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The Middle Cumberland Culture

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Part One

THE ARNOLD VILLAGE SITE
EXCAVATIONS OF 1965-1966

Robert Ferguson

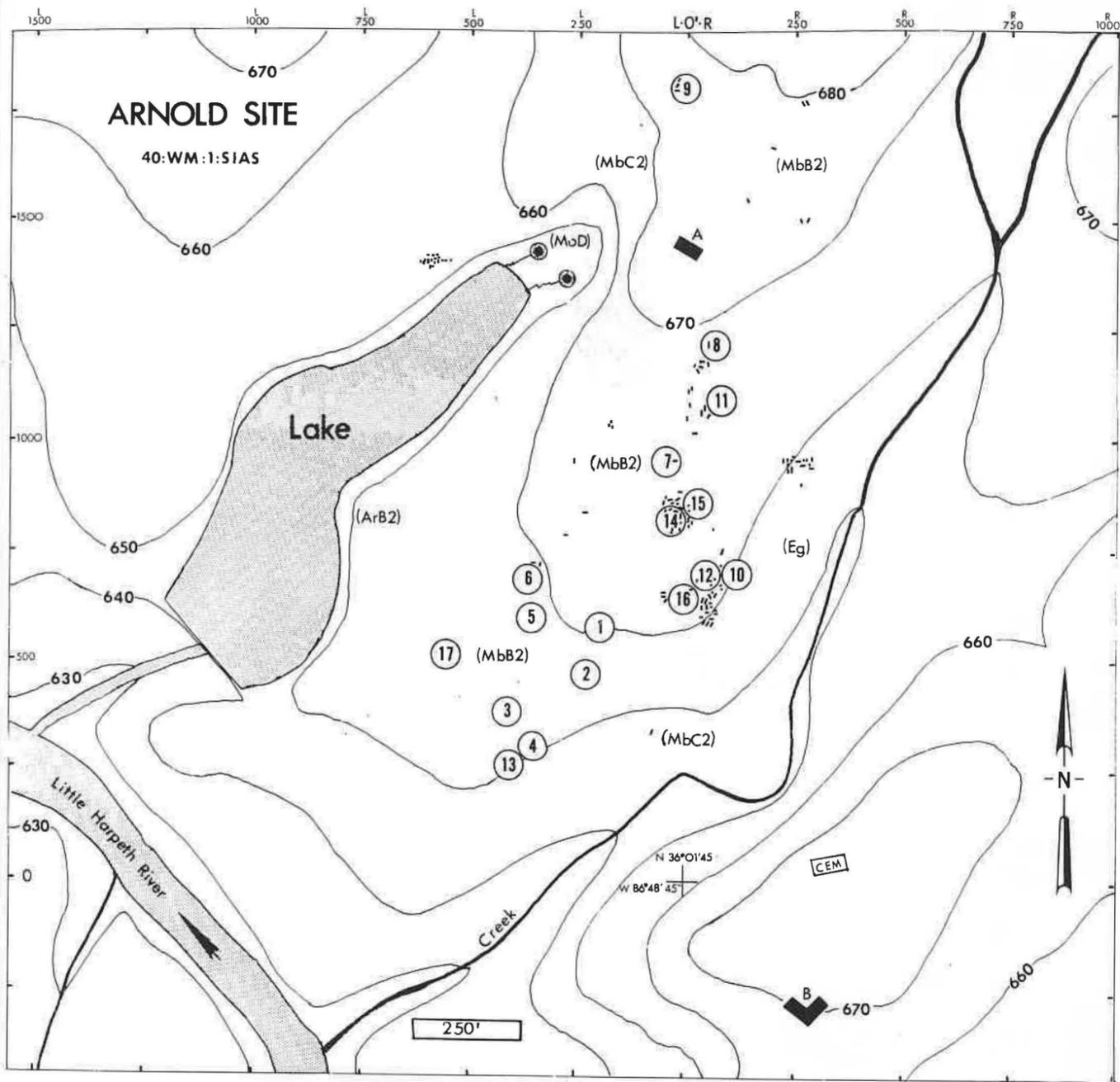


FIGURE 1. THE ARNOLD SITE and Vicinity (40-WM-1-SIAS): Soil types, terrain, and structure locations. Contour interval is 10 feet (datum: mean sea level). Reference map: Oak Hill Quadrangle (Tennessee), U.S. Geological Survey, 1953.

LEGEND

- ⑮ House sites (not to scale). ① Burials (not to scale). A Landmark: Home of James Fowler.
 B Landmark: Brentwood Country Club.
- Major soil types on site (in parentheses):
 (MbB2) MAURY SILT LOAM, 2 to 5 percent slopes, eroded. (MbC2) MAURY SILT LOAM, 5 to 12 percent slopes, eroded.
 (Eg) EGAN SILT LOAM, 5 to 12 percent slopes, eroded. (MoD) MIMOSA AND ASHWOOD, very rocky soils, 5 to 12 percent slopes.
 (ArB2) ARMOUR SILT LOAM, 2 to 5 percent slopes, eroded.

Part 1

ARNOLD VILLAGE SITE
 EXCAVATIONS OF 1965-1966

Robert Ferguson

The Middle Cumberland Culture

William Edward Myer, in a manuscript completed just prior to his death on December 2, 1923, wrote: "less is known of the ancient inhabitants of the Cumberland Valley than of those of almost any other region in the United States...." For forty years Myer had studied the archaeology of the Middle Tennessee area--concentrating on late Temple Mound period ceremonial precincts and outlying satellite villages--and was well-acquainted with the archaeological remains of what we now call the Middle Cumberland Culture (1). He pin-pointed geographically the area of its greatest intensity as lying between the confluence of the Caney Fork River and the Cumberland on the east, and the junction of the Cumberland and Ohio Rivers on the west.

Within the area so delimited, and on tributaries to the north and south of the Cumberland, a Mississippi culture developed and flourished between the years 1200 and 1700 A.D. In the decades just preceding 1700, Charleston trading companies sent explorers to search the unknown lands west of the Southern Appalachians for more tribes with which to do business. By that time the culture had come to an end. Except for a possibly-meaningful notation on a map (discussed later in this section) the explorers mention no villages, no people. The record of their existence is entirely archaeological. It is a record of a numerous people--sedentary and agriculturally competent.

In the Nashville, Tennessee area the graves of the Middle Cumberland Culture are abundant. R. S. Robertson, writing in 1877, notes: "These graves are found everywhere about Nashville, and within the city limits." Modern Nashville encompasses much

1. Middle Cumberland Culture subsumes such local expressions as "Stone Grave Peoples" and "Gordon People" and is considered to be the final prehistoric culture development in its area.

of the "everywhere about Nashville" of Robertson's day and still the graves abound both in and out of the city proper. Sheer abundance led to frequent discovery by white settlers. The following impression of the area is worthwhile because it was written less than fifty years after first settlement of Nashville and because of the information it conveys about the countryside.

"When the first settlers came to this bluff in 1779-80, the country had the appearance of one which had never been cultivated. There were no signs of any cleared land nor other appearance of former cultivation. Nothing was presented to the eye but one large plain of woods and cane, frequented by buffaloes, elk, deer, wolves, foxes, panthers, and other animals suited to the climate. The land adjacent to the French Lick, which Mr. Mansco in 1769 called an old field, was a large, open piece, frequented and trodden by buffaloes, whose large paths led to it from all parts of the country, and there concentrated. On these adjacent lands was no undergrowth nor cane as far as the creek reached. The country, as far as to Elk River and beyond it, had not a single permanent inhabitant except the wild beasts of the forest, but it had been inhabited many centuries before by a numerous population. At every lasting spring is a large collection of graves, made in a particular way, with the heads inclined on the sides and feet stones, the whole covered with a stratum of mold and dirt about eight or ten inches deep. At many springs is the appearance of walls inclosing ancient habitations, the foundations of which were visible wherever the earth was cleared and cultivated, to which walls intrenchments were sometimes added. These walls sometimes inclose six, eight, or ten acres of land; and sometimes they are more extensive. Judging from the number and frequency of these appearances, it cannot be estimated but that the former inhabitants were ten times, if not twenty times, more numerous than those who at present occupy the country (Haywood 1823:108-109)."

While part of the sentence appears to be missing where Haywood mentions stone-enclosed graves, it is clear that he is discussing the Middle Cumberland Culture.

Many of the earliest reports mixed fact and fancy. Small graves--in reality those of children--were thought to be archaeological evidence that a "race of dwarfs" had occupied part of the Cumberland Basin. Gates P. Thruston, a Nashvillian, did much to dispel such ideas locally in his valuable work, Antiquities of Tennessee, which was first published in 1890. About the same time (1894) Cyrus Thomas considered several manifestations of "stone grave peoples" and left little doubt that the graves were constructed by Indians (and not a "vanished race of Mound Builders"). As early as 1876, Joseph Jones,

a medical doctor, determined that "Upon careful examination of the smallest graves, I found, that, so far from inclosing a race of pigmies, they contained remains of children and infants (1876:39)."

While local interest in the stone graves has not waned, the light of present-day theory and technique has been slow to shine along the Cumberland. As a result, this significant manifestation of the Temple Mound II period in Middle Tennessee has not been adequately reported. It is hoped that the present series of studies will help bring into focus the emerging picture of the Middle Cumberland Culture.

ARNOLD VILLAGE

Salvage archaeology at the Arnold Village Site was undertaken by members of the Southeastern Indian Antiquities Survey, Inc. (SIAS) of Nashville, Tennessee, when the site was threatened with partial destruction. We are grateful to Charles Moseley of The Arnold Company and to Sam and Bob Coleman of Coleman Realty Company for their complete cooperation. The Third National Bank of Nashville and Vanderbilt University made possible radiocarbon dating of both Arnold Village and Ganier materials. A grant from the Carter-Cash Foundation paid for a similar dating of a West Site burial. Benwah Sparkes, the Nashville Banner and its editor the late Charles Moss, provided much-needed public education and support. Special thanks are due Ronald Spores, H. C. Brehm, John Broster, Jimmy Moore and Les Leverett.

Location

The Arnold Site (40-Wm-1-SIAS) is located about a mile southwest of Brentwood in the northernmost reaches of Williamson County, Tennessee. The site, shown in Figure 1 is bounded on the east by a shallow, wet-weather creek which joins the Little Harpeth River south of the village itself. The area under consideration encircles two small springs (1374-L312) which flow year round. No study has been made of the low-lying area south of the 640' contour line. Surface reconnaissance of the areas east, north, and west of the site was carried on during the two seasons of the survey. It is felt that the boundaries indicated in these quadrants are approximate boundaries of the original village.

The village was just above the flood plain of the Little Harpeth River which flows northwest toward a confluence with the Harpeth about eight miles below the site. The greater Harpeth provides the major drainage for the county and joins the Cumberland River near Ashland City. As is the case with many other local streams which are tributary to the Cumberland, the banks of the Little Harpeth are rife with the remains of villages. Frequently the sites are within shouting distance of each other. Some appear to have been settlements no larger than hamlets or extended households. Others boast the characteristic ceremonial precinct of the Temple Mound II Period. Most are separated by

fertile bottom lands which are enriched through the siltation process when the Little Harpeth swells from its bed to inundate the valley floor.

Geology

The Middle Cumberland area--indeed, most of the Cumberland River drainage--lies within the geologic province called by Shimer "Interior Low Plateaus". He describes the area as one of lower altitudes and less relief than the adjacent Appalachian Plateau. The low-domed Cincinnati Arch, running nearly north and south, includes two major elevations. One of these is the Nashville Dome, dissected in many places by erosional process. Sandstone and layers of limestone rich in chert form resistant layers which cause flat-topped or conical hills in the erosion-produced Nashville Basin. On the extreme eastern edge of the province, thin soil on limestone accounts for Barrens, or zones of sparse vegetation. Caves, sinkholes, and disappearing streams are common (Shimer 1972: 44-47, and map "Q").

The Arnold Village site is near the western limit of the Nashville Basin and is underlain by the Ordovician Nashville Group comprising Bigby Cannon Limestone and Hermitage Formation (Miller et al, 1966). Completely surrounding the Nashville Basin is the Highland Rim which is largely Paleozoic Mississippian. Broken Hills jut out from the Rim to within a mile of the Arnold Site. The nearest hill displays the lower strata of the Mississippian - Fort Payne Formation and Chattanooga Shale - at its top and the various Upper Ordovician strata on its sides. Thus, a wide variety of limestone, silicistone and shale was within easy reach of the Arnold Village inhabitants.

The site itself is on gently sloping (2 - 5%), shallow soil which has eroded along the steeper perimeter. In places, limestone shelves lie exposed. Thin slabs for construction of the unique stone burial boxes and raw material for lithic implements were close at hand.

Climate

The average annual temperature of north central Tennessee is 59° (Piper 1932:6). Rarely, temperatures reach highs of 112° and lows of -23°. Short winter cold spells with temperatures of 0° to 30° are seldom more than a week in duration although several such spells may occur each winter. Similarly, brief hot spells occur in summer months but the average July temperature in Nashville is 79.1° (Piper 1932:7). Farmers can expect a minimum of at least 175 frostfree days annually. The average is 210 days and the maximum recorded is 261 days (Piper 1932:9). In such a climate, much living can be done outdoors - particularly from mid-spring to mid-autumn. Winter quarters, however, should provide protection from cold winds, rain and snow. Rainfall is fairly evenly distributed throughout the year; the annual average is 48.49 inches (Piper 1932:14). Under these growing conditions,



Figure 2. Arnold Site in summer cover.



Figure 4. House Site #2 depression being staked for excavation. Shallow "dishing", characteristic of Arnold Village house sites, is visible.

farmers produce one crop of corn each year.

Figure two is a photograph of the heavy mid-summer floral cover at the Arnold Village site. Broom sedge, milkweed, thistles and other weeds abound. Broadleaf trees - among them oak and maple - are heavily foliated at this season of the year. Because of a wide variety of soil types (as shown in Figure 1) and depths, the total floral spectrum of the site is quite broad. The field shown in the photograph is the heart area of the site. It was not tilled by the past owners as far back as they can recall. Certainly, the sub-soil plow has never bitten into the cultural deposits.

Structures

Remains of 17 houses were discovered at the site. While we cannot present a total picture of any one house, a partial composite may be drawn from the assembled data. Summary observations of each house site are as follows:

House Site #1 at 575-L200. Visible as a circular depression in the earth. A trench yielded abundant fired daub (probably from walls), a grooved sandstone abrading tool, and a small triangular flint point.

House Site #2 at 450-L230 (Figure 3). Visible as a circular depression in the earth (See Figure 4). The presence of fired daub in a test trench indicated that a structure had been destroyed by fire. This house site was staked in five-foot squares and excavated in six-inch levels. Approximately 18 inches below the datum plane a floor was uncovered and partially traced before the excavation had to be abandoned. Debris in the soil above the floor level included a variety of sherds and worked and unworked flint pieces and some debitage. On the floor itself were a number of charred seeds, charred sections of two posts or roof beams (Figure 5), chunks and particles of fired daub (frequently with split-cane impressions), pot sherds, a milling stone, a handstone, ashes, bone, and restorable parts of three serrated-applique rim bowls. No burials were in direct association with the dwelling. The only indication of a fired house floor anywhere at the Arnold Village site was a thin layer of smooth, fired clay (446-L221, Figure 3). However, a contiguous lens of unfired clay suggests that firing may not have been intentional (Figure 6). It could have occurred when the house burned. As Webb suggests (1938:192) a prepared clay floor was "polished by the passing of many feet." It is possible that the clay feature herein described is the remnant of such a smoothed clay floor.

