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The Schlemmer Site: A Late Woodland-Mississippian Site in the American Bottom

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THE SCHLEMMER SITE: A LATE WOODLAND-MISSISSIPPIAN SITE IN THE AMERICAN BOTTOM

by

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VITA

The author, Christine R. Szuter, is the daughter of Frank E. Szuter and Helen M. Szuter. She was born July 2, 1952, in Garfield Heights, Ohio. In June, 1970 she graduated from Valley Forge High School in Parma Heights, Ohio.

She entered Bowling Green State University in September, 1970 and graduated with majors in sociology and psychology and a minor in Spanish in June, 1974.

While attending Loyola University, she was granted a research assistantship in the Department of Anthropology from 1974 to 1976. She was awarded the Master of Arts in Anthropology in January, 1979.

Presently, she is enrolled in the doctoral program at the University of Arizona in Anthropology.

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CHAPTER I

INTRODUCTION

The Schlemmer site is a Late Woodland-Mississippian site located on the floodplain of the Mississippi River called the American Bottom. This broad expanse of floodplain with a variety of environmental zones has been occupied from the Archaic to the present. The American Bottom is on the east side of the Mississippi River adjacent to St. Louis, Missouri. The floodplain extends from Alton, Illinois in the north to Chester, Illinois in the south with the loess bluffs marking the eastern boundary (Porter 1974). The Chokia site and its satellite communities of Mitchell, Lunsford-Pulcher, the St. Louis Group, and the East St. Louis Group as well as numerous farming villages in the outlying area are located on this floodplain (Figure 1). The Schlemmer site is one of these small farming hamlets. It is located south of prehistoric Cahokia and north of Lunsford-Pulcher at the southern edge of Dupo, Illinois in St. Clair County.

The Late Woodland period is locally termed "Bluff Culture". It is divided into two phases: Early Bluff and Late Bluff. The differences between Early Bluff, Late Bluff, and Mississippian are related to site location and distribution, radiocarbon dates, and types of cultural material. The following discussion is based on Munson and Harn's (1971) survey of the American Bottom.

Munson's (1971) survey of the northern portion of the bottom yielded 4 Early Bluff villages and 10 Late Bluff villages. Most early

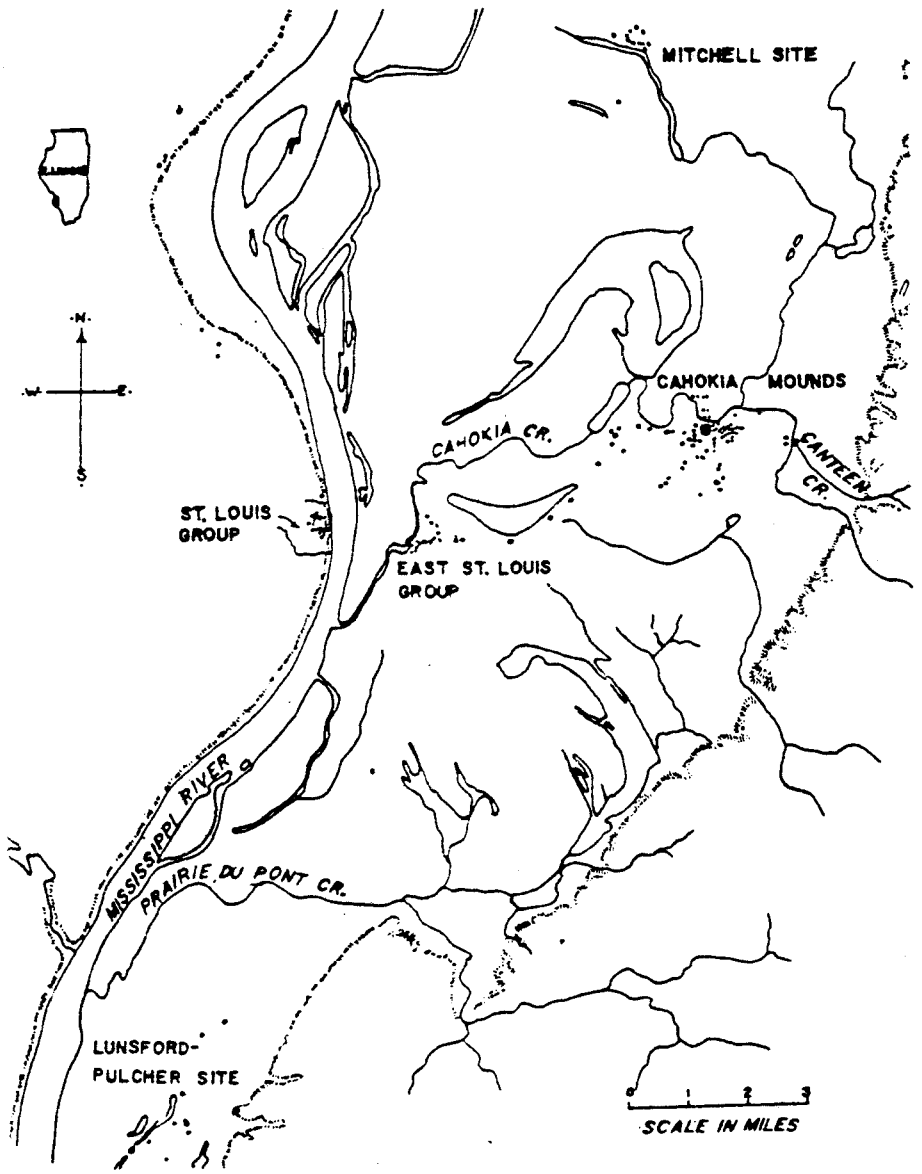


Figure 1. Map of the American Bottom marking the location of Cahokia and four satellite towns. Inset shows location of the American Bottom in Illinois. This map is taken from Fowler (1973) which is based on Bushnell's 1904 map of the area.

and Late Bluff villages were located on the blufftop edge less than a quarter to a half mile from a large, permanent water source. One Early Bluff village and 3 Late Bluff villages were located on the floodplain. In contrast, only 4 out of 15 Mississippian villages and camps located by Munson (1971) in the northern portion of the American Bottom were located on the blufftop edge. With the exception of one Late Bluff village, the Early Bluff, Late Bluff, and Mississippian sites in the southern half of the American Bottom (Harn 1971) were located on the Wood River Terrace bordering Mississippi River meanders or on streams. The one Late Bluff village located by Harn (1971) was located in the physiographic zone labeled "talus slope and Wood River Terrace," less than one-quarter mile from a large, permanent water source. In the southern portion of the bottom as compared to the northern portion, the number of Early Bluff sites decreases (2 sites recorded), the Late Bluff villages and camp sites increases (18 sites recorded), and the Mississippian camps and village sites increases (17 sites recorded). As a general statement, Harn (1971:38) did not find as many Early Bluff sites as Late Bluff and Mississippian sites. Although Early Bluff, Late Bluff, and Mississippian components were found on the same sites, it could also be noted that on single component sites, Late Woodland sites tended to be located along the blufftop edges, with slightly more Late Bluff sites than Early Bluff sites on the bottom land along with the Mississippian sites.

The second major difference between Early Bluff, Late Bluff, and Mississippian occupations are mean radiocarbon dates. The mean radiocarbon date for the Early Bluff sites, Hilltop, Stolle, Klunk

Mounds 8 and 10, Koster Mound 2, and Snyders was A.D. 755 ± 126 (Munson 1971:14). For the Late Bluff sites, Cahokia, Roedger-Hayes, and Kane Village the mean radiocarbon date was A.D. 1070 ± 86 (Munson 1971:14). With a range of A.D. 629 to 881 for the Early Bluff sites and A.D. 984 to 1156 for the Late Bluff sites there appears to be a significant difference between these radiocarbon dates. If the dates for each site are examined individually, the radiocarbon dates actually range from the mean dates for the Early Bluff through the mean dates for the Late Bluff. For example, the Early Bluff Stolle site has 2 radiocarbon dates, 720 ± 110 (A.D. 610-830) and 900 ± 110 (A.D. 790-1010). The range of these 2 dates could place the occupation of the site temporally as either Early Bluff or Late Bluff. Although radiocarbon dates have been used as markers to distinguish Early Bluff, Late Bluff, and Mississippian occupations, they are not precise for providing a specific date of occupation of a site and can only grossly delineate Early Bluff, Late Bluff, and Mississippian occupations.

The cultural material recovered from a site is probably the most widely used indicator for an Early Bluff, Late Bluff, or Mississippian component. The following discussion of these differences is based on Munson and Harn (1971). Pottery from an Early Bluff site is mainly cordmarked, grit or grog tempered, conoidal-based jars with rounded or tapered lips. The cordmarks are S-twisted. Decoration consists of a cordwrapped-stick or plain-dowel impression on the exterior or interior of the lip. Projectile points range in size from the large Lowe points to the smaller ones such as Koster and Roxana

points. The remains of structures are shallow basins with individual posts.

Late Bluff pottery is grit, grog, or limestone tempered with smoothed and flattened rims. The lips are undecorated and may be thickened, flared, filletted, or extruded with or without notching. The Z-twist cordmarking extends up to the shoulder area with the upper part of the vessel smoothed. Monks Mound Red, a limestone-tempered, red-slipped ceramic, is common. The lithic assemblage of Late Bluff sites has fewer projectile points and a greater quantity of hoe flakes than Early Bluff sites.

Early Middle Mississippian sites are represented in the American Bottom, but the nature of Mississippian occupations after A.D. 1200-1300 is unclear. In general, at Mississippian sites the quantity of plain, shell-tempered vessels increases and the quantity of cordmarked vessels decreases. Vessels have rolled and extruded rims often with loop handles. Locally, pottery types include Cahokia Red-filmed bowls, Powell Plain, Ramey Incised, and Cahokia Cordmarked. Vessels are shaped into bowls, bean pots, and jars. Projectile points are small and triangular in shape. Hoe fragments and sharpening flakes are common. House construction changes from single posts to wall trenches.

Although it is fairly easy to list cultural traits that distinguish Early Bluff, Late Bluff, and Mississippian, the exact relationship between the components present at a site is often obscure. When these components co-occur at a site, it is difficult to know whether the sites represent a transition from Early Bluff to Late

Bluff to Mississippian over a long period of time or if a single component is present with cultural traits from the other phases. This is particularly true for sites known only from surface materials.

The unknown nature of the relationship between Late Woodland and Mississippian occupations derives from several factors. First, excavations in the American Bottom have focused on the large sites, specifically Cahokia and have ignored the outlying areas. The data and subsequent interpretations have been skewed toward the larger sites, thus biasing interpretations given to Late Woodland-Mississippian development toward long, continuous occupations of sites.

With the exception of the Mitchell site (Porter 1974) and the Knoebel site (Bareis 1976) there has been little concern with understanding the community plan of entire sites. The spatial patterning of features cannot be known for sites not completely excavated. The interpretation of an evolutionary development from Late Woodland to Mississippian at Knoebel (Bareis 1976) in a timespan of three generations depends on knowing the spatial arrangement of features at the site. The settlement pattern within a site may be crucial to understand the relationships between the different components at the site.

Third, dating techniques are not precise enough to determine the exact length of time of any particular component. Radiocarbon dates have a range of at least 100 years. Even with a series of radiocarbon dates there are other problems to consider. A common archaeological problem is the reuse of wood posts. Because a log may be reused many times before it is abandoned the period of time between

the date it was cut and the date it was abandoned may differ for many logs. Other technical problems relating to carbon dates include changes in the radiocarbon ratios in the atomosphere and "isotopic fractionation caused by differences of plant phytochemistry" (Hall 1974:11). Other dating techniques have not proved successful in distinguishing Late Woodland and Mississippian components. Dendrochronology has not been refined for use in the Midwest. The use of superpositioning for dating can only give a relative date that one object (feature or material) was deposited before another. Often a site will contain Late Woodland materials overlaid with Mississippian remains, but the time span between deposition of different artifacts or the construction of different features is still unknown. Other sites have features with fill containing both ceramic types from both periods with no apparent stratification.

Fourth, the terms "Late Woodland" and "Mississippian" refer to several different concepts, which in turn imply certain relationships between Late Woodland and Mississippian. Late Woodland and Mississippian have also been used to indicate time periods. The Late Woodland period extends in time from A.D. 700-800 to A.D. 1200-1300 (Maxwell 1973); the Mississippian extends from A.D. 900 to 1500 (Caldwell 1973). Late Woodland and Mississippian are also used to refer to specific cultures or specific groups of Indians. Although there is considerable overlap in the length of occupation of Late Woodland and Mississippian sites, it has been inferred that the Late Woodland and Mississippian cultures follow an evolutionary line of development. The use of Late Woodland and Mississippian in the latter

context implies distinctness between the 2 that can be identified. Closely tied to the use of Late Woodland and Mississippian as specific cultures or groups of people is the idea that Late Woodland and Mississippian are distinct constellations of culture traits. Basin posthole structures, cordmarked pottery, grog, grit or limestone tempered pottery, and stemmed points all indicate a Late Woodland occupation. A switch to wall trench house construction, shell-tempered pottery, and triangular points identify a Mississippian occupation. The use of Late Woodland and Mississippian as time periods, specific cultures, particular groups of Indians, or as a constellation of culture traits may be very useful but the relationship between Late Woodland and Mississippian is more important than the arbitrary division between the 2.

The Mitchell site was excavated under the Highway Salvage Program in 1960, 1961, and 1962 by Porter (1974). Located seven air miles north-northwest of Monks Mound it is thought to be a "satellite community of 'downtown' Cahokia" (Porter 1973:137). According to Porter, Mitchell was occupied for a short time period from A.D. 1150 to 1200. In his analysis of Mitchell, emphasis is placed on the whole village rather than on any particular portion of the total site. By using the whole town as a unit of study for interpretation, Porter was able to state that Mitchell represents a short occupation with varying ceramic types representing different functions rather than time depth. At Mitchell there were contemporaneous groups which have been formally dichotomized at other sites as Late Woodland and Mississippian.

One of Porter's (1974:141) concerns is whether there is "a real cultural difference between so-called Late Bluff and Cahokians." First, he sees no published data adequate to maintain a position of distinct cultural groups. Therefore, a position of 1 group rather than 2 distinct groups occupying Mitchell is more tenable. Second, although the findings of Late Bluff ceramics in a basin house is usually typed as Late Woodland, the presence of these ceramics with shell-tempered wares can also be interpreted as due to functional differences in ceramics (1974:189). Finally, the use of Stuiver-Suess corrected radiocarbon dates from several different areas of the Mitchell site are all clustered around A.D. 1200. From these data Mitchell is viewed as one occupation rather than a Late Woodland settlement followed by a Mississippian occupation.

In contrast to Mitchell, excavations at small parts of the Cahokia site (Salzer 1975; Williams 1975) indicate an in situ development of the Mississippian tradition from the Late Woodland culture. In a summary field report of excavations conducted at the Merrell Tract of Cahokia during the summers of 1969, 1971, and 1972, Salzer (1975) posits the opinion that there is an evolutionary sequence of development from Late Woodland to Mississippian. The Merrell Tract, located 300 meters west of Monks Mound, exhibits a large number of features. The structures, their garbage layers in the fill, and the superpositioning of structures allow Salzer to make the tentative conclusion of an in situ development. These 2 cultural groups are not viewed as contemporaneous as they are by Porter at the Mitchell site. In Porter's opinion a "single evolutionary development for culture

history at Cahokia may not be realistic" (1974:186). For Salzer (1975: 7) an evolutionary perspective of the Late Woodland-Mississippian phenomena would afford additional knowledge on the evolution of complex societies.

Williams (1975), using data from excavations on the east lobes of Monks Mound, has the same view as Salzer of an in situ Mississippian development. The east lobes, "ridge-like protrusions extending from the east side of Monks Mound" (1975:21), are man-made ramps. The stratigraphy here is interpreted as a long time beginning with the Patrick Phase, A.D. 600 to 800, and extending to the Sand Prairie Phase, A.D. 1100 to 1500. Ceramic types, based on temper, were graphed according to the percentage of occurrence at certain depths. At lower depths, from 3 to 4 meters, there is a preponderance of grit tempered sherds contrasted with a depth of 1 meter where shell tempered sherds are most abundant (Williams 1975:21). From this evidence, Williams interprets Cahokia as beginning as a Late Woodland village with the Mississippian culture being an in situ development from the Bluff culture. Thus he offers a similar evolutionary, in situ explanation as Salzer for the occurrence of Late Woodland and Mississippian at Cahokia. The problem with William's interpretation of Cahokia is that it is only based on three test trenches in which portions of features were exposed. In additon, one of the radiocarbon dates of thatch from Feature 284, 925 ± 60 B.P. (A.D. 1025 ± 60), did not correspond to the expected Patrick phase dates of A.D. 600 to 800. As Williams (1975:24) notes, future research will need to clarify the

exact relationship between the early "Bluff" culture and the later "Mississippian" culture.

Twelve and a half miles south of Cahokia is the Late Woodland-Mississippian town of Lunsford-Pulcher. This site, with at least 10 mounds, is located adjacent to Fish Lake, an old meander of the Mississippian River. A thorough excavation of this site had not taken place but surface collections and small test excavations, reported by Freimuth (1974) and Griffin (1977), reveal the presence of both Late Woodland and Mississippian cultural remains.

Based on the data from 5 test pits excavated in 1950, Griffin (1977) views Lunsford-Pulcher as a long occupation extending through time from A.D. 600 to 900. The Mississippian occupation of the site is small, insignificant,and not contemporary with the Late Woodland occupation. As Griffin states (1977:485, 487):

> It is unlikely that any Mississippi occupation or occupations at the site were contemporary with any of the groups of people who made the grit-grog-limestone tempered pottery. The dominant Late Woodland ceramics in the village test pits represent a fairly long period of time from ca. A.D. 600-900 as a reasonable guess, but the site was probably occupied intermittently during this period. Our evidence does not show any significant occupation by people of the Old Village development and climax and only sporadic evidence of Late Mississippi materials.

Freimuth's interpretation of the Late Woodland-Mississippian manifestations at Lunsford-Pulcher are quite different from those offered for Mitchell and Cahokia. There was not an <u>in situ</u> development of the Mississippian culture but the site has time depth of 400 years. The Mississippians and Late Woodland Indians are viewed as different ethnic groups in which there is an "overlay of Mississippian socio-political ideas on a Late Woodland population which retains its

ethnic identity into the climax of the Cahokia site and possibly longer in outlying areas" (Freimuth 1974:v). The Mississippian culture represents a form of diffusion from the Caddoan region and not an in situ development as postulated by Salzer and Williams at Cahokia. Based on a radiometric date, ceramics, calendrics, and site planning, Freimuth views Lunsford-Pulcher as covering a time span from A.D. 800 to 1200. Ceramics are from the Patrick, Unnamed, Fairmount, and Stirling phases. According to Freimuth (1974), Feature 2, a small refuse pit, contained a mixture of Late Woodland and Mississippian pottery making the development of a unilineal ceramic chronology futile. As Freimuth (1974:33) readily admits, the analysis of data from surface collections and one pit still leaves the chronology over a large portion of Lunsford-Pulcher unknown.

Freimuth and Griffin both view Lunsford-Pulcher as a site occupied for several hundred years. Griffin's dates, A.D. 600-900, are considerably earlier than those given by Freimuth (A.D. 800-1200). They both discuss outside influences at Lunsford-Pulcher. Griffin attributes the presence of stone box graves to influence from southwest Illinois. Freimuth views the Mississippian component as developing from a Caddoan influence. Freimuth places more emphasis on the Mississippian component which he sees as larger and more significant than Griffin does.

Thus for these 3 Late Woodland-Mississippian towns there are 4 distinct viewpoints as to the relationship between the Late Woodland and Mississippian components. At Mitchell they are viewed as contemporaneous representing a short time period allowing for the

diverse nature of the ceramics. The ceramic complexity is a result of functional differences rather than time depth. At Cahokia there is the evolutionary viewpoint that the Mississippian culture evolved from the Late Woodland. There is an in situ development of the Mississippian tradition. For Freimuth the opposite is true at Lunsford-Pulcher, there was not an in situ development. Ethnic groups interact which allows for an interchange of ideas which is reflected in cultural remains. Griffin does not view the Mississippian occupation at Lunsford-Pulcher to be large, significant, or contemporaneous with the Late Woodland.

Although the Schlemmer site has Late Woodland and Mississippian components it is not completely analogous to these 3 sites. It is not a satellite temple town but is a small farmstead. Four different lines of community types are noted in the bottomland (Brandt 1972 and Fowler 1966 in Gregg 1975a; Fowler 1975). Figure 2 shows the layout of this settlement pattern in the American Bottom. Cahokia represents the only first line community located in the geographical center of the other sites. Second line communities consist of Mitchell to the north, Lunsford-Pulcher to the south, East St. Louis to the west, and the St. Louis Group further west across the Mississippi River. These were all characterized by numerous mounds covering hundreds of acres. Third line communities, including Horseshoe Lake, Lohmann, McDonough Lake, and Grassy Lake sites, have a single platform mound and surrounding village area. Limited test excavations have been carried out at Horseshoe Lake (Gregg 1975b). Finally, fourth line communities encompass small hamlets or farmsteads. Schlemmer, Divers,

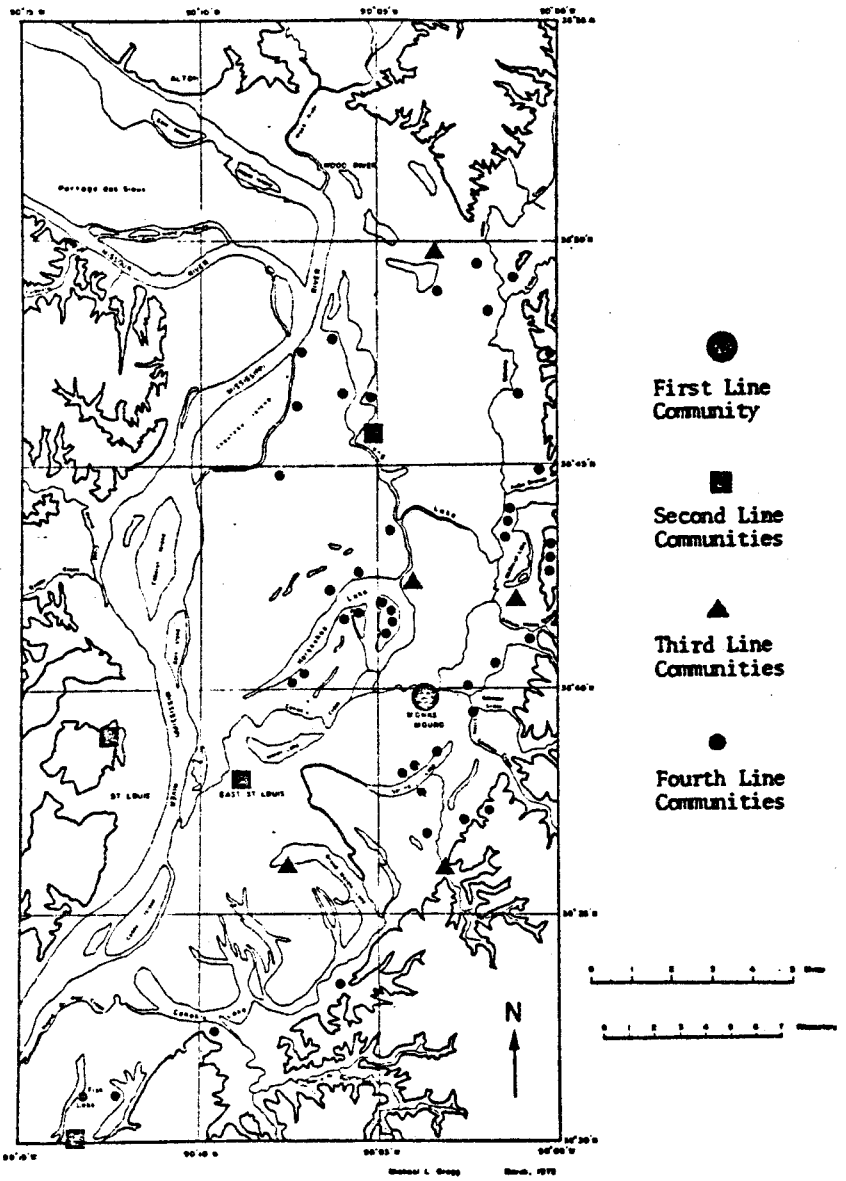


Figure 2. Settlement pattern in the American Bottom according to ranking of Mississippian sites. This map is taken from Gregg (1975a) which is compiled from U. S. Geological Survey, St. Louis sheet, November, 1893; Alton Quadrangle, 15 Minute series, 1955; Township plats of the original land survey; and Corps of Engineers map of the Mississippi River, 1870-1878.

