date. The number of dates is still severely lacking, however, and there is a great possibility that as more dates are secured, the picture will change.

According to the above mentioned chronology, the dates from Zone II place its limits of occupation time at Late Marksville and Late Baytown. As has previously been discussed in depth, this zone gave ample evidence of having seen a long term, apparently continuous, occupation. The date range indicated of ca. three hundred years was not surprising and it is doubtful if this span of time is equal to the length of Zone II occupation on the site. That the Marksville culture is represented, there is no doubt. It is also obviously a Late Marksville manifestation which gradually changed into a Baytown Culture. The Marksville pottery types (Marksville Stamped and Incised) were in a tiny minority whenever they were encountered and could not be assigned to any particular segment of the occupation. There is a possibility that these types were still being made as late as ca. 540 A.D. (one of the sherds was found in the latest dated pit). As would be expected for typological reasons, the dates averaged later than those from Helena Crossing Site.

Conclusion

Most of the section on radiocarbon dating could properly be placed under this heading, since it seems that the most important contribution of the project was the correlation of the dates with the artifacts from the two zones.

As was mentioned previously, the excavation revealed something considerably different from what had been anticipated. One additional conclusion can be drawn from this: surface collections can be deceptive. The original surface survey collection, which, of course, did not include material from the small portion of the site excavated due to its having been covered with bushes and grass, revealed nothing earlier than the Baytown Period.

It is felt that in spite of the fact that the site contents were a complete surprise, the excavation was a success, having made substantial contributions to the understanding of the ceramic sequence of the area and the date ranges in which portions of this sequence occur.

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Appendix

BOYD SITE
REPORT OF FAUNAL ANALYSIS

by

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BOYD SITE
TUNICA COUNTY, MISSISSIPPI
FAUNAL ANALYSIS

Abstract: This prehistoric Baytown Marksville and Tchula Indian site in Tunica County, Mississippi yielded 1,224 bones identified to genus and/or species. A minimum of four species of fish, six turtles, seven birds and nineteen mammals were recorded. Fish were the most important food source with deer following second. Very few skeletal remains of birds were found rendering interpretation nearly impossible.

Ecology

The entire area of Tunica County is one of many sub-ecological zones all combining to form the general ecological system. These are swamps, highlands, river bottom forests, prairie grasslands, streams, and the river itself. The climate of the area is that of a temporate rain forest, receiving ample precipitation all year long. The consequences of this diverse area on its fauna are very important; it allows for the existence of a very diversified faunal list for the area. This faunal list, in turn, allows for a wide selection of species to be used by a culture in the area. Therefore, it is possible that no species necessarily may be a primary source of subsistance. Also, one geographic area may not be necessarily used constantly. When analyzing the material from such an area, the faunal range of the region must be kept in mind.

Fish

With reference to the identifiable bone material as to genus, it can be concluded that a great portion of these aboriginals' diet was fish. This subsistence pattern also tends to be true with regard to the unidentified Teleost remains listed in this paper under the heading "scraps" (see: Charts II and IV). Of the total examined boney fish material, *Ictalurus*, *Amia calva* and *Lepisosteus* were the genera most represented. Several species of catfish (*Ictalurus*), as well as two species of *Lepisosteus (gar)*, were found in the remains. *Amia calva* is commonly known as the bowfin and is considered by today's standards (along with the gar) to be somewhat less than desirable as a source of food supply. There has been literature written on the preference of aboriginals for these fish over today's common "game fish" and it need not be rehashed here.

The size of all the boney fish remains was taken into consideration with the purpose of further delineating the subsistence pattern. The resulting statistics are as follows:

1. *Ictalurus* sp.[1] — 50% less than one lb.
2. *Amia calva* — moderate side for respective genus
3. *Lepisosteus* sp.[2] — moderate side for respective genus

[1]Species includes channel and blue catfish, etc.
[2]Species includes short and long nosed gar.