The hearth at 452-L231 is typical of those at the site. It was constructed of puddled clay with a modeled rim and was probably fired by normal use (Figure 7). A remnant section of lip suggests that a rim of about 1 1/2" height extended around the hearth. This type of hearth is frequently termed a fire-bowl or fire basin. Because of its bowl shape and its function

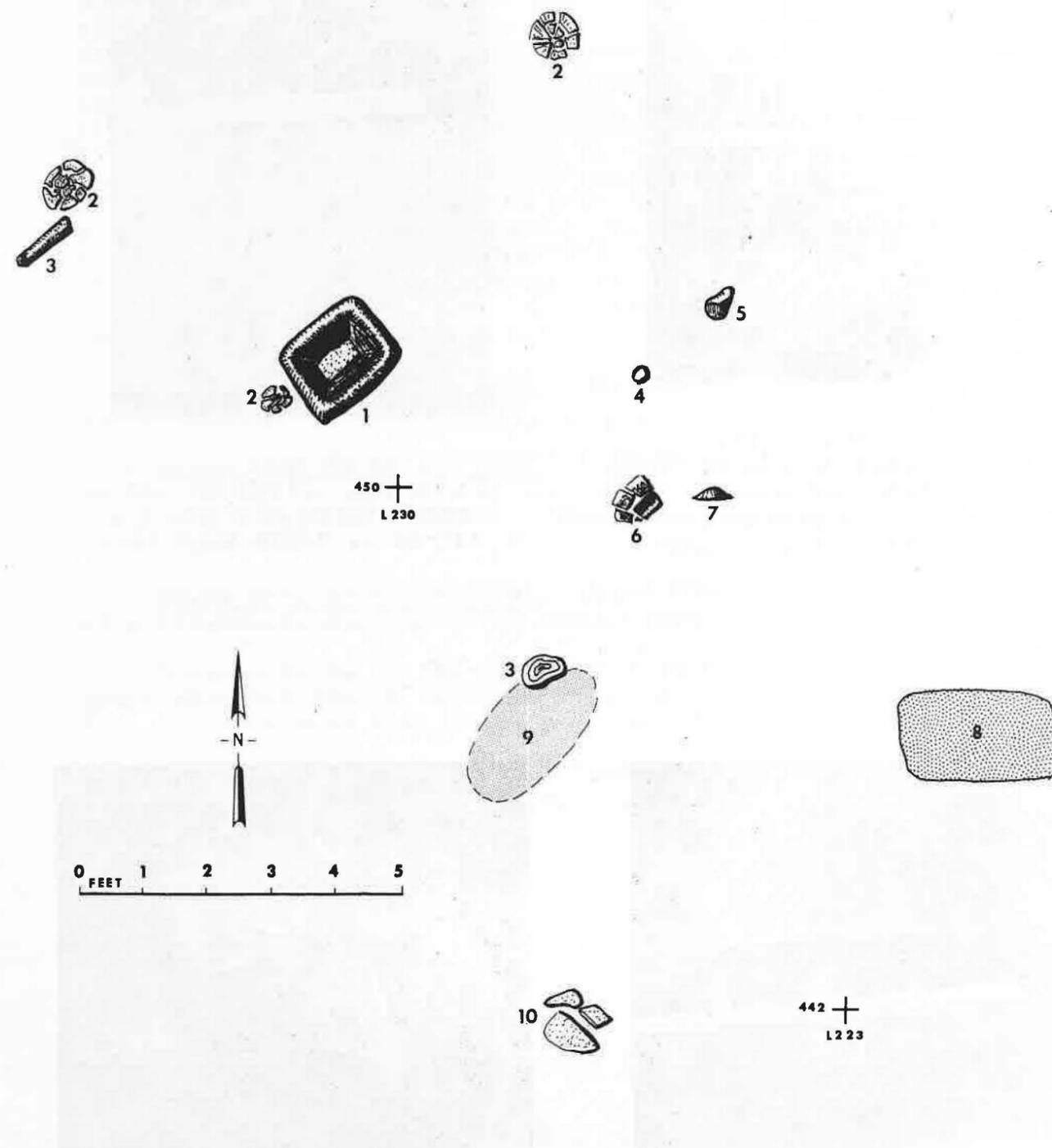


Figure 3. Schematic of part of the floor of house site #2 showing prominent features. 1) Fire basin; 2) Broken serrated-rim bowls; 3) Fragment of charred wood shown in Figure 5; 4) Pottery discoidal; 5) Pestle; 6) Fragments of stone mortar; 7) Terrapin shell; 8) Fired clay section on floor; 9) Concentration of charred seeds; 10) Arrangement of flat stones.

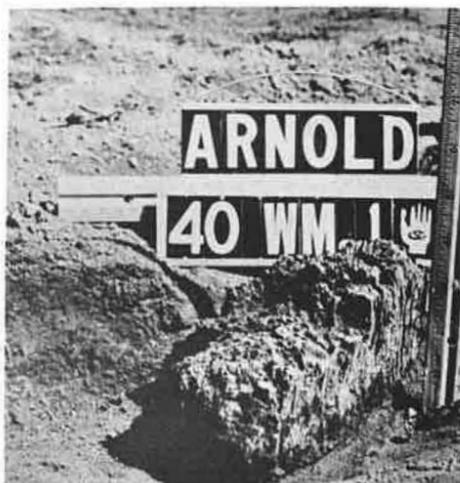


Figure 5. One of the charred wood fragments on the floor of House Site #2. Its proximity to the hearth may be seen in Figure 3.

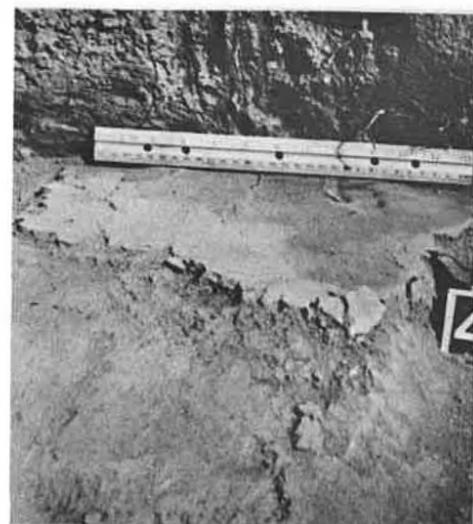


Figure 6. Layer of smooth fired clay at 446-L221, House Site #2.

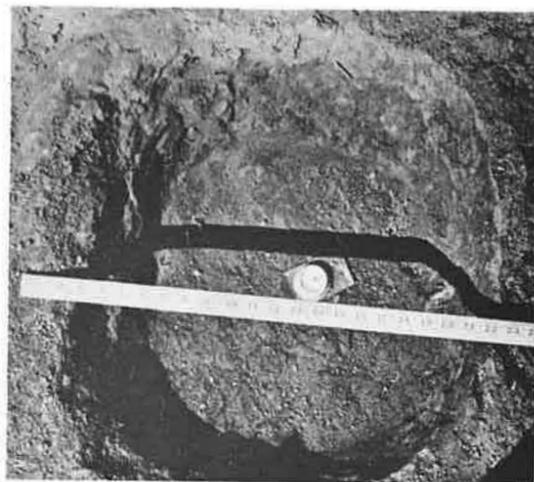


Figure 7. Firebowl (hearth) at 452-L231, House Site #2. Note lip section in upper left corner.

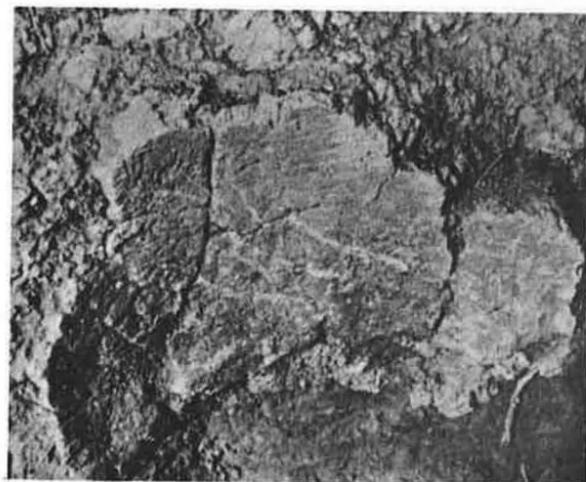


Figure 8. A section of the firebowl (hearth) wall at 452-L231, House Site #2, showing the nearly vertical walls and a rounded corner.

as a basin for fire, the terms are apt. Unlike firebowls reported by Webb (1938) for the Norris Basin, and Nash (1968) for the Link site, Arnold Village basins were not round and were deep. The shape, as shown in Figures 7 and 8, is perhaps best described as nearly square with rounded corners. The sides taper slightly in toward the bottom, and the bottom itself is flat. From east corner to west corner, the inside width at the lip is 21 inches. Average depth is nine inches. At Hiwassee Island Nash found that centrally-located fireplaces were normal in the dwellings, but that the occurrence of the rectangular, modeled-rim fire basin was rare. (Lewis and Kneberg 1946:173). However, Lewis and Kneberg felt that fireplace form could not be used as a diagnostic developmental characteristic for Mississippian subcultures because "all forms were in use throughout the Mississippian occupation" (1946:73).

House Site #3 at 375-L420. Visible as a circular depression in the earth.

House Site #4 at 300-L350. Visible as a circular depression in the earth. A test pit at the lowest point within the depression disclosed a typical firebowl. There was no opportunity to excavate this house site.

House Site #5 at 590-L365. Fired daub, a reliable indicator of a structure, was uncovered during roadbuilding.

House Site #6 at 685-L365. Substructure remnants of this house were visible in vertical walls of a gas line ditch (Figure 9). The outermost post molds measured 13' 5" apart.

House Site #7 at 950-L40. Fired daub and charred debris, revealed during roadway ditching, indicate that this house also burned.

House Site #8 at 1220-R60. A typical firebowl was present in the wall of a gas line ditch.

House Site #9 at 1815-R0. A bulldozer excavating for a basement uncovered the configuration of features shown in Figure 10. Only the bottom of the firebowl was spared by the blade of the bulldozer. Post molds, 7' 1" from the firebowl, indicate a design relationship to house sites 2 and 6.

House Site #10 at 690-R115. Tell-tale deep orange clay of a firebowl marked the presence of this house floor in a water line ditch.

House Site #11 at 1090-R85. Determined by presence of fired daub in a water line ditch.

House Site #12 at 690-R75. Fired daub and firebowl fragments were noted in the wake of a bulldozer digging a basement.

DWELLING ELEMENTS

Fig. 9

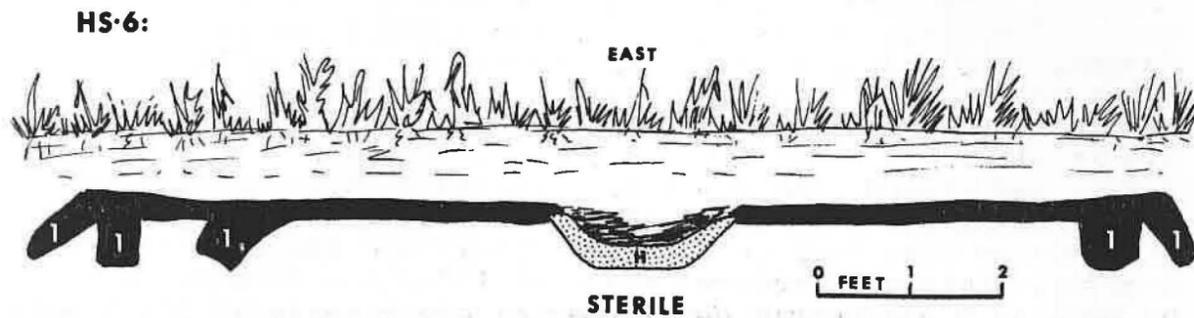
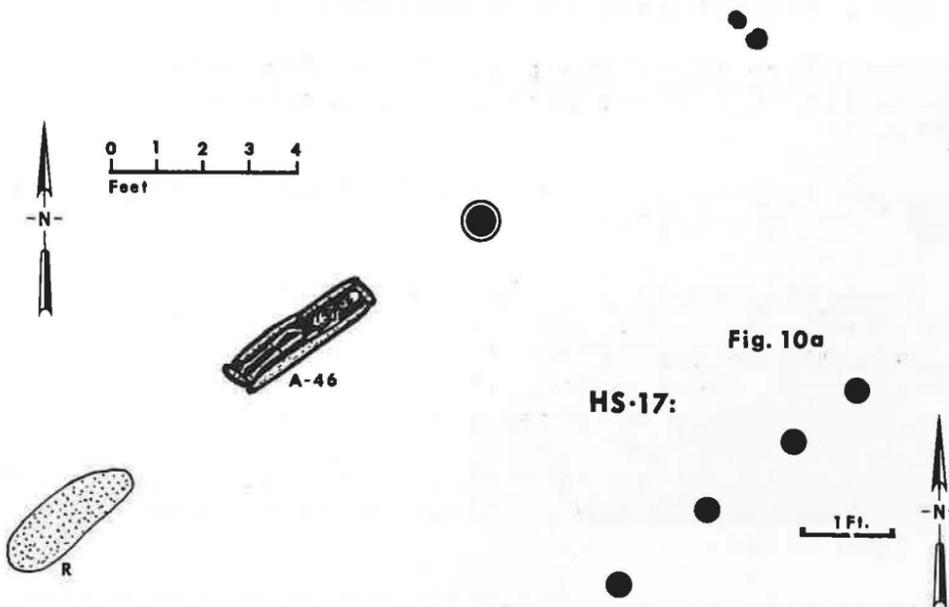


Figure 9. Vertical profile of materials comprising House Site #6 as seen in cross section disclosed by excavation for a gas line at 685-L365.

≡ Organic soil; plow zone. 1 Post mold.
 H Puddled clay hearth. ■ Debris on floor.

Fig. 10

HS-9:



Figures 10 & 10a. Diagram of materials related to House Site #9 at 1815-R0. (10a) Four post molds in a ditch at 525-L550.

● Post mold. ● Puddled clay hearth.
 A-46 Burial R Refuse pit.

House Site #13 at 260-L400. Visible as a circular depression in the earth. A trench revealed no fired daub or other positive evidence.

House Site #14 at 815-L20. Presence of this structure determined by a stratum of fired daub just below ground surface.

House Site #15 at 860-R10. Presence indicated by stratum of fired daub in burial #41 overburden.

House Site #16 at 650-R0. Presence indicated by a fire-bowl in a sewer field ditch excavation.

House Site #17 at 525-L550. Post molds, as shown in figure 10a, indicated possible presence of a structure.

These meager data have been interpreted as follows: The houses were of wattle-and-daub construction. The wattle was split cane and the daub was clay with fiber binder. Where fired daub is present in a house site excavation it is assumed that the house burned. Where there is no fired daub or charred organic matter of any consequence, the opposite is assumed.

Puddled-clay firebowls with raised rims occupied a central place in the house floors. Without exception, the hearths, or firebowls, were found in the center of the large saucer-shaped depressions which marked where houses once stood. Exact relationship of the firebowls to the structures which had housed them was undetermined in those cases where they were discovered in the side walls of ditches dug by developers of the site. The firebowls we saw were of a uniform size and depth and conveyed a feeling of being a normal, standard construction of the culture under discussion. The sides and rims were thick--up to five inches--and would have held heat well. Sunk as they were in the floor of the dwellings, they would doubtless have heated the earth at their circumference. They were deep enough to hold live, banked coals for many hours, and were heating, or warming, devices rather than fireplaces, in today's sense. Slow broiling of food would have been possible, as well as boiling, and cooking within the coals. Pre-cooked victuals could have been kept warm for long periods of time, convenient to the occupants of the dwelling.

There were post molds and charred sections of posts some six or seven feet from the hearths in several of the house floors. These are too near the hearths to be peripheral wall posts and probably represent remains of central supports or roof beams. Available evidence indicates that many of the circular depressions were 20 or more feet in diameter. It is likely the houses were of this size or larger.

A horizontal arrangement of flat stones was discovered on the floors of House Sites #1 and #2 (442-L226, Figure 3). Similar arrangements have been found at other Middle Cumberland

sites--the Gordon site, for example (Myer, 1928). While their intended purpose or use is not known, it is possible they were used as flat working surfaces during food preparation.

Because of developer's schedules it was never possible to excavate a house site in its entirety. Therefore, the precise shape of the structures was never determined. No wall lines were fully excavated, no corners. The saucer-shaped depressions appeared to be round or nearly so. However, centuries of erosion may account for the circular appearance.

No evidence was discovered of structures having been re-built. Domiciliary, or residence mounds of the kind described by Nash (1968) were absent, although local lore tells of a low mound of a possible domiciliary nature having once been present on the site. As Nash points out, such residence mounds would have been destroyed by plowing, but there is evidence (the circular depressions) that the Arnold Village site was never plowed. However, it is possible that the site was disturbed by a disc harrow which would have diminished evidence of a raised rim on the house sites.

Unlike the first structures built on the Link site, Arnold Village houses were not built on the surface of the ground, but on or near the hardpan stratum as described by Webb in the Norris Basin (1938:190). No wall molds were observed where post molds were seen. Post molds were all too large to fit the "small pole" house type, and conformed in this respect to "large log" construction. Because no houses were fully excavated, we can add no new information to the sequence of Mississippian house types as developed by Nash.

Burial plots were not far from the houses. There is considerable evidence that special areas were set aside as cemeteries. As burial areas expanded, space for house sites may have been restricted. Since both grave floors and house floors usually rested on or just below the subsoil hardpan, construction of a house in a burial area would have necessitated removal of the burials. No evidence of such action was noted.

Subsistence

Analysis of animal remains from one trash pit revealed bones of the following: deer, woodchuck, a type of Sigmadon rodent, frog, opossum, and other unidentified rodents. The percentage of small rodent bones was very high. Disregarding the possibility of hungry rats in the trash pile, preliminary analysis of materials indicates more meals of woodrat than of venison. Comprehensive ethnozoological interpretation must await conclusion of studies now in progress.

Charred remains of corncobs, beans, and other seeds in graves and on house floors are indicative of a horticultural tradition. Findings in House Site #2 are indicated in Figure 3.

A knowledge of gourds is clearly indicated by the presence of gourd effigy bowls. These bowls depict half a gourd - usually complete with blossom and stem. The well preserved evidence of domesticated plants, coupled with the presence of permanent housing, points unmistakably to sedentary life with a rather well-developed agricultural subsistence base.

Varieties of Stone Box Graves

All of the burials at the Arnold Village site were of the Cumberland "stone box" variety. The distinguishing - indeed, definitive - feature of this variety of stone slab sepulcher is its having been constructed of upright stone slabs for the specific body it is to entomb. It is almost form-fitting in its construction - frequently wide at the head and narrow at the feet. This "tailored" appearance distinguishes the Cumberland "stone box" variety from burial vaults of similar material and general design. Robertson commented on this characteristic:

The sides and end of the grave were lined with thin limestone slabs, making a complete stone cist, about six feet long and just wide enough for the body to be placed within it, with the arms pressed close to the side (1878:277).

An example of similarity in both material and design is to be found in the Watkins Mound variety (Logan County, Kentucky). Figure 11 shows a typical burial of this variety (Burial #17, Watkins Mound). When compared with a typical burial of the Cumberland "stone box" variety (Figure 17), a basic difference is noted: The Watkins Mound "stone box" is spacious; the Cumberland "stone box" is not (Figure 12). There are other differences of course. The Watkins Mound Variety represents the earliest known form of stone slab burial box in this general area. The associated artifact assemblage is exclusively Woodland (Ray, 1967).

By way of contrast, the Cumberland "stone box" grave is always Middle Mississippian in assemblage. Possibly the cultural difference actually exists more in space than in time because Woodland sites are rare in the Nashville area proper and Middle Mississippian sites are rare in Logan County, Kentucky. However, it is becoming increasingly certain that a stone burial box tradition of considerable depth existed in the Nashville Basin and in the area to the north. Within this region the practice was widespread.