Knoebel, Loyd, Kane Village, Olin, and Stolle are fourth line communities.

Cahokia was the stronghold of the power group or elite geographically centered among the outlying satellite towns or second line communities. With the vast network of waterways, Cahokia was in a position that did in fact facilitate communication and transport of goods. The site was a center dominated by Monks Mound with at least 100 other mounds. Cahokia with its managerial functions was able to control the trade system, religious activities, craft specialists, and the hinterland. It was through the control of the hinterland that Cahokia was able to support its own population. The situation at Cahokia would probably support Sanders and Price's (1968) hypothesis that if there is one large center and several smaller ones located in the same geographical area, the larger center used a labor force gathered from the smaller sites.

The second line communities followed a similar pattern in nucleation, size, and function as Cahokia, but they did so on a smaller scale. Lunsford-Pulcher and Mitchell contain a number of mounds that indicate a community plan in their organization. At Mitchell there is a plaza area defined by 4 mounds with a large post pit found in the central part of the plaza (Porter 1973:143). No population estimates exist for second line communiities but the area of each site indicates that it could support a large number of people though not as many as Cahokia. A very gross population estimate of 25,000 has been made for Cahokia (Gregg 1975a). Second line communities acted as intermediary trade centers between Cahokia and other

outside regions and between Cahokia and the fourth line communities, such as Schlemmer. Second line communities may have been buffer sites that shielded Cahokia from certain outsiders. Lunsford-Pulcher and Mitchell could represent a level in a bureaucratic structure that outsiders must go through before they reach the highest bureaucratic level.

Third line communities are located closer to the Cahokia site and could be viewed as extensions of the main center. They generally had a single platform mound with a surrounding village area of 10 to 30 acres (Gregg 1975a:129).

Farmsteads, the fourth line communities, are small hamlets or villages where farming was the chief occupation. Fourth line sites, such as Schlemmer, Centerville (Norris 1973) and Knoebel (1976) are drastically different in their population, size,and pattern of nucleation from the first and second line communities. Evidence of farming is based on fragments of charred corncobs at Loyd (Hall 1963), Kane Village (Hall 1963; Munson and Anderson 1973) and Centerville (Norris 1973), and agrarian tools or fragments found at Schlemmer, Stolle Quarry (Hall 1963) and Centerville.

This settlement system model proposed by Fowler simplifies the patterning of sites in the American Bottom. It glosses over any diversity that may be present among sites within a particular line of communities. For example, it assumes that all fourth line communities were similar in design and function. Schlemmer, Knoebel, and Centerville are all different from each other. This settlement system model also suggests second line communities were developing at the

same time in different parts of the bottom to fulfill similar functions. This has not been demonstrated. Although this thesis is not a settlement pattern analysis, the use of this model is helpful in placing Schlemmer within a framework in the American Bottom, though it must be realized that the model is extremely general.

The purpose of this thesis is twofold. First, it presents the Schlemmer site report with a description of the excavation and cultural remains. Second, these data are used to examine whether or not the Schlemmer site can shed light on the existing controversy of the relationship between the Late Woodland and Mississippian people.

CHAPTER II

SITE LOCATION AND EXCAVATION PROCEDURES

The Schlemmer site was excavated under the supervision of John Kelly with the following crew members: Vera Adams, Maureen Blake, Mary Harter, Jean Linder, Christopher Maurer, George Milner, and Richard Yerkes. This crew was part of the Historic Site Survey Program who were working during 1974 in the American Bottom of Monroe County. Barb Prange, Merrill Prange, and Patty Schlemmer volunteered to work on the site. Charles J. Bareis and the University of Illinois field school's assistance made it possible to clear a relatively large section of the site.

John Kelly and Paul Dickinson first noticed the site when they saw a street being cut for a new subdivision through the area. They surface collected material that included Monks Mound Red sherds and a micro drill. John Kelly wrote a letter to James W. Porter informing him of the site and one to Charles J. Bareis to find out if any highway funds would be involved. Charles J. Bareis contacted Mrs. Schlemmer and arranged for a meeting that took place on June 30, 1974. Charles Bareis, James W. Porter, John E. Kelly, Jorge Marcos, and Glen Freimuth were all at this meeting where permission was granted by Mr. and Mrs. Schlemmer to excavate the area.

The Schlemmer site is located near Dupo, Illinois in Township 1 North, Range 10 West, Section 28, Southwest ¼ of the Northeast ¼. Universal Transverse Mercator (UTM) coordinates are N4265650 to N4265700

and E743300 to E743400 in Zone 15. The Illinois Archaeological Survey (Urbana) number is 11-S-382. Excavation took place from July 8 to 21, 1974 and from November 11 to 13, 1975 with a total of 368 square meters exposed. All features, structures,and burials were excavated in 1974 with the exception of Feature 38. Figure 3 is a plan view of the Schlemmer site.

Methods of Locating Features

Two techniques for locating features before excavation were used at the Schlemmer site. During the 1974 excavations a magnetometer was used and in November, 1975 probing and phosphate testing was done. These two techniques of locating features were used in the FAI-255 survey in the American Bottom (Williams n.d.).

Maurer (n.d.:2) used the fluxgate magnetometer at the Schlemmer site in order to "detect the differences in soil magnetism characteristic of pits or house basins." Two methods were used to analyze the results. First, the readings were plotted as a magnetic contour map which showed areas of metallic concentration. At Schlemmer an oil well casing was located at S42.0 W31.0 which meant that reliable results could not be produced for an area 18 meters in radius. Structure 1 and numerous pits were within this 18 meter radius and therefore were not detected through the use of the magnetometer. Two areas were excavated using the magnetic contour map. One area did not produce any features. Feature 37, an historic horse burial, was found when the second area was excavated. It is labelled as a modern disturbance on Figure 3. Subsequently, Structure 2 was excavated but this feature was not

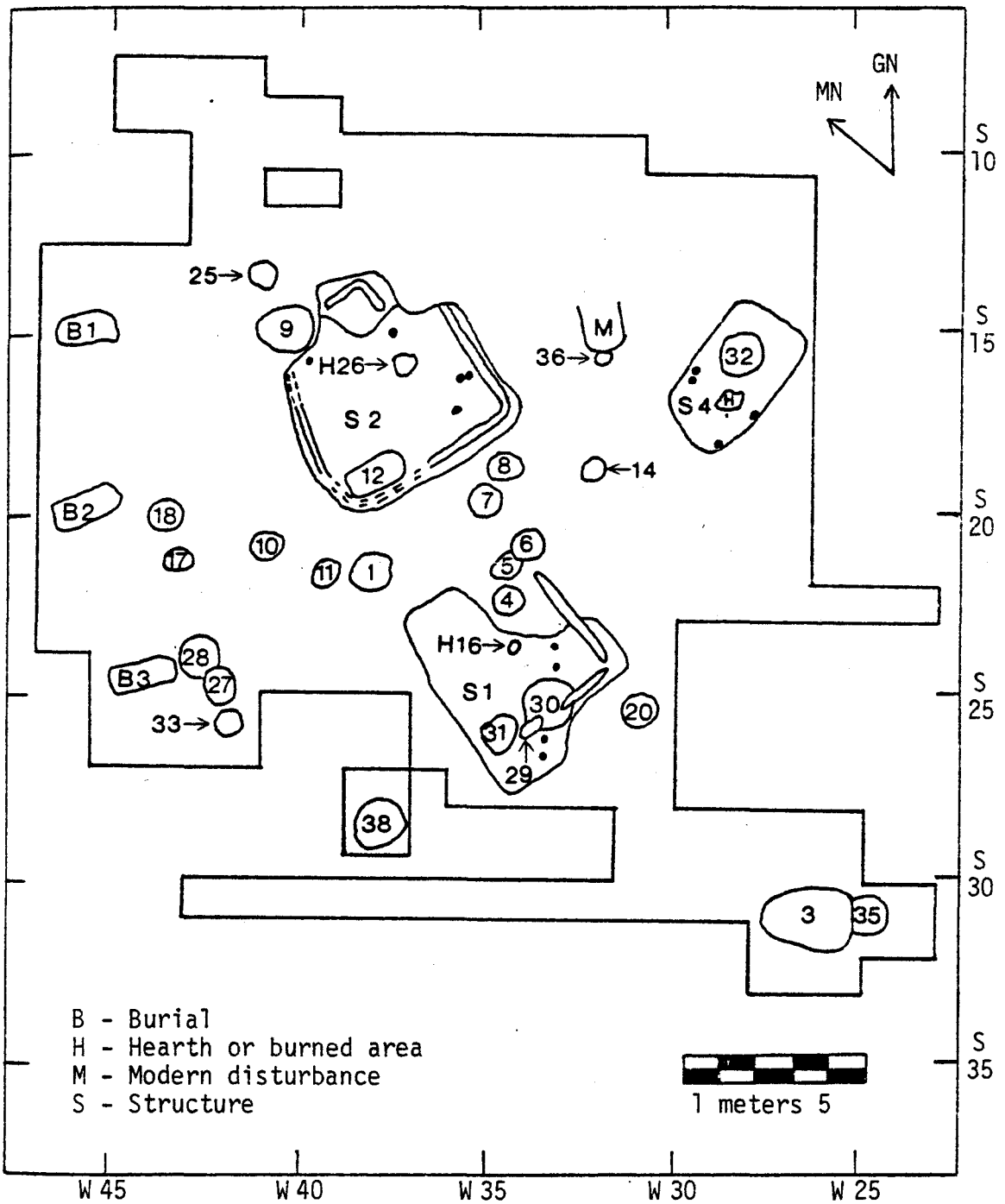


Figure 3. Plan View Map of the Schlemmer Site, 11-S-382

revealed by the magnetic contour map. The second method of analysis consisted of a graph in which distance and signal strength were plotted. Sharp peaks from this graph were replotted with points of intersection considered as probable areas of archaeological features. Structure 2 would have been noted using this method. This second method of plotting points did make it possible to locate Structure 4 before excavation. Along with locating Structure 4, the magnetometer suggested the existence of "five additional possible structures and numerous additional features, none of which were tested by excavation" (Maurer n.d.:6). The use of the magnetometer is relatively new as a technique to locate archaeological features in the American Bottom, although it had been used in the early 1960's at the Angel Site in Indiana (Black 1967:417-427). The exploratory nature of its use at Schlemmer did allow for the possible location of at least one structure and one pit.

Phosphate testing was done by John Kelly and Lucretia Kelly during the excavations conducted in November, 1975. A return to the Schlemmer site was warranted by the fact that house construction that was taking place would have disturbed an area not excavated in 1974. Two temporary points were set with the transit at S28.5 W36.0 and S28.5 W41.0. Samples for phosphate testing were taken with a piston auger every 0.5 meter east-west and every 1.0 meter north-south. The soil was compacted so tightly that a screw-auger with a 5 centimeter diameter bit was used to penetrate it and a 2 centimeter diameter piston auger was used to extract the soil sample. This soil compaction may have been caused by heavy equipment used on the site. The phosphate

tests were made on a scale of 1 to 6, the higher the number the higher the phosphate content and thus the higher probability that there has been prehistoric disturbance. The phosphate tests at Schlemmer were done in a similar manner as described by Eidt (1972). Only readings above 5 were considered important. Twenty samples that were taken between S25.5-28.5 W38.5-40.5 yielded results less than 5. Moving east to S26.5 W37.5 the phosphate test was greater than 5 which, along with visual inspection of the soil, indicated some type of feature. Feature 38 was defined during excavation.

The grid system established for excavation was the same as that used for the subdivision. The 0:0 point was set at a 2 inch wide iron pipe property marker at the northeast corner of the private property and the subdivision. Along the north edge of the subdivision 2 points were set at S0.0 W25.0 and S1.0 W60.0. A 2 by 2 inch hub set at S0.0 W25.0 was given an arbitrary elevation of 100 meters. Points were then laid out along the W25.0 line at S25.0, S50.0, S75.0, and S90.0. A tree located further west along the private road with a notch marked in it 65 centimeters above the base was used to mark a second elevation of 100.82 meters.

Excavations began by opening several test units. This was followed by removing 2 trenches at S30.0-31.0 W25.0-43.0 and S22.0-23.0 W27.0-39.0 with the help of Charles J. Bareis and the University of Illinois Field School. Subsequently, an additional area of 218 square meters was cleared by hand. The backhoe and front end loader were used to remove the plowzone from approximately S13.0-25.0 W43.0-47.0 and S11.0 -22.0 W26.45-33.0. This allowed for the observance of the 3 burials.

Features 17, 18, 36, 37, and Structure 4 with Feature 32. All features were defined immediately below the plowzone. Feature depths were measured below the scaped surface (BSS). No soil was screened due to the factor of time. All features were carefully trowelled and any cultural materials were bagged according to provenience. Flotation samples were taken from all the features. These samples have been processed and are now being analyzed by Denise Steele.

Excavations of Pits, Houses, and Burials

All pits were defined below the plowzone and plan view maps were drawn. Each pit was then sectioned, with one half removed in arbitrary 15 centimeter levels. Soil differences in the fill were observed and a profile map was drawn. Generally, these differences in fill were not very sharp, but each were given a zone designation. Excavation of the other half of the pit followed these differences in fill. All pit material remains were bagged according to the various levels. Soil samples for flotation were taken for each pit. Not all of the plan view metrics are identical to the profile length measurements due to intense rodent activity and sandy soil that made feature boundaries diffuse. The stain of the pit was scribed and mapped in plan view. Occasionally, once a profile map was drawn, the stain was not found to extend as far as originally mapped. Since time was a factor, some of these features were not remapped. The discrepancies are generally less than 3 centimeters where they do occur, with the exception of Feature 8 where a 17 centimeter difference is noted between between the plan view length and profile length.

All 3 house structures were excavated in a similar way. Plan views and profiles of all structures were mapped. Structure 1 had 3 profiles, 1 extending from S25.55 W36.05 to S25.27 W34.15, 1 from S23.44 W31.70 to S26.30 to W35.45, and 1 from S24.79 W32.11 to S23.31 W33.25. Structure 2 was profiled, southeast to northwest from S19.34 W36.35 to S14.06 W39.12 and across the porch area. Structure 4 was profiled along a northwest-southeast axis from S15.63 W29.42 to S17.16 W27.58. These structures all contained postmolds which were cross-sectioned and profiled. The wall trenches of Structure 1 and Structure 2 were sectioned across their width and profiled. The wall trenches of Structure 1 were profiled in 4 different places and in Structure 2 at 3 locations. It was initially thought that Structure 2 had 2 fill zones; Zone A, a dark fill and Zone B, a lighter fill zone. After closer examination, Zone B was not fill but a sterile subsoil with considerable rodent activity. This was determined after excavations had extended into Feature 12 and a complete profile of the structure basin was observed. An attempt was made to locate a wall trench or posts between the south edge of Feature 12 and the southwest edge of Structure 2, but with little success. The wall trench along the east side of Structure 2 had a very light-colored fill. Both hearths, Feature 16 and Feature 26, in Structure 1 and Structure 2, respectively, were also mapped in plan view and profiled.

Three burials were located at the base of the plowzone after a backhoe with a front end scoop was used to clear the area S13.0-25.0 W43.0-47.0. All burials were pedestalled and mapped in plan view and a north-south profile of each pit was drawn.

CHAPTER III

DESCRIPTION OF FEATURES

This chapter is divided into 3 general sections: structures, pits, and burials. The Schlemmer site had 3 structures, 26 pits, 2 hearths, and 3 burials. The discussion of each structure includes a general description, a list of the elements of the structure, and a description of the elements. The general description of each structure will include its shape and dimensions, type of fill, a description of superpositioning when present, and the contents of the basin fill. The elements of the structure will list all construction features of the house and internal features. This will then be followed by a description of the elements of the structures. The description of each pit includes its shape and dimensions, fill types, superpositioning, and contents (Table 1). The description of the burials will include the shape and dimensions of the burial pits, fill of the pits, and a description of the burial.

Structures

Structure 1

General Description. The basin for Structure 1 was a T-shaped wall trench structure with a northeast-southwest width of 4.74 meters and a northwest-southeast length of 5.62 meters. It covers a surface area of approximately 17.0 square meters. From the 3 profiles taken, an 0.08 meter deep basin was noted. The profile wall, extending from

Table 1. Metrics of Pits

Feature	Plan View Shape	Profile Shape	Plan View Width	Plan View Length	Profile Depth
1	Circular	Rectangular Straight walls Flat bottom	E-W 1.11 m.	N-S 1.18 m.	.39 m.
3	Oval	Basin; inward, curved sides	N-S 1.62 m.	E-W 2.42 m.	.20 m.
4	Circular	Rectangular Straight walls Flat bottom	E-W .84 m.	N-S .88 m.	.33 m.
5	Irregular circle	Rectangular Straight walls Flat bottom	N-S .73 m.	E-W .74 m.	.32 m.
6	Circular	Rectangular Straight walls Flat bottom	E-W .89 m.	N-S .89 m.	.30 m.
7	Circular	Rectangular Straight walls Flat bottom	N-S .87 m.	E-W .88 m.	.35 m.
8	Oblong	Basin	N-S .74 m.	E-W .98 m.	.20 m.
9	Oval	Basin	E-W 1.45 m.	N-S 1.20 m.	.13 m.
10	Circular	Rectangular Straight walls Flat bottom	E-W .92 m	N-S .94 m.	.32 m

Table 1. Metrics of Pits (continued)

Feature	Plan View Shape	Profile Shape	Plan View Width		Plan View Length		Profile Depth
11	Circular	Irregular basin	E-W	.72 m.	N-S	.77 m.	.21 m.
12	Rectangular	Rectangular	NW-SE	.82 m.	NE-SW	1.62 m	.35-.40 m.
14	Circular	Straight walls Irregular bottom	N-S	.66 m.	E-W	.68 m.	.17 m.
17	Oval	Basin Curved bottom	NW-SE	.50 m.	NE-SW	.65 m.	.10 m.
18	Circular	Irregular rectangle	E-W	.90 m.	N-S	.94 m.	.35 m.
20	Circular	Rectangular Straight walls Rounded bottom	N-S	.88 m.	E-W	.90 m.	.33 m.
25	Circular	Basin	E-W	.68 m.	N-S	.70 m.	.15 m.
27	Rectangular	Fairly rectangular; rounded sides and bottom	E-W	.64 m.	N-S	.90 m.	.35 m.
28	Irregular circle	Irregular Double bottom	E-W	1.14 m.	N-S	1.24 m.	.55 m.
29	Oval	Inward sloping sides; Flat bottom	NW-SE	.31 m.	NE-SW	.68 m.	.07 m.
30	Circular	Basin	N-S	1.35 m.	E-W	1.45 m.	1.20 m.

Table 1. Metrics of Pits (continued)

Feature	Plan View Shape	Profile Shape	Plan View Width	Plan View Length	Profile Depth
31	Irregular circle	Rectangular	E-W 1.00 m.	N-S 1.06 m.	.65 m.
32	Circular	Straight sides Flat bottom	N-S 1.25 m.	E-W 1.26 m.	.70 m.
33	Circular	Basin	E-W .69 m.	N-S .71 m.	.10 m.
35	Circular	Curved sides Rounded bottom	E-W .87 m.	N-S 1.08 m.	.40 m.
36	Oval	Uneven basin Drops to .28 m. depth at east end	N-S .30 m.	E-W .44 m.	.28 m.
38	Oval	Irregular rectangular shape	N-S 1.02 m.	E-W 1.40 m.	.64 m.

S25.55 W36.05 to S25.27 W34.15, showed a fill of a very dark greyish brown (Munsell color 10YR3/2) fine sand with dark brown (10YR3/3) and dark yellowish brown (10YR4/4) mottles. In the fill were small flecks of charcoal and burned clay. Both of the other profile walls, 1 extending from S23.44 W31.70 to S26.30 W35.45 and 1 that extended from S24.79 W32.11 to S23.31 W33.25, did not show the same color and type of mottling, but instead had yellowish brown (10YR5/4) clay flecks along with burned clay and charcoal. The basin fill contained 10 shell tempered sherds (17.5 grams), 4 cordmarked grog tempered sherds (21.0 grams), 5 cordmarked grit tempered sherds (32.0 grams), 1 cordmarked limestone tempered sherd (11.0 grams), and 3 shell tempered rimsherds (48.5 grams). One small, untempered bowl (176.0 grams) was recovered from the fill of Structure 1. Out of a total of 52 chert flakes, 12 (45.9 grams) were unmodified, 20 (64.7 grams) were modified, 8 (42.8 grams) were heat treated and unmodified and 12 (65.9 grams) were modified and heat treated. Other chert materials included 1 projectile point (11.0 grams), 1 biface (11.0 grams), and 1 chert chunk (6.0 grams). Also found in the fill of Structure 1 were 5 pieces of limestone (740.0 grams), 3 burned pieces of limestone (51.0 grams), 1 sandstone slot abrader (28.0 grams), 1 rough rock (1.0 gram), and 1 piece of galena (5.0 grams). Charcoal and small pieces of clay were also recovered during excavation.

Elements of Structure 1. The elements of Structure 1 included:

1. Wall trenches
2. Four internal postmolds

3. Two pits: Feature 30 (not associated with Structure 1) and Feature 31
4. Work area: Feature 29
5. Hearth: Feature 16.

Description of the Elements of Structure 1. The wall trenches were cross-sectioned and profiled at 4 different locations. The fill was brown-dark brown (10YR4/3) fine sand mottled with yellowish brown (10YR5/4) sand and some clay. The depth varied from 0.20 to 0.29 meters with a width of 0.08 to 0.12 meters. No postmolds were noted within the wall trenches, though 4 postmolds were defined within the structure.

The northeast wall trench, as shown on Figure 3, extends beyond the basin boundary of Structure 1. The area between the northeast wall trench and the edge of the house basin may actually have been part of Structure 1, but was not dug as deep as the remaining portion of the house. If the house was rectangular in shape, rather than T-shaped, Feature 5, a Mississippian pit, was possibly associated with the structure.

All 4 postmolds were cross-sectioned and a profile map was drawn. The fill consisted of a very dark greyish brown (10YR3/2) fine sand heavily mottled with dark yellowish brown (10YR4/4) sand and clay for Postmold A and B. The fill of Postmold C and D was a dark yellowish brown (10YR4/4) sandy silt. The postmolds had depths ranging from 0.12 to 0.20 meters and diameters from 0.15 to 0.20 meters.