4. *Pogonis cromis* — moderate size for respective genus
5. Teleost
   a. 70% — less than ½ lb.
   b. 29% — ½ - 2 lb.
   c. 1% — 2 - 5 lb.

Of these fish remains there were a few extremely large fish (five lbs. and over) represented by several rib fragments and large vertebrae, some of which may represent individuals in excess of forty lbs.

Approximately fourteen per cent of the total remains from the site are charred. The bulk of these that are identifiable to any degree (other than just unidentifiable "scrap") are of Teleost.

Based on the interpretation of the data of the fish remains from this site, it can be definitely stated that catfish composed the bulk of this aspect of these people's diet. Gar and bowfin were also favored. There is also evidence from the remains that "panfish" such as bream and bass are present in the site. These remains are too fragmentary, however, and the lack of comparative skeletons prohibits the writer's placement of them in any classification other than a general taxonomic category.

Amphibians and Reptiles

Pseudemys sp. appears to be the most characteristic of the reptile and amphibian remains; whereas, the mud and musk turtles (*Kinosternon* and *Sternotherus*) are sparsely represented.

The use of these turtles along with others (see: Chart II) was apparently for food; however, ornaments and eating utensils made from their shells have been found in various sites. Other reptile remains are indeed scarce, and scanty remains from this assemblage prohibit further discussion of them.

Amphibians seem to comprise the least of the remains from the site. This is not to be unexpected since their bones seldom survive due to their cartilaginous make up. It may also be possible that the use of these animals as food by these prehistoric peoples was limited.

Small amounts of mollusk shells were found among the skeletal material. The bulk of these are from pelecypods, probably fresh water mussels obtained from the nearby Mississippi River.

Mammal Analysis

Of the total number of identified bone, fourteen per cent was determined as mammal at least to the genus level. The majority (15.5%) consisted of White-tailed Deer, *Odocoileus virginianus*, indicating that this animal was second only to fish in importance as a food item. Only nine bones, most of which were lower limb bones, were found to be burned. The predominant bones were also of the lower limbs, showing that rump portions were favored. By count, according to left astragali, there were a minimum of twelve deer at this site. It is not possible to determine the number of humans this amount of deer might support because of the fact that this count was stretched over a span of occupation.

A sharp drop in the number of identifiable mammals was found after the analysis of the deer remains. Most of these were nearly equal in their appearance at the site. *Peromyscus* sp. (1.15%) was second in abundance; however, the small bones made positive identification difficult. *Procyon lotor* and *Didelphis marsupialis* remains followed in occurrence, indicating the possibility of a marshy environment for the times these animals were present in the site. Only one element (humerus) of the raccoon was burned leaving some doubt as to whether or not this animal was utilized as food. Raccoon as well as beaver, *Castor canadensis*, may have been used for its fur; however, this was not substantiated by the presence of any particular element over another in the site.

A variety of other animals were found (see: Chart II). Due to the scarcity of remains both identifiable and other, it would appear that they were of little importance in the Indian economy either as food or for trade.

Bird Analysis

The bird remains at the Boyd Site were difficult to analyze in that there were few whole or identifiable bones. A specialist would be needed to determine the smaller bones beyond the level of a robin-sized category. Of the birds in this area, few were represented. Being situated in the Mississippi Flyway, there should have been many more birds present at the site, if they were utilized. Most of those identified were water birds, with a minimum of one individual for each type. Only the *Meleagris gallopavo*, Wild Turkey, consisted of a significant number of identified bone; however, no more than one individual was positively determined.

Only a small portion of the bird bones were burned. The majority were of the wing and back, perhaps indicating that they were used ceremonially or for their feathers. These birds are an excellent food source, but since so few individuals were represented, their utilization in the economy can only be speculated.

CARBON DATED COMPARISONS

The following are the comparisons of the percentages of material from Zones I and II, and for the Features having C^{14} dates that were of special interest to the archaeologist.