As a culture adopted the use of stone slabs in constructing burial enclosures, it may have merely adapted the concept to its prevalent form of burial. There is some evidence in support of this hypothesis. At Swallow Bluff Island, Decatur County, Tennessee, the stone boxes enclosed flexed burials only (Moore, 1916). At Tinsley Hill, Kentucky, there were flexed, extended, and bundle burials within stone boxes (Schwartz, 1961). The Arnold Village site manifestation of the Middle Cumberland

Comparative Dimensions

AVERAGE ADULT GRAVE BOX DIMENSIONS
CONSTRUCTION MATERIALS: STONE SLABS

SITE:	0	12"	24"	36"	48"	60"	72"	84"	NO.
WIDTH									
A								19
B								11
C								5
D								1
E								1
F								1
LENGTH									
A								19
B								19
C								5
D								1
E								1
F								1
DEPTH									
A								19
B								11
C								5
D								1
E								1
F								1

FIGURE 12. Comparative dimensions of Stone Box burials at several sites within 100 miles of Nashville, Tennessee. All except the Watkins Mound Site are probably Mississippian. Measurements are of stone box interiors, extended interments only. No. refers to the number of burials in sample.

Site code: A, Arnold; B, Tinsley Hill; C, T. J. Gray; D, Watkins Mound #17; E, Ellis Creek #2; F, Henry Isle #8.

Note that the Watkins Mound grave is wide and deep.



Figure 11. Woodland burial in the Watkins Mound Site, Logan County, Kentucky. Note the spacious interior of the Watkins Mound variety. By comparison the Cumberland Stone Box variety burial is compact and close fitting.

Figure 13. Anomalous burial form at the Arnold Site. While the burial box form itself is typical, flexion of right leg and both arms is atypical. Note small triangular point in situ above left pelvis.

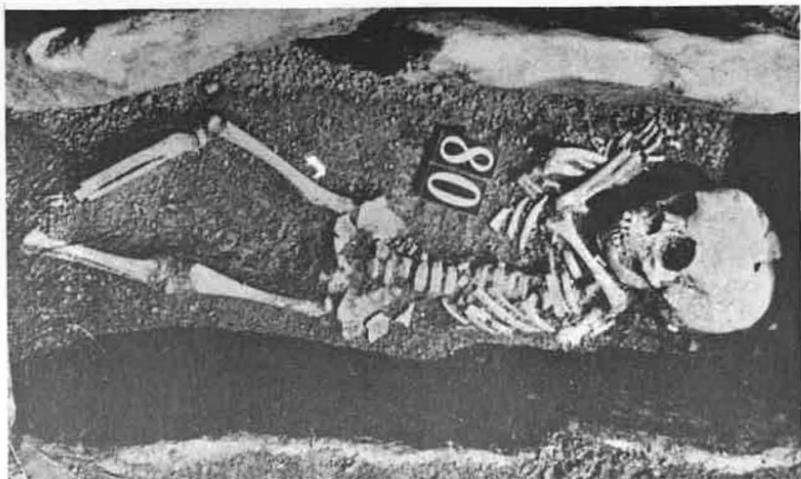


Figure 16. Burial #91 photo taken during excavation shows unique use of an urn as one end of a Cumberland Stone Box grave.

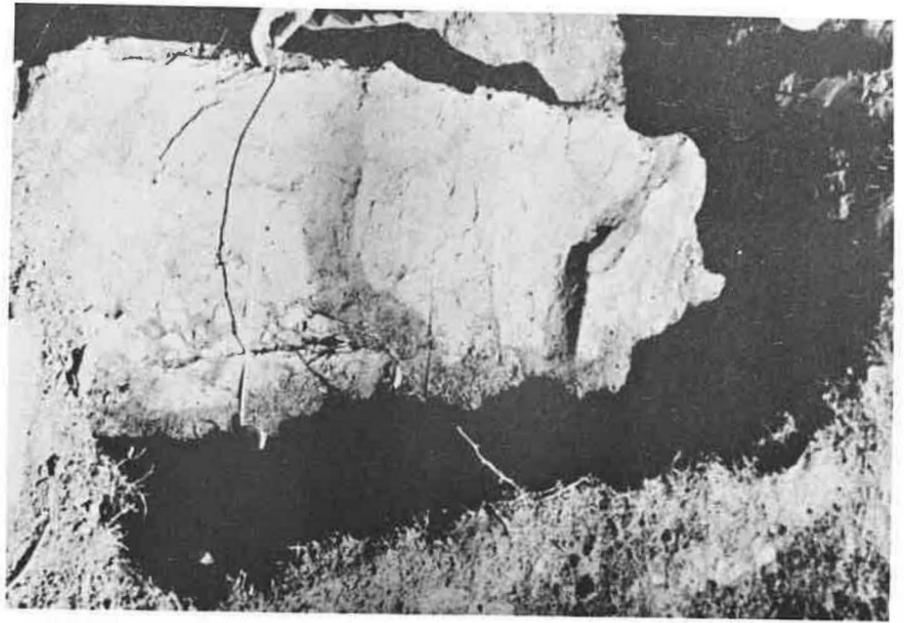


Figure 14. Burial #25 was the only grave where slate was used in cap-stone (cover) construction.

FIGURE 15: Three varieties of the stone box type burial.

Variety	Major Feature	Definition & Description	Distribution/Manifestations
Cumberland Stone Box	Burial box built to dimensions of extended, primary inhumation. Mississippian assns.	A rectangular sepulcher constructed of vertical stone slabs built to the size of the initial burial in all dimensions and covered with one or more layers of stone. Frequently rests on the subsoil hardpan. Bottom may be lined with sherds, stone, sand or nothing.	Abundant in Nashville area (the northern third of the Central Basin of Tennessee). Known as far west as the lower Cumberland River Valley near Eddyville, Kentucky (Schwartz, 1961), and in Jefferson County, Missouri (Bushnell, 1920).
Watkins Mound Stone Box	Spacious burial box with Woodland associations.	A rectangular sepulcher constructed of vertical or slightly flaring stone slabs. Built much larger in all dimensions than the individual to be buried. Covered with one or more layers of stone. Several layers deep in type site mound which was formed around the burials.	Watkins Mound, Logan County, Kentucky. Other possible manifestations: Martin Place mound, Thirlkill Place, Little Reedy Point - all on Green River, Kentucky (Moore 1916: 481-485, 490-491, 485-486).
Swallow Bluff Stone Box	Body flexed in ill-fitting grave.	A rectangular sepulcher constructed of vertical stone slabs. Shorter than the preceding varieties. Inside depth and width measurements, however, are similar to CSB. Top covered with layered slabs. Body always flexed or "crammed" in grave. May occur in association with unenclosed (pit) burials.	Swallow Bluff Island, Decatur County, Tennessee (Moore 1915: 213-214).

Culture contained only extended burials (with the possible exception of Burial #80 [Figure 13] which conformed in all other respects) and a few cases of the inclusion of a bundle burial with an extended burial. Watkins Mound burials were extended in stone boxes and enclosed in a mound. A small cemetery in Jefferson County, Missouri, is described by Bushnell (1920:54-56) in which pit burials, stone enclosed burials, and bundle burials are intermixed.

Figure 15 describes three varieties of the stone box burial type. While the division of "stone box" burials into varieties is arbitrary, a workable taxonomy is created. Differences as well as similarities become more evident.

In working out this particular North American taxonomy, I selected enclosed vs unenclosed burials as primary categories. Within these categories several types may be distinguished. Following is a hypothetical listing of types and varieties of enclosed burials:

<u>TYPE</u>	<u>VARIETY</u>
Stone Enclosed	Watkins Mound Cumberland "stone box" Swallow Bluff Island
Wood Enclosed	Split slabs Hollow logs Bark-lined pits Historic sawed-and-pegged caskets Log tombs in mounds

The types are based on the material used in construction of the enclosures; varieties are drawn from the ways the construction material was put to use. The three varieties of stone enclosures bear the names of sites or areas where first defined. As with any taxonomy, there are many possible criteria which can be selected for ordering the material. The present scheme can be expanded as types and varieties are identified and described. Whether this system will be useful in defining inter- and intra-cultural relationships remains to be established.

Because the stone slab sepulcher is the most distinctive feature of the culture under consideration, a discussion of the construction of the stone burial boxes at the Arnold Village Site is presented.

Raw Materials

The stones used for side, end, and top construction are slabs of limestone, sandstone, or slate, one to two inches thick. These materials are plentiful in the nearby sedimentary outcroppings along hillsides and rivers. Limestone was the standard

burial box raw material at the Arnold Village site. Use of sandstone was rare and but a single use of slate was seen. The slate was used as a capstone, or cover, on Burial #25 (Figure 14). The slabs were shaped for their intended uses and were roughly dressed to fit at joining surfaces.

Construction of a Grave Box

Considering the fact that stone, wood, and bone tools were all that the villagers had, it is perhaps easy to understand why grave excavations were just large enough to allow construction of a box tailored to the size of the deceased. The bottom usually rested on or just below the subsoil hardpan layer. Usual depth of the inside of the burial box was ten or eleven inches. Some few were six inches deep and others were twelve inches deep. Depth of the capstone beneath ground surface varied in accordance with hardpan depth.

Endstones were frequently wider than the burial boxes and, like the sidestones, were set into the hardpan two or three inches below grave bottom - possibly for added stability. Burial #91 (Figure 16) deviates from the norm in that a large pottery vessel with part of the side removed was used instead of an endstone at the head of the grave. It was the only one of its kind at the site.

Sidestones were fairly closely joined to the endstones (Figures 17, 18 and 19). Where more than one slab was required for the desired grave length, overlapping joints were made. The top edges of end and sidestones were smoothed for a better fit with the capstones (Figure 19).

After the body was placed in the grave, several capstones were laid horizontally across the box formed by side and endstones (Figures 20 and 21). In one case a single stone, broad enough to cover the entire box, was used as a capstone.

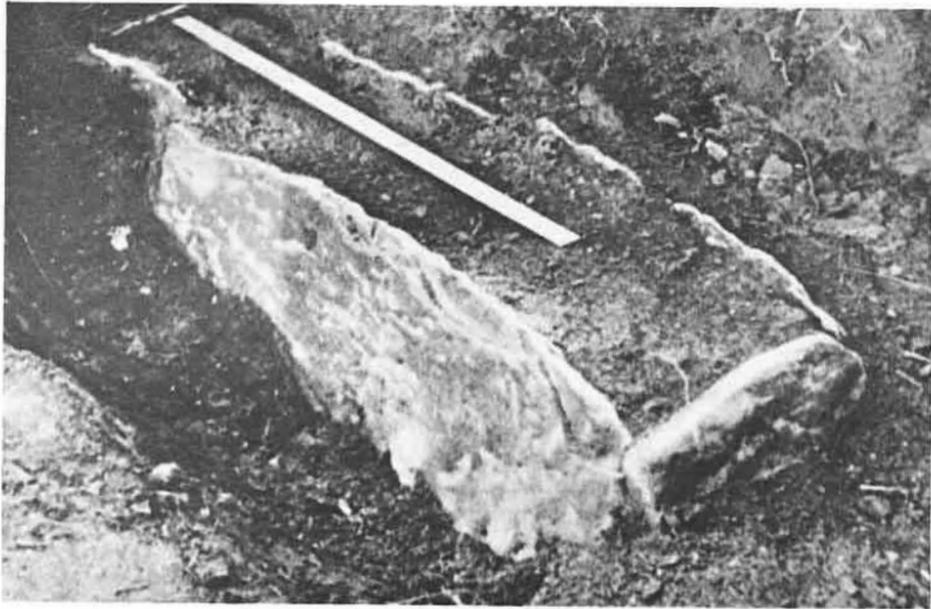
Sixteen burials at the Arnold Village site had floors of non-perishable materials. The materials and their frequency of use are as follows:

Ceramic mosaic floor	11
Limestone mosaic floor	1
Sandstone mosaic floor	1
Undifferentiated-stone mosaic	2
Mixed ceramic-stone mosaic	1

The flooring material rested on the hardpan bottom of the graves. Sometimes sherds from a ceramic mosaic floor could be reconstructed into one or more large vessels. Perishable materials may have been used as grave-liners, but evidence of such was not seen.



17



18



19

Figures 17, 18, and 19. Fitted corners of end and sidestones, and overlapping sidestone joints, are shown in this series of pictures.



Figure 20. Burial #40 with capstones (covers) in place. More than one layer of capstones were common.



Figure 21. Three of the burials at 850-RO. #17 is partially excavated. #19 (lower right) and #20 are in nearly a straight line and have capstones still in place.

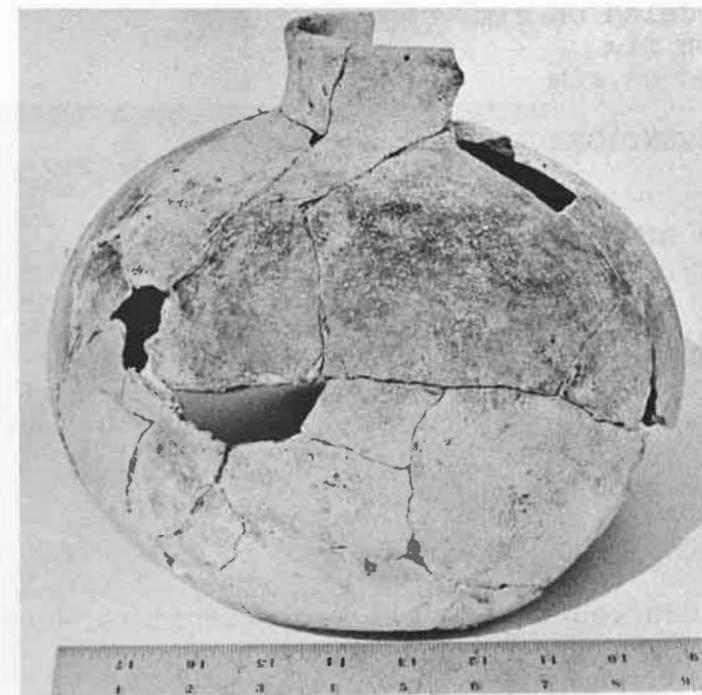


Figure 22. Short neck jar, or olla, partially reconstructed from sherds used to lay a grave floor.

Grave Goods

Death was not considered to be the end of the way for the village residents. Thirty-four burials were furnished with pottery bowls or water bottles for whatever journey lay ahead. Nine were accompanied by mussel shells for use as spoons or plates. Small triangular flint points were found in six graves but were associated with only one burial which contained ceramic ware. The point in this case (Burial #72) was in such a position it could possibly have been the cause of death. Three of the burials containing the points were located within 18 feet of each other in the burial cluster at 600-R50.

Four children were buried wearing strings of shell beads. Figure 44 shows a restrung drilled-shell bead necklace with carved-bone owl effigy pendant that was found in a combined adult - child burial. Three adults and one child were buried with objects sometimes referred to as beads or ear ornaments (Figure 43). Bear tooth pendants were found in two graves and pierced ceramic "teardrop" pendants in one. Ceramic bowls and water bottles were found in both adult and child graves. As previously noted, 34 burials were accompanied by bowls or water bottles. These may be grouped as follows:

BOWLS IN EFFIGY FORM:	QUANTITY
Beaver effigy bowl	1
Gourd effigy bowl	2
Fish effigy bowl	5
Mussel-shell effigy bowl	2
BOWLS WITH SERRATED APPLIED RIM DESIGN -with compound body	4 1
BOWLS WITH MODELED RIM FIGURES	
Upright human head modeled on rim	1
Animal head modeled on rim	1
Wood duck head modeled on rim	1
STRAP HANDLED POT WITH CONVENTIONALIZED ZOOMORPHIC DESIGN	4
BOWL WITH UNDULATE, FLARED RIM	2
UNDECORATED BOWLS	3
HOODED WATER BOTTLES	
Hunchback effigy	3
Blank face	2
Negative painted with sun circle design and owl-like head on hood	1
CONVENTIONAL WATER BOTTLE	1

Effigy forms rarely occurred together. The exceptions were



Figure 23. Double burial (#38). An adult male and an adult female burial with both bodies oriented to the same direction. A femur from the male was used for securing the first Middle Cumberland Culture radio-carbon dating.



Figure 24. Double burial (#78). An extended adult burial with a child burial extended from the opposite end of the grave.



Figure 25. Triple burial at 940-R275 during excavation. A female skull is shown in its position overlaying that of an adult male. The back of a child's skull is to the right of the female.

multiple burial #9 (940-R275) where a fish effigy and a mussel-shell effigy were found with the three skeletons, and a burial which contained a beaver effigy bowl (Figure 38) and a fish effigy bowl (Figure 36).

Of the 151 graves excavated at the Arnold Village site, 133 contained single extended interments; 16 contained double interments; and two contained triple interments.

Of the 16 double interments, one grave contained a bundle burial at the feet of an extended body. In the other 15 cases both individuals had been buried in extended position. The common forms of double burial are pictured in Figures 23 and 24.

Of the two triple interments, one contained a single extended body and two bundle burials. One end of the triple burial (#9) is shown during excavation in Figure 25. All three bodies were interred extended in the same direction.

Burial Polarity

Burial polarity of 64 graves chosen at random is shown in Figure 26a. 66% show east - west or north - south alignment. Polarity of 17 extended (Cumberland Stone Box variety) burials at the Tinsley Hill, Kentucky, site is shown in Figure 27a; there is a marked affinity for the south to west quadrant with 35% oriented to the west (Schwartz, 1961).

Polarized clusters appear within burial areas (Figure 28). One wonders if these were "family plots". The burial cluster at 1400-L500 (Figure 29) shows 16 graves oriented along an east - west axis and two oriented north-south. This cluster is in closer agreement with the general east - west orientation of Tinsley Hill graves. Burial polarity of related Middle Cumberland Culture sites is shown in Figures 26b and 27b.