Feature 30 was a circular-shaped pit with a basin-shaped profile. Although this feature was located within the walls of Structure 1, it was cut by one of the south wall trenches of the strcuture and by Feature 29, and therefore is not associated with this structure. The east-west length was 1.45 meters, the north-south width was 1.35 meters, and the depth was 0.55 meters. The fill consisted of 2 zones. Zone A was a very dark greyish brown (10YR3/2) fine sand with flecks of burned clay and charcoal. Zone B was a brown-dark brown (10YR4/3) fine sand mottled with a very dark greyish brown (10YR3/2) fine sand. This pit contained 8 cordmarked, grog-tempered sherds (24.5 grams). There was a total of 5 chert flakes: 1 unmodified (0.01 grams), 2 modified (3.0 grams), and 2 unmodified and heat treated (3.0 grams). Other lithic material included 12 pieces of burned limestone (64.0 grams), 2 pieces of limestone (19.0 grams), and 1 rough rock (9.5 grams). This feature also contained fragments of charcoal.

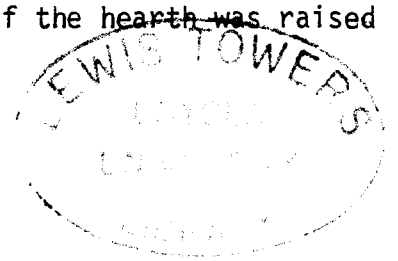
Feature 31 was an irregular circular pit with a rectangular profile having a north-south length of 1.06 meters, an east-west width of 1.00 meters and a maximum depth of 0.65 meters. Three fill zones were noted. Zone A was a very dark greyish brown (10YR3/2) fine sand with small flecks of burned clay and charcoal. The soil color of Zone B ranged from a very dark greyish brown (10YR3/2) to a very dark grey (10YR3/1). The soil was a fine sand and was heavily mottled with burned clay and small flecks of charcoal. Zone C was a dark brown (10YR3/3) heavily packed fine sand with small flecks of charcoal and two soil lenses. The lenses were a dark yellowish brown (10YR4/4), fine sand mottled with small flecks of charcoal. All of the 47 sherds

recovered were shell tempered: 41 (137.0 grams) were plain, 5 (41.5 grams) were cordmarked, and 1 (46.0 grams) was fabric-impressed. This fabric-impressed, shell-tempered sherd was part of a salt pan. Four rims, numbers 9, 10, 11, and 25, were all plain, shell-tempered sherds. There were 10 unmodified chert flakes (25.6 grams), 9 modified chert flakes (50.3 grams) and 2 unmodified, heat-treated chert flakes (8.0 grams). At the bottom of this feature were 2 large chert cores weighing 1711.2 grams. Other chert items recovered were 3 chert chunks (16.5 grams). One piece of limestone (63.0 grams) was worked and 6 pieces (369.0 grams) were burned. Three pieces (6.5 grams) of sandstone and 1 rough rock (13.0 grams) were in this pit. One limestone slab (83.6 grams) measured 7.5 centimeters by 5.5 centimeters by 1.5 centimeters and one sandstone slab weighed over 500 grams. Two segments of a charcoal log were recovered for carbon dating, but the dating has not been done. Fragments of a deer mandible, charred acrons, and beans were contained in Feature 31.

Feature 29, an oval area, with a flat base and sloping side profile, was probably a work area for heat treating chert. It had a northeast-southwest length of 0.68 meters, a northwest-southeast width of 0.31 meters, and a depth of 0.07 meters. This feature was superimposed on Feature 30. Three fill zones were noted. Zone A was a yellowish brown (10YR5/6) silt abundantly mottled with a very dark greyish brown (10YR3/2) silt and had occasional charcoal flecks. Zone B was a dark yellowish brown (10YR4/4) silt mottled with dark brown (7.5YR3/2) burned soil and a few flecks of black to very dark grey (7.5YR2.5/0) burned soil. This zone also contained occasional charcoal

flecks. Zone C was a brown-dark brown (10YR4/3) silt mottled with dark yellowish brown (10YR4/4) and dark brown (7.5YR3/2) burned soil containing occasional black to very dark grey (7.5YR2.5/0) burned soil and charcoal flecks. No ceramic material was recovered from Feature 29. All chert material recovered was heat treated. Nine flakes (145.9 grams) were unmodified and 23 flakes (199.0 grams) were modified. Two pieces of limestone (300.0 grams) found in this area were burned. In addition to the chert and limestone, there was 1 shell fragment (1.5 grams).

The hearth, Feature 16 in this structure, was circular in plan view and U-shaped in profile. During the 1974 summer excavation this feature was not profiled. In October, 1975 John Kelly and Jean Linder went back to the site to obtain a plan view and a profile map. It had a north-south length of 0.26 meters, an east-west width of 0.24 meters, and a depth of approximately 0.10 meters. The fill was silt that contained an abundance of charcoal. The rim of the hearth was raised above the floor of Structure 1.



Structure 2

General Description. Structure 2 was a square wall trench house with a porch area extending from the northwest side. It had a northwest-southeast length of 5.96 meters, a northeast-southwest width of 5.37 meters. The depth ranged from 0.10 meters to 0.36 meters in the porch area. The surface area was approximately 28 square miles. The one soil zone, Zone A, of Structure 2 was a dark brown (10YR3/3) sandy silt with abundant small yellowish brown (10YR5/6) mottles.

Other areas within Zone A had dark yellowish brown (10YR4/4) mottles and some areas had burned soil and small flecks of charcoal. The basin fill of Structure 2 contained 124 plain, shell-tempered sherds (842.0 grams), 1 cordmarked, shell-tempered sherd (1.0 gram), 4 fabric-impressed, shell-tempered sherds (169.5 grams), 3 plain, grog-tempered sherds (5.5 grams), 7 cordmarked, grog-tempered sherds (73.0 grams), 6 cordmarked, grit-tempered sherds (31.0 grams), 1 cordmarked, limestone-tempered sherd (3.0 grams), and 1 red-slipped, limestone-tempered sherd (1.0 gram). From a total of 11 rimsherds, 2 (57.0 grams) were cordmarked, shell-tempered, 8 (324.0 grams) were plain, shell-tempered, and 1 (3.0 grams) was red-slipped, limestone-tempered. A shell-tempered pottery trowel (119.0 grams) which was worn from use, was found on the floor of Structure 2. This structure contained an abundant amount of lithic material. There were 175 chert flakes: 50 (269.2 grams) were unmodified, 108 (710.3 grams) were modified, 1 (3.0 grams) was heat treated and unmodified, 15 (72.8 grams) were modified and heat treated, and 1 (27.3 grams) was an hoe flake. Out of the 108 modified chert flakes, 5 were from non-local chert sources: 1 Kaolin chert flake (0.5 grams) and 4 Dongola chert flakes (15.6 grams). Artifacts included 4 (3.0 grams) projectile points, 1 chert blade (8.7 grams), 1 chert scraper (46.9 grams), and 1 Mill Creek chert hoe (377.0 grams). In addition to these chert artifacts were 4 chert cores (82.8 grams), and 8 chert chunks (111.0 grams). The remaining lithic material consisted of 6 pieces of limestone (396.0 grams), 13 pieces of burned limestone (471.0 grams), 9 pieces of sandstone (682.0 grams), 1 sandstone slot abrader (13.0 grams), 8 rough rocks (77.0 grams),

1 firecracked rough rock (170.0 grams), 2 pieces of galena (14.0 grams), grams), and 1 quartzite hammerstone (109.0 grams). Two limestone slabs (232.0 grams) measured 8.0 centimeters by 7.5 centimeters by 1.3 centimeters and 8.5 centimeters by 5.5 centimeters by 1.3 centimeters. Two sandstone slabs were also recovered. One, weighing 121.1 grams, measured 8.5 centimeters by 5.5 centimeters by 1.0 centimeters. The other weighed 120.9 grams and measured 8.0 centimeters by 6.0 centimeters with the width varying between 1.0 centimeter to 1.9 centimeters. This structure also contained deer bone fragments and charcoal.

Elements of Structure 2. The elements of Structure 2 included:

1. Wall trenches
2. Four internal postmolds
3. One pit: Feature 12
4. One hearth: Feature 26.

Description of the Elements of Structure 2. The wall trenches were cross-sectioned and profiled in 3 places. The fill of the wall trenches along the porch area and east wall was a brown-dark brown (10YR4/3) fine sand extending to a depth of 16 to 18 centimeters. The wall trench along the west wall had 2 fill zones. Zone A was a dark yellowish brown (10YR4/4) silty sand with a few small dark brown (10YR3/3) mottles. Zone B was a dark brown (10YR 3/3) silty sand with very few small, dark yellowish brown (10YR4/4) mottles. The depth of this wall trench was 0.35 meters. The width of all the wall trenches ranged from 0.12 to 0.25 meters. Since the area around Feature 12 was

excavated to a depth of 0.60 meters no wall trench was observed along the south wall.

All 4 postmolds were cross-sectioned revealing a fill of brown-dark brown (10YR4/3) fine sand. The depth of the fill ranged from 0.05 to 0.13 meters and the diameter ranged from 0.13 to 0.25 meters.

Feature 12 was a rectangular pit with a northeast-southwest length of 1.62 meters and a northwest-southeast width of 0.82 meters. The profile had a rectangular shape with a depth of 0.35 to 0.40 meters. There was 1 soil zone, Zone A, that was a dark brown (10YR3/3) silty sand with a few small yellowish brown (10YR5/4) mottles. The fill also had occasional charcoal flecks. This feature had an abundance of materials. There were 159 plain, shell-tempered sherds (593.0 grams), 3 cordmarked, shell-tempered sherds (17.0 grams), 1 cordmarked, grog-tempered sherd (3.0 grams), and 1 red-slipped, limestone-tempered sherd (2.0 grams). Ten rimsherds (355.0 grams) were plain, shell-tempered and 1 (15.0 grams) was cordmarked, shell-tempered. Twenty chert flakes (67.2 grams) were unmodified, 45 were modified (231.55 grams), 3 were heat treated and unmodified (15.7 grams), 12 were modified and heat treated (41.8 grams), and 1 was a Mill Creek chert hoe flake (10.0 grams). Two of the mofified, chert flakes were made of non-local chert: 1 was Dongola chert (2.0 grams) and 1 was Root Beer chert (1.0 grams). There were 7 chert chunks (250.7 grams). Chert artifacts included 3 projectile points (2.5 grams), 1 blade (12.0 grams), and 1 denticulate (86.25 grams). Limestone was quite abundant in Feature 12. Thirty-two pieces of limestone (2350.9 grams), 5 burned pieces of limestone (125.0 grams), and 3 limestone slabs (4495.15 grams) were

recovered. These 3 limestone slabs measured: 15.0 centimeters by 22.0 centimeters with the width varying between 1.5 to 2.1 centimeters; 33.0 centimeters by 22.0 centimeters with the width between 2.2 to 3.9 centimeters; and 23.0 centimeters by 8.0 centimeters with the width between 2.1 to 3.3 centimeters. Feature 12 also contained 38 pieces of sandstone (159.0 grams), 6 rough rocks (190.15 grams), and 1 sandstone slot abrader (23.0 grams). Deer, fish, and bird bone along with charcoal fragments were in this pit, though specific species were not identified. While completing the flotation samples for this feature, 1 human, permanent, lower left, second molar was found.

Feature 26 was a shallow hearth in the floor of Structure 2. It has a ring of burned soil that was incomplete along the east edge. The north-south length was 0.62 meters, the east-west width was 0.65 meters, and the depth was 0.08 meters. The fill was a very dark greyish brown (10YR3/2) sandy silt with small charcoal flecks and light yellowish brown (10YR6/4) flecks of burned soil. The floor was a dark reddish brown (5YR2.5/2) sandy silt mottled with very dark grey to black (10YR2.5/1) flecks of burned soil. The walls were yellowish red (5YR4/6).

Structure 4

General Description. Structure 4 was a small rectangular basin structure with a northeast-southwest length of 4.02 meters and a northwest-southeast width of 2.42 meters. The northwest-southeast profile showed a depth of 0.10 meters for the structure. The fill was a dark brown (10YR3/3) sandy silt with small yellowish brown (10YR5/6)

mottles. It contained occasional small flecks of charcoal and oxidized burned soil. The basin fill contained 10 plain shell-tempered sherds (41.0 grams), 2 cordmarked, shell-tempered sherds (5.0 grams), and 1 cordmarked, grit-tempered sherd (1.0 gram). The chert debris was 3 unmodified, chert flakes (1.5 grams), 6 modified chert flakes (34.2 grams), and 2 modified and heat treated chert flakes (5.0 grams). Other lithic material was 1 waterworn cobble weighing 55.0 grams. Burned soil, charcoal, mussel shell, and unidentified tooth enamel were in this structure.

Elements of Structure 4. The elements of Structure 4 included:

1. Three postmolds
2. One pit: Feature 32
3. Burned area.

Description of Elements. Three postmolds located in the southwest half of the house were cross-sectioned. Postmolds A and B both had 1 soil zone which was a dark yellowish brown (10YR4/4) sandy silt with an abundance of yellowish brown (10YR5/4) small mottles. This differed from the 4 soil zones of Postmold C. These 4 zones all had a sandy silty texture but varied in the color of the soil matrix and degree of mottling. Postmold B is 0.04 meters deep while Postmold A is 0.16 meters deep and Postmold C is 0.18 meters deep. The diameter of Postmold A and B was 0.12 meters and that of C was 0.36 meters.

Feature 32 was a circular pit with a straight sided, flat bottomed profile. Its north-south width was 1.25 meters, the east-west length was 1.26 meters and the depth was 0.70 meters. There were 2 soil

zones. Zone A was a very dark greyish brown (10YR3/2) sandy silt with very few small dark yellowish brown (10YR4/4) mottles and flecks of charcoal. Zone B only differed in its texture which was sandier than Zone A. The basin fill of this feature contained 22 plain, shell-tempered sherds (57.5 grams), 10 cordmarked, shell-tempered sherds (14.5 grams), 3 cordmarked, grog-tempered sherds (14.0 grams), 1 limestone tempered sherd (7.0 grams), 3 red-slipped, limestone-tempered sherds (3.0 grams), and 1 untempered sherd (2.0 grams). The only rim-sherd, number 7, was shell tempered (53.0 grams) with a plain surface. Chert flakes totalled 19. Five (3.0 grams) were unmodified, 10 (23.0) grams) were modified, and 4 (6.5 grams) were modified and heat treated. One of the modified flakes (4.0 grams) was Dongola chert. A biface (12.0 grams) and a piece of chert (1.5 grams) were other chert items recovered. Two pieces of limestone (4.0 grams), 16 pieces of burned limestone (304.0 grams), and 3 rough rocks (12.0 grams) were in this pit, along with unidentified bone fragments and charcoal.

The burned area was an irregular circular area of oxidized soil roughly measuring 0.70 meters northeast-southwest and 0.75 meters northeast-southwest.

Pits

Feature 1

Feature 1 was a circular pit with an east-west length of 1.18 meters and a north-south width of 1.11 meters. The depth was 0.39 meters. The east-west profile was straight walled, flat bottomed, and rectangular in shape. There were 5 fill zones, 4 of which were a dark

brown (10YR 3/3) fine sand with varying degrees of burned soil, clay, and charcoal. The fifth zone was also find sand but was dark yellowish brown. The ceramics consisted of 1 plain, grog-tempered sherd (2.0 grams), 53 cordmarked, grog-tempered sherds (268.5 grams), 13 cordmarked, grit-tempered sherds (230.5 grams), 9 cordmarked, grog- and grit-tempered sherds (154.0 grams), and 1 untempered sherd (2.0 grams). Four rimsherds, numbers 6, 22, 23, and 33, were cordmarked and grog tempered. Pieces of the grog-tempered cordmarked pottery found in this feature were identical to sherds found in Feature 6, as determined by petrographic analysis (Porter and Szuter 1978). Feature 1 contained 16 chert flakes: 4 (6.0 grams) were unmodified, 3 (2.5 grams) were modified, 3 (3.0 grams) were heat treated and 6 (7.8 grams) were modified and heat treated. Four chert chunks (16.8 grams) were recovered, 1 (5.8 grams) chunk was heat treated. Ninety-one pieces of limestone (952.5 grams), out of a total of 100 pieces (1096.5 grams), were burned. There were 3 rough rocks (171.0 grams), 1 (102.0 grams) was used as a hammerstone. Numerous fragments of muddauber's nest (283.8 grams) along with burned clay and bone fragments were found in this pit.

Feature 3

Feature 3 was a large, shallow-basin oval pit. It measured 2.42 meters east-west, 1.62 meters north-south, and 0.20 meters deep. The fill was fine sand and possibly burned. The ceramics consisted of 1 plain, grog-tempered sherd (2.0 grams), 53 cordmarked, grog-tempered sherds (268.5 grams), 13 cordmarked, grit-tempered sherds (230.5 grams),

1 cordmarked, grit-and grog-tempered sherd (1.5 grams), 5 plain, limestone-tempered sherds (17.0 grams), and 1 cordmarked, limestone-tempered sherd (5.0 grams). Four chert flakes (2.15 grams) were unmodified and 1 (0.01 gram) was heat treated. Two projectile points (5.0 grams) and 1 chert chunk (0.5 grams) were other chert items in this feature. Additional lithic material consisted of 1 piece of limestone (3.0 grams), 3 pieces of burned limestone (11.0 grams), 1 piece of sandstone (35.0 grams), 2 rough rocks (61.5 grams), and 1 piece of galena (82.0 grams). Feature 3 was superimposed on Feature 35's western edge.

Feature 4

Feature 4 was a roughly circular pit having a rectangular profile. It had an east-west width of 0.84 meters, a north-south length of 0.88 meters, and a depth of 0.33 meters. The fill of Zone A was a brown-dark brown (10YR3/3) fine sand containing a few flecks of charcoal and burned soil. Zone B was a yellowish brown (10YR5/4) fine sand. There were 7 cordmarked, grog-tempered sherds (47.0 grams), 1 plain, grit-tempered sherd (1.0 gram), 2 plain, grog- and grit-tempered sherds (61.0 grams), 1 cordmarked, grog- and grit-tempered sherd (49.0 grams), 1 plain grog- and grit-tempered sherd (29.0 grams) that was worked in a circular shape resembling an incomplete spindle whorl. Only 1 cordmarked, grog- and grit-tempered rimsherd, number 70 (5.0 grams), was in this feature. Chert material was sparce, consisting of 2 unmodified chert flakes (2.0 grams), and 1 chert chunk (2.0 grams). Other lithic material was also scant. Four pieces of limestone

(52.5 grams) and 1 rough rock (6.0 grams) were recovered. Eight pieces of burned clay, weighing a total 60.7 grams, were in this feature.

Feature 5

Feature 5 had a roughly circular plan view with a rectangular profile. This feature was possibly associated with Structure 1. The east-west length was 0.74 meters, north-south width was 0.73 meters, and the depth was 0.32 meters. Zone A was a brown-dark brown (10YR4/3) silty sand mottled with yellowish brown (10YR5/4) soil flecks, charcoal, and burned soil. Zone B was yellowish brown (10YR5/4) fine sand that might have been wash. This feature had a relative abundance of shell-tempered sherds compared to the other ceramic material in this pit. Fifteen sherds were shell-tempered (138.0 grams) while only 1 was cord-marked, grog-tempered. The 1 rimsherd (34.0 grams), number 44, was also plain, shell-tempered. Fifteen chert flakes were found in this feature: 1 unmodified (5.0 grams), 9 modified (89.6 grams), 2 unmodified and heat-treated (6.7 grams), 2 modified and heat-treated (25.7 grams), and 1 unmodified blade (7.0 grams). The only chert chunk found weighed 2.0 grams. The other lithic remains were 3 pieces of burned limestone (93.0 grams), 1 rough rock (187.0 grams), and 1 limestone slab (2335.4 grams) that measured 21.0 centimeters by 16.0 centimeters with the width varying between 3.0 centimeters to 4.7 centimeters. Charcoal and unidentified bone fragments were recovered.

Feature 6

Feature 6 was a circular pit with a rectangular profile. Its east-west width and north-south length were both 0.89 meters with a

0.30 meter depth. Zone A was a dark brown (10YR3/3) sand mottled with very dark greyish brown (10YR3/2) and yellowish brown (10YR5/4) soil flecks, charcoal, and burned soil. Zone B was a yellowish brown (10YR5/4) fine sand that appeared to be wash. Feature 6 had 49 cordmarked, grog-tempered sherds (248.0 grams), 6 cordmarked, grog- and grit-tempered sherds (135.0 grams), and 3 untempered sherds (25.0 grams). Nine rimsherds were in Feature 6. Rimsherds, numbers 8 (54.0 grams), 13 (33.0 grams), 14 (11.5 grams), 15 (13.0 grams), 65 (4.5 grams), and 26 (6.0 grams) were cordmarked and grog tempered. Rimsherd 21 (51.5 grams) was grog and grit tempered with exterior cordmarking. Two rimsherds, number 16 (6.0 grams) and 17 (17.0 grams), were untempered. Three chert flakes (6.7 grams) were unmodified, 3 (4.7 grams) were modified, 1 (0.6 grams) was heat treated, and 1 (3.5 grams) was modified and heat treated. Four chert chunks weighed 15.1 grams. Sixty-seven pieces of limestone (832.0 grams) were burned and 1 piece (15.0 grams) was not burned. Other lithic remains were 1 piece of sandstone (3.0 grams) and 1 rough rock (2.9 grams). Unidentified bone fragments, burned clay, and fragments of a muddauber nest were in Feature 6. Feature 5 superimposed the southwest side of Feature 6.

Feature 7

This was a circular pit with a rectangular-shaped profile. Its north-south width measured 0.87 meters, its east-west length 0.88 meters, and its depth was 0.35 meters. The fill was a homogenous dark brown (10YR3/3) fine sand with small flecks of charcoal and burned clay. There

were 31 cordmarked, grog-tempered sherds (136.0 grams) and 1 cordmarked, grit-tempered sherd (3.0 grams). Rimsherd 63 (95.0 grams) was cordmarked and grog tempered. Fourteen chert flakes were recovered: 8 modified (17.5 grams), 1 modified made from Dongola chert (0.2 grams), and 5 modified and heat treated (6.3 grams). One chert chunk weighed 15.0 grams. Twenty-nine pieces of limestone (203.0 grams) were burned. One piece of sandstone (129.0 grams) and 3 (18.0 grams) were found in Feature 7. Charcoal and fragments of turtle bone were also recovered.

Feature 8

Feature 8 was an oblong pit with a shallow basin profile. Its north-south width was 0.74 meters, the east-west length was 0.98 meters, and its depth was 0.20 meters. The profile length, 1.15 meters, differed with the east-west plan view length of 0.98 meters. Unfortunately, plan view maps were not back-checked against profile maps. Zone A was very dark greyish brown (10YR3/2) fine sand mottled with small flecks of charcoal. Zone B was a brown-dark brown (10YR4/3) fine sand. Feature 8 only contained 1 unidentified pottery fragment (0.5 grams).

Feature 9

The oval, basin-shaped pit measured 1.45 meters east-west by 1.20 meters north-south with a 0.13 meter depth. The fill was a dark yellowish brown (10YR4/4) silty sand with a few small, dark brown (10YR3/3) mottles. There was a moderate amount of cultural debris. Four plain, shell-tempered sherds (7.0 grams), 1 cordmarked,

grog-tempered sherd (9.0 grams), and 1 plain, shell-tempered rimsherd, number 31, were the ceramics recovered. Chert materials included 2 unmodified flakes (20.0 grams), 3 modified flakes (14.0 grams), unmodified, heat treated flake (1.0 grams), and 1 hammerstone (85.0 grams). One piece of limestone (3.0 grams), 1 sandstone (86.0 grams), 1 piece of cinder (3.0 grams), 1 Missouri River clinker slot abrader (17.0 grams), and 1 piece of burned clay (1.0 grams) were found.