	% Zone I/II		220 BC F-47 Num. of Bone	220 BC F-47 %	85 AD F-37 Num. of Bone	85 AD F-37 %
Zone I	.5	Mammal	6	.5		
	99.4	Fish/Turtle	1,149	99.4	13	small unidentified fragments
	0	Bird	0	0		
	0	Misc.	0	0		
		TOTAL	1,155	99.9	13	

			250 AD F-10 Num. of Bone	250 AD F-10 %	450 AD F-22 Num. of Bone	450 AD F-22 %	540 AD F-28 Num. of Bone	540 AD F-28 %
Zone II	4.9	Mammal	614	4.03	19	16.4	27	20.0
	51.0	Fish/Turtle	7,886	51.8	90	77.6	104	77.0
	.4	Bird	57	.37	1	.8	4	2.9
	42.0	Misc.	6,680	43.8	6	5.1	0	0
		TOTAL	15,237	100	116	99.9	135	99.9

The Features in Zone I are difficult to interpret with regard to C^{14} correlations due to insufficient representative material.

The bone material in the features of Zone II, however, shows a definite pattern in the use of fish and mammals as a source of subsistence. This is assuming that both fish and mammals were consumed. From 250 AD (F-10) through 540 AD (F-28) a dramatic increase in the use of fish (from 51.8% to 77.0%) and a substantial increase in the use of mammals (from 4.03% to 20.0%) is seen. There was a small increase in the presence of bird bones.

An interzone correlation is difficult to ascertain due to the insufficient representative bone material from Zone I. The majority was fish and turtle with only a very slight percentage of mammal (from F-47 only).

Summary: In evaluating the vertebrate remains from the Boyd Site, it is evident that numerous species of fish, mammals and turtles constituted the major food items. The fish served as the main food staple with White-tailed Deer as the main mammal food source. The use of the beaver, raccoon, fox, and squirrel is difficult to ascertain due to insufficient representative bone material. These animals may have been used for their fur. Birds did not appear to be a major source of food, and were most likely hunted and trapped for the use of their feathers.

CHART I

TAXONOMIC LIST

PHYLUM CHORDATA

CLASS: MAMMALIA

- Order Marsupialia
  - Family Didelphidae
    - *Didelphis marsupialis*, Opossum
- Order Primates
  - Family Hominidae
    - *Homo sapiens*, Man
- Order Lagomorpha
  - Family Leporidae
    - *Sylvilagus floridanus*, Eastern Cottontail
- Order Rodentia
  - Family Sciuridae
    - *Tamias striatus*, Eastern Chipmunk
    - *Sciurus carolinensis*, Gray Squirrel
    - *Sciurus niger*, Fox Squirrel
  - Family Castoridae
    - *Castor canadensis*, Beaver
  - Family Cricetidae
    - *Peromyscus* sp., White-footed Mouse
    - *Sigmodon hispidus*, Hispid Cotton Rat
- Order Carnivora
  - Family Canidae
    - *Canis familiaris*, Domestic Dog
    - *Vulpes fulva*, Red Fox
  - Family Procyonidae
    - *Procyon lotor*, Raccoon
  - Family Mustelidae
    - *Mephitis mephitis*, Striped Skunk
  - Family Felidae
    - *Felis concolor*, Mountain Lion
    - *Lynx rufus*, Bobcat
- Order Artiodactyla
  - Family Tayassuidae
    - *Sus scrofa*, Pig
  - Family Cervidae
    - *Cervus canadensis*, Elk (Wapiti)
    - *Odocoileus virginianus*, White-tailed Deer

CLASS: OSTEICHTHYES

- Order Amiiformes
  - Family Amiidae
    - *Amia calva*, Bowfin
- Order Lepisosteiformes
  - Family Lepisosteidae
    - *Lepisosteus* sp., Gar
- Order Cypriniformes
  - Family Ictaluridae
    - *Ictalurus* sp., Catfish
    - *Pogonis cromis*, Drum