A Demographic Comparison

Of 82 burials for which evidence is clear, 45 individuals were over 20 years of age at death and 37 were under 20. A comparison with age-at-death schedules of three Hiwassee Island components (Lewis & Kneberg 1946:153-7), and the Ganier site schedule from elsewhere in this report is given below:

<u>SITE/COMPONENT</u>	<u>UNDER 20 AT DEATH</u>	<u>OVER 20 AT DEATH</u>
Hiwassee Island		
Historic Component	65%	35%
Dallas Component	56%	44%
Hamilton Component	28%	72%
Ganier Site	45%	55%
Arnold Village Site	45%	55%

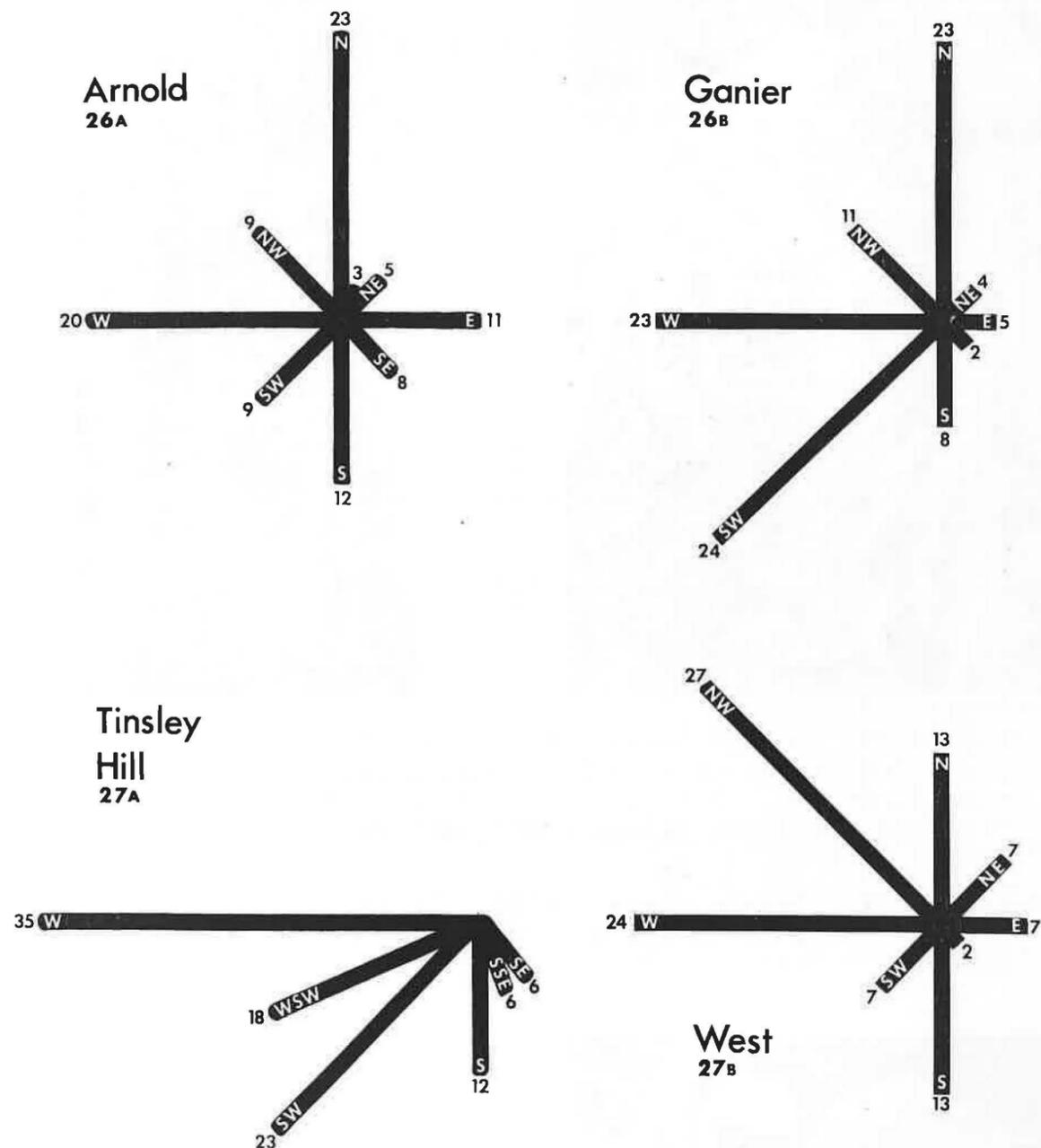


Figure 26 & 27. Burial polarity of four sites with Middle Cumberland Culture components. Figures are percentages based on available data.

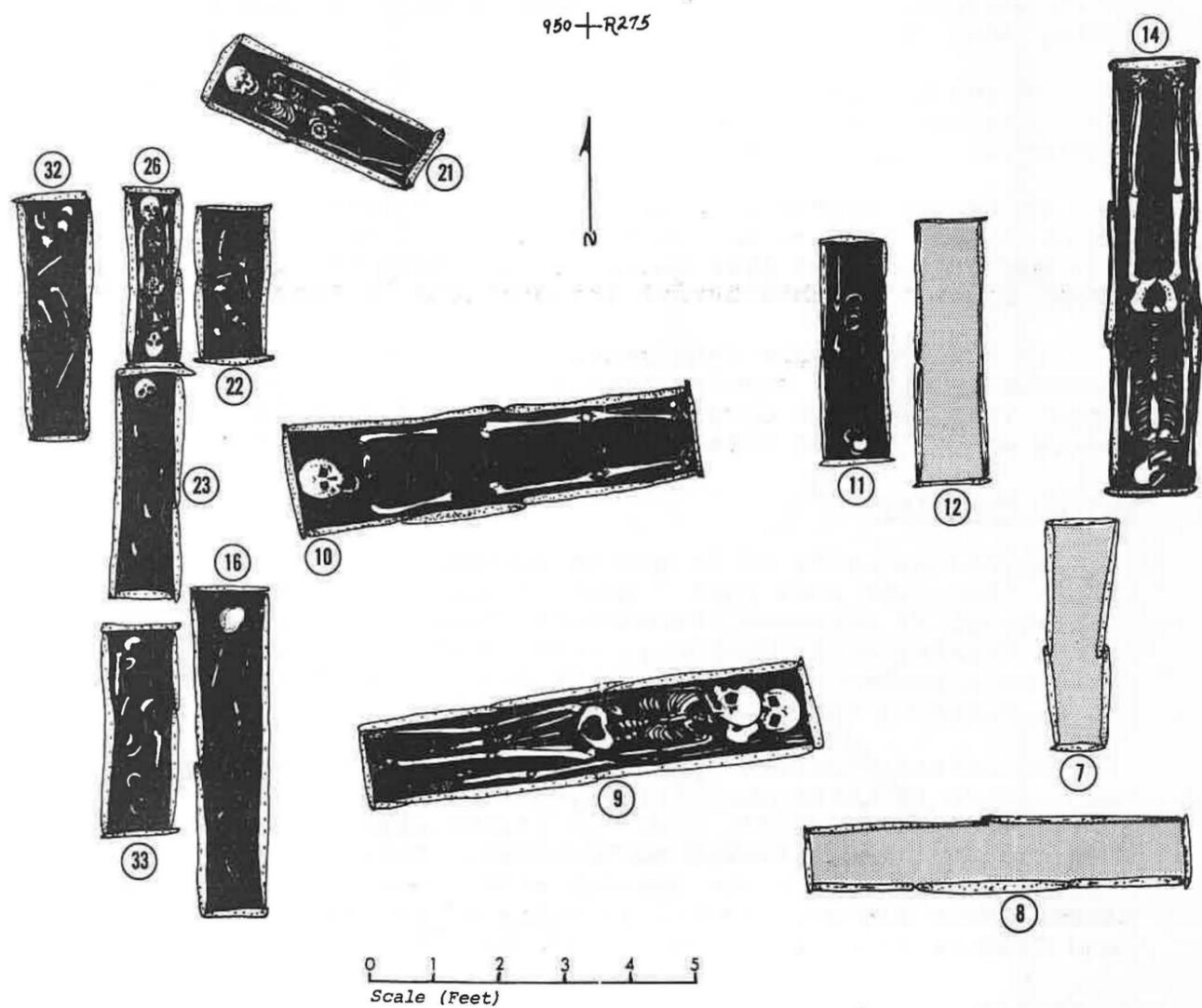


Figure 28. Typical burial configuration at 950-R275 shows two north-south clusters separated by four generally east-west oriented graves. Toned graves had been vandalized.

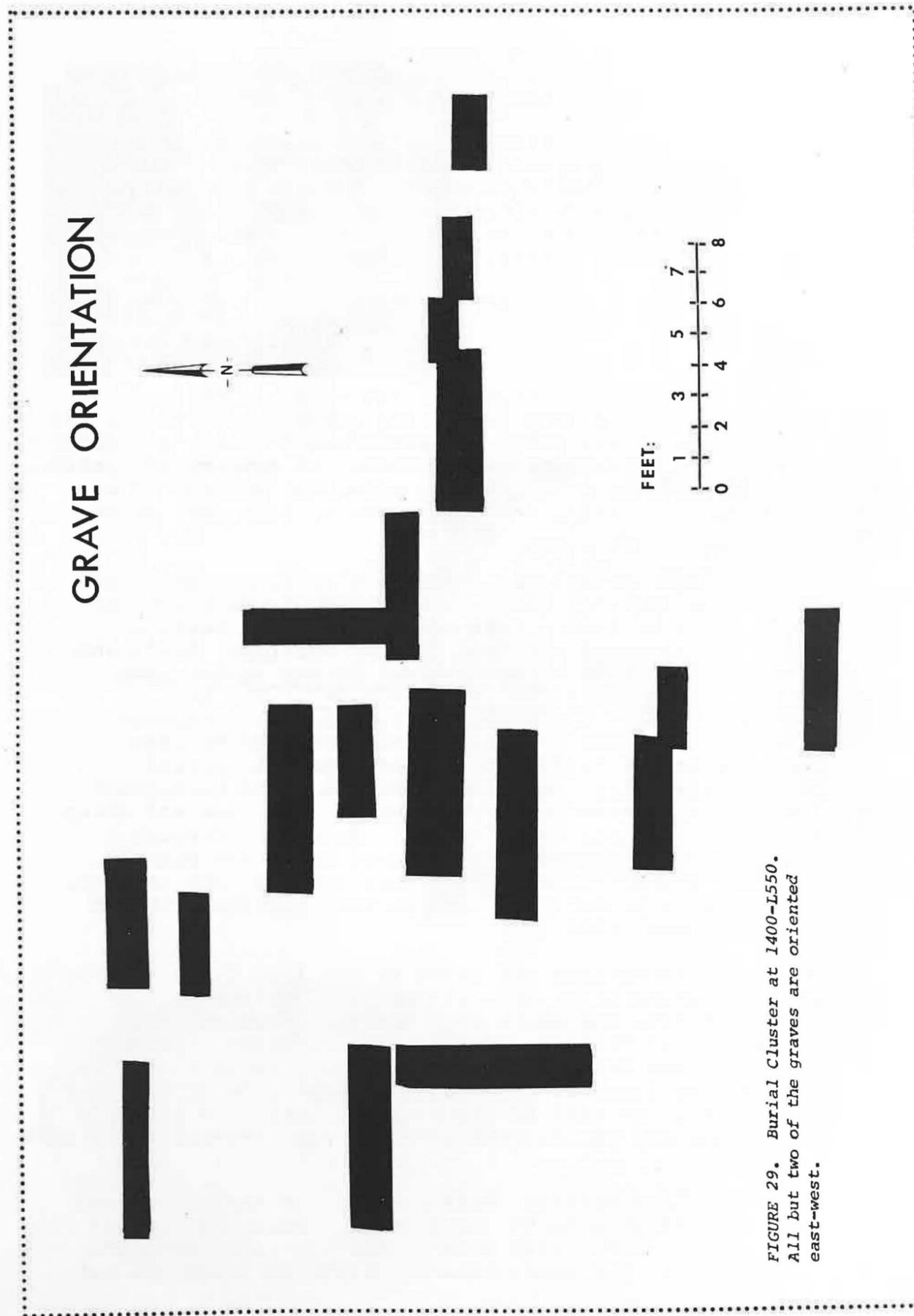


FIGURE 29. Burial Cluster at 1400-L550. All but two of the graves are oriented east-west.

Precise agreement of the Arnold and Ganier schedules is noteworthy. It is a strong link in the chain of similarities binding these two Middle Cumberland sites.

Lewis and Kneberg attribute the high Dallas death rate to the introduction of European diseases (1946:158). If this be the case, the Arnold/Ganier schedules indicate a period before the most devastating effects of the new diseases were felt. On a purely statistical basis, we can fit Arnold/Ganier between Hamilton and Dallas in a relative chronology.

ARTIFACTS

Ceramics

Arnold Village excavations yielded only Mississippian pottery types. Sherds from within the grave box of Burial #38 (from which a femur was taken for radiocarbon dating at Geochron) were sent to the University of Tennessee. A summary of findings there is contained in the following excerpted portion of a letter from Charles Faulkner, University of Tennessee archaeologist:

The identifiable sherds from this site seem to be from Neeley's Ferry Plain vessels except the thick rim sherd which is from a salt pan. This type (Neeley's Ferry Plain) was first described by Phillips, Ford, and Griffin in 1951 in Archaeological Survey in the Lower Mississippi Alluvial Valley, 1940-1947. The type description fits the medium to coarse shell-tempered plainware from the Cumberland and Tennessee Valleys. The type is not diagnostic for any specific period during Mississippi development but is found throughout the shell-tempered pottery sequence. The lugs and strap handle are typical of this type. Several different vessels are undoubtedly represented here, for example, the body sherds range in thickness from ca. 3mm to 9 mm. Vessels were probably jar-shaped with recurved rim and globular body (1965).

Our own observations and those of the late Charles Nash, Memphis State University, who classified a small sample of sherds, corroborate the above as a general statement for ceramics at Arnold Village. Nash stated, however, that the Neeley's Ferry and Bell Plain were obviously variant from the materials he found at the West Tennessee site of Chucalissa (Memphis). He said it was probable that both groups (Arnold Village and Chucalissa) used the same general techniques (1966).

Arnold Village pottery, like much of the Nashville-area pottery, is distinguished by its flowing form. The rounded shapes contrast vividly with more angular pottery south and west of this area, and constitute an attribute which has not

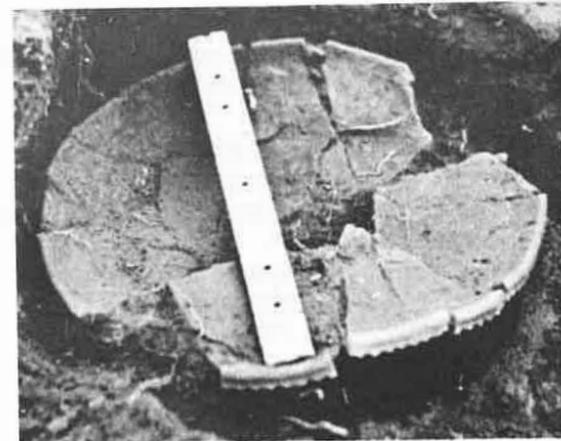


Figure 30. Serrated, applied rim bowl in situ on floor of House Site #2 at 450-L230.



Figure 31. Top view of a bowl from floor of House Site #2.



Figure 32. Bowl with serrated, applied rim design. Segments of a terrapin carapace were found in it as shown.

been fully described.

Certainly general design and decoration were common enough, and fall within the range of the Temple Mound II period:

Bowls (with or without serrated, appliqued rim design);
Bowls (with human and other animal heads modeled on rim);
Strap-handle pots (with conventionalized zoomorphic designs or with incised decorations, or both);
Effigy bowls (fish, gourd, beaver, mussel shell shapes);
Water bottles (human effigy, blank-face effigy, negative painted, hoodless).

Effigy forms (including the strap-handle pots with conventionalized zoomorphic design) were common in graves but never occurred in association with house floors. The only form common to both houses and graves were the serrated rim bowls. Even here a size distinction should be pointed out: Bowls from the floor of House Site #2 were larger than any funerary bowls of the same design (serrated, appliqued rim). Figures 30 and 31 depict a serrated rim bowl from the floor of House Site #2 (450-L230). Figure 32 shows a bowl of the same design from a burial. The culinary bowl from the house floor is much larger than the funerary bowl, although their general design is the same.

A bowl, peculiar for its angularity, had been inverted over the pedal bones of Burial #60. The bowl and a plain pot which was also in the grave are shown in Figure 34.

Effigies

As previously stated, effigy forms occurred only as burial accompaniments. Strap-handle pots with conventionalized zoomorphic designs were no exception.

Plain and hooded water bottles occurred most frequently with child burials. A full-figure effigy water bottle found on the surface in a disturbed area is shown in Figure 35. Two animal effigies were found in a child's grave at 642-R45. Other ceramic manufactures are shown in Figures 36 - 43.

Shell and Bone

Mussel shells were found in association with nine burials at the Arnold Village site. Some had been trimmed at the lip so that a spoon with a handle was produced. A single conch shell vessel was recovered and is shown in Figure 46. Shell was used to manufacture the two small beads shown in Figure 47. They are similar in form to those in Figure 43. The large shell bead in the center of Figure 47 was found on the surface in a disturbed area of the site.

Several bear canine "pendants" were recovered (Figure 47,



Figure 33. Vertical compound bowl with crude rim serrations.



Figure 34. Two undecorated vessels from Burial #60.



Figure 35. Full-figure human effigy water bottle from a disturbed area at 925-R100.