Feature 10

Feature 10 was a circular pit with a rectangular profile. Its east-west length was 0.94 meters, north-south width was 0.92 meters and its depth was 0.32 meters. The one soil zone, Zone A, was a very dark greyish brown (10YR3/2) fine sand with small yellowish brown (10YR5/6) mottles and occasional flecks of charcoal and burned clay. The ceramic material consisted of 20 cordmarked, grog sherds (556.0 grams), 2 plain, grog-tempered sherds (5.5 grams), 1 plain, grit-tempered sherd (1.5 grams), and 2 untempered sherds (7.0 grams). One cordmarked, grog-tempered, worked sherd (18.0 grams) was recovered. There were 2 unmodified chert flakes (0.6 grams), 10 modified chert flakes (15.9 grams), 1 modified and heat treated chert flake (1.2 grams), and 1 piece of chert (6.0 grams). Fifty-one pieces of limestone (514.0 grams) were burned; 4 (4.0 grams) were not burned. Two pieces of sandstone (55.0 grams) were also found in this pit along with 3 pieces of burned clay (12.0 grams).

Feature 11

This pit was circular with an irregular basin. It had an east-west width of 0.72 meters, a north-south length of 0.77 meters and a depth of 0.21 meters. Zone A was dark brown (10YR3/3) fine sand with charcoal and burned clay flecks. Zone B was brown-dark brown (10YR4/3) sand with dark brown (10YR3/3) mottles. All material remains were recovered from the first 5 centimeters below plowzone. The material consisted of 1 plain, shell-tempered sherd (7.0 grams), 3 cordmarked, grog-tempered sherds (84.0 grams), 1 untempered sherd (3.0 grams), 1 modified chert flake (1.5 grams), 1 modified, heat treated chert flake (1.5 grams), 1 piece of limestone (6.0 grams), and 8 pieces of burned limestone (83.0 grams).

Feature 14

This circular pit, with its straight-walled sides and irregular bottom, was sterile. It had a north-south width of 0.66 meters, an east-west length of 0.68 meters and a depth of 0.17 meters. Zone A was dark brown (10YR3/3) sandy silt and Zone B was dark yellowish brown (10YR4/4) fine sand.

Feature 17

After removing the plowzone and shovel scraping the surface, only the bottom of this pit remained giving the oval, shallow basin a depth of 0.10 meters. Its northwest-southeast axis was 0.50 meters and the northeast-southwest axis was 0.65 meters. The fill had a dark yellowish brown (10YR4/4) sandy silt texture with some brownish yellow (10YR6/6) mottling. This pit contained 2 pieces of burned limestone

(2.0 grams) and 1 bloated sherd (7.0 grams) that was cordmarked. This bloated sherd fit with another sherd from Feature 28.

Feature 18

This circular feature had an east-west width of 0.90 meters and a north-south length of 0.94 meters. Its irregular rectangular profile had a 0.35 meter depth. Zone A had a dark brown (10YR3/3) sandy silt fill with brown-dark brown (10YR4/3) mottles, small flecks of burned soil and charcoal. Zone B was dark yellowish brown (10YR4/4) fine sand. There were 1 plain, grog-tempered sherd (1.0 gram), 9 cordmarked, grog-tempered sherds (98.5 grams), 1 plain, grit-tempered sherd (1.5 grams), 1 plain, untempered sherd (7.0 grams), 1 cordmarked, grog-tempered rimsherd (15.0 grams), number 57, and 1 piece of burned clay (2.0 grams). Chert debris consisted of 2 unmodified chert flakes (4.0 grams), 2 modified chert flakes (4.5 grams), 2 modified, heat treated chert flakes (1.2 grams), and 2 pieces of chert (17.0 grams). Other lithic material were 31 burned pieces of limestone (352.5 grams) and 1 piece of sandstone (123.0 grams).

Feature 20

Feature 20 was a circular pit with a straight walled, rounded bottom profile. It had a dark brown (10YR3/3) sandy silt fill with small flecks of burned soil and charcoal. It had an east-west axis of 0.90 meters, a north-south axis of 0.88 meters and a depth of 0.33 meters. The ceramics consisted of 11 cordmarked, grog-tempered sherds (86.0 grams) along with 2 cordmarked, grog-tempered rimsherds, number 12 (76.0 grams) and number 31 (5.0 grams). There were 1 unmodified

chert flake (0.01) grams), 6 modified chert flakes (5.5 grams), 3 unmodified, heat treated chert flakes (7.7 grams), and 2 pieces of chert (9.0 grams). Fourteen pieces of burned limestone (149.3 grams) were recovered in addition to 2 pieces of sandstone (30.5 grams), and 3 pieces of rough rock (20.0 grams). Unidentified bone and charcoal fragments were also in this feature.

Feature 25

This circular, basin shaped pit had an east-west width of 0.68 meters, a north-south length of 0.70 meters, and a depth of 0.15 meters. Its one fill zone was dark brown (10YR3/3) fine sand with brown-dark brown (10YR4/3) mottles. The only material remain was 1 cordmarked, grog-tempered sherd (8.0 grams).

Feature 27

Feature 27, a rectangular pit with a fairly rectangular profile, had a north-south 0.90 meter length, an east-west 0.64 meter width and a 0.35 meter depth. There was 1 fill zone that was dark brown (10YR3/3) silty sand with brown-dark brown (10YR4/3) mottles and occasional small flecks of charcoal and burned soil. This feature was abundant in both ceramic and limestone material. There were 2 grog-tempered sherds (15.5 grams), 66 cordmarked, grog-tempered sherds (631.5 grams), 2 cordmarked, grit-tempered sherds (17.0 grams), 1 cordmarked, limestone-tempered sherd (9.0 grams), and 4 cordmarked, bloated sherds (7.0 grams). Two rimsherds, numbers 56 (2.0 grams) and 52 (55.0 grams), were cordmarked with grog tempering while another, number 58 (18.0 grams) was cordmarked and bloated. Seventy-four pieces of limestone (1302.0

grams) were burned. One rough rock (8.5 grams) along with 1 unmodified flake (0.01 gram), and 1 chert biface (53.0 grams) were recovered. Feature 27 also contained fish bone fragments and burned clay. The southeast portion of Feature 28 cut into Feature 27.

Feature 28

This slightly irregular circular pit had an irregular profile that exhibited a double bottom. Its east-west width was 1.14 meters, north-south length was 1.24 meters, and its depth was 0.55 meters. Zone A was dark brown (10YR3/3) fine sand with very dark greyish brown (10YR3/2) and brown-dark brown (10YR4/3) mottles and a few flecks of charcoal and burned clay. The fill of Zone B was brown-dark brown (10YR4/3) fine sand with more flecks of burned clay and charcoal than Zone A. There were 15 grog-tempered sherds (76.0 grams), 17 cordmarked, grog-tempered sherds (83.0 grams), 1 cordmarked, grit-tempered sherd (5.0 grams), 1 cordmarked, limestone-tempered sherd (2.0 grams), 9 plain, bloated sherds (40.0 grams), and 2 cordmarked, bloated sherds (3.0 grams). Four of the 11 bloated sherds fit with rimsherd 58 from Feature 27. Another 1 of the bloated sherds fit with the 1 bloated sherd from Feature 17. Rimsherds, numbers 66 (11.0 grams), 67 (1.0 gram), and 68 (9.0 grams) were also bloated. Rimsherd 64 (48.0 grams) was grog tempered with vertical cordmarking. Chert material consisted of 2 unmodified, chert flakes (14.0 grams), 5 modified chert flakes (13.7 grams), 1 (0.7 grams) which was made from Dongola chert, 3 unmodified, heat treated, chert flakes (2.6 grams), 1 unmodified, chert blade (36.1 grams), and 3 pieces of chert (27.0 grams). Two rough rocks

(29.0 grams) and 71 burned pieces of limestone (557.0 grams) were in this feature along with unidentified bone fragments. Feature 28 was superimposed by Feature 27 along the southeast edge.

Feature 33

This circular pit had a shallow basin that was 0.10 meters deep. The east-west width was 0.69 meters and the north-south length was 0.71 meters. The east-west width of the plan view map measures 0.10 meters shorter than the profile length of 0.79 meters. As was previously mentioned, due to time and labor constraints, backchecking the plan view and profile maps was not always feasible. The only fill zone, Zone A, was a dark brown (10YR3/3) fine sand with yellowish brown mottles (10YR5/4) and flecks of charcoal. The material remains were 4 cordmarked, grog-tempered sherds (48.0 grams), and 10 pieces of burned limestone (18.0 grams).

Feature 35

Feature 35, a circular pit with curved sides and a rounded bottom, had an east-west width of 0.87 meters, a north-south length of 1.08 meters, and a depth of 0.40 meters. There was one fill zone, Zone A. It was a dark brown (10YR3/3) fine sand with dark yellowish brown (10YR4/4) mottles, charcoal, and burned clay flecks. One plain, shell-tempered sherd (1.0 grams), 2 cordmarked, shell-tempered sherds (2.5 grams), 1 plain, grog-tempered sherd (0.5 grams), 6 cordmarked, grog-tempered sherds (75.5 grams), and 1 fabric-impressed, limestone-tempered sherd (34.0 grams) were recovered. Two rimsherds, numbers 55 (51.0 grams) and 59 (37.0 grams), were both from the same cordmarked

limestone tempered vessel. Chert material consisted of 6 unmodified chert flakes (5.3 grams), 13 modified chert flakes (30.2 grams), 1 modified, heat treated, chert flake (0.45 grams), 1 chert biface (51.5 grams), and 1 chert projectile point (1.5 grams). There were 24 pieces of limestone (596.0 grams), 2 of which were burned (63.0 grams), and 4 rough rocks (42.8 grams), along with some unidentified bone fragments. Feature 3 cut into the western edge of Feature 35.

Feature 36

This oval pit had an uneven basin that dropped to a depth of 0.28 meters at the east end. Its east-west length was 0.44 meters and north-south width was 0.30 meters. The fill was very dark greyish brown (10YR3/2) fine sand with dark yellowish brown (10YR4/4) mottles and some clay. The only material remain was 1 plain, limestone-tempered sherd (5.0 grams). This feature was partially superimposed by Feature 37, which was an historic horse burial.

Feature 38

Feature 38, an oval pit with an irregular rectangular profile, had a north-south width of 1.02 meters, an east-west length of 1.40 meters, and a depth of 0.64 meters. The fill was dark brown (10YR3/3) sandy loam mottled with small flecks of charcoal and burned clay. There was an abundance of ceramic remains, many of which were from the same vessel. Eight plain, grog-tempered sherds (6.5 grams), 122 cordmarked, grog-tempered sherds (907.0 grams), 23 cordmarked, grit-tempered sherds (392.0 grams), and 1 plain, grit- and grog-tempered sherd (73.0 grams) were in this feature. Rimsherds, numbers 2 (47.0

grams), 3 (146.0 grams) and 5 (39.0 grams), were cordmarked, grog-tempered rimsherds from the same vessel. Portions of rimsherds 2 and 5 were bloated. Rimsherd 4 (3.0 grams) was vertically cordmarked and grit tempered. Chert materials consisted of 5 modified chert flakes (7.3 grams), 2 modified, heat treated chert flakes (9.5 grams), 1 unmodified, heat treated, chert flake (0.01 gram), and 2 pieces of chert (6.0 grams). Other lithic materials included 332 pieces of burned limestone (5939.5 grams) and 1 piece of quartzite (47.0 grams). Charcoal and unidentified bone fragments were also recovered. Feature 38 cut into Feature 39, which was defined in plan view but not excavated due to a lack of time.

Burials

Burial 1

Burial 1 was located in a fairly rectangular burial pit, 1.70 meters east-west by 0.87 meters north-south with a depth of 0.13 meters below plowzone. The pit was oriented grid east-west. The pit fill was a dark brown (10YR3/3) sandy silt with brownish yellow (10YR6/6) mottles. Along the south edge of the pit a small semi-circular extension, possibly a postmold, was noted in plan view, but not sectioned. Postmolds in burial pits have been noted at the Hatchery West site (Binford et al. 1970) and may have been used as grave markers. Burial pits 2 and 3 did not show evidence of postholes. Material remains included 3 sherd fragments (4.0 grams) of unidentifiable temper, 1 piece of limestone, and 1 piece of chert.

Preservation was poor, most of the burial consisted of bone meal. One small femur shaft fragment, mandible bone meal, the crowns of several upper and lower teeth, and several unidentifiable bone meal, long bone shaft fragments were recovered. The teeth were in occlusion and the skull probably rested on the occipital because of the orientation of the dental arch. The teeth were located at the grid east end of the pit.

The third molar had erupted and exhibited little attrition suggesting that Burial 1 was a young adult. First and second molars exhibited moderate attrition. Nothing remained on which a sex determination could be made.

Burial 2

Burial 2 had a similar rectangular shaped burial pit, measuring 1.90 meters southwest-northeast, 0.86 meters southeast-northwest and a depth of 0.42 meters. The pit was oriented grid northeast-southwest. The fill was a dark yellowish brown (10YR4/4) sandy silt with a few small flecks of charcoal and burned soil.

One grit tempered sherd (2.0 grams), 1 cordmarked, grit-tempered sherd (8.0 grams), 1 cordmarked, grog-tempered sherd (11.0 grams), and 1 chert flake (5.0 grams) were found in the pit fill.

This burial was also poorly preserved. Only skull, teeth, tibia, and femur shaft fragments were identifiable. The position of the burial fragments suggests this was a primary articulated burial in which the body was extended on its back with the knees spread and the ankles together. The skull was located at the grid east end of the

pit. Both tibiae exhibited a marked proliferation of the cortical bone along the anterior crest producing a bowed effect.

The sex of this burial could not be determined. The third molar had erupted indicating it was an adult. It may have been a young adult based on the moderate attrition of the third molar.

Burial 3

Burial 3 was in a rectangular pit measuring 1.68 meters west southwest-east northeast by 0.84 meters east southeast-west northwest with a 0.31 meter depth. The pit was oriented grid east northeast-west southwest. The fill was a brown-dark brown (10YR4/3) sandy silt with a few small brownish yellow (10YR6/6) mottles.

This primary articulated burial was on its back with its legs flexed to the right. The right arm was extended, the left arm was not preserved. The skull was lying on its left side and located at the grid east of the pit. The missing teeth were probably a result of extensive rodent activity around the facial area.

This burial is also an adult with the third molars exhibiting moderate attrition. The sex was not determinable on the basis of the poorly preserved bone present.

CHAPTER IV

CERAMIC ANALYSIS

At the Schlemmer site there was great ceramic variability in vessel shape, tempering, and surface treatment. There was a predominance of jars and bowls in addition to pans and a plate. Sherds were tempered with shell, grit, grog, and limestone. Some sherds did not have any temper. Surface finishes ranged from slips, cordmarking to plain pottery. All the sherds recovered from Schlemmer were weighed and described according to temper and surface treatment. Rim profiles were drawn for the rimsherds.

Analysis of Body Sherds

All sherds were catalogued according to provenience, then weighed in grams and described. The description of each sherd included the temper, surface treatment, and any other characteristic elements. Temper was identified macroscopically. If the temper was difficult to identify, then the sherd was thin sectioned and the temper was identified microscopically (Porter and Szuter 1978). The material used as a temper included grit, limestone, grog, and shell. The shell and limestone were usually leached out. Some sherds contained a combination of grog and grit as a temper. When grit was present in the paste it was impossible to determine whether it was used as a temper or was an inclusion in the clay source and not intentionally added. In these cases the temper was described as a

combination of both since the grit, whether intentionally added or being part of the original clay source, acted as a temper.

The surface treatment was described as cordmarked, slipped, or plain. The cordmarked sherds were analyzed to determine whether the cordmarking was S-twisted or Z-twisted. This was done in order to test Munson's (1971:10) statement that Late Woodland occupations tended to have a preponderance of cordmarked sherds with S-twisted cords as opposed to Z-twisted cords. In a letter to Shippee (1972:84), he further states that "the percentage of this attribute (was) quite significant in separating Early Bluff from Late Bluff." Munson was not explicit in describing his method for determining the type of cordmarks on each sherd, although he also states in that same letter (Shippee 1972:84) that S-twist is right hand and Z-twist is left hand and "the impressions on the pottery are negative, so the cord was the opposite of the impressions that you see" (italics are Munson's).

The cordtwists of sherds were analyzed in the following manner. Modeling clay was pressed onto the cordmarked side of a sherd and removed. The impression on the clay was examined macroscopically to determine if the cord the potter used was S-twisted or Z-twisted (Figure 4). The clay would mirror, that is be the opposite of, the impression on the sherd and therefore would represent what type of cord the potter had actually used. No attempt was made to determine how many times the cord had been twisted. Only the final twist was able to be analyzed using this method. Table 2 is a tabulation of the quantity of cordmarked sherds that were S-twisted or Z-twisted. These tabulations do not correspond to the total number of cordmarked

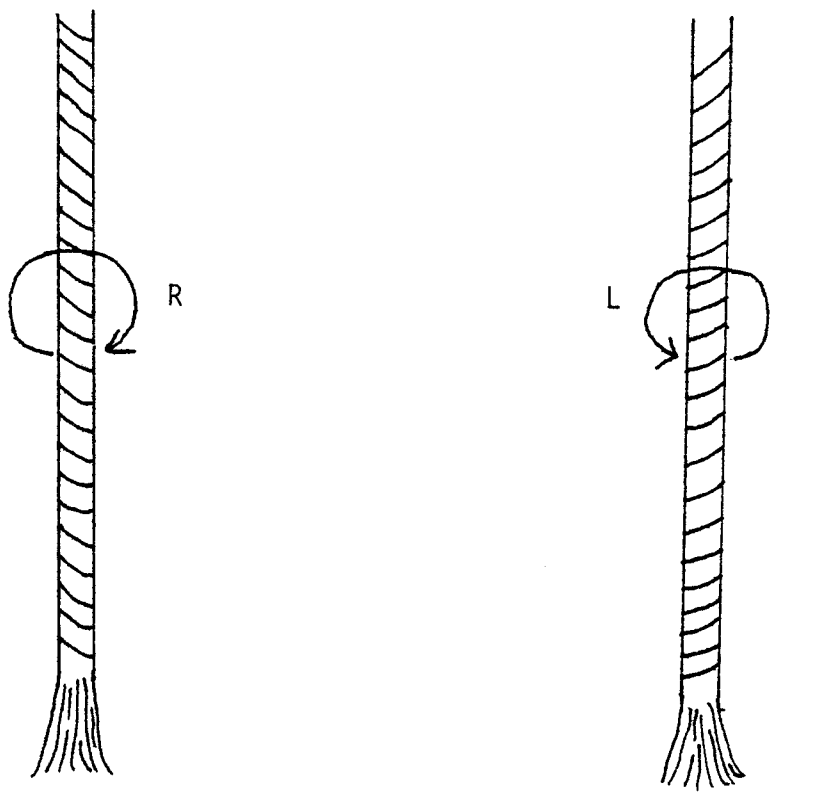


Figure 4. Illustration of an S-twist and Z-Twist cord. The cord twists to the right (R) for an S-twist cord and to the left (L) for a Z-twist cord. Drawing adapted from Hurley (1968).

Table 2. Quantity of S-Twist and Z-Twist Cordmarked Sherds from Each Feature. Features not listed either did not contain any cordmarked sherds or the cordmarked sherds in the feature could not be analyzed.

Feature	S-Twist	Z-Twist
1	25	0
3	2	1
4	5	0
6	13	0
7	10	0
10	26	0
11	6	0
12	3	0
18	2	0
20	3	0
25	1	0
27	23	10
28	1	1
31	1	0
32	4	0
33	0	1
35	4	0
38	3	0

sherds as it was not possible to determine the type of cordmarking on every sherd. Some sherds were too worn or smoothed over for any analysis to be complete or accurate. The results showed that the majority of analyzed sherds had S-twisted cordmarks, while only 13 sherds from 4 pits had Z-twisted cordmarks.

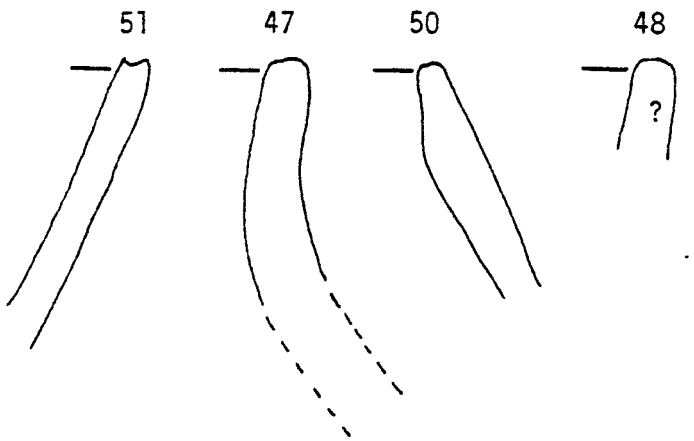
The analysis of the twists of cordmarks supported Munson's statements that Early Bluff cordmarked wares would have a preponderance of S-twisted cordmarks. Only 4 Late Woodland features, 3, 27, 28, and 33, had sherds with Z-twist cords. The remaining features that contained sherds that could be analyzed had S-twist cordmarks. Late Bluff wares were not represented at Schlemmer therefore it was not possible to verify Munson's statement that Z-twist cordmarks would be more frequent on Late Bluff cordmarked ceramics. Munson does not describe the type of cordmarks one should expect on Mississippian pottery. In the Schlemmer sample, Mississippian cordmarked pottery that could be analyzed all had S-twist cordmarks. No Z-twist cordmarks were observed on the Mississippian pottery. Although Munson makes note of differences in cordmarking, he does not explain the significance in the shift in the types of twist of the cords.

Analysis of Rimsherds

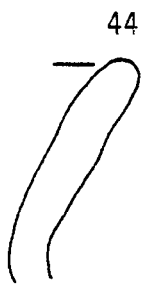
A total of at least 63 rimsherds from different vessels were recovered from Schlemmer. Each rimsherd was catalogued on a separate index card and given a number. On the back of each index card a rim profile was drawn except in cases where the rim was too small to orient it properly. Figure 5 contains the drawings of all rim

Figure 5: Drawings of profiles for rimsherds, grouped by plowzone and Level 1, features, and structures. Number above each profile is the rimsherd number and corresponds to the description in Table 3. Short line at top edge of each profile indicates interior of vessel. A question mark inside the profile means orientation was questionable. All rimsherd profiles are drawn except where no orientation was possible.