CLASS: AMPHIBIA

Order Salientia
Family Ranidae
Rana pipiens, Leopard Frog

CLASS: REPTILIA

Order testudinata
Family Chelydridae
Chelydra serpentina, Snapping Turtle
Kinosternon sp., Mud Turtle
Sternotherus sp., Musk Turtle
Family Testudinidae
Terrapene ornata, Ornate Box Turtle
Terrapene carolina, Box Turtle
Pseudemys sp., Cooter
Family Trionychidae
Amyda refox, Softshell Turtle
Order Squamata
Family Colubridae
Natrix sp., Water Snake
Family Crotalidae
Ancistrodon piscivorus, Cottonmouth Moccasin

CLASS: AVES

Family Ardeidae
Casmerodius albus, Egret
Family Anatidae
Anas platyrhynchos, Mallard
Aix sponsa, Wood Duck
Oxyura jamaicensis, Ruddy Duck
Mergus serrator, Red-breated Merganser
Family Accipitridae
Buteo sp., Hawk
Family Meleagrididae
Meleagris gallopavo, Wild Turkey
Gallus gallus, Chicken

CHART II

PERCENTAGE OF MATERIAL OF TOTAL REMAINS

MAMMALS

	Number of Identified Remains	Percent	Minimum Individuals
White-tailed Deer *Odocoileus virginianus*	431	2.10	12
White-footed Mouse *Peromyscus* sp.	32	.16	2
Raccoon *Procyon lotor*	27	.13	2

	Number of Identified Remains	Percent	Minimum Individuals
Opossum *Didelphis marsupialis*	10	.05	1
Man *Homo sapiens*	7	.03	1
Elk *Cervus canadensis*	6	.03	1
Cottontail Rabbit *Sylvilagus floridanus*	4	.02	1
Sylvilagus sp.	4	.02	1
Beaver *Castor canadensis*	5	.02	1
Red Fox *Vulpes fulva*	4	.02	1
Mountain Lion *Felis concolor*	3	.01	1
Dog *Canis familiaris*	3	.01	1
Fox Squirrel *Sciurus niger*	2	.01	1
Sciurus sp.	1	.004	1
Gray Squirrel *Sciurus carolinensis*	1	.004	1
Chipmunk *Tamias striatus*	1	.004	1
Bobcat *Lynx rufus*	1	.004	1
Striped Skunk *Mephitis mephitis*	1	.004	1
Hispid Cotton Rat *Sigmodon hispidus*	1	.004	1
Pig *Sus scrofa*	1	.004	1
Felidae gen. et. sp. indet.	1	.004	1
Unidentified Mammal Bones	1,019	5.02	
FISH			
Catfish *Ictalurus* sp.	253	1.25	
Gar *Lepisosteus* sp.	103 bones 853 scales	.51 4.20	

	Number of Identified Remains	Percent	Minimum Individuals
Bowfin *Amia calva*	89 bones 702 scales	.44 3.50	
Drumfish *Pogonis cromis*	2	.01	
Teleost	(see misc. scrap)		
AMPHIBIANS AND REPTILES			
Cooter *Pseudemys* sp.	103	.51	1
Musk Turtle *Sternotherus* sp.	58	.29	1
Mud Turtle *Kinosternon* sp.	21	.10	1
Snapping Turtle *Chelydra serpentina*	3	.01	1
Soft Shell Turtle *Amyda ferox*	5	.02	1
Ornate Box Turtle *Terrapene ornata*	2	.01	1
Box Turtle *Terrapene carolina*	2	.01	1
Water Snake *Natrix* sp.	1	.004	1
Cottonmouth Moccasin *Ancistrodon piscivorus*	1	.004	1
Leopard Frog *Rana pipiens*	1	.004	1
Reptilia gen. et. sp. indet.	3	.01	
Testudinata gen. et. sp. indet.	209	1.03	
Boid gen. et. sp. indet.	33	.16	
AVES			
Wild Turkey *Meleagris gallopavo*	11	.050	1
Ruddy Duck *Oxyura jamaicensis*	8	.039	1
Mallard *Anas platyrhynchose*	8	.039	1
Wood Duck *Aix sponsa*	4	.020	1