CM 0 1 2

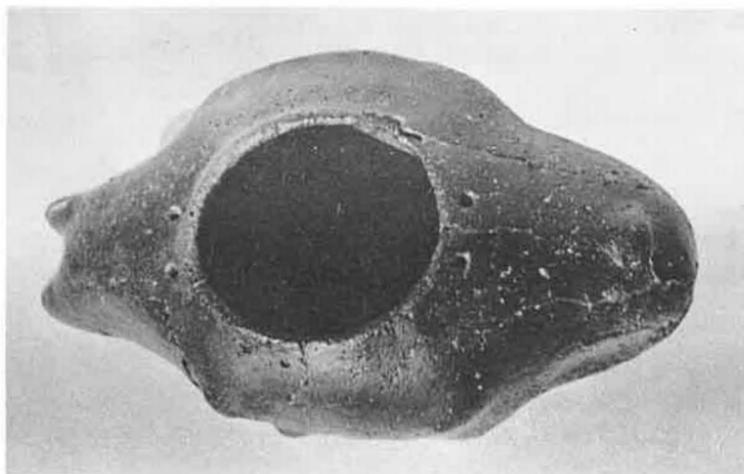


Figure 36. Fish effigy bowl with holes which may have served as points-of-attachment for thongs.



Figure 37. Bowl with rim adorno depicting an alligator, or dragon-like animal, holding a human head between its teeth. Similar adornos are reported from Mouse Creek (Griffin, 1952, Fig. 110).

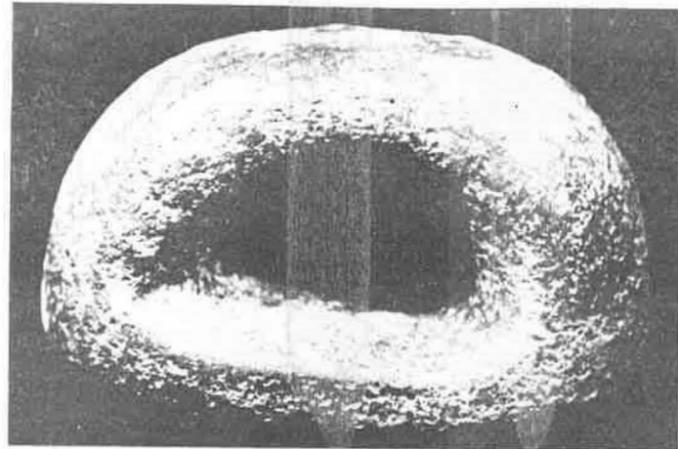


Figure 38. Bowl with beaver effigy adorno. The beaver faces the lower-left-hand corner and appears to have a twig in its mouth.



Figure 39. Hooded water bottle with sun circle in negative painting and owl-like head on hood.

Figure 40. Side view of hooded, negative-painted water bottle shown in Figure 39.



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Figure 41. Ceramic "plastering trowel". A surface find at the Arnold Site.



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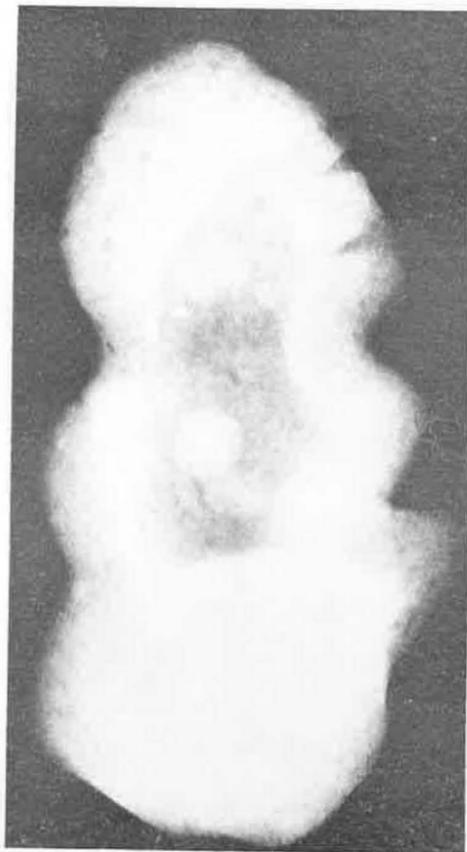


Figure 42. Ceramic human effigy rattle possibly similar to one described from Angel Site (Black, p. 461; "third example). Figure 42a. An X-ray photograph of the same hollow effigy in preceding Figure showing pellets inside. Figurine faces right.

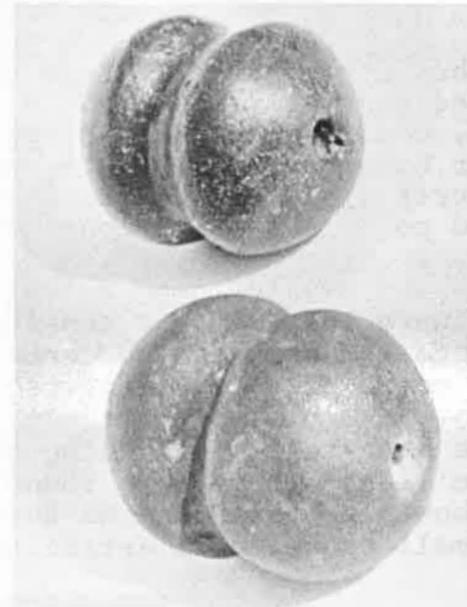


Figure 43. Beads from Arnold Village Site burials.

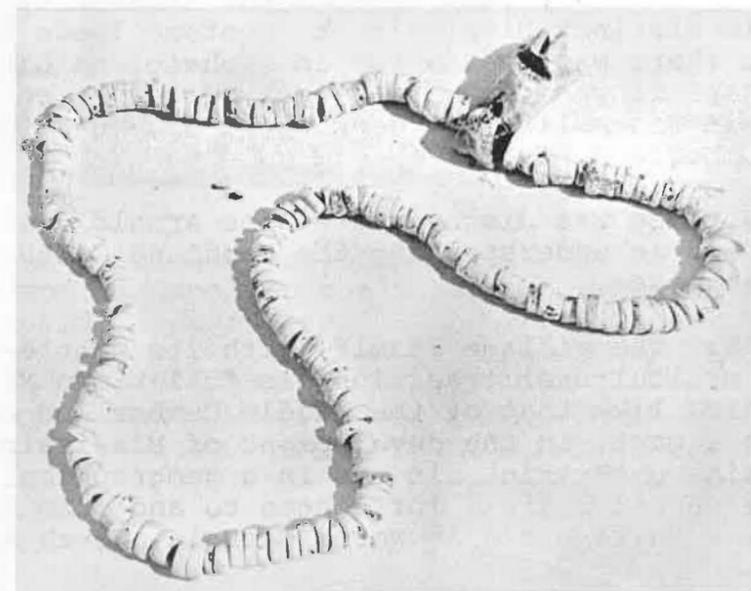


Figure 44. Shell beads and carved-bone pendant from a burial.

left). Most were notched at the proximal end. Two bone needles were found in Burial #63 and are the only such found at the site (Figure 48). A deer bone awl was in the grave box at 1785-R260.

Lithic Manufactures

Of the chipped flint points thus far identified from the Arnold Village site, there are types generally assigned to the Transitional Paleo-Indian, Archaic, Woodland and Mississippian Periods. Only the small triangular Mississippian points were indisputably in association with burials and house floors with the exception of the broad, notched point shown in Figure 49 which was found in a child's grave.

The engraved stone shown in Figure 50 was found beneath the skull of an adult burial. The design nearest the center appears to be a skull--a recurrent motif of the "Southern Cult".

Other lithic artifacts include a variety of abrading stones (Figure 51). Portions of several milling stones were found. Figure 52 shows a drilled stone elbow pipe found on the surface and Figure 53 shows a variety of small cannel coal artifacts.

Discussion

ARCHAIC: The chipped flint points thought to be Archaic may indicate a persistence of types into Mississippian times. It is also possible that Arnold Village inhabitants found the points elsewhere and carried them into the village. However, the meaning of the fact that none of the Archaic types were discovered in distinct Mississippian context leads to a conclusion that there was occupation in Archaic and Late Archaic times. Perhaps it was only a seasonal campsite; certainly there was no deposit resembling the deep shell middens of the Archaic along the Cumberland River.

WOODLAND: Nothing was discovered at the Arnold Village site which would aid in understanding the Woodland Culture Period in Middle Tennessee.

MISSISSIPPIAN: The village itself, with its wattle-and-daub houses and horticultural tradition, is full-blown Mississippian. Its exact role, like that of the Middle Cumberland Culture of which it was a part, in the development of Mississippian traditions remains uncertain. It was in a geographical position to both receive and radiate influences to and from the Mississippi and Ohio River valleys and to North Georgia, North Alabama and East Tennessee.

We have two radiocarbon dates for the Arnold Village, based on collagen content of femora of burials selected because of their undisturbed condition. Both were primary burials in typical Cumberland Stone Box variety graves. The dates are as follows:

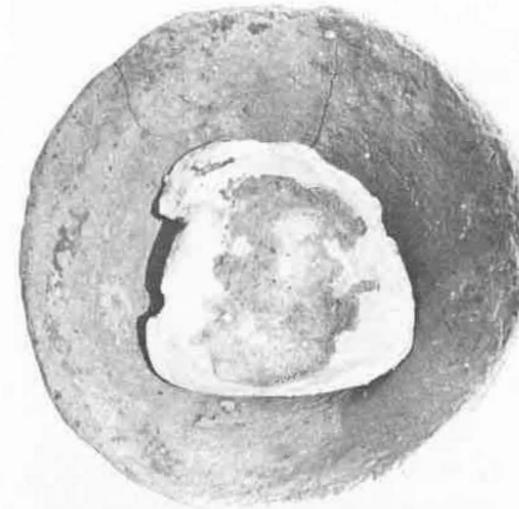
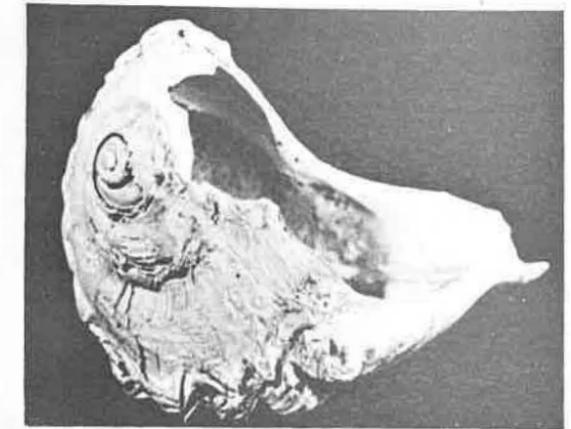
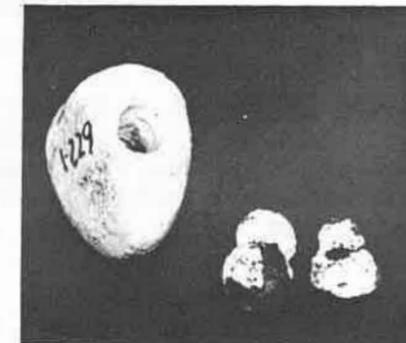


Figure 45. Mussel shell within a bowl as discovered in a burial.



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Figure 46. Conch shell vessel from Burial #116.



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Figure 47. A notched bear tooth, drilled shell bead and two smaller shell beads from the Arnold Village Site.

49



Figure 49. Flint point from a child burial. The point appears to be of nodular flint origin. It is 5 1/2 inches in length.

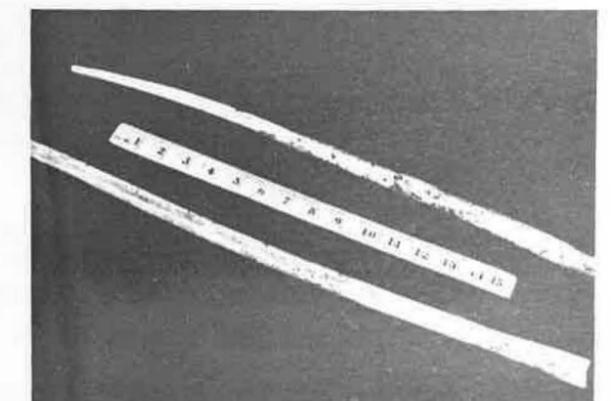


Figure 48. Two bone "needles" from Burial #63 at 625-R44. White areas may indicate points of attachment of perishable parts of the original complete artifact.

1200 A.D. (750 ± 80 years B.P.; GX 1079);
 1680 A.D. (270 ± 65 years B.P.; GX 0452).

Nearly 500 years separate the radiocarbon determinations. A date for the Ganier site (discussed in Part 2) centers on 1250 A.D., while that for the West site is 1360 A.D. (590 ± 115 B.P.; UGa 333). The West site is a Middle Cumberland Culture site reported by John Dowd (1972).

The four determinations are charted in Figure 54 together with dates from Chucalissa and Angel sites for comparative purposes. Three of the Middle Cumberland Culture dates fall within the first third of the Temple Mound II period while a single Arnold Village determination falls at the very end of the same period. A complete lack of trade goods of non-Indian manufacture reinforces the assumption that the settlements were abandoned before effective European contact. Certainly they could not have been in existence in 1715 when a French trading post flourished for a few months on a mound in present Nashville. It is for this reason that the 1680 determination is a degree less acceptable than the others.

Archaeology of Hiwassee Island revealed European trade articles only in late years of Dallas occupation (Lewis and Kneberg 1946:135). As we have seen, age-at-death schedules for Ganier and Arnold Village sites are nearest in alignment to those of the Dallas component at Hiwassee Island. The Dallas component has not, to my knowledge, been dated by the carbon-14 method, but the preceding Hamilton component appears to end by 1100 A.D. (Faulkner, 1967:22). Allowing for the intervening Hiwassee Island component, for which identifiable burials were absent, contemporaneity of at least early Dallas and the Middle Cumberland cultures is strongly suggested.

There is no intrinsic methodological reason for rejecting any of the dates. Yet, the archaeological evidence tends to argue against a 500-year occupation of the Arnold Village site by the same Mississippian people. In the first place, there was no great accumulation of debris, no definable stratification, as would be expected in a long-term continuous occupation. Neither were there indications of rebuilding (on the same house sites) as noted by Nash in Humphreys County, Tennessee.

There is little indication in the cultural remains of internal culture change. In fact, the very homogeneity of the remains obscures evidence of even minimal change. If we accept the range of temporal occupation suggested by the radiocarbon dates, we must view the Middle Cumberland Culture as a conservative, non-innovative society at least on the material level.

Some External Connections

There is little doubt that there was some sort of relationship between the Angel Site people, near Evansville, Indiana,



Figure 50. Engraved stone from beneath a skull in an Arnold Village site CSB burial. A sketch of the incised design is shown in the upper-right-hand corner.

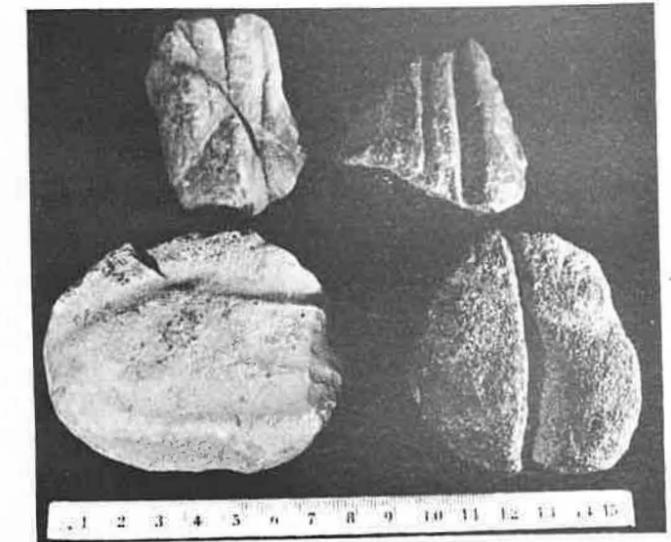


Figure 51. Sandstone abraders.

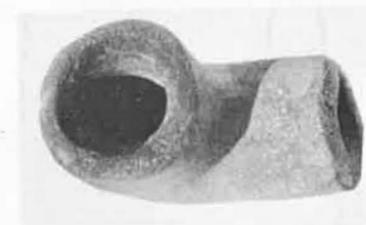


Figure 52. Drilled stone elbow pipe from surface. About 2" long.



Figure 53. Examples of cannel coal shapes at the Arnold Village site.