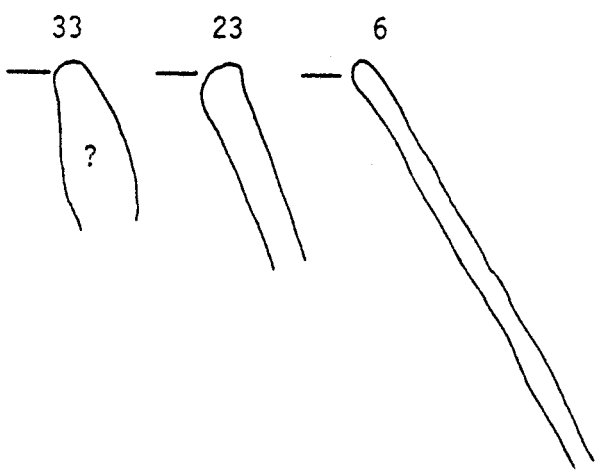
Plowzone and Level 1



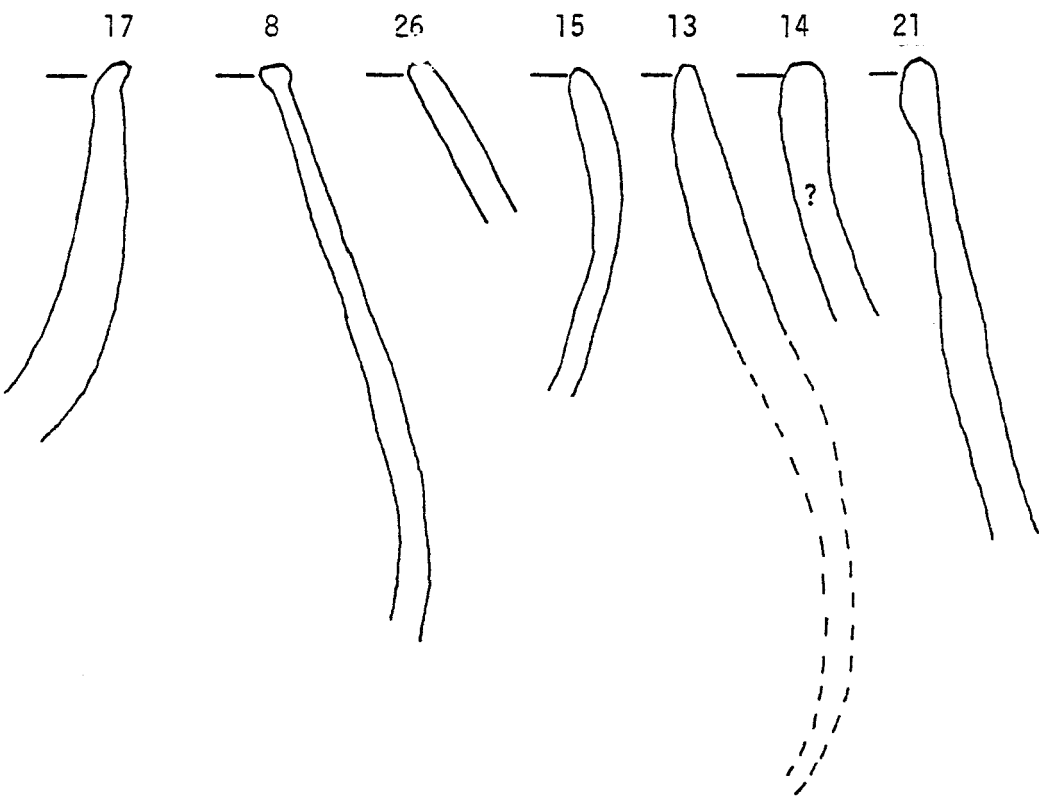
Feature 5



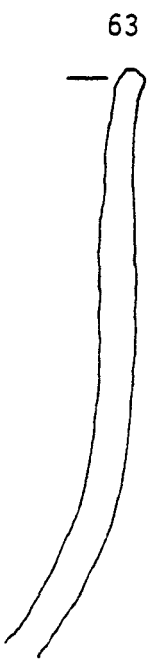
Feature 1



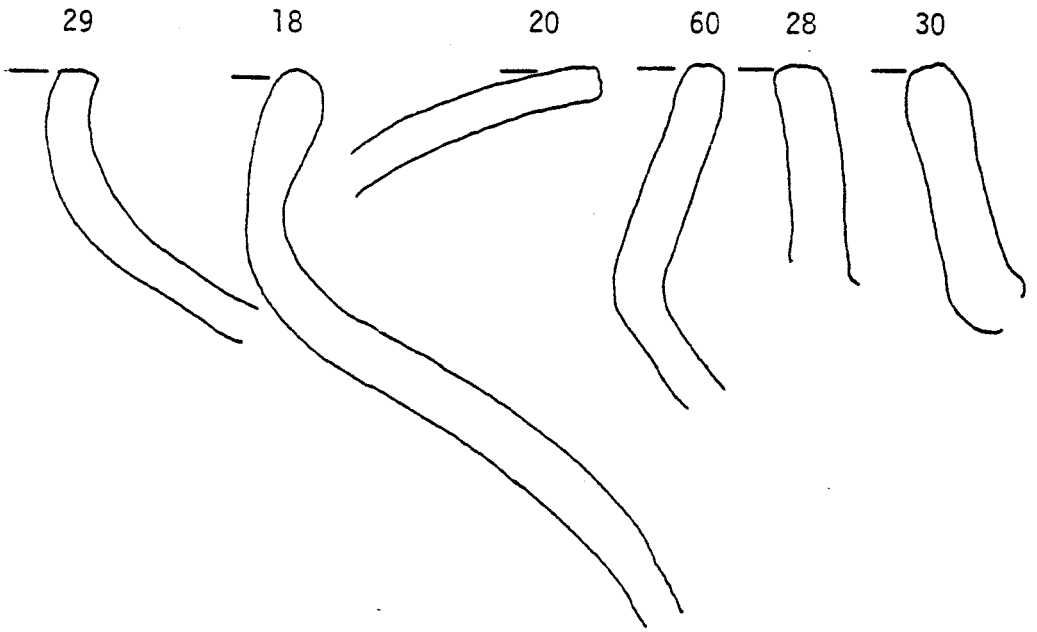
Feature 6

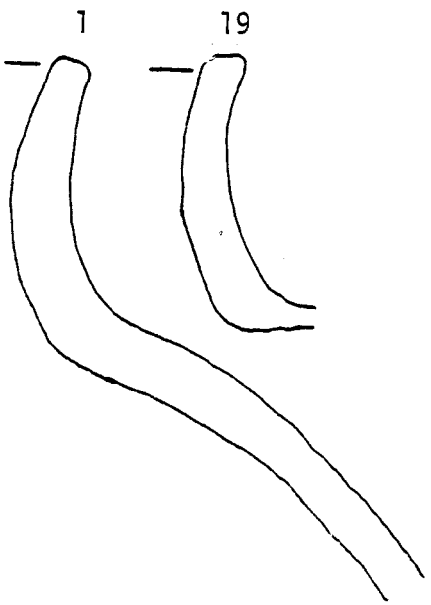


Feature 7



Feature 12





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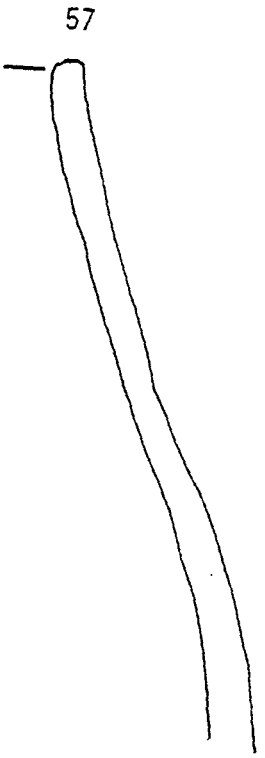
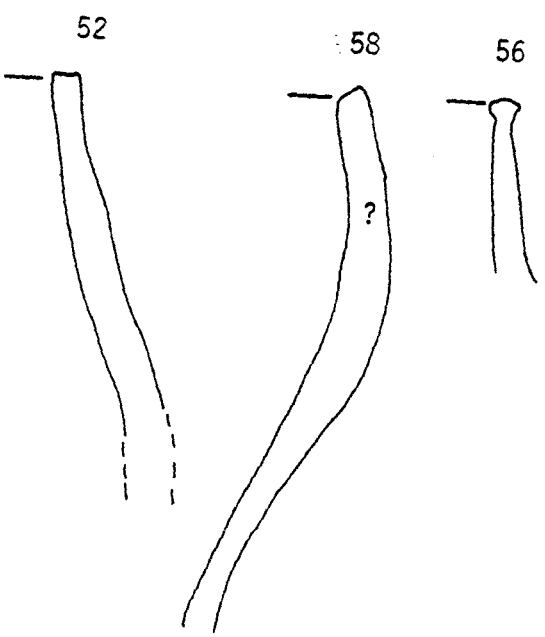


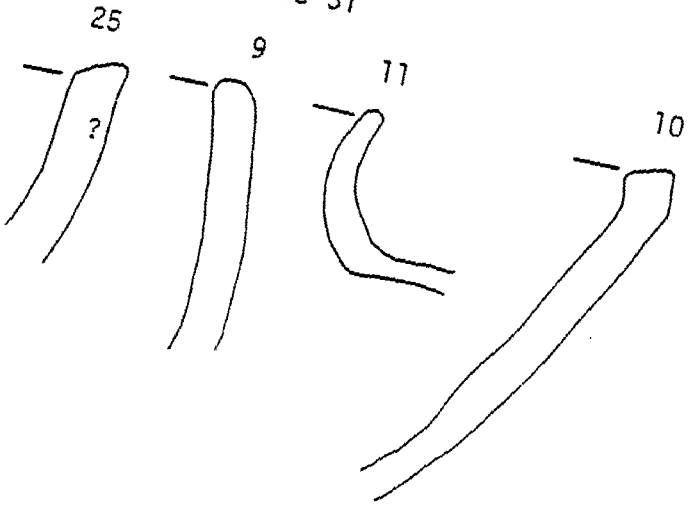
Feature 20

Feature 27



Feature 28

Feature 31



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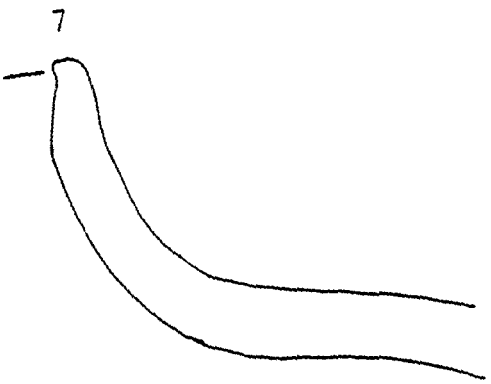

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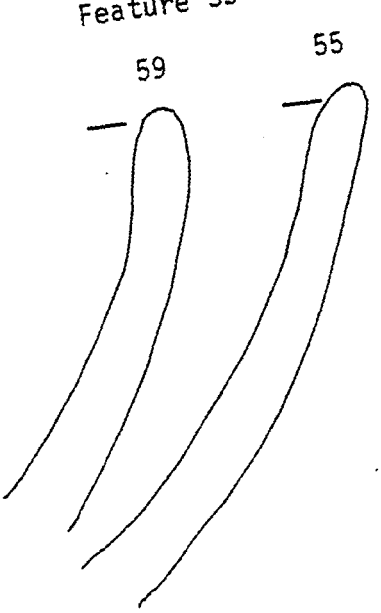
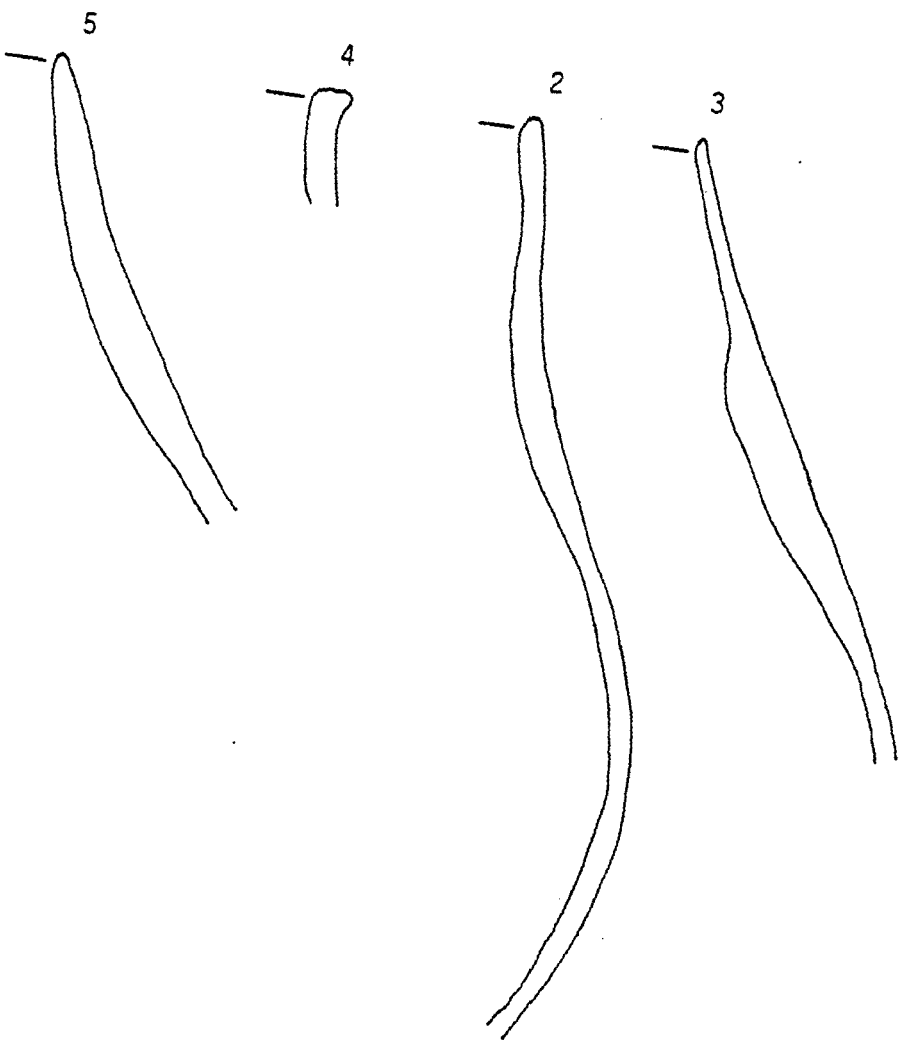
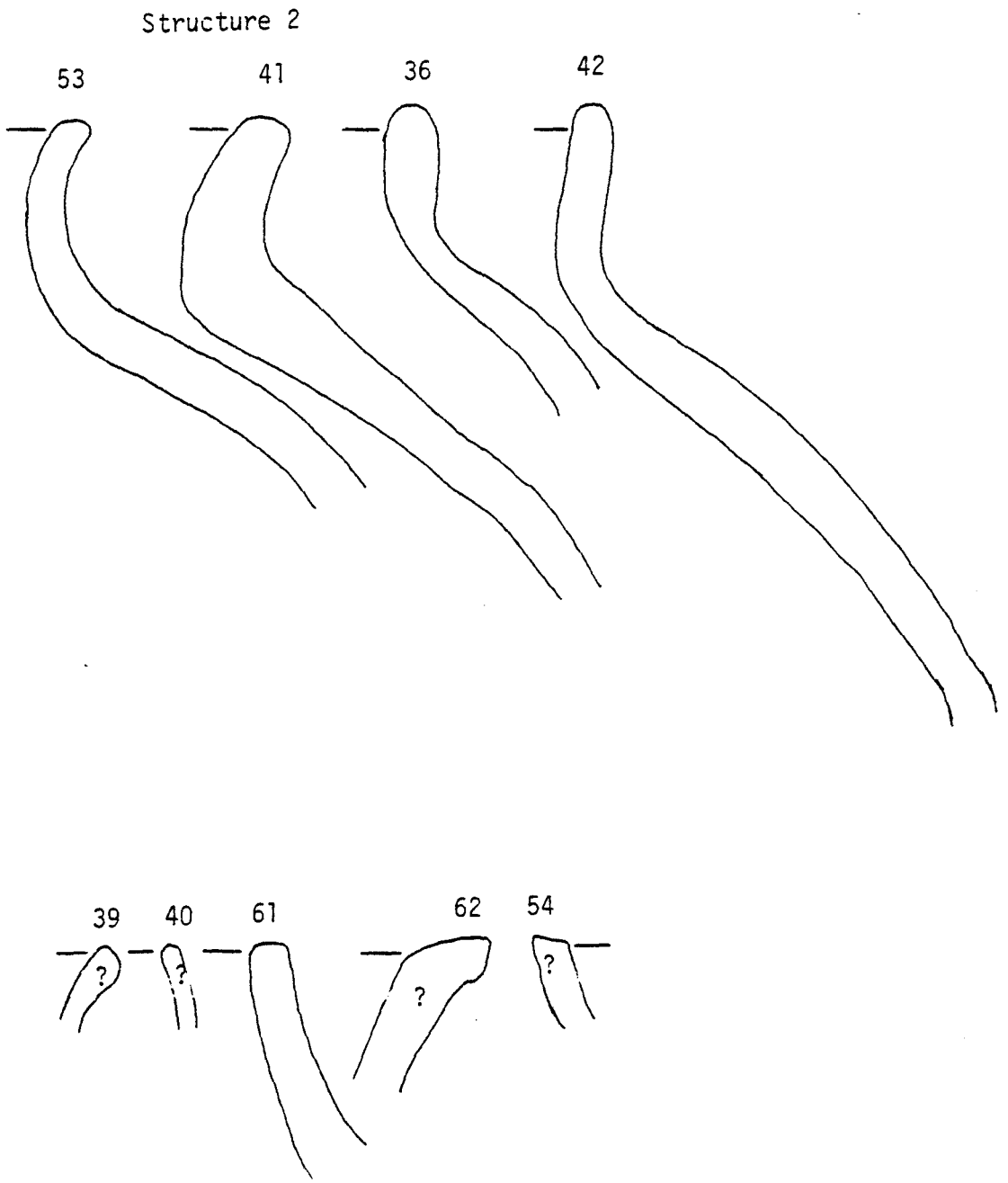
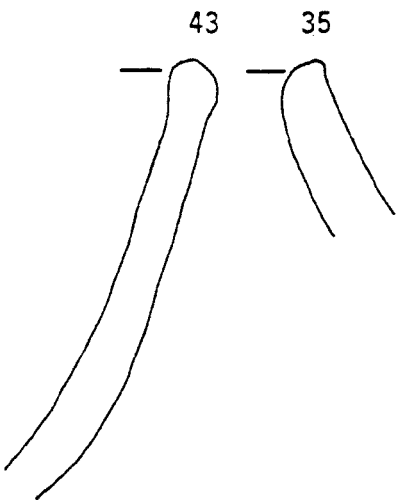


Feature 38




Structure 2
53
41
36
42
39
40
61
62
54
?
?
?
?

Structure 1



profiles. The description of each rimsherd, according to temper and surface treatment, was identical to the way it was done for the body sherds.

Table 3 gives additional information for each rimsherd. Column 1 gives the feature in which the sherd was found. Column 2 contains the rimsherd number which was given during cataloguing. Column 3 lists the vessel form and, if present, any appendages. Most of the vessels were jars or bowls with no appendages. Additional information noted in column 3 includes: (1) if the orientation of the rim profile is questionable, (2) if no orientation was possible, or (3) if the rim fits or is possibly from the same vessel as another rim. Column 4 includes the type and degree of surface treatment ranging from plain, to cordmarked, to slipped. The temper is listed in column 5. The last 2 columns list the weight in grams, and the range of the width in millimeters of the rimsherd. The width of the rimsherd is a range from the thinnest to thickest part in profile. If only 1 number is given, the rimsherd was relatively uniform in width. The rim diameter was indeterminable for the majority of vessels and is not included in Table 3.

Distribution of Ceramics

The most apparent characteristics of temper and surface treatment were recorded for the Schlemmer ceramics. Vessel shape was noted for the rimsherds. Using these 3 characteristics--temper, surface treatment, and vessel shape--it was apparent that there was a

Table 3. Description of Each Rimsherd Recovered from the Schlemmer Site

Feature	Rimsherd Number	Vessel Form Appendages	Surface Treatment	Temper	Weight in grams	Weight in mm.
12	1	Jar	Plain, smooth	Shell	82	.6-.8
38	2	Globular jar; fits with Rimsherds 3 and 5	Fairly vertical cordmarking over entire rim; bloated in parts; interior slashes	Grog	47	.3-.45
38	3	Globular jar; fits with Rimsherd 2 and 5	Vertical cordmarking over entire rim; interior slashes	Grog	146	.2-.7
38	4	Jar?	Vertical cordmarking beginning .5 cm below lip; interior notches	Grit	3	.5
38	5	Globular jar; fits with Rimsherds 2 and 3	Fairly vertical cordmarking over entire rim; interior slashes; bloated in parts	Grog	39	.3-.55
1	6	Globular jar; possibly from same vessel as Rimsherd 26	Cross-hatched cordmarking	Grog	31	.35
32	7	Shouldered jar	Plain, smooth	Shell	53	.4-.9
6	8	Globular jar	Cross-hatched cordmarking	Grog	54	.3
31	9	Bowl/Jar?	Plain, smooth	Shell	32	.5-.6

Table 3. Description of Each Rimsherd Recovered from the Schlemmer Site (continued)

Feature	Rimsherd Number	Vessel Form Appendages	Surface Treatment	Temper	Weight in grams	Weight in mm.
31	10	Bowl	Plain, smooth	Shell	47	.5-.7
31	11	Jar with broken loop handle	Plain, smooth	Shell	9	.3-.6
20	12	Globular jar	Vertical cordmarking	Grog	76	.3-.6
6	13	Globular jar	Vertical cordmarking	Grog	33	.4-.7
6	14	Questionable orientation	Cordmarked	Grog	12	.5-.6
6	15	Jar/Bowl?	Vertical cordmarking interior slashes causing rippled lip	Grog	13	.4
6	16	No orientation possible	Plain	None	6	.3-.7
6	17	Small bowl	Plain, very smooth	None	17	.3-.8
12	18	Jar; single lug; fits with Rimsherd 42	Plain, smooth	Shell	84	.5-.8
12	19	Jar	Plain, smooth	Shell	35	.5-.8
12	20	Possible plate	Plain, smooth	Shell	7	.4-.6

Table 3. Description of Each Rimsherd Recovered from the Schlemmer Site (continued)

Feature	Rimsherd Number	Vessel Form Appendages	Surface Treatment	Temper	Weight in grams	Weight in mm.
6	21	Jar	Vertical cordmarking	Grog & Grit	52	.3-.6
1	22	No orientation possible	Cordmarked	Grog	4	.5-.8
1	23	Jar	Vertical cordmarking	Grog	12	.5-.6
12	24	No orientation possible	Plain, smooth	Shell	3	.5
31	25	Questionable orientation	Plain, smooth	Shell	6	.6-.7
6	26	Jar; possibly from same vessel as Rimsherd 6	Cross-hatched cordmarking	Grog	6	.35
12	27	No orientation possible; but fits with Rimsherd 28	Plain, smooth	Shell	1	Fragment
12	28	Jar; fits with Rimsherd 27	Plain, smooth	Shell	16	.7
12	29	Jar	Cordmarking beginning one centimeter below lip	Shell	15	.45-.7
12	30	Jar?	Plain	Shell	17	.8-.10

Table 3. Description of Each Rimsherd Recovered from the Schlemmer Site (continued)

Feature	Rimsherd Number	Vessel Form Appendages	Surface Treatment	Temper	Weight in grams	Weight in mm.
20	31	No orientation possible	Cordmarked; cord wrapped stick interior notches	Grog	5	.6
31	32	No orientation possible	?	Shell?	1	Fragment
1	33	Questionable orientation	Cordmarked	Grog	7	.5-.8
S 1	34	No orientation possible	Plain, smooth	Shell	1	.6
S 1	35	Jar?	Plain, smooth	Shell	5	.4-.8
S 2	36	Jar	Plain; burned material on exterior	Shell	24	.5-.7
S 2	37	No orientation possible	Plain, smooth	Shell	1	.6
S 2	38	No orientation possible	Plain, smooth	Shell	4	Fragment
S 2	39	Questionable orientation	Plain, smooth	Shell	6	.3-.5
S 2	40	Questionable orientation	Plain	Shell	5	.3
S 2	41	Jar	Plain, smooth	Shell	163	.6-1.3

Table 3. Description of Each Rimsherd Recovered from the Schlemmer Site (continued)

Feature	Rimsherd Number	Vessel Form Appendages	Surface Treatment	Temper	Weight in grams	Weight in mm.
S 2	42	Jar; fits with Rimsherd 18	Plain, smooth	Shell	99	.6-.9
S 1	43	Bowl	Plain, smooth	Shell	47	.6-.7
5	44	Jar	Plain, smooth	Shell	34	.5-.7
PZ	45	No orientation possible; but possibly from same vessel as Rimsherd 64	Vertical cordmarking from lip; interior notches	Grog	3	.5
PZ	46	No orientation possible	Cordmarked; bloated rim	Grog?	3	.6
PZ	47	Jar	Plain	Shell	16	.6-.8
PZ	48	Questionable orientation	?	Grog	4	.5-.6
PZ	49	No orientation possible	Plain, smooth	Shell	4	.6
PZ	50	Jar	Vertical cordmarking from lip	Grog	9	.35-.7
L 1	51	Bowl	Cordmarked; cord wrapped stick interior notches	Grog	18	.4-.6
27	52	Jar	Vertical cordmarking from lip; triangular interior notches	Grog	55	.4-.6

Table 3. Description of Each Rimsherd Recovered from the Schlemmer Site (continued)

Feature	Rimsherd Number	Vessel Form Appendages	Surface Treatment	Temper	Weight in grams	Weight in mm.
S 2	53	Jar with loop handle	Cordmarked	Shell	53	.5-.7
S 2	54	Questionable orientation	Plain red-slip	Lime-stone	1	.5
35	55	Bowl; fits with Rimsherd 59	Cordmarked; cord wrapped stick interior notches	Lime-stone	51	.6-.9
27	56	Jar?	Cordmarked; interior and exterior notches	Grog	2	.35-.5
18	57	Globular jar	Vertical cordmarking from lip; cord wrapped stick interior notches	Grog	15	.4-.6
27	58	Completely bloated	Vertical cordmarking?	Grog?	18	.45-.7
35	59	Bowl; fits with Rimsherd 55	Cordmarked; cord wrapped stick interior notches	Lime-stone	37	.6-.9
12	60	Jar with bifurcate lug	Plain, smooth	Shell	117	.6
S 2	61	Jar	Plain	Shell	19	.6-.9
S 2	62	Questionable orientation	Cordmarked?	Shell	4	.8-1.2

Table 3. Description of Each Rimsherd Recovered from the Schlemmer Site (continued)

Feature	Rimsherd Number	Vessel Form Appendages	Surface Treatment	Temper	Weight in grams	Weight in mm.
7	63	Bowl	Cordmarked	Grog	95	.3-.5
28	64	Jar; possibly from same vessel as Rimsherd 45	Vertical cordmarking; interior notches	Grog	48	.35-.7
6	65	No orientation possible	Cordmarked; triangular interior notches	Grog	4	.4-.5
28	66	No orientation possible	Cordmarked; bloated rim	?	11	.4-.55
28	67	No orientation possible	Plain?; bloated rim	?	1	.25-.3
28	68	No orientation possible	Bloated	?	9	.25-.5
S 2	69	Small bowl	Plain	None	176	.6
4	70	?	Cordmarked	Grog & Grit	5	Frag-ment

differential distribution of ceramic types. Table 4 gives the exact quantity and weight of the various types of sherds in all the pits.