	Number of Identified Remains	Percent	Minimum Individuals
Red Breasted Merganser *Mergus serrator*	3	.010	1
Egret *Casmerodius albus*	2	.010	1
Hawk *Buteo* sp.	1	.004	1
Chicken *Gallus gallus*	1	.004	1
Unidentified Bird Bones	103	.510	
MISCELLANEOUS SCRAP			
Unidentified Bones	7,324	36.1	
Mollusk Shell	118	.58	
Teleost	5,497 bones 3,200 scales	27.0 15.7	

TOTAL REMAINS FROM SITE INCLUDING SCALES 20,285

TOTAL REMAINS IDENTIFIABLE AS TO GENUS 2,774

TOTAL REMAINS IDENTIFIABLE TO GENUS NOT INCLUDING *Lepisosteus* sp. and *Amia Calva* SCALES 1,224

CHART III

PERCENTAGE OF REMAINS IDENTIFIED AS TO GENUS

MAMMAL	*PERCENT*
White-tailed Deer *Odocoileus virginianus*	15.5
White-footed Mouse *Peromyscus* sp.	1.15
Raccoon *Procyon lotor*	.97
Opossum *Didelphis marsupialis*	.36
Man *Homo sapiens*	.25
Elk *Cervus canadensis*	.22
Cottontail Rabbit *Sylvilagus floridanus*	.14
Sylvilagus sp.	.036

MAMMAL	*PERCENT*
Beaver *Castor canadensis*	.18
Red Fox *Vulpes fulva*	.14
Mountain Lion *Felis concolor*	.11
Dog *Canis familiaris*	.11
Fox Squirrel *Sciurus niger*	.072
Sciurus sp.	.036
Gray Squirrel *Sciurus carolinensis*	.036
Chipmunk *Tamias striatus*	.036
Bobcat *Lynx rufus*	.036
Striped Skunk *Mephitis mephitis*	.036
Hispid Cotton Rat *Sigmodon hispidus*	.036
Pig *Sus scrofa*	.036
FISH	
Catfish *Icatalurus* sp.	9.1
Gar	3.71 bones
Lepisosteus sp.	30.7 scales
Bowfin	3.21 bones
Amia calva	25.3 scales
Drumfish *Pogonis cromis*	.072
AMPHIBIANS AND REPTILES	
Cooter *Pseudemys* sp.	3.7
Musk Turtle *Sternotherus* sp.	2.09
Mud Turtle *Kinosternon* sp.	.75
Snapping Turtle *Chelydra sepentina*	.11
Ornate Box Turtle *Terrapene ornata*	.072

	PERCENT
Box Turtle *Terrapene carolina*	.072
Water Snake *Natrix* sp.	.036
Cottonmouth Moccasin *Ancistrodon piscivorus*	.036
Soft-shelled Turtle *Amyda ferox*	.18
Leopard Frog *Rana pipiens*	.036
AVES	
Wild Turkey *Meleagris gallopavo*	.39
Ruddy Duck *Oxyura jamaicensis*	.28
Wood Duck *Aix sponsa*	.14
Red Breasted Merganser *Mergus serrator*	.11
Hawk *Buteo* sp.	.036
Chicken *Gallus gallus*	.036
Egret *Casmerodius albus*	.072
Mallard Duck *Anas platyrhynchos*	.28

CHART IV

PERCENTAGE OF REMAINS

Available as Scrap of 17,507
(not identified as to genus)

UNIDENTIFIED BONE	PERCENT
Teleost	41.8
Bone	31.4
Scales	18.3
Mammal	5.8
Testudinata	1.2
Mollusk	.7
Bird	.6
Boid	.2
Reptilia	.017
Felidae	.006

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