Fig. 54

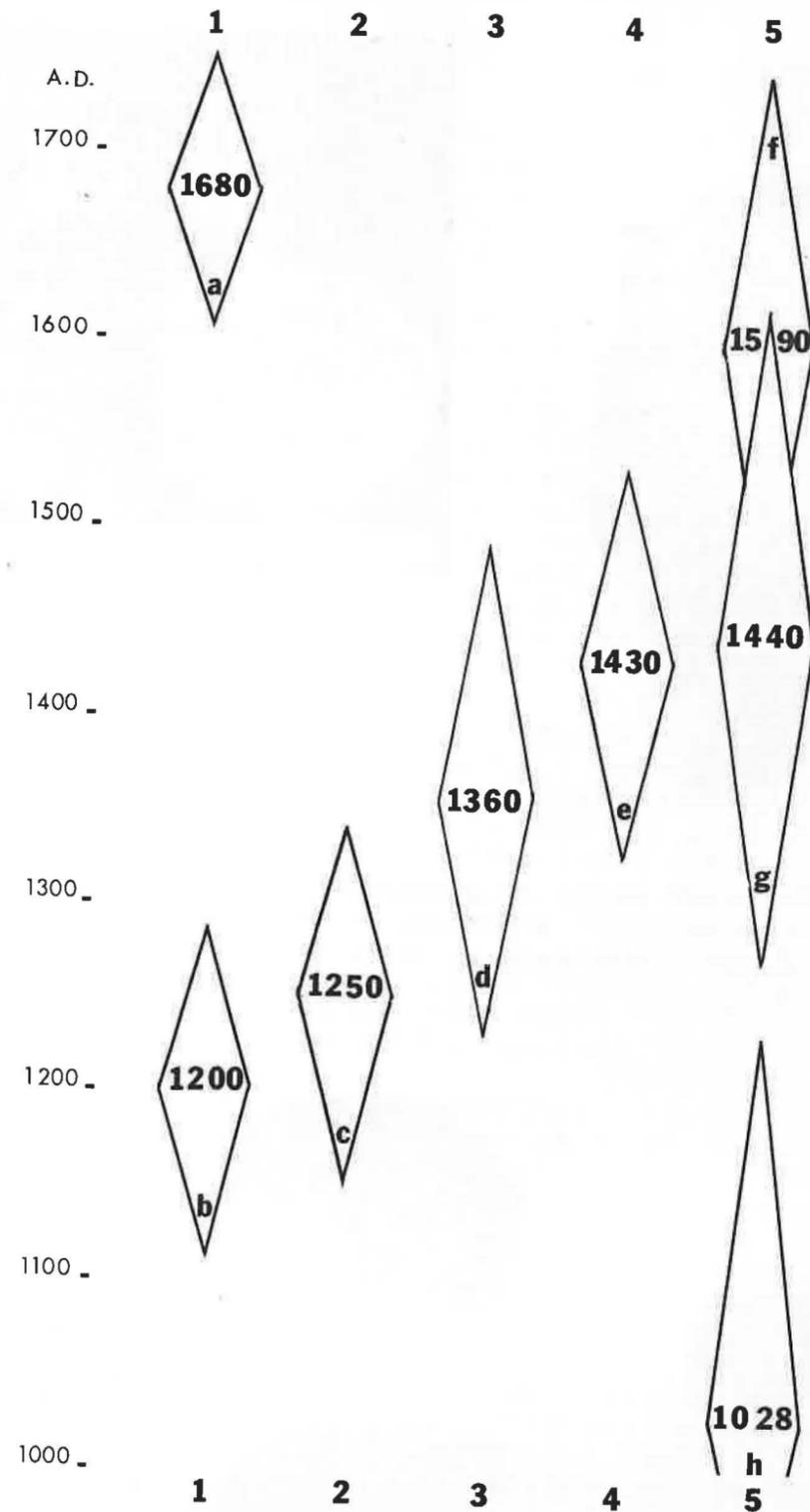


Figure 54. Radiocarbon dates obtained for Middle Cumberland Culture sites and other Mississippian sites. 1) Arnold Village: (a) GX0452, (b) GX1079; 2) Ganier: (c) GX0871; 3) West: (d) UGa-333; 4) Angel (Indiana): (e) M-4c; 5) Chucalissa (Memphis): (f) M-788, (g) M-584, Large log construction in Stratum 1, (h) M-583.

and those along the Cumberland. It may have been no more than a general shared culture type (Middle Mississippian) but there are certain similarities in artifact design which indicate possible closer relationship.

One such relationship is found in pottery styles and forms. Roundness in vessel construction, previously mentioned for specimens from the Arnold Village Site, is obvious in those pictured by Black from Angel Site. Such vessels may be seen in his figures 61, 279, 280, 292, and 144, for example. However, Black states that "...95 percent of the bowl rim sherds are plain" (1967:467). As previously indicated, a high percentage of Arnold Village bowls were decorated, usually with notched, appliqued rim strips. Black found only two examples of effigy water bottles. This form was infrequent at Arnold Village, but not as rare as indicated for Angel. Black found few elements of the "Southern Cult" which was also sparsely represented at Arnold Village. But he did report negative painting, daub, some use of stone grave linings (mostly in secondary burials), and puddled clay fire basins with raised rims. Most of the latter were round and centered in the house floors. However, he did encounter square fire basins at both early and late depths in one subdivision (0-13-D). He regarded the subdivision as having occupied a special position within the village (1967:357). Square, or rectangular, fire basins were also found in some dwellings at Mouse Creek (Bradley County, Tennessee) which will be discussed later.

Effigies at Angel, in pendant and vessel form, include owl, human, duck, frog, gourd, and "blank face". These forms are frequently encountered in the Middle Cumberland Culture and are, indeed, widespread in Mississippian times. The owl, in particular, is ubiquitous. It appears in a special form at Arnold Village, Mouse Creek, and at Angel. Black shows three in Figure 521 (1967:457). They bear close resemblance to figures found in a burial, and on a house floor, at Arnold Village which we entered in our specimen catalog as "owl or 'little bear' effigies". Black's description of this class of distinctive figurines is given below:

"These pendants are modeled in clay in a stylized but often recognizable zoomorphic form. They are generally small (average 3.1 cm.; range: 2.0 - 5.5 cm.) and have a single perforation in the area of the head. Shell-tempered clays were present in 48 examples. The owl is the most frequently encountered representation (36). Well made for the most part, these pendants are characterized by pointed ears, a beak projecting from a round face, a full and exaggerated abdomen, small bulbous eminences for feet, a modeled tail, and wings represented by a curved incised line and/or pinched modeling (1967:458)."

Examples of the same sort of small effigies in the Mouse Creek Culture may be seen in Figure 110, Griffin (1952), under the heading, "Pottery figurines-R". The owl pendants, now reported from three widely-separated sites in the East, may assume

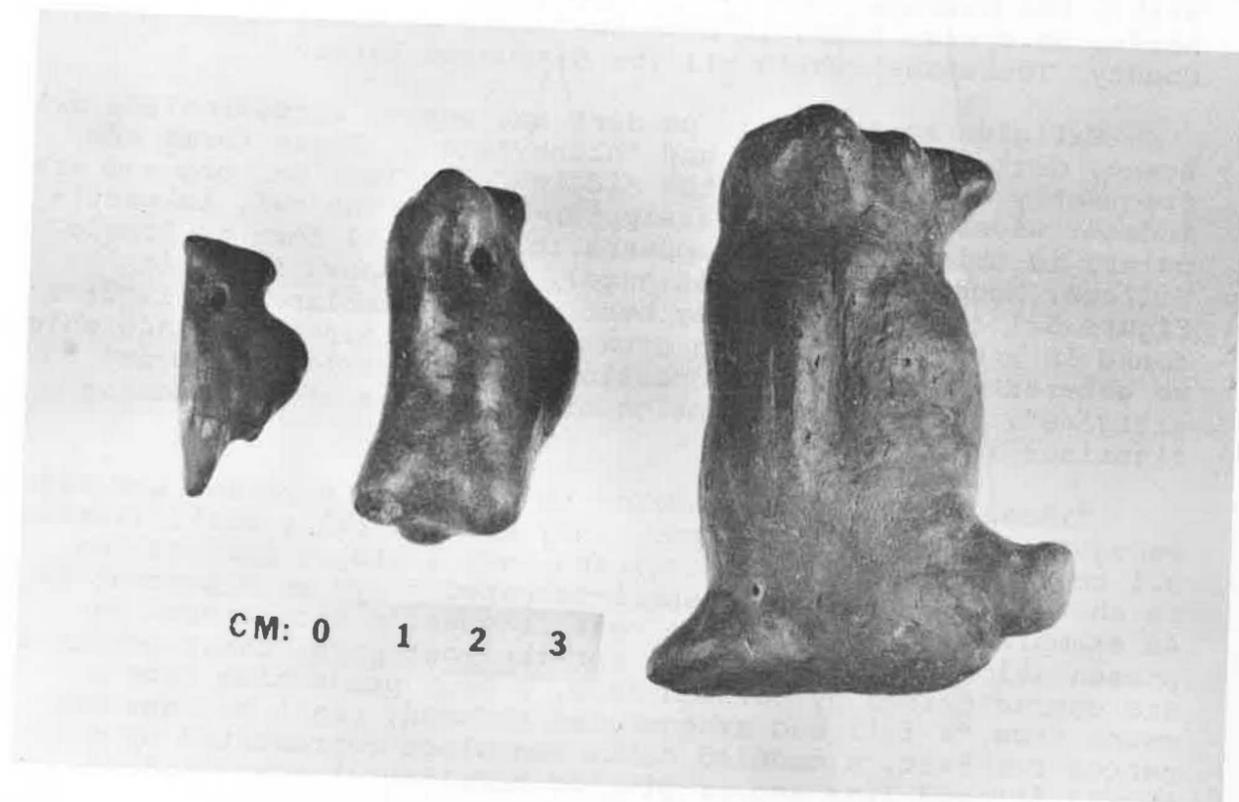
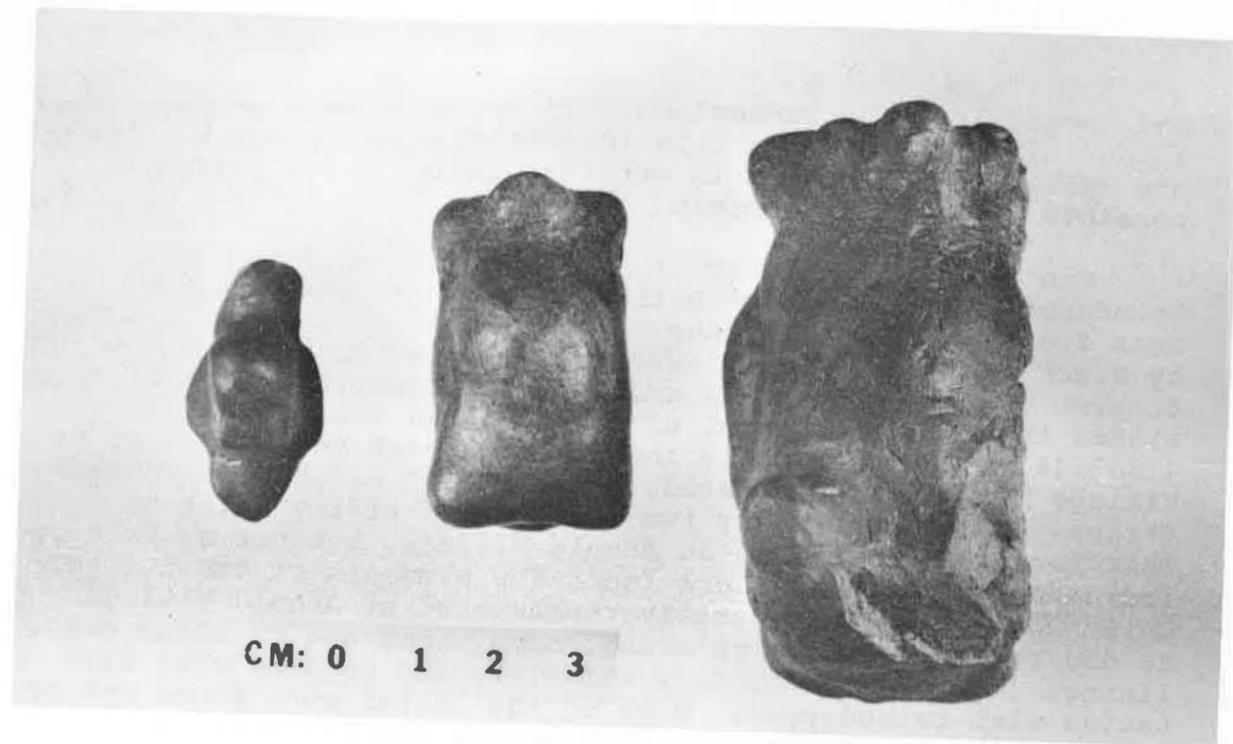


Figure 55a and 55b. Ceramic figurines from Arnold Village site, front and side views. The two on the left are pierced in a manner permitting their use as pendants. Similar figurines are reported for Angel and Mouse Creek sites.

special diagnostic importance. Arnold Village yielded the three specimens shown in Figure 55.

The Mouse Creek assemblage also contains many other similarities to the Middle Cumberland Culture. Many of these have already been elaborated by Kneberg (1952:198) and by Lewis and Kneberg in *Hiwassee Island*. A particularly compelling argument is found in the map by Le Sieur Vermale, 1717, entitled, "Carte Generale de la Louisiane ou du Miciscipi", which shows a group called Tongoria located both on the Middle Cumberland River and near (or at) the location of Mouse Creek. Lewis and Kneberg point out that Swanton considers Tongoria another name for the Yuchi. With the exception of stone-enclosed burials, the two manifestations appear almost identical.

A copy of Mouse Creek field notes supplied by Dr. Alfred K. Guthe of the University of Tennessee contains the following information on fire basins:

"Fireplaces were centrally located and the circular form predominated over the rectangular. Modeled clay rims were present in a number of instances, and where absent it is possible that they may have been destroyed by cultivation. Rectangular fireplaces generally possessed flat bottoms, whereas the bottoms of the circular ones were rounding".

Historical Considerations

In endeavoring to explain the final, and seemingly sudden, demise of the Middle Cumberland Culture we turn to early historical evidence. Such factors as introduced epidemic diseases, pressure from the armed Iroquois (who raided as far south as northern Alabama and claimed the land at the time of the Treaty of Fort Stanwix), encroachments by displaced Algonquin tribes, and French and Spanish manipulations in the south, could have served to radiate shock waves that led to displacement or elimination. This is as yet an obscure page in the culture history of the Central Southeast, and one that can be made plain only through tightly problem-oriented archaeology, more intensive linguistic study, and the resumption of the search for historical documents and their interpretation.

In summary, the Arnold Village site is a typical manifestation of the Middle Cumberland Culture. The subsistence base was horticulture, supplemented by hunting and gathering. Burial practice was homogeneous in its major features. Radiocarbon dates place the Arnold Village in the full range of the Temple Mound II period. Its material evidence fulfills most of the requirements set forth by Willey and Phillips (1958:146, 163) for the New World Formative Stage of their historical-developmental scheme. Abundant evidence of Southern Cult affiliation was lacking but this, perhaps, is to be expected in a settlement with no apparent ceremonial precinct. The tribal identity of the Arnold Village--and Middle Cumberland Culture--peoples remains a matter for conjecture.

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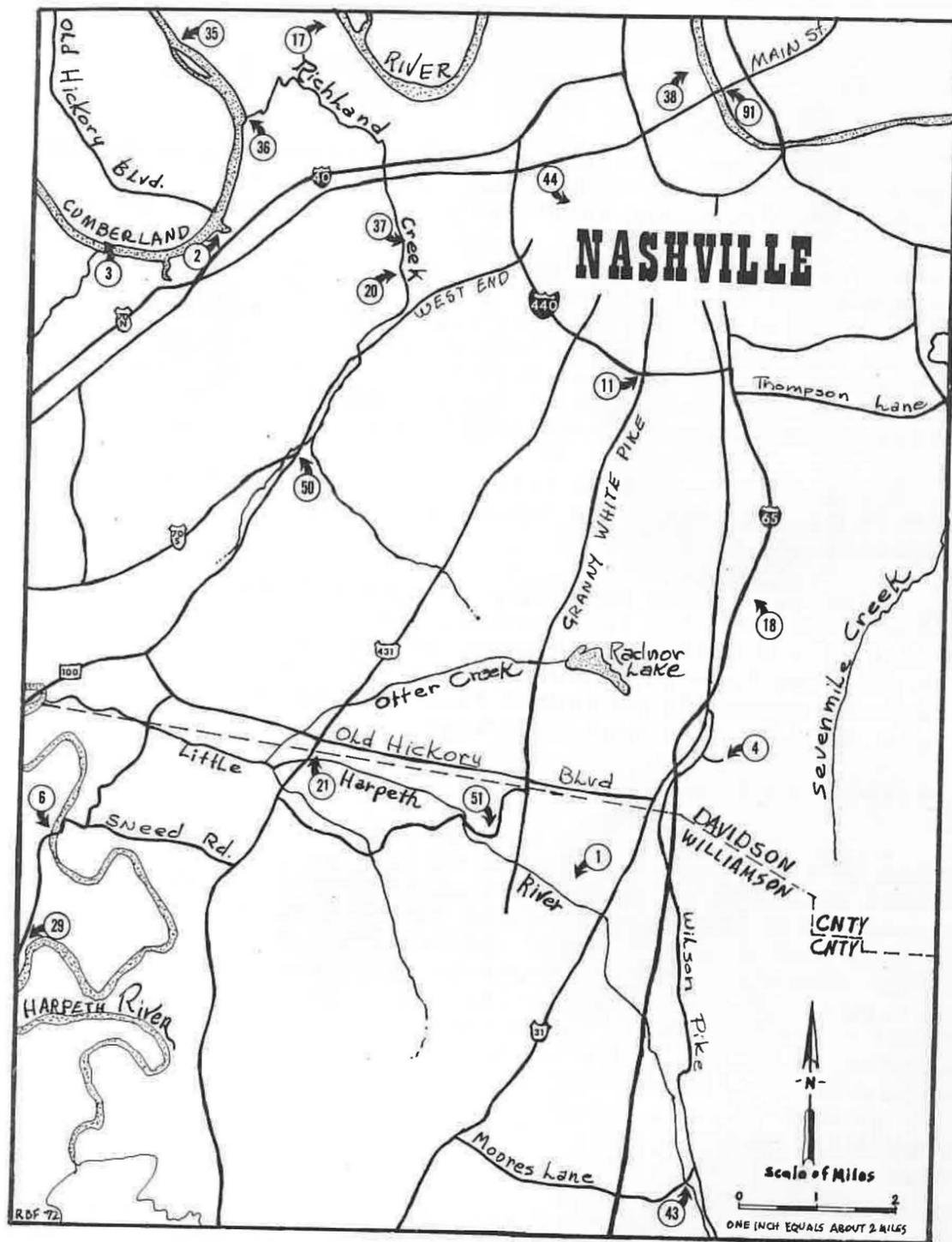


Figure 56. Sketch map of Nashville area showing locations of known Middle Cumberland Culture sites. 1, Arnold Village; 2, Ganier; 3, West; 4, Gordon Town; 6, McKinnon; 11, Jeffords part of "Noel Cemetery"; 17, Cockrills Bend; 18, Travelers Rest; 20, Thayer Hospital; 21, Kelly; 29, Old Town; 35, Graves; 36, Cox's Dock; 37, McCabe Park; 38, Sulphur Dell; 43, Fewkes; 44, Centennial Park; 50, Logan; 51, Coleman; 91, East Nashville Mounds. (Numbers correspond to SIAS Site Registry, JOURNAL January 1972.) Site 11 is presently threatened by construction of Interstate 440 loop.

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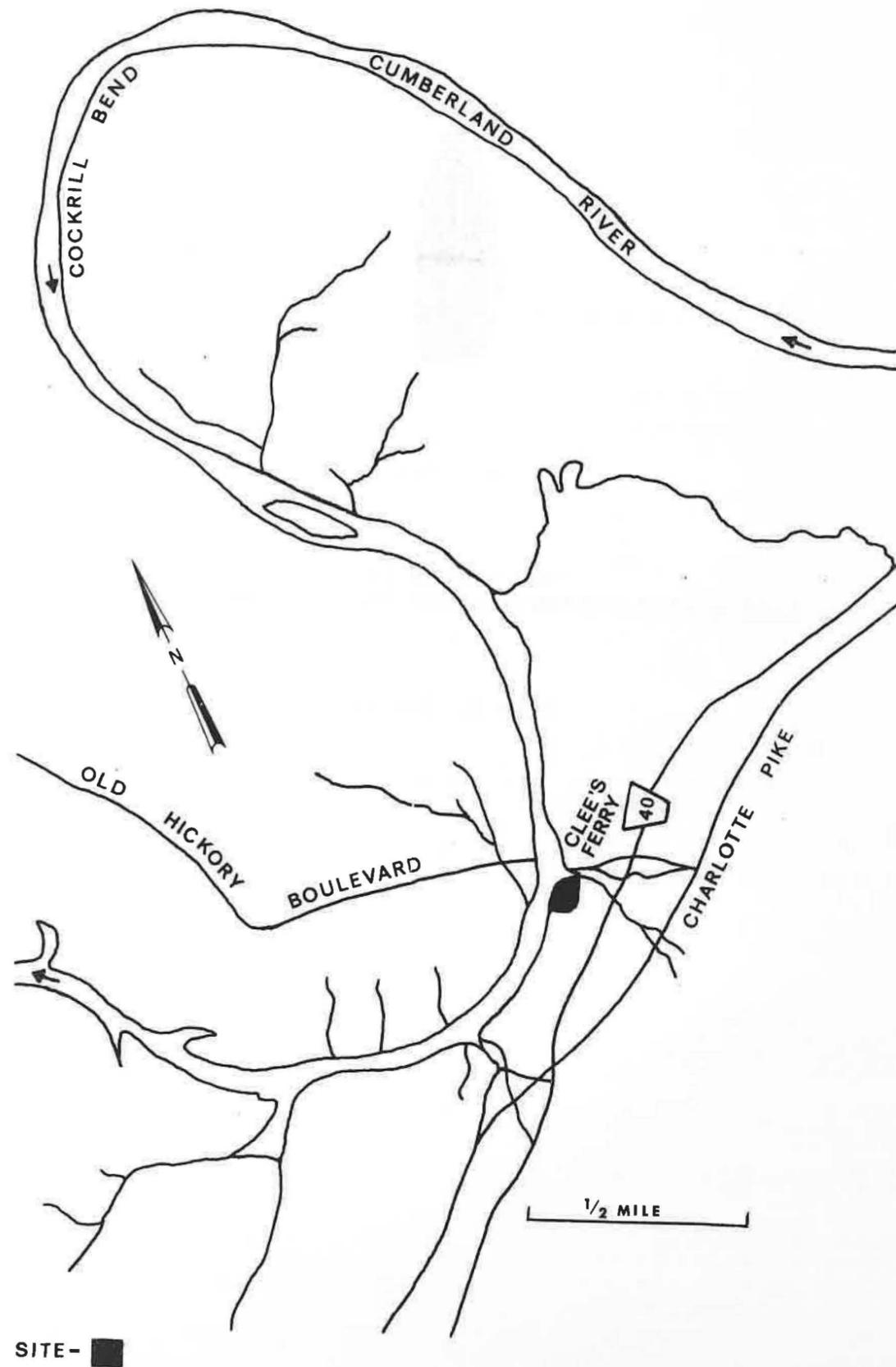
Part Two

THE GANIER SITE
A LATE MISSISSIPPIAN VILLAGE ON THE CUMBERLAND RIVER

John B. Broster

GANIER SITE

Fig. 1



Part 2

THE GANIER SITE A LATE MISSISSIPPIAN VILLAGE ON THE CUMBERLAND RIVER

John B. Broster

INTRODUCTION

The Ganier Site is located in Davidson County, Tennessee, within the city limits of Metropolitan Nashville (Figure 1). It is some five hundred feet south of Clee's Ferry Road and covers an area of about twenty-five acres in a rolling grassy field on the left bank of the Cumberland River where it is joined by a small tributary stream (Figure 2).

Elevation above sea level varies from four hundred to four hundred and thirty-five feet. The area is gently sloping with very few visible signs of occupation. This is due to extensive plowing and planting of the field over a period of several decades.

Though the land that constitutes the occupational area is fairly level, the banks of both the river and the stream drop off sharply to the water line. The bank along the river shows a very extensive outcropping of Cambrian limestone. The soil tends to be a rich medium to dark brown loam and would have been sufficient for the agricultural needs of the people. The fields across the river also tend to be good for planting, and could have helped meet the needs of agriculture, then as now. In some of the lower areas along the river bank there are small deposits of river sand. But these are not extensive and do not reach far into the main area of occupation.

Confronted with the pending destruction of the site by real estate developers, the decision was made to prepare for excavation and to salvage as much of the cultural record of the site as possible. A site survey was made in the early part of 1966 and surface collections were made.

The first few weeks of work were spent in salvaging materials and information from the road cuts. About a dozen of the stone-box burials and several shell pits were encountered. Two structural features were recorded when they were cut through by pipe line ditches.

From our large general surface collection we were able to determine the areas of intensive occupation. It was decided that the most effective method would be to dig a series of trenches at key points in the site. One of the important areas excavated was a shell and refuse midden called Excavation Unit A, located in the northern end of the site at the point where the tributary

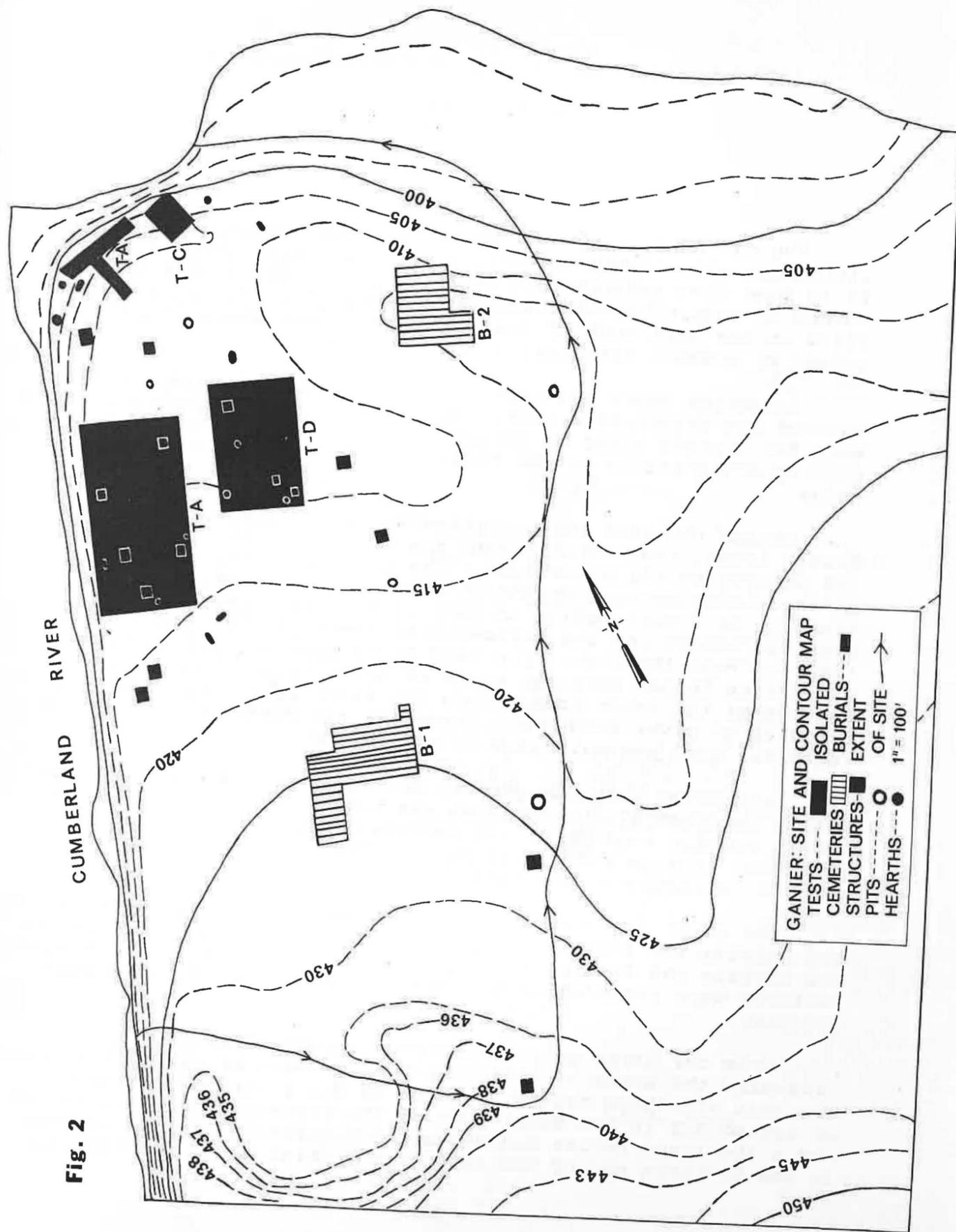


Fig. 2

stream emptied into the Cumberland River (Figure 3).

A very large burial area was located in the south central part of the site when a drainage ditch was cut exposing some thirty stone-box graves (Figure 4). Most of the skeletal material was saved from destruction. This led to the further discovery of seventy-two more of these types of burials.

Our excavation continued through 1966 and much of 1967. In all, approximately 30% of the site was excavated and led to further knowledge of the cultural system under consideration. The remainder of the site was either totally destroyed or placed in such a condition so as to be inaccessible for many years to come.

SETTLEMENT PATTERN

In many areas the plow disturbed the soil to the extent that cultural material was mixed and many of the dwelling spaces were completely destroyed.

We found that the western part of the site, along the river bank, was best for preservation of materials. This has been designated as Excavation Unit B. Here we were able to excavate four dwellings and several related shell pits.

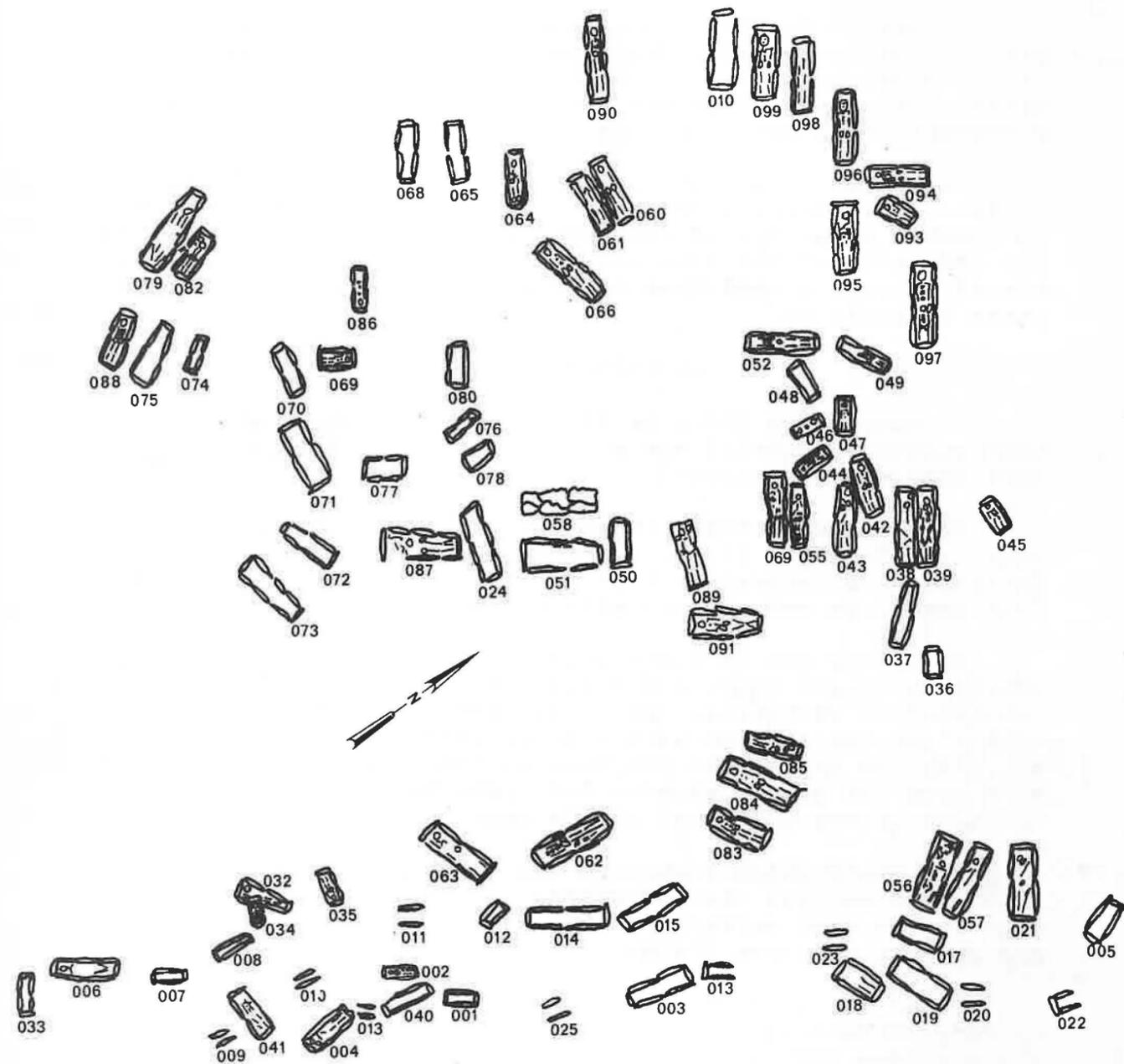
Dwellings can be distinguished by the presence of daub, charred wood and cane, and postmolds. The walls of the buildings consisted of vertically set poles with an interlacing of split cane which was covered with a thick layer of daub. When the wet clay was applied to the cane an impression of the cane was made upon the clay. We were fortunate to have both the cane and daub preserved in one of the house sites.

The posts which supported the walls can be observed during excavation as oval discolorations in the soil. In only one case did we have sufficient preservation for distinguishing any pattern to these postmolds.

Other features were shell middens and pits. One large midden, containing shell, bone, and pottery, was located at the northern end of the site. Small refuse pits were located in and around the dwelling area and, in one case, inside a house feature.

House Site #1

Evidence for this structure was discovered in a ditch near the bank of the river. As yet, there is still some doubt as to this being an actual dwelling. The feature showed up as a layer of burned clay about twelve feet in length in the southwest side of the ditch. It contained daub and fire-cracked limestone. The most striking thing about the feature was the location of two stone-box graves below the house floor. One



BURIAL AREA 1
Fig. 4
-- = 1'



Figure 3. View of North trench (Test A) looking toward the Cumberland River.

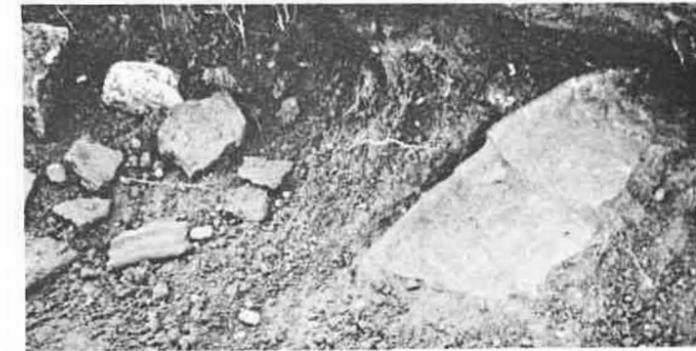


Figure 5. Salt pan sherd on floor of House Site #4 (Test B).

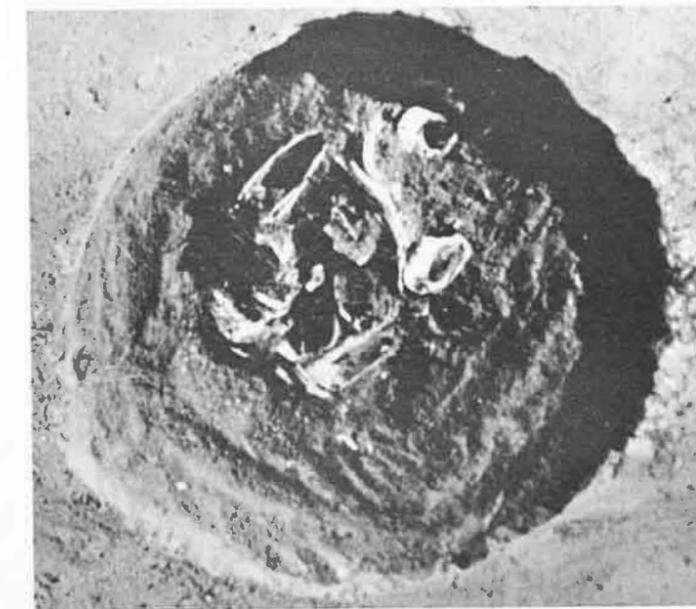


Figure 6. View of shell pit #4 (Test B) 0.05' level.

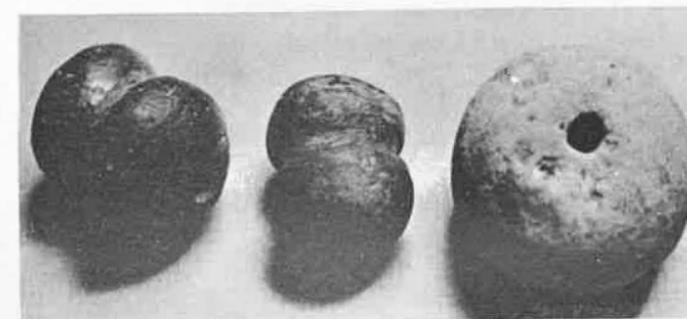


Figure 7. Clay beads found on surface of the site.

of the burials had been almost totally destroyed by road machinery used to cut the ditch. The other burial, listed as G-3, was that of a three year old child, buried in an extended position.

House Site #2

This dwelling, like #1, was discovered when a pipe line was cut through it and was fifteen feet in diameter with a prepared floor and hearth. The floor contained a variety of flint chips and shell tempered pottery. A mixture of daub and charred cane was found above the hearth and floor. The daub had possibly been disturbed by plowing.

House Site #3

The dwelling was sixteen feet in diameter and postmolds suggested a square wall pattern. Within the house, a great variety of animal bone, shell, pottery, and charred beans were found. In the southwest corner of the floor a sample of beans was removed for radio carbon dating. A small Bell Plain bowl was found on the western side of the hut.

Outside the southern sector of the floor a pit, some three feet wide and one foot deep, yielded an abundance of shell, bone, and shell-tempered pottery.

House Site #4

The floor of this hut was highly interesting in that a large number of artifacts were found in the occupational area. Rim sherds, projectile points and deer bones were scattered across the floor (Figure 5). An unusual feature was a refuse pit located in the floor, apparently associated in time with the dwelling.

The only non-structural features found in the house site area were the many and varied shell and refuse pits (Figure 6) scattered along the banks of the creek and the river. A few pits were found in the southernmost part of the site. The pits contained large amounts of shell, bone, and pottery and varied from two feet to four feet in diameter.

A hearth discovered during road grading, was located in the northern end of the site, just outside of Excavation Unit C. It was 2.5 feet wide and consisted of fire cracked limestone. Associated with it were burned deer bones. It is doubtful that this feature is related to the Mississippian component.

CERAMICS

A total of 1,359 sherds, all of which were shell-tempered, were recovered from the units that were excavated. From

this we were able to establish four basic Mississippian types. Neeley's Ferry Plain (Mississippian Plain) and Bell Plain (Phillips, Ford, and Griffin, 1951) were most abundant. Salt Pan Plain and Fabric Impressed sherds occurred in much smaller frequencies.

Neeley's Ferry Plain (Mississippian Plain): (See Table #1)

This type represents 77% of the total sherds recovered from the site. From the reconstruction of one vessel and from profiles drawn of others the most common form was a large jar or olla with lugs. Occasionally, strap handles are placed on the vessel instead of the lugs. Of the 127 rim sherds found, 14 were recurved with a rounded lip. The remaining 13 sherds were recurved but with a very pronounced fold to the lip. All sherds were of a coarse to medium shell-temper.

Bell Plain

A total of 267 sherds of this paste were found and accounted for 20% of the total sherd collection. These sherds had an extremely fine shell-temper with smooth surfaces. The thickness varied from 3mm. to 6mm. Nearly all of the burial offerings of pottery had a Bell Plain paste. The forms represented in the burials can be closely identified with the Dallas decorated vessels described by Lewis and Kneberg (1946).

Salt Pan Plain

Only 38 sherds of this type were found on the site. The temper is coarse shell and is much like the Neeley's Ferry Plain paste but the vessel walls are much thicker. The lip of the pans are large and folded.

Salt Pan Fabric Impressed

These sherds represent a very small number and comprise only 1% of the total collection. They are distinguished from the plain sherds in that the outer sides are decorated by the impressions of a very loose-weave textile.

Among sherds classified as having a Bell Plain paste some 66 bear great resemblance to Dallas decorated. Notched and noded rim decoration are found in abundance. Cross-hatch and curvilinear incisions are also found on these fine shell-tempered vessels. Modeled effigies of both human and animal form were found on the site.

In the stone-lined graves we had these very fine decorated vessels being used as burial offerings. Two curvilinear incised, strap handled bowls were found in Burial area #1. One of these had spaced nodes under the arched incisions.

The most common type was the notched appliqued-rim bowl.

DISTRIBUTION OF CERAMICS: TABLE #1

GENERAL SITE (TEST C)

TYPE	PROVENIENCE		LEVELS		Totals	%		
	0.0-0.5'	%	0.5-1.0'	%				
Neeley's Ferry Plain (Mississippian Plain)	158	73	334	66	185	85	677	71
Bell Plain	42	19.5	142	28	33	15	217	23
Salt Pan Plain	11	5	19	4	0	0	30	4
Salt Pan Fabric Impressed	5	2.5	8	2	0	0	13	2
	<hr/>		<hr/>		<hr/>		<hr/>	
	216		503		218		937	

DISTRIBUTION OF CERAMICS: TABLE #2

BURIALS AND FEATURES (Excavation Unit B)

PROVENIENCE	TYPE			
	Neeley's Ferry Plain (Mississippian Plain)	Bell Plain	Salt Pan Plain	Salt Pan Fabric Impressed
Burials	213	19	2	5
House Floor #1	0	1	0	0
House Floor #2	20	2	0	0
House Floor #3	25	8	0	0
House Floor #4	54	3	7	0
Midden and Pits	47	17	0	0
	<hr/>			
Totals	359	50	9	5



Figure 8. Celts.



Figure 10. L-R Muller, nutstone, muller from Test B.

1"



Figure 9. Hammerstones.

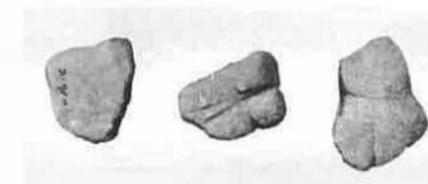


Figure 11. Sandstone abraders.

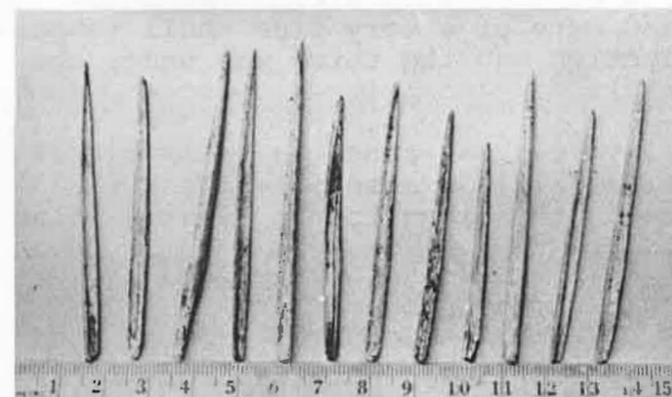


Figure 12. Burial #062 - splinter bone awls.

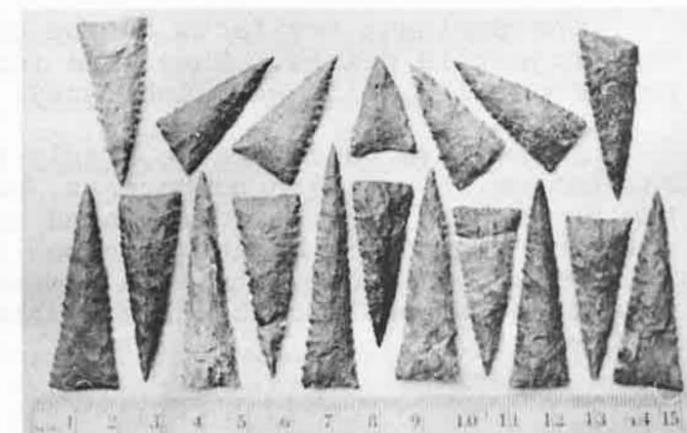


Figure 13. Burial #062 - Sand Mountain Type.

One was found intact in Burial #056 and many sherds were found throughout the site.

The most decorative and well-formed of the mortuary vessels bore effigies of animal and human forms. The figures were modeled upon the outer walls of the vessels. Incisions were sometimes used to show facial details. A listing of the effigies follow:

Type	Number
Fish effigy bowl	5
Frog effigy bowl	2
Wood Duck effigy bowl	2
Human effigy bowl	1
Human effigy water bottle (Figure 14a)	2
Total	12

Pottery artifacts

Only five examples of non-container pottery artifacts were excavated at the site. One pottery disk was found in the North trench, 1.0' level, and was made from a Neeley's Ferry Plain sherd.

Three globular clay beads were located within the site. All were very darkly fired and were of a very fine shell temper. Two were in the surface collection and the third was under the skull in Burial #040 (Figure 7).

One rather large oval clay bead was found in shell pit #4 at the Northern end of the site. It was associated with shell tempered pottery and is believed to belong to the Mississippian phase at the site (Figure 7).

LITHIC MATERIAL

Only a small percentage of the lithic materials of the site has been examined at present. The author has undertaken an examination of the chipped stone and ground stone artifacts from Test B. A larger collection from the site material was sent to James Cambron for analysis.

The dominant artifacts in the chipped stone industry were the projectile points. They were for the most part fairly fine textured flint which was light grey, grey brown, and black.

There were Late Archaic, Early Woodland, Late Woodland, and Late Mississippian components, based on the analysis of the projectile points, represented at the site. The only substantial occupation of the site was during the Late Mississippian. The rest of the components are represented by only a scattering of artifacts, and probably are related to semi-nomadic camping at the site.



- Figure 14. Incised and noded vessel from Burial #089.
 Figure 15. Noded rim vessel from Burial #047.
 Figure 16. Burial #034: Human effigy water bottle, 4" high.
 Figure 17. Burial #097: Wood duck effigy bowl, dia. 4.5".
 Figure 18. Burial #055: Strap handle jar, dia. 3.5".
 Figure 19. Burial #082: Human effigy bowl, dia. 3.5"; and small stone disc.
 Figure 20. Burial #056: Notched rim bowl, dia. 5".
 Figure 21. Burial #056: Strap handle bowl, dia. 2"; and long neck vessel, dia. 2".
 Figure 22. Burial #5: Frog effigy vessel, dia. 5.5".
 Figure 23. Burial #5: Fish effigy bowl, dia. 4.5"; and (right) fish effigy bowl from Burial #012, dia. 4".

A listing of the projectile point types follows:

Madison (Cambron and Hulse, 1964: A-60)

Fifteen of these points were located in the first two levels in the excavated area of Test B and C. An additional 18 of these Late Mississippian points were found in Burial #062 at a depth of 0.5'.

Sand Mountain (Cambron, 1969)

Two examples of this newly-formulated type were excavated in the 0.0-0.5' level in Test B.

Pentagonal (Cambron and Hulse, 1964: A-60a)

The two points of this type may be associated with the Late Woodland component of the site. These may conform to the Jacks Reef Pentagonal type.

Adena (Cambron and Hulse, 1964: A-1)

Only one of these points was found in the area excavated, though three other examples were collected in the surface survey. This is a Late Archaic or Early Woodland artifact.

Hamilton Stemmed (Cambron and Hulse, 1964: A-108)

A Hamilton Stemmed point was recovered in the first level of Test C. It is a Late Woodland type associated with the Hamilton culture.

Wade (Cambron and Hulse, 1964: A-84)

In Test C, at the 1.0-1.5' level, two of these projectile points were found mixed with later Mississippian artifacts. This is a Late Archaic point which continues into the Middle Woodland (2500 B.C.-1500 B.C.), and could not have been associated with the Mississippian occupation of the site.

Gary (Cambron and Hulse, 1964: A-41)

Four proximal ends of this type were associated with the upper levels of Test B and C. A Late Archaic to Woodland date has been suggested for this type.

Copena (Cambron and Hulse, 1964: A-20a)

Three of these points were recovered in the upper two levels of Test B. A late Middle Woodland association has been established for this type.

Benton Stemmed (Cambron and Hulse, 1964: A-9)

All of the examples of this type were found in the 1.0-1.5' level of Test B. This is a Late Archaic artifact, which also appears on a shell midden directly across the river from the Ganier site.

Provisional Type 1

Fourteen of these side-notched points were excavated from the upper two levels of Test A, B, and C. They conform to no known type. The author suggests that the majority of this type is associated with the Mississippian component.

The general lack of large numbers of scrapers, knives, and projectile points in the Mississippian component, linked with a small percentage of animal bone, suggests that hunting played a very minor role in the subsistence base of these people. The number of ground stone tools (pestles, mullers, and mortars, etc.) which are more generally associated with the processing of wild and cultivated plants, far exceeds the number of chipped stone tools recovered from the three test areas.

LITHIC MATERIALS

(Test B)

Type	Levels			Totals
	0.0-0.5'	0.5-1.0'	1.0-1.5'	
Chipped stone:	68	50	26	144
Projectile points:	27	16	5	48
Madison	6	9	0	15
Sand Mountain	2	0	0	2
Pentagonal	2	0	0	2
Adena	1	0	0	1
Hamilton				
Stemmed	1	0	0	1
Wade	1	0	1	2
Gary	3	1	0	4
Copena	2	1	0	3
Benton				
Stemmed	0	0	4	4
Provisional				
Type 1	9	5	0	14
Knives:	9	8	7	24
trianguloid	0	1	0	1
ovoid	3	2	4	9
parallel sides	6	5	3	14
Scrapers:	7	10	5	22
stemmed-end	3	2	3	8
core	2	3	0	5
side	2	5	2	9
Gravers	1	3	1	5
Chisels	1	2	0	3
Utilized				
flakes	23	11	8	42
Ground and				
pecked stone:	105	69	16	190
Grooved axe	1	0	0	1
Hammerstones	25	16	4	45
Grooved abraders	7	4	0	11
Mortars	12	10	3	25
Mullers	20	13	6	39
Nut stones	12	9	1	22
Sandstone disks	3	2	1	6
Spades	1	2	0	3
Celts	20	4	1	25
Sandstone pipe	1	1	0	2
Slate gorget	1	1	0	2
Pestles	2	7	0	9

BONE AND SHELL

Bone Artifacts

Very few artifacts of bone were found at the site. This was due either to poor preservation or to the fact that very little hunting was done by these people. I tend to think that the latter was the case.

The most numerous bone artifacts are splinter awls made from the cannon bone of the deer. These were split longitudinally and were well ground and polished along their full length. Our only examples of these came from a cluster of twelve in Burial #062 (Figure 12).

One turtle shell pendant or rattle was found in Burial #043 and was located on the knee of the skeleton. This makes up the total of bone artifacts found at the site.

Shell

All of our information on shell comes from the stone-lined burials. We have seven examples of small shell bead necklaces being placed with the burials. In all cases these were found with infants or children. The beads were roughly circular and drilled. They seem to have been made from local mussel shells.

Two drilled shell pendants were found in the graves and were associated with a great number of shell beads. Both pendants were oval and had no surface design.

Five shell spoons were found which were made by carving and notching a handle on a mussel shell. These constitute the shell artifacts found on the site. The sample is very small and probably does not represent a very complete example of the utilization of shell during the Mississippian in this location.

ANIMAL AND PLANT REMAINS

Faunal remains at the site are meager and only those from a selected area excavated have been examined. The following animal remains have been identified:

TYPE	LEVELS EXCAVATION UNIT B						Total	%
	0.0-0.5'	%	0.5-1.0'	%	1.0-1.5'	%		
white-tailed deer (<u>Odocoileus virginianus</u>)	61	61.5	102	71	26	65	189	67
black bear (<u>Euarctos americanus</u>)	0	0	1	0.75	0	0	1	0.2
cottontail (<u>Sylvilagus floridanus</u>)	5	5	1	0.75	0	0	6	2
beaver (<u>Castor canadensis</u>)	0	0	2	1.5	0	0	2	0.5
woodchuck (<u>Marmota nonax</u>)	0	0	1	0.75	0	0	1	0.2
bobcat (<u>Lynx rufus</u>)	0	0	1	0.75	0	0	1	0.2
grey fox (<u>Urocyon cinereoargenteus</u>)	2	2	3	2	0	0	5	1.4
unidentified rodent	15	15.5	6	4	5	12	26	9
turtle sp.	4	4	14	9	3	8	21	8
frog sp.	1	1	2	1.5	0	0	3	1
unidentified fish	9	9	12	8	6	15	27	10
unidentified bird	$\frac{2}{99}$	2	$\frac{0}{145}$	0	$\frac{0}{40}$	0	$\frac{2}{284}$	0.5



Figure 24. Burial #099-A notched rim sherd in mouth of skeleton.



Figure 25. Burial #097 - Wood duck effigy bowl placed between legs of burial.



Figure 26. Burial #062, adult male age 40-45.

Based on present evidence, it can be concluded that collecting river mussels seems to have been more important to subsistence than hunting.

In two cases, mussel shells were found scattered on floors of houses. The lack of abundant fish and turtle remains may be attributable to our small sampling. Of mammal bones, those of deer predominate.

We have fairly substantial evidence that agriculture, though highly important, was supplemented periodically by shellfish collecting