Features 1, 3, 4, 6, 7, 8, 10, 17, 18, 20, 25, 27, 28, 30, 33, 36, and 38 did not contain any shell tempered sherds. Feature 14 was sterile and Feature 8 had only 1 unidentifiable pottery fragment (0.5 grams). Feature 11 contained 1 shell tempered sherd (7.0 grams) and Feature 35 contained 3 shell tempered sherds (3.0 grams). Since there is a paucity of shell tempered sherds in these 2 pits and the sherds do not weigh much, these pits are grouped with the aforementioned ones. This set of features contained sherds that were grog, grit or limestone tempered. Ninety-two percent of these sherds had a cord-marked surface (475 cordmarked sherds weighing 4414.0 grams out of 518 grog, grit, and limestone tempered sherds weighing 4673.0 grams). Eight percent had a plain surface (42 plain grog, grit, and limestone tempered sherds weighing 225.0 grams), and 1 sherd (34.0 grams) had a fabric impressed surface. This pattern was particularly predominant among the grog-tempered sherds where out of a total of 442 grog tempered sherds (3425.0 grams), 412 (3317.0 grams) or 93 percent were cordmarked. S-twist cordmarks were predominant in this set of features with the Z-twist cordmarks found only on 13 sherds from Features 3, 27, 28, and 33. Table 2 gives the exact quantity of S-twist and Z-twist cordmarks. Rimsherds from this group of pits were present in Features 1, 6, 7, 18, 20, 27, 28, 35, and 38. All of these rims were from various shaped jars and bowls, none having flared or everted rims. Figure 5 illustrates the rim profiles and Figure 6 shows the distribution of rimsherd types.

Table 4. Quantity and Weight in Grams of Ceramic Types from all Pits. ( ): Weight in grams.

Feature	Shell	Shell Cordmarked	Shell Fabric Impressed	Grog	Grog Cordmarked	Grit	Grit Cordmarked	Grog and Grit	Grog and Grit Cordmarked	Limestone	Limestone Cordmarked	Limestone Red Slipped	Limestone Fabric Impressed	No Temper	Bloated	Worked Sherd	Fragments
1				1 (2)	53 (268)		13 (230)		9 (154)					1 (2)			3 (2)
3					5 (16)		1 (3)		1 (2)	5 (17)	1 (5)						7 (4)
4					7 (47)	1 (1)		2 (61)	1 (49)							1 (29)	3 (1)
5	15 (138)				1 (6)												13 (8)
6					49 (248)				6 (135)					3 (25)			3 (1)
7					31 (136)		1 (3)										3 (3)
8																	1 (1)
9	4 (7)				1 (9)												

Table 4. Quantity and Weight in Grams of Ceramic Types from all Pits. ( ): Weight in grams (cont'd)

Feature	Shell	Shell Cordmarked	Shell Fabric Impressed	Grog	Grog Cordmarked	Grit	Grit Cordmarked	Grog and Grit	Grog and Grit Cordmarked	Limestone	Limestone Cordmarked	Limestone Red Slipped	Limestone Fabric Impressed	No Temper	Bloated	Worked Sherd	Fragments
10				2 (6)	20 (556)	1 (2)								2 (7)		1 (18)	4 (4)
11	1 (7)				3 (84)									1 (3)			1 (1)
12	159 (593)	3 (17)			1 (3)							1 (2)					
14																	
17															1 (7)		
18				1 (1)	9 (90)	1 (2)								1 (7)			8 (9)
20					11 (86)												3 (3)
25					1 (8)												
27				2 (16)	66 (632)		2 (17)				1 (9)				4 (7)		2 (1)

Table 4. Quantity and Weight in Grams of Ceramic Types from All Pits. ( ): Weight in grams (Cont'd)

Feature	Shell	Shell Cordmarked	Shell Fabric Impressed	Grog	Grog Cordmarked	Grit	Grit Cordmarked	Grog and Grit	Grog and Grit Cordmarked	Limestone	Limestone Cordmarked	Limestone Red Slipped	Limestone Fabric Impressed	No Temper	Bloated	Worked Sherd	Fragments
28				15 (76)	17 (83)		1 (5)				1 (2)				11 (43)		4 (4)
29																	
30					8 (24)												
31	41 (137)	5 (42)	1 (46)														
32	22 (58)	10 (15)			3 (14)					1 (7)		3 (3)		1 (2)			19 (12)
33					4 (48)												2 (1)
35 35	1 (1)	2 (2)		1 (1)	6 (76)								1 (34)				9 (4)
36										1 (5)							

Table 4. Quantity and Weight in Grams of Ceramic Types from All Pits. ( ): Weight in grams (Cont'd)

Feature	Shell	Shell Cordmarked	Shell Fabric Impressed	Grog	Grog Cordmarked	Grit	Grit Cordmarked	Grog and Grit	Grog and Grit Cordmarked	Limestone	Limestone Cordmarked	Limestone Red Slipped	Limestone Fabric Impressed	No Temper	Bloated	Worked Sherd	Fragments
38				8 (6)	122 (907)		23 (392)		1 (73)								19 (4)

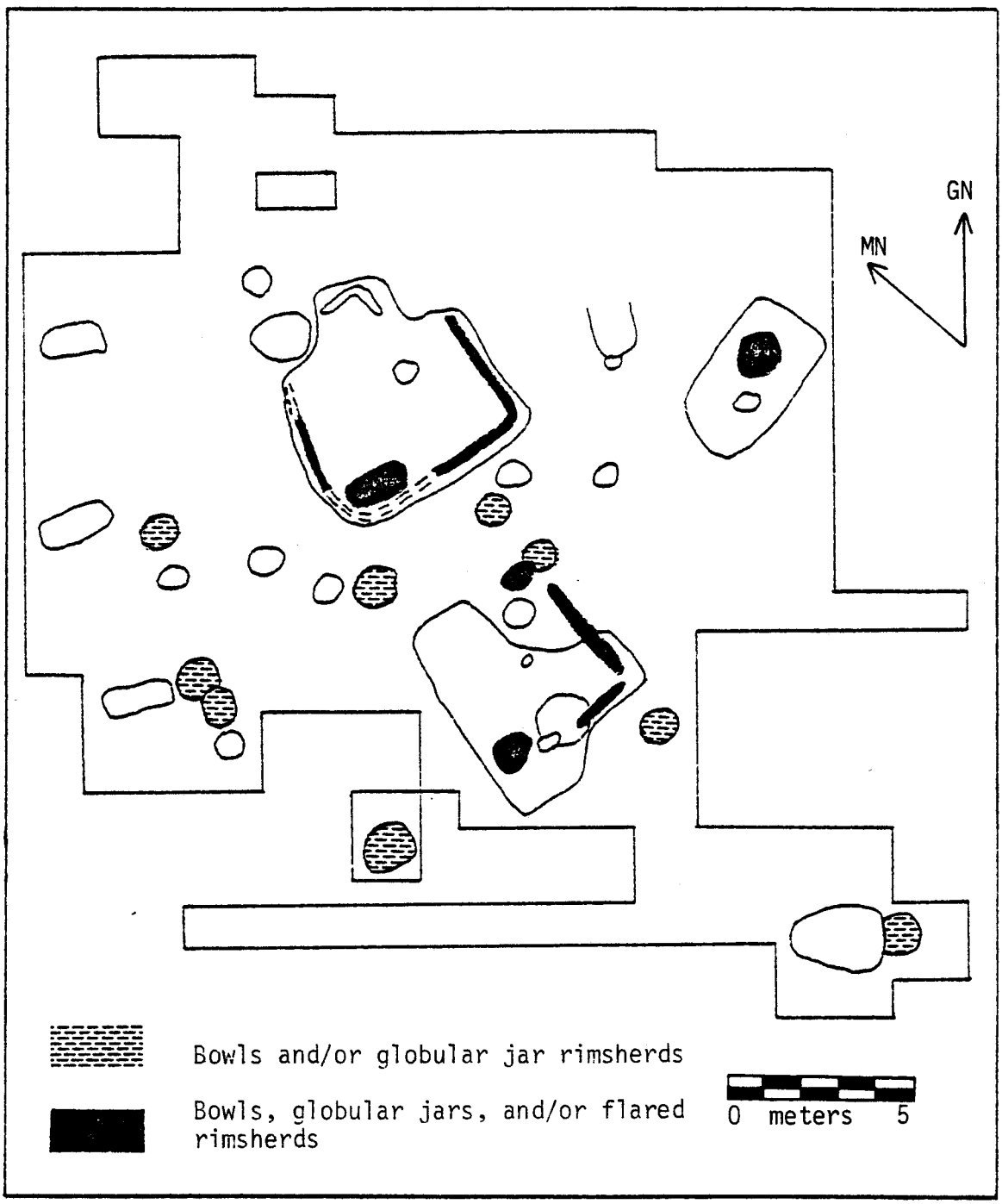


Figure 6. Distribution of Different Rimsherd Types Found at the Schlemmer Site

Features 12, 31, and 32 located inside Structures 1, 2, and 4 and Features 5 and 9 situated outside of the structures all contained shell tempered sherds. From a total of 272 sherds (1099.0 grams) in these 5 pits, 96 percent (260 sherds weighing 1053.0 grams) were shell tempered. Feature 31 exclusively contained shell-tempered sherds. A comparison of Figure 7 with Figure 8 shows the differential distribution of grog- and shell-tempered sherds. Ninety-three percent of the total number of shell temepred sherds had a plain rather than cord-marked surface. All of the cordmarked sherds analyzed had S-twist cordmarks. All the rimsherds found in Feature 5, 12, 31, and 32 were flared with the exception of a plate in Feature 12 and bowl shaped vessels from Feature 31.

Feature 14 could not definitely be grouped with either one of these two sets of pits since it did not contain any ceramics. Feature 29 is grouped with Features 5, 9, 12, 31, and 32 since it is located in Structure 1. Although Feature 17 only contained 1 bloated sherd, this pit is associated with the Late Woodland pits since the sherd fit with another sherd from Feature 28.

The contents of the 3 structures followed a similar distributional pattern as Features 5, 9, 12, 31, and 32. All 3 structures contained shell-tempered pottery along with a combination of either grog, grit, or limestone tempered wares. Table 5 gives the quantity and weight in grams of the different types of ceramics found in Structures 1, 2, and 4. Structure 1 contained 10 shell tempered sherds (18.0 grams), Structure 2 had 129 (295.0 grams), and Structure 4 had 12 (46.0 grams). Both Structures 1 and 2 also contained grog-, grit-,

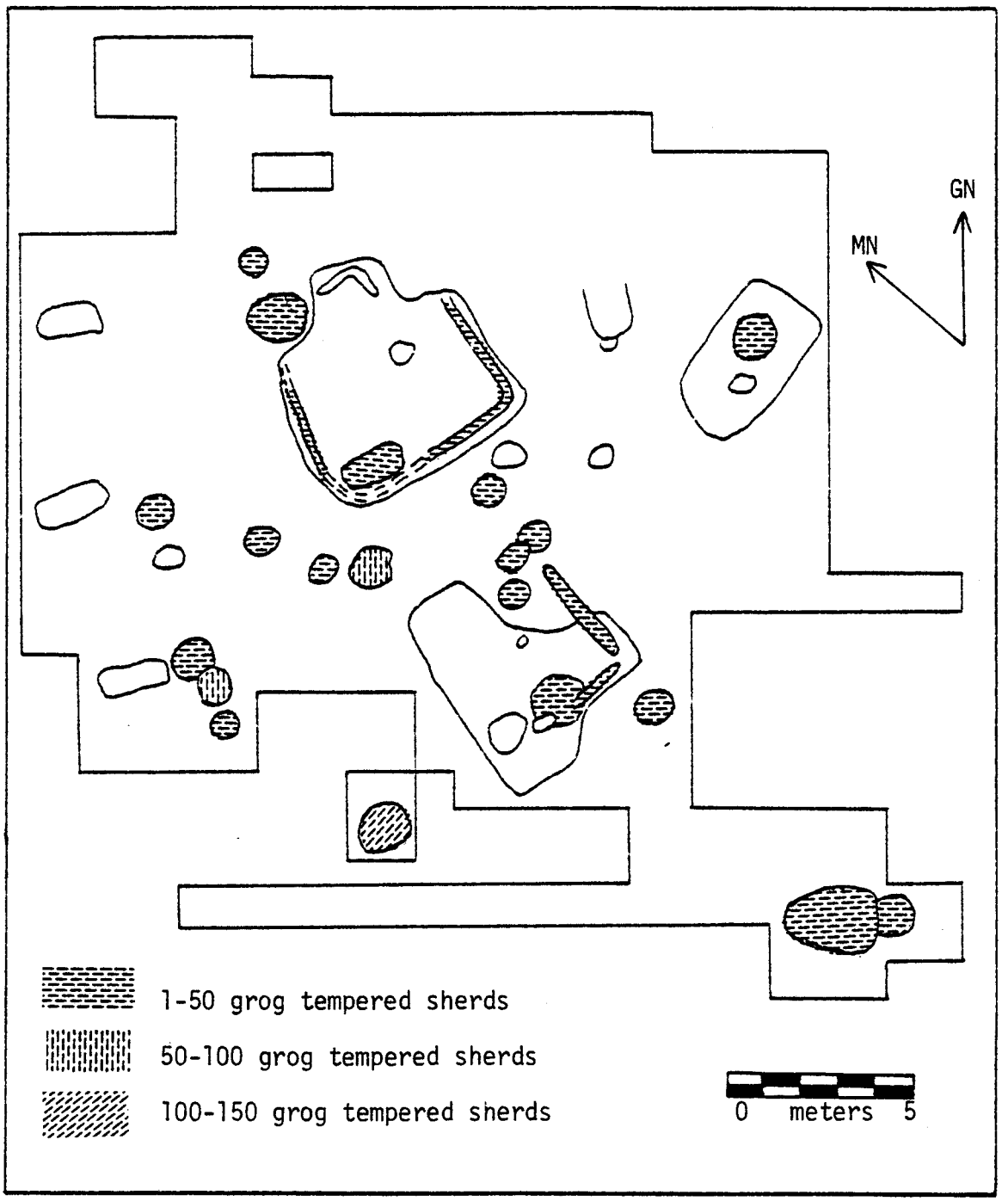


Figure 7. Quantity and Distribution of Grog Tempered Sherds. Blank features indicate no grog tempered sherds were recovered.

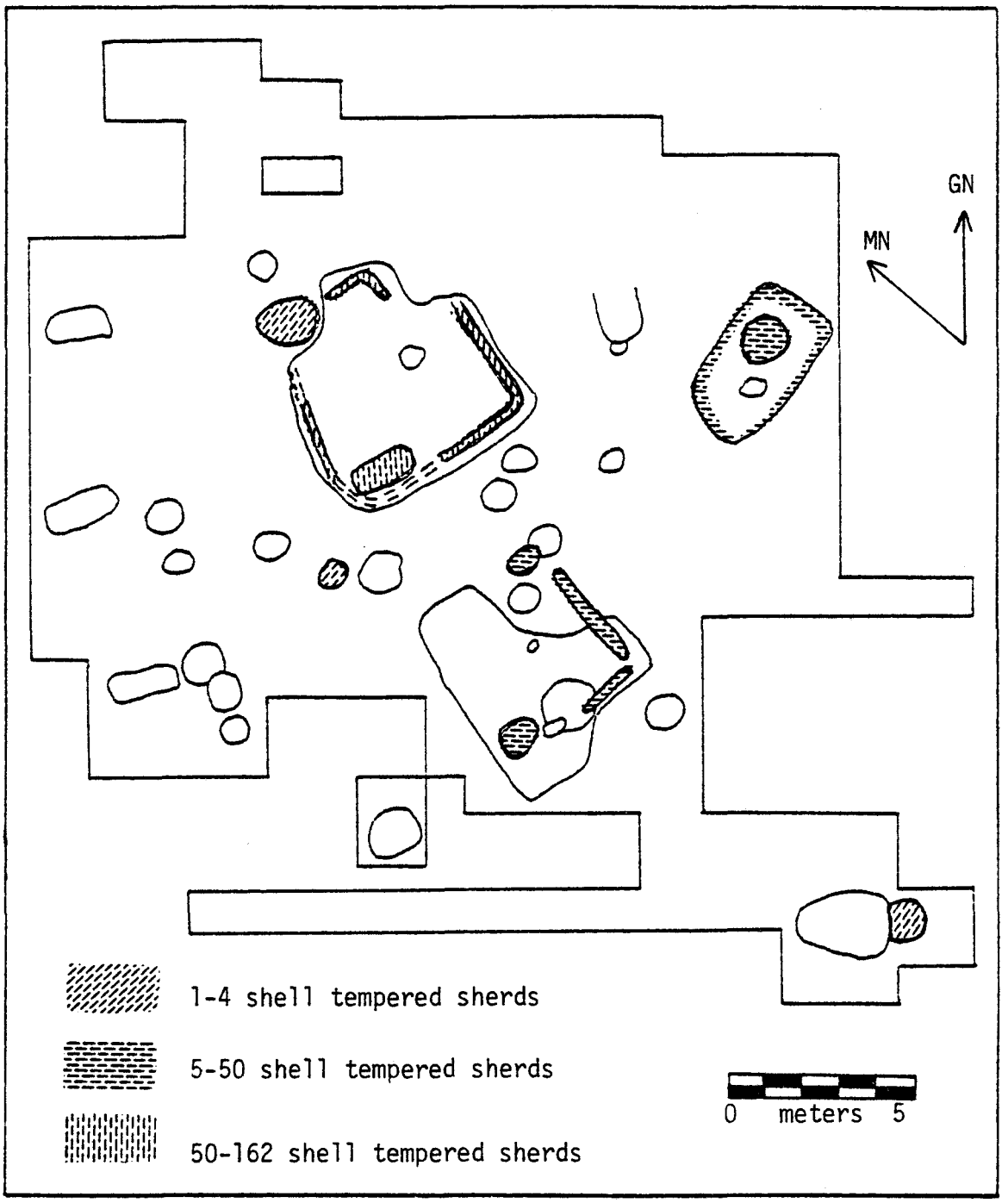


Figure 8. Quantity and Distribution of Shell Tempered Sherds. Blank features indicate no shell tempered sherds were recovered.

Table 5. Quantity and Weight in Grams of Ceramic Types from the House Basins of Structures 1, 2, and 4

Ceramic Type	Structure 1	Structure 2	Structure 4
Shell	10 (18)	124 (842)	10 (41)
Shell Cordmarked		1 (1)	2 (5)
Shell Fabric Impressed		4 (170)	
Grog		3 (6)	
Grog Cordmarked	4 (21)	7 (73)	
Grit Cordmarked	5 (32)	6 (31)	1 (1)
Limestone Cordmarked	1 (11)	1 (3)	
Limestone Red-Slipped		1 (1)	
Shell tempered pottery trowel		1 (119)	
Small bowl	1 (176)		
Fragments, Unidentified Temper	3 (2)	36 (56)	9 (4)

and limestone-tempered sherds whereas Structure 4 only had 1 grit-tempered sherd (1.0 gram) in addition to the shell-tempered sherds. With the exception of 1 limestone-tempered, red-slipped rimsherd (1.0 gram) in Structure 2, the rims found in Structures 1 and 2 were all shell tempered. The rimsherds from Structure 2 were from bowls and flared-rim jars; the rims from Structure 1 were from bowl-shaped vessels. There were no rimsherds in Structure 4. Overall, Structure 2 had the greatest variety and quantity of ceramics while Structure 4 had the least.

Discussion

Traditionally the ceramic analysis in a site report is used as an indicator of the length of occupation. Within the Midwest the temper of sherds is one characteristic commonly used to determine the chronology of the site. Cole and Deuel (1975) describe the Mississippian and Woodland pattern as a set of traits and complexes differentiated by such culture traits as houses, burial customs, ceremonials, industries, and art forms. Although their list does group traits that occur together in the archaeological record, it does not explain the relationship between the Woodland people and the Mississippian people. These groups of people are merely defined in terms of their artifactual remains. In 1937 when Cole and Deuel's book was first printed, the use of trait lists was acceptable and useful for understanding basic differences between Woodland and Mississippian. Even though it is generally realized that a trait list does not reveal the complexity of a social system, it is still frequently used by

authors in the Midwest. Kehoe (1964) specifically uses ceramic variability in the Midwest to illustrate the concept of trait constellations. Once again the temper of vessels is used as a chronological marker with no mention made of situations where different ceramic types occur at one site. Fowler and Hall (1972) list traits to describe the phases at Cahokia, without discussing the problems involved in their general description. This is not an argument that ceramics are not good time indicators, but that to simply use temper as an indicator of time simplifies the interaction or relationship between different groups and may also overlook the fact that one group of people may have used two different ceramic types.

A general trend can be represented by ceramic types, but a closer look at the distribution of ceramics at a site may show that this is not always the case. Not all sites exhibit a patterning of ceramics into two different groups. There is a need to account for sites that contain a mixture of ceramic types. Knoebel, Mansker, and Mitchell all had certain features that contained both grog, grit, and shell tempered wares. Bareis (1976) interprets the intermixing of ceramics found at Knoebel as a transition period between two generations who are changing from Woodland to Mississippian traditions. Porter (1974) interprets the ceramic mixing found at Mitchell as a result of functional differences in the use of different tempered and shaped vessels.

Whether an evolutionary explanation or functional explanation is given, the intermixture of pottery types should be expected. If evolutionary explanations are sought, then one would still expect

transition periods where people were switching from one ceramic tradition to another. There would not be a distinct break between one type of ceramic and another, but rather different groups of people would accept change at different rates and other groups of people might cling to an old pattern while adopting a new one.

Although Schlemmer contains both shell-and grog-tempered pottery, it is not suggestive of a transition period in the adoption of one type of ceramic over another. Arguments of functional variability in ceramics or evolutionary sequences have been based on data where the ceramics of pits and houses have been mixed. This is not the case at Schlemmer. In fact, at Schlemmer the 2 different types of ceramics are quite distinctly separated into different pits. Based on the ceramic data it appears that Schlemmer represents two distinct occupations. The distribution of ceramic characteristics of temper, shape, and surface treatment support this conclusion. Other data from the site also support this general statement and is presented in the following chapter. The use of this ceramic data rests on 2 assumptions. First, it is assumed that inhabitants would not separate their garbage or broken vessels into different pits on the basis of temper and that some overlapping of ceramic types in pits would occur. Second, it is assumed that some intermixing of materials would occur to a degree in some of the pits.

Pottery at other sites is quite similar to that found at Schlemmer. The ceramics from the Late Woodland pits at Schlemmer resemble those found at the Stolle Quarry Site located near Dupo, Illinois. Although a basic site report of the data recovered has not

been published, sketches of several ceramic vessels have been made available (Hall 1975). These globular jars have cordmarked exterior and interior lip slashes. The rim profiles and the general vessel descriptions match the vessels found in the Late Woodland pits at Schlemmer. These Patrick Period ceramics from the Stolle site have associated carbon dates of A.D. 720 ± 110 (M-1684) and A.D. 900 ± 110 (M-1683).

The ceramics from the house structures at Schlemmer do not resemble these Patrick Phase ceramics but rather are similar to Mississippian pottery recovered from the Kincaid site in southern Illinois. Kincaid is a Late Middle Mississippian town located on Avery Lake near Metropolis, Illinois (Cole 1951). It consisted of 19 mounds forming a fairly large prehistoric community. Four foci were present at Kincaid extending in time from the Archaic to the Middle Mississippian. The pottery from the Middle Mississippian component, the Middle Kincaid, closely resembles that from Schlemmer (Cole 1951:Plate XXII; e, h, n, o). The shell tempered wide-mouth jars have slightly everted rims with either bifurcated lugs or single loop handles. Structure 2 and Feature 12 from Schlemmer contained vessels of this type. Dendrochronology dates for the Middle Kincaid component suggest the occupation extended between 1523 to 1598. The similarity of ceramics at Schlemmer with those from Stolle Quarry and Kincaid, along with the ceramics being spatially separated at the site, suggests that the Schlemmer site was occupied by 1 group of people followed at some later time by another group of people.

When examining the Schlemmer ceramics it was observed that pottery from different pits appeared to be from the same vessel. In some cases, such as the pottery from Features 17 and 28, the sherds actually fit together, thus tying the features together as contemporaneous. In other situations, the pottery did not actually fit together, but it was thought that the sherds were from the same vessel. A petrographic analysis of the ceramics was undertaken to determine if certain features were contemporaneous (Porter and Szuter 1978). The analysis did show that certain pits contained sherds from the same vessel. Features 1, 6, 18, 10, and 11 are contemporaneous as well as Features 27, 30, and 33. All are Late Woodland pits.

The ceramic data did not support any relationship between the Late Woodland and Mississippian component at Schlemmer. First, the ceramic analysis of temper, surface treatment, and vessel shape showed 2 distinct ceramic types that were differentially distributed across the site. Second, these 2 ceramic types are similar to ceramic types at Stolle and Kincaid, that differ greatly in time. Finally, a petrographic analysis showed that although some features could be considered contemporaneous, the Late Woodland features were not contemporaneous with the Mississippian features.

CHAPTER V

LITHIC ANALYSIS

The lithic assemblage at Schlemmer included chert artifacts and debitage, limestone, sandstone, rough rock, and galena. Chert flakes and limestone composed the bulk of the assemblage. The worked chert pieces were generally poor in quality. All lithics were counted, weighed, and catalogued according to provenience.

Analysis

Chert materials included flakes that were unmodified, modified, heat treated, or had a silica sheen, chert cores, bifaces, projectile points, a denticulate, blades, and unworked pieces of chert.

Modified flakes were utilized, retouched, or had edge damage. The edges of these flakes were either crushed by use, retouched by the removal of small flakes, or damaged. Unmodified flakes did not show any wear, retouch, or edge damage.

Heat treated flakes exhibited one or more of the following characteristics: a waxy, smooth texture, heat spalls, or a color change. Heat treating is done to make the chert easier to flake. Chert that has one of the characteristics of a heat treated item may also have been non-intentionally burned and discarded. The distinction between intentionally heat treated chert and that which shows characteristics of heat treating is not made in this paper.

Hoe flakes had a polished surface, a result of being part of a digging implement that was used in the soil. The use of the term "hoe" denotes a digging implement, but does not imply a specific function, such as agriculture or house construction. Bifaces were pieces of chert that had been flaked on both sides. The few projectile points that were recovered, were weighed and drawn. A denticulate was an artifact with tooth-like serrating on the edges (Crabtree 1972: 58). A blade was a flake with the length measuring at least twice the width (Crabtree 1972:42). Chert pieces, generally weighing less than 25 grams, were unmodified nodules of chert.

Limestone, sandstone, rough rock, galena, and cinder were other lithic material used at Schlemmer. Limestone was either in its natural state or burned. Burned limestone crumbles easily and is lighter and oftentimes pinkish in color. The size of the limestone varied from small pieces to large, flat slabs. Sandstone appeared in pieces or slabs, but was not burned. Slot abraders used for sharpening implements were made of sandstone due to its abrasive quality. A piece of Missouri River clinker was also used as a slot abrader. A small quantity of cinder was recovered at Schlemmer. Rock, usually igneous and not altered by humans, was described as rough rock. Hammerstones were rounded rock with one edge shattered as a result of using it to hit other materials (Porter 1974: Appendix IV).

Tables 6 and 7 list the quantity and weight of all lithic material recovered from the pits. Tables 8 and 9 list the lithics recovered from the house basins. A plus sign (+) after a number indicates a heavier weight than the scale was able to record or a higher

Table 6. Quantity and Weight in Grams of Cert Material from All Pits. ( ): Weight in grams.

Feature	Unmodified Flakes	Modified Flakes	Unmodified Heat Treated Flakes	Modified and Heat Treated Flakes	Modified and Non-Local Flakes	Hoe Flakes	Cores	Bifaces	Projectile Points	Hammerstone	Blade	Denticulate	Chert Pieces
1	4 (6)	3 (2)	3 (3)	6 (8)									3 (11)
3	4 (2)		1 (-)						2 (5)				1 (1)
4	2 (2)												1 (2)
5	1 (5)	9 (90)	2 (7)	2 (26)							1 (7)		1 (2)
6	3 (7)	3 (5)	1 (1)	1 (4)									4 (15)
7		8 (18)		5 (6)	1 (-)								1 (15)
8													
9	2 (20)	3 (14)	1 (1)							1 (85)			
10	2 (1)	10 (16)		1 (1)									1 (6)

Table 6. Quantity and Weight in Grams of Chert Material from all Pits. (): Weight in grams (continued)

Feature	Unmodified Flakes	Modified Flakes	Unmodified Heat Treated Flakes	Modified and Heat Treated Flakes	Modified and Non-Local Flakes	Hoe Flakes	Cores	Bifaces	Projectile Points	Hammerstone	Blade	Denticulate	Chert Pieces
11		1 (2)		1 (2)									
12	20 (67)	43 (229)	3 (16)	12 (42)	2 (3)	1 (10)			3 (2)		1 (12)	1 (86)	7 (251)
14													
17													
18	2 (4)	2 (4)		2 (1)									2 (17)
20	1 (-)	6 (6)	3 (8)										2 (19)
25													
27	1 (-)							1 (53)					1 (1)
28	2 (14)	4 (13)	3 (3)		1 (1)						1 (26)		3 (27)
29			9 (146)	23 (199)									

Table 6. Quantity and Weight in Grams of Chert Material from all Pits. (): Weight in grams (continued)

Feature	Unmodified Flakes	Modified Flakes	Unmodified Heat Treated Flakes	Modified and Heat Treated Flakes	Modified and Non-Local Flakes	Hoe Flakes	Cores	Bifaces	Projectile Points	Hammerstone	Blade	Denticulate	Chert Pieces
30	1 (-)	2 (3)	2 (3)										1 (21)
31	10 (26)	9 (50)	2 (8)				2 (1711)						3 (16)
32	5 (3)	9 (19)		4 (6)	1 (4)			1 (12)					1 (2)
33													
35	6 (5)	13 (30)	1 (1)					1 (52)	1 (2)				
36													
38		5 (7)	1 (-)	2 (10)									2 (6)

Table 7. Quantity and Weight in Grams of Lithic Material, Other than Chert, from All Pits.
( ): Weight in grams

Feature	Limestone	Burned Limestone	Limestone Slab	Sandstone	Sandstone Slab	Rough Rock	Galena	Cinder	Slot Abrader	Hammer-stone	Quartzite	Hematite
1	9 (144)	91 (952)				2 (69)				1 (102)		
3	1 (3)	3 (11)		1 (35)		2 (62)	1 (82)					
4	4 (52)					1 (6)						
5		3 (93)	1 (2335)			1 (187)						
6	1 (15)	67 (832)		1 (3)		1 (3)						
7		29 (203)		1 (129)		3 (18)						
8												
9	1 (3)			1 (86)				1 (3)	1 (17)			
10	4 (4)	51 (514)		2 (55)								

Table 7. Quantity and Weight in Grams of Lithic Material, Other than Chert, from All Pits.
(): Weight in grams (continued)

Feature	Limestone	Burned Limestone	Limestone Slab	Sandstone	Sandstone Slab	Rough Rock	Galena	Cinder	Slot Abrader	Hammer-stone	Quartzite	Hematite
11	1 (6)	8 (83)										
12	32 (2351)	5 (125)	3 (4495)	38 (159)		6 (190)			1 (23)			
14												
17		2 (2)										
18		31 (352)		1 (123)								
20		14 (149)		2 (30)	3 (20)							
25												
27		74 (1302)				1 (8)						
28		71 (557)				2 (29)						
29		2 (300)										

Table 7. Quantity and Weight in Grams of Lithic Material, Other than Chert, from All Pits.
(): Weight in grams (continued)

Feature	Limestone	Burned Limestone	Limestone Slab	Sandstone	Sandstone Slab	Rough Rock	Galena	Cinder	Slot Abrader	Hammer-stone	Quartzite	Hematite
30	2 (19)	12 (64)				1 (10)						
31	1 (63)	6 (369)	1 (84)	3 (6)	1 (500+)	1 (13)						1 (1)
32	2 (4)	16 (304)				3 (12)						
33		10 (18)										
35	22 (533)	2 (63)				2 (43)						
36												
38		332 (5940)									1 (47)	

Table 8. Quantity and Weight in Grams of Chert Material from the House Basins of Structures 1, 2, and 4

Chert Material	Structure 1	Structure 2	Structure 3
Chert Flakes Unmodified	12 (46)	49 (260)	3 (2)
Chert Flakes Modified	20 (65)	103 (694)	5 (12)
Chert Flakes, UM Heat Treated	8 (43)	1 (3)	
Chert Flakes Modified and Heat Treated	12 (64)	15 (73)	1 (2)
Chert Flakes Modified Non-Local Chert		5 (16)	
Hoe Chert Flakes		1 (27)	
Chert Blade		1 (9)	
Chert Scraper		1 (47)	
Chert Biface	1 (11)		
Projectile Points	1 (11)	4 (3)	
Hoe		1 (377)	
Chert Cores		4 (83)	
Chert Pieces	1 (6)	8 (111)	

Table 9. Quantity and Weight in Grams of Lithic Material, Other than Chert, from the House Basins of Structures, 1, 2, and 4.

Lithic Material	Structure 1	Structure 2	Structure 4
Limestone	5 (740)	6 (396)	
Burned Limestone	3 (51)	13 (471)	
Limestone Slab		2 (232)	
Sandstone		9 (682)	
Sandstone Slab		2 (242)	
Sandstone Slot Abrader	1 (28)	1 (13)	
Galena	1 (5)	2 (14)	
Quartzite Hammerstone		1 (109)	
Rough Rock	1 (1)	9 (247)	1 (55)

quantity of limestone pieces than were able to be counted due to the crumbly nature of the material. A dash (-) means the item was less than 0.5 grams in weight.

Distribution

Chert flakes, either unmodified, modified, or heat treated, were not found in Features 8, 14, 17, 25, 33, and 36. All of these features were either sterile, such as Feature 14, or contained a small amount of debris. Features 8, 25, and 36 each contained only 1 sherd apiece. Features 17 and 33 contained small amounts of pottery and limestone. Chert flakes were also found in the house basins of Structures 1, 2, and 4, although Structure 4 only contained a total of 9 chert flakes (15.7 grams), both modified and unmodified.

Heat treated chert flakes were recovered from Features 1, 3, 5, 6, 7, 10, 11, 12, 18, 20, 28, 29, 30, 31, 32, 35, and 38. All of the chert flakes from Feature 29 were heat treated. Feature 29 also contained the largest amount of heat treated flakes: 32 unmodified and modified flakes weighing 348.9 grams. All 3 house basins contained chert flakes that had been heat treated.

Chert cores were only recovered from Feature 31 and Structure 2, bifaces from Structure 1, Features 27, 32, and 35 and projectile points from Structures 1 and 2, and Features 3, 12, and 35. Structure 4 did not contain any cores, points, or bifaces.

Limestone was quite abundant throughout the entire site. It was only absent from Features 8, 14, 25, and 36. As was mentioned above these pits did not contain very much debris. Structure 4 did

not contain any limestone whereas it was quite abundant in Structures 1 and 2. Limestone slabs were only found within Structures 2 and Features 5, 12, and 31. The Late Woodland pits did not contain slabs of limestone.

Sandstone was found in 9 of the 26 pits which includes Features 3, 6, 7, 9, 10, 12, 18, 20, and 31, and in Structure 2. Sandstone slabs were only found in Structures 1 and 2 and Feature 12.

Galena which is associated with the making of pigments (Porter 1975: Appendix IV) was found in 1 pit, Feature 3, and within the house basin fill of Structures 1 and 2.

A Mill Creek chert hoe (377.0 grams) from Structure 2, a hoe flake (10.0 grams) from Feature 12, and 1 hoe flake (27.3 grams) from Structure 2 were the only evidence of digging implements found at Schlemmer.

Three hammerstones were recovered from Structure 2 and Features 1 and 9, all from different materials. The one from Feature 9, weighing 85.0 grams, appeared to be Root Beer chert whereas the 1 from Feature 1 was an igneous rock (102.0 grams), and the 1 from Structure 2 was quartzite (109.0 grams).

Cinder was scarce, with 1 piece (3.0 grams) coming from Feature 9. A piece of Missouri River clinker (17.0 grams) also recovered from Feature 9, was used as a slot abrader.

Discussion

Some lithic materials were evenly distributed throughout the site while others are only found in some features and not others.

These differences in the lithic distribution are due to both chronological and functional factors. The majority of non-local chert types, digging implements, triangular projectile points, limestone, and sandstone slabs are associated with the Mississippian component.

Although the amount of non-local chert was scant over the entire site, the majority and most varieties were found within the Mississippian component (Figure 9). A total of 8 non-local chert flakes, 1 Mill Creek chert hoe, and 1 Root Beer chert hammerstone were found at Schlemmer. Six of the flakes, the hoe, and the hammerstone were found within Structure 2 and Features 9, 12, and 32. Only 2 flakes were in the Late Woodland Features 7 and 28. Dongola, or as it is sometimes called, Cobden Ball, was the chert type used for the flakes in those 2 Late Woodland features. Structure 2, Features 12, and 32 contained Dongola chert, along with Kaolin, Mill Creek, and Root Beer chert.

The 1 hoe found in Structure 2 and the hoe flake in Feature 12 were made of Mill Creek chert. Porter (1974:881) states the source of this chert type as the "faulted zone of southern Illinois, south of Anna around the small settlement of Mill Creek." Kaolin, a translucent chert, comes from a restricted area northwest of Anna (Porter 1974:882). Dongola, or Cobden Ball, is similarly restricted to the area near Anna, Illinois (Porter 1974:883). Root Beer chert, named after its color, is not so precisely located, but it is thoughtto come come from certain valleys in Missouri (Porter 1974:884).

The term "digging implement" is used by Winters (1969) to denote artifacts whose function was digging, whether the digging was

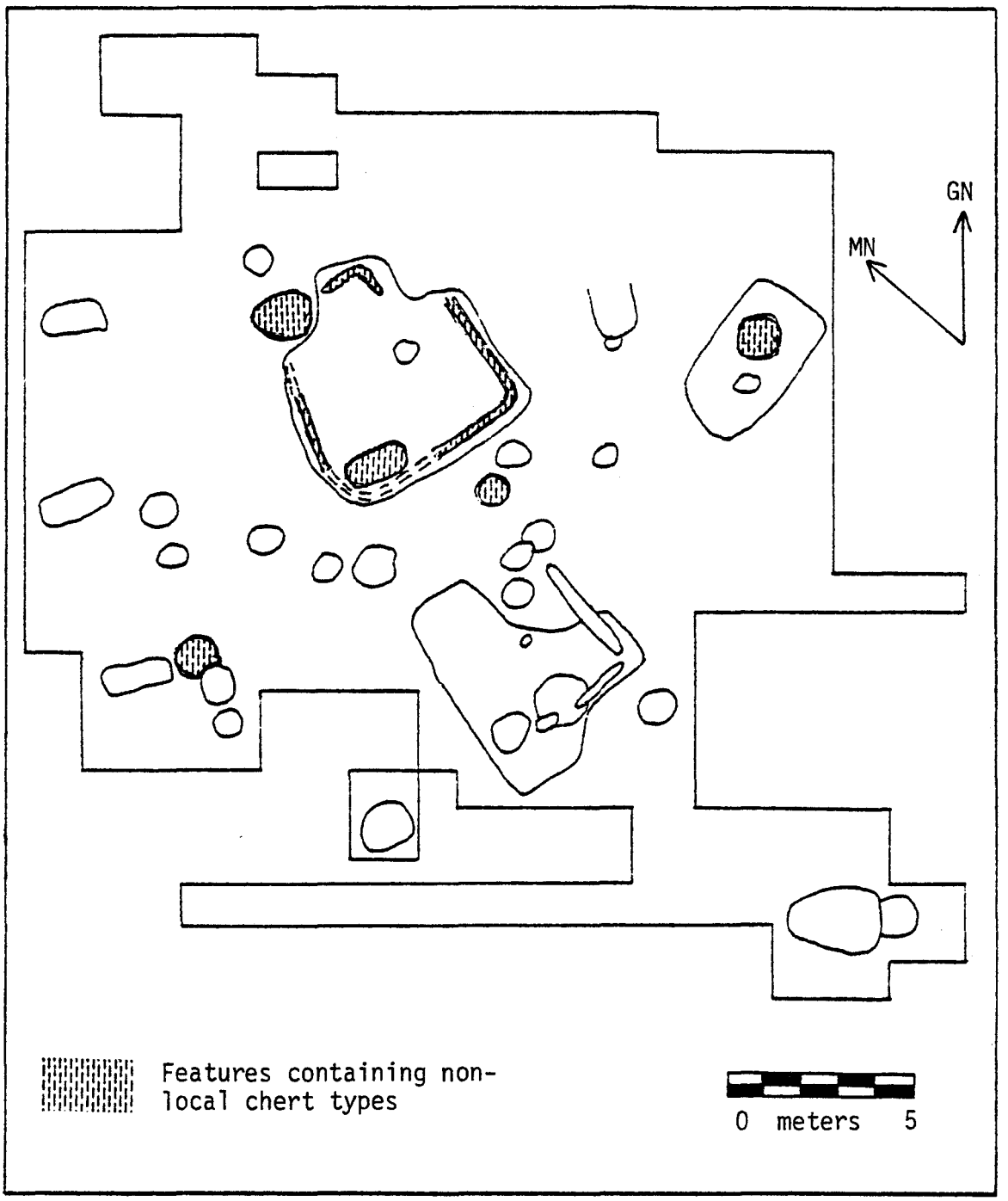


Figure 9. Distribution of Features Containing Non-Local Chert Types

for agricultural purposes or house and pit construction. The more commonly used term has been "hoe", implying some type of agricultural activity, though this might not always be the case. The hoes and spades recovered from Mitchell were used for excavation of wall trenches, pits, and postmolds (Porter 1974:908). Winters (1969) states that at the Archaic sites, Robeson Hills and Swan Island in the Central Wabash Valley, the shell hoes were used either as rakes for cleaning out hearths or as digging implements for pit construction. The Schlemmer site had very little evidence of digging implements. There was 1 Mill Creek chert hoe and 2 hoe flakes recovered, all found within Structure 2 and Feature 12. It is not known if these artifacts were used for agricultural activity or house construction or a combination of both. The size of Schlemmer and its location suggest it was a farmstead where agriculture was practiced. A complete floral and faunal analysis of the flotation remains would offer evidence as to the different types of activities carried out at Schlemmer.

A total of 14 projectile points were recovered. Three were not associated with any feature, but were from either the plowzone, backdirt pile, or Level I of excavation. Level I was the first level excavated below plowzone. Two portions of different points, a tip and a base, were in Feature 3; Feature 35 contained a base of a projectile point. Structure 2 and Feature 12 had 4 (3.0 grams) and 3 (2.5 grams) points, respectively. Structure 1 contained 1 point weighing 11.0 grams.

There were differences in the types of projectile points found within Structure 2 and Feature 12 as compared to those found in

Features 3 and 35. The points within Structure 2 were all basic isoceles triangular points whereas the points from Features 3 and 35 were side-notched and stemmed points. The point from Structure 1 was stemmed. No triangular points were recovered from the Late Woodland pits. These small isoceles triangular points are identified with the Mississippian pattern (Cole and Deuel 1975) while side-notched and stemmed points are associated with the Woodland pattern (Fowler and Hall 1972). Triangular points were recovered from the Mississippian component of the Schild site, Green County, Illinois (Perino 1971) and from the Upper Mississippian Knoll Spring site, Cook County, Illinois (Slaymaker III and Slaymaker, Jr. 1971). Side-notched and stemmed points were recovered from the Late Woodland Kane Village in Madison County, Illinois (Munson and Anderson 1973). Figure 10 shows the distribution of projectile point types at Schlemmer.

Limestone and sandstone slabs were only associated with the house Structures 1 and 2 and associated pits, Features 5, 12, and 31. No slabs were associated with the Late Woodland pits. The slabs may have been used as a grinding slab or in the process of cooking, though there was little wear on them to suggest that they were used for grinding. The exact function of these slabs is not known.

Chert flakes and limestone pieces were fairly evenly distributed across the site. The abundance of limestone at the Schlemmer site is a common phenomenon on Late Woodland-Mississippian sites. Harn's (1971) survey of the American Bottom in Madison and St. Clair counties revealed an increase in the presence of limestone on Bluff Culture sites. Ninety-four percent of these sites showed this

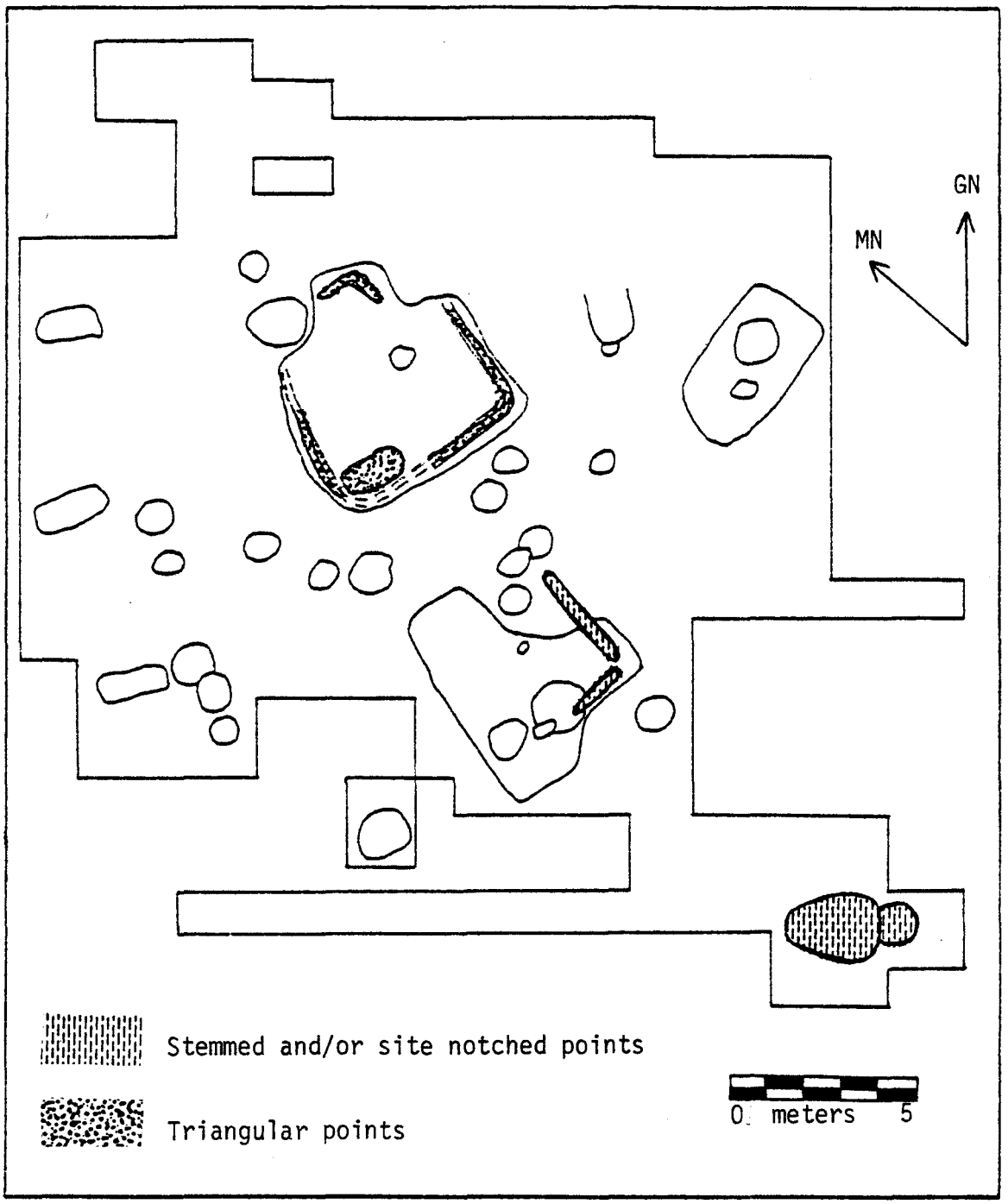


Figure 10. Distribution of Projectile Point Types

increase in limestone. Porter (1974:892) lists 3 possible uses of limestone:

1. Temper in ceramic muds
2. Unhairing of flayed hides
3. Cooking of corn.

The first use of limestone as a temper in ceramics must be discounted for the Schlemmer site since limestone tempered ceramics are scarce. Porter suggests that small sites which contain a large amount of limestone might be viewed as specialty camps where processing of either hides or corn took place. If Schlemmer is viewed as a small farmstead, it is possible that along with agricultural activities, the processing of food, specifically corn, took place there. Katz et al. (1974), using ethnographic data, showed that it was quite common for societies dependent on corn to process it with a lime solution which added to the corn's nutritional value. The limestone at Schlemmer might have been used for this purpose. Limestone bluffs are just east of the site, making this material easily accessible.

Thus far the discussion has centered on the distribution of lithic materials with respect to the site chronology, without specific reference to the function of some features. Structure 4 and Feature 29, due to their paucity and abundance of certain types of lithics, are suggestive of different functions.

All of the 32 chert flakes from Feature 29 showed evidence of heat treating. All of the chert, a white local chert, which turned pinkish and black with heat treating, appeared to be from the same

core. Some of these flakes were heat treated after flaking as the ventral surface of these flakes had a pink or black color as did the dorsal surface of the flake. This feature may have been a work area based on the abundance of heat treated chert and the lack of other cultural material.

Structure 4 contained only 9 chert flakes and 1 rough rock which is in start contrast to the two other structures that had a wide variety of lithic material. This structure differed from the others, not only in the quantity of artifacts, but also in its construction. It is a basin-shaped pit house in contrast to the wall trench construction of Structures 1 and 2. The paucity of material remains and the difference in house construction suggest a special function for Structure 4. Several functions are possible:

1. A sweathouse
2. A structure used solely for sleeping
3. A structure used for drying hides or meats
4. A storage area for grains.

The burned area in Structure 4 makes the first 3 functions plausible. A faunal and floral analysis would verify or refute the last 2 functions. The floral remains of Structure 4 could be compared to the remains of Structures 1 and 2 to determine if there were differences in the quantity and type of floral remains.

As with the ceramic data, the lithic material also tends to support the thesis that there were 2 separate occupations at Schlemmer. The variety and amount of non-local chert types tend to cluster within the Mississippian features. Digging implements and flakes are

only found in the Mississippian component. Projectile point types are differentially distributed across the site following this Late Woodland and Mississippian division.

CHAPTER VI

INTERPRETATION AND DISCUSSION

As mentioned in the introduction, Schlemmer is one of several sites in the American Bottom that has Late Woodland and Mississippian components. Even though Schlemmer has at least 2 components, as does Mitchell, Mansker, Knoebel, Cahokia, and Lunsford-Pulcher, it does not fit so neatly into the explanations and interpretations given to the Late Woodland-Mississippian phenomena at these sites.

The interpretations given to these Late Woodland-Mississippian sites fall into 2 categories based on length of occupation. Either the co-occurrence of Late Woodland-Mississippian is viewed as a rapid development and therefore a short-term occupation or the development of Late Woodland and Mississippian occurs over many centuries allowing for a long-term occupation. Sites, such as Mitchell, Mansker, and Knoebel, are interpreted as a short-term occupation. Porter (1974), Piesinger (1972), and Bareis (1976) view the co-occurrence of Late Woodland and Mississippian as either a contemporous situation (i.e., Mansker and Mitchell) or an *in situ* short-term evolution (Knoebel). Cahokia and Lunsford-Pulcher are interpreted as long-term occupations where either the Late Woodland develops into Mississippian, as at Cahokia, or as at Lunsford-Pulcher there is some outside influence that causes the Late Woodland to adopt Mississippian traits while retaining some Late Woodland traits. Table 10 outlines interpretations that have been given to Late Woodland-Mississippian sites.

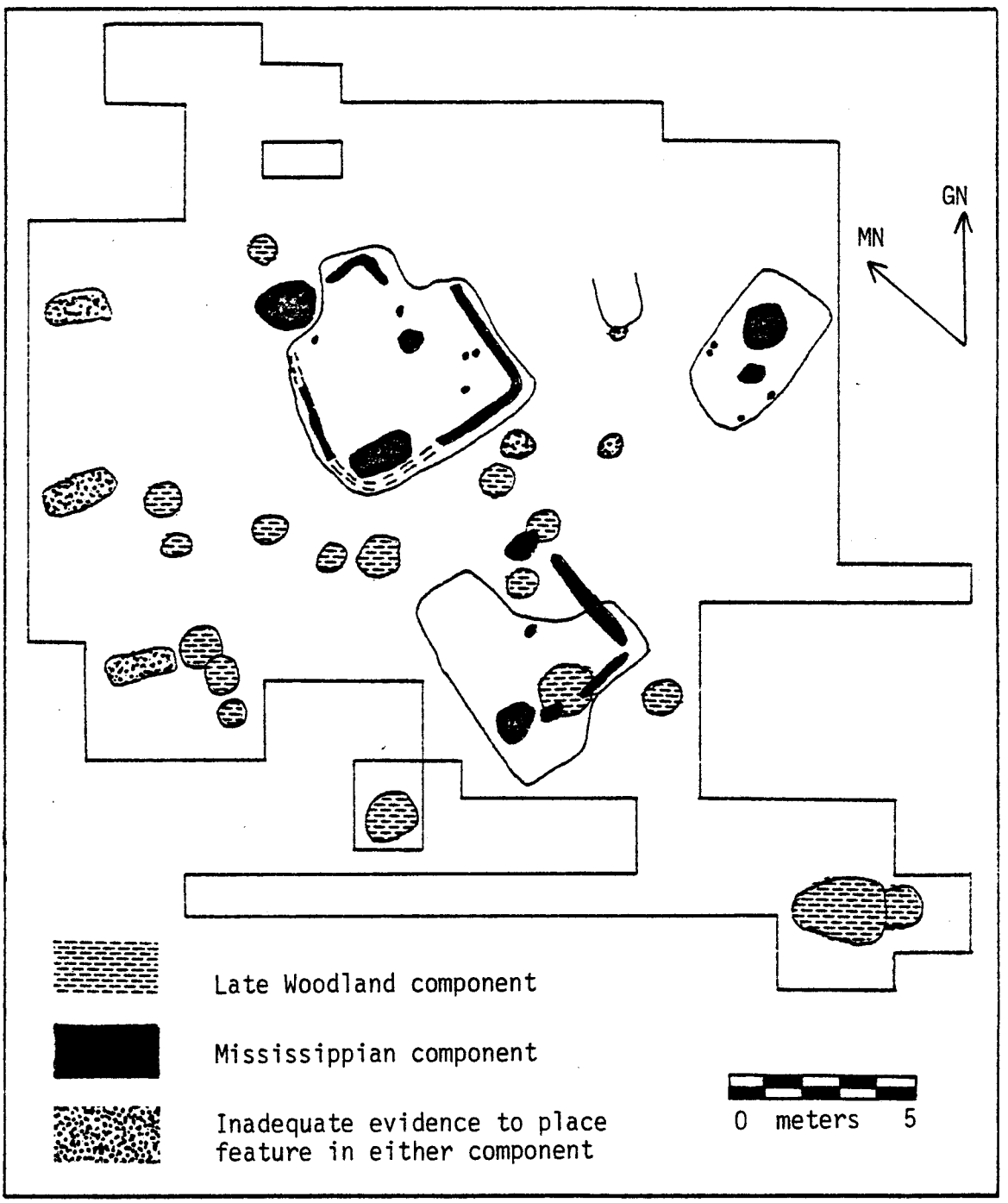


Figure 11. Distribution of the Late Woodland and Mississippian Components at the Schlemmer Site

Table 10. Outline of Explanations Given to Sites Containing both Late Woodland and Mississippian Components

I. These sites represent a short-term occupation.

   A. Late Woodland and Mississippian were contemporaneous in time, such as at the Mitchell and Mansker Sites.

   B. In situ evolution occurred from Late Woodland to Mississippian over a few generations as at the Knoebel Site.

II. These sites represent a long-term occupation.

   A. The Late Woodland developed into the Mississippian over a long time period, as at Cahokia.

   B. Outside groups influenced the development from Late Woodland to Mississippian, as at Lunsford-Pulcher.

Interpretations of long-term and short-term occupation of Late Woodland-Mississippian sites both have their place in the prehistory of the American Bottom. Sites that both have been occupied for a long length of time offer evidence towards a general framework of events that occurred through time and the accompanying changes that took place. Short-term occupations exhibiting evidence from 2 adjacent phases shed light on the transition between phases, on the relationship between groups living contemporaneously but having different material remains, or on one group that has a variety of material remains. Interpretations given to long-term occupations are macro in their approach offering support for the broad, general prehistory of the area. Those interpretations given to sites occupied for a short term deal with specific changes and relationships on a micro-level.

The interpretation of short occupation of these two groups has been argued for at the Mitchell Site (Porter 1974), the Mansker Site (Piesinger 1972), and the Knoebel Site (Bareis 1976). All are considered to be short occupations by one group of people rather than a long occupation of hundreds of years. Ceramic diversity occurs because of functional differences (Porter 1974), outside influences (Piesinger 1972), or generational differences (Bareis 1976). The superpositioning of house structures along with variation in house types is interpreted as a difference in function (Porter 1974), rebuilding of houses in a short time period (Piesinger 1972), or succeeding generations rebuilding their houses at the same location (Bareis 1976).

The available evidence from the Schlemmer site differs from the data presented for these sites in 4 ways:

1. Its distribution of different ceramic types throughout the site.
2. The type of temper used in the grog from grog tempered sherds.
3. The absence of superimposed house structures.
4. No evidence to support a relationship between the Late Woodland and Mississippian components.

At Mitchell there were 11 refuse pits that were all, with the exception of those in the fill of Mound H, "associated with feature complexes involving Late Woodland-Mississippian pottery as well as possible structures" (Porter 1974:98). At the Mansker site "the Woodland and Mississippian pottery occurs in a consistent mixture throughout the site" (Piesinger 1972:61). The exception to this were 9 pits that have only grog or grit tempered sherds, but this is explained as an accidental exclusion of shell tempered sherds based on the overall small number of sherds in these pits. Knoebel is different from Mitchell and Mansker in that although Bareis views the Late Woodland-Mississippian development to be short term over 3 generations he does see the Mississippians as evolving from a Late Woodland base. At Knoebel there is a transitional phase in which there is a mixture of Late Bluff ceramic traits and Mississippian traits.

The Schlemmer site does not offer evidence that there was any interaction between the Late Woodland and Mississippian components of the site. If these groups at Schlemmer were contemporaneous then one would expect to find, as at Mitchell and Mansker, pits containing an

intermixing of grog and shell tempered sherds. This does not occur. Instead there are 16 pits without shell tempered pottery (Figure 8 and Table 4). This includes Features 1, 3, 4, 6, 7, 8, 10, 17, 18, 20, 25, 27, 28, 30, 33, 36, and 38. Feature 14 and 29 did not contain any ceramics. Sixteen of these features were located outside of the 3 structures with the exception of Feature 30. This circular pit, Feature 30, was located in Structure 1 but was superimposed by a smaller work area, Feature 29, and part of the wall trench of the house. This does not necessarily imply any extensive time depth but it does mean Feature 30 existed before Structure 1 was constructed. There are 2 features, 11 and 35, which are outside the structures and do contain shell-tempered pottery. Feature 11 has 1 sherd weighing 1 gram and Feature 35 has 3 shell tempered sherds weighing a total of 3 grams. These 2 pits are still considered to be Late Woodland since the amount of shell tempered sherds is so small and may only be the result of rodent activity.

Along with the absence of shell tempered sherds in the Late Woodland pits there is also a paucity of grog or grit tempered sherds in the features associated with the Mississippian component. These features are 5, 9, 12, 31, and 32. Features 5, 9, and 12 each have only 1 grog sherd, Feature 32 has 3 grog sherds, and Feature 31 has all shell tempered pottery. No grit tempered sherds were found in any of these Mississippian pits. The inclusion of these grog tempered sherds in the fill of these features can be the result of either fill being taken from outside the structure where most of the grog sherds were located or a minimal use of grog wares during the Mississippian

occupation. If these 2 components of the site were contemporaneous, it would seem highly unlikely that the garbage would be separated by temper of the sherds and thrown into different pits. Even if there was a functional difference in the ceramic types, it would still seem that some accidental mixing would occur particularly between Features 4, 5, and 6, which are in close proximity of each other. Feature 5 had 15 shell tempered sherds while Features 4 and 6 had none. In contrast, Features 4 and 6 had 7 and 49 grog tempered sherds, respectively, while Feature 5 had only 1 grog tempered sherd.

The second argument against the components being contemporaneous rests on a microscopic study of the sherds. A thin section analysis of 62 sherds from Schlemmer was made (Porter and Szuter 1978). One of the major problems this study attempted to solve was to examine grog tempered sherds to determine the type of temper used in the grog. Forty grog tempered sherds were thin sectioned, which is 9 percent of the total number of grog tempered sherds (462 grog sherds) found at Schlemmer. It was hypothesized that if this site represented 1 contemporaneous group, that the grog used in grog-tempered wares would have an equal chance of being shell tempered, grog tempered, or grit-tempered.

Both at the Mansker site and at the Mitchell site, grog tempered pottery was analyzed petrographically (Porter 1974:712). The temper of the grog did include shell, which was not found at Schlemmer. The argument used at Mitchell and Mansker is that grog tempered pottery, an earlier Late Woodland type, should not contain shell tempered pottery as a temper since shell tempered wares are

associated with the later Mississippian period. The logic is that an earlier pottery type should not contain pottery from a subsequent time period, and, if it does, the 2 pottery types were contemporaneous. This then leads to the argument that very little time difference lies between the Late Woodland and Mississippian components of the site. The danger with this argument is that it does not take into account that the site may actually represent a transitional period between the Late Woodland and Mississippian and does not necessarily refute the idea that there was a long time of development from the beginning of the Late Woodland period to the end of the Mississippian period.

At Schlemmer, 19 sherds had grog tempered grog, 5 sherds were possible grog tempered grog, 2 sherds had limestone tempered grog, and 12 had an indeterminate type of grog. Shell tempered grog was not found. This indicates that:

1. The pottery makers differentially chose grog tempered sherds to make pottery over shell tempered sherds.
2. There were two different loci for pottery manufacture of shell versus grog pottery.
3. These groups are not contemporaneous and therefore shell tempered grog sherds would not be expected.

Presently, there is no reason to suppose that when making grog tempered ware a potter would have a reason for choosing grog or shell tempered sherds for temper. At Schlemmer it is not possible to discern if there were 2 different places of pottery manufacture. It may be that Structure 2 was used for pottery manufacture based on

the pottery trowel found on the floor and the abundance of sherds in the fill. No other possible location for pottery manufacture was noted. If this explanation of 2 locations were true, there would still be the question as to why there was a separate location for making ceramic ware for 1 group of people. The third explanation, that these groups are not contemporaneous, is the most plausible based on the available data.

The third argument against a short term occupation of the site is based on the absence of superimposed house structures. At Mitchell, Mansker, and Knoebel superimposed houses were present. At Knoebel each house construction was related to either the Early Bluff, Transitional, or Mississippian ceramics. The superimposed houses gave a time depth of 3 generations which allowed for changes in ceramics. At Mansker, 3 large wall trench structures and several pits were superimposed.

The Schlemmer site did not have superimposed house structures. Each structure could be viewed in terms of a different function, rather than as a series of rebuilt houses. Structure 2, being the largest and containing the largest quantity of sherds and lithic materials, may have been a domestic unit while Structure 4 may have functioned as a building for storage since it contained very little artifactual material. Flora and fauna material recovered from a flotation analysis could support the possibility of different functions.

Along with Schlemmer being different from Mitchell, Mansker, and Knoebel in (1) its distribution of ceramic types in various pits,

(2) the absence of shell tempered grog pottery, and in (3) the absence of any superimposed houses, there was not any relationship between the Mississippian pits associated with the houses and the Late Woodland pits, either in ceramic wares or projectile points.

It has already been shown that there was a clear segregation of ceramic types in pits associated with the houses versus those outside the houses. The thin section analysis of sherds also attempted to discover if some pits were contemporaneous. Various sherds appeared similar when viewed macroscopically but could not be fit together. A thin section analysis was done to determine if they were from the same vessel (Porter and Szuter 1978). Through this analysis various features were viewed as contemporaneous. Two different sets of features contained pottery that microscopically was considered to be from the same vessel. Features 1, 6, 10, 11, and 18, and Features 27, 30, and 33 were considered contemporaneous based on the fact that sherds from the same vessel were found in them. Based on an actual fit between sherds, Features 17 and 28 are related. Although relationships between features can be observed between the Late Woodland pits, no tie could be made between the Late Woodland pits and the Mississippian structures and pits.

Although the actual amount of diagnostic lithic material was scant, there was again a segregation of types of projectile points by features. Triangular points typed as Mississippian were found in Structure 2. Where projectile points are found in the Late Woodland pits, and this is only in Features 3 and 35, the shape is side notched in Feature 3 or stemmed in Feature 35. This is contributing evidence

rather than substantial proof that there was not a relationship between the Late Woodland and Mississippian components.

The data from the Schlemmer site generally support the idea that it was occupied by 2 separate groups of people at different times. The Late Woodland occupation occurred first, followed at some later indeterminate time with the Mississippian. There are no data to support a view that these 2 components were interrelated. In some ways, though, Schlemmer does differ from the long-term occupation interpretations given to sites as Cahokia and Lunsford-Pulcher. These include:

1. It does not show a continuous occupation and
2. Exhibits no Caddoan influence in terms of material remains.

The Schlemmer site has an Early Bluff, but no Late Bluff occupation, followed by the Mississippian. This implies some time difference between the components, but does not suggest a strictly linear evolution of one group occupying an area and slowly transforming into another group. More recent excavations at Schlemmer have revealed several Late Bluff features. This material will be important to determine if the present analysis will be upheld.

Secondly, Schlemmer has no artifactual material, calendrics, or site planning suggestive of Caddoan influences. Freimuth (1974) reports that Lunsford-Pulcher had Caddoan influences suggesting the importation of a Caddoan culture complex which was overlain on the Late Woodland occupation. The intermixing of the Caddoan culture complex and the Late Woodland led to the rise of the Mississippian

culture. Schlemmer is, of course, a small site and this process may have taken place elsewhere for there is no evidence to suggest that the Late Woodland and Caddoans blended together at the Schlemmer site.

CHAPTER VII

SUMMARY

The Schlemmer site, a Late Woodland-Mississippian site, located in the southern portion of the American Bottom, is important for two reasons. First, it is a small site. Its size is important because very little information is known about farmsteads or hamlets located in the American Bottom. Research has mainly focused on the larger sites such as Cahokia and Mitchell. With contract work gaining in importance, more data and information will be gathered from smaller sites. Second, Schlemmer has two components, Late Woodland and Mississippian, that frequently co-occur on sites in the American Bottom. These components probably represent separate farmsteads. The majority of explanations given to the Late Woodland-Mississippian phenomenon center on the length of occupation of the site. The major thesis in this paper is that the Schlemmer site was inhabited by two groups of people at different times. The components present were not found to be contemporaneous. This view was based on ceramic data, lithic data, and the relationships found between features.

Since further excavations have recently been carried out at Schlemmer additional questions can be posed. A petrographic analysis of sherds should be done to determine the temper of the grog in grog tempered sherds. An analysis of the types and distribution of ceramics and lithics could be compared with the present analysis. Since more of the site was exposed a spatial analysis of the features may

reveal a community plan that would aid in understanding the relationship between the different components. Finally, the flotation analysis may be crucial to determine the function of features and to determine the length of occupation. The preliminary flotation analysis of Schlemmer floral remains revealed the presence of maize in Structure 2 and Features 26 and 32 and beans in Features 29 and 31 (Denise Steele personal communication May 13, 1978). All 5 of these features are Mississippian. A flotation analysis could focus on the distribution of cultigens which could be used to indiate the time depth at the site.

Although research on Late Woodland-Mississippian sites have focused on the length of occupation of these 2 components, there are several other areas open for future research. Certain questions need to be answered. Why do Late Woodland and Mississippian occupations frequently co-occur at sites? Is this due to Late Woodland-Mississippian settlements? Research along these lines will require a large number of sites with both Late Woodland and Mississippian components. Schlemmer is one of those sites that may be able to contribute further knowledge towards an understanding of the Late Woodland-Mississippian phenomenon.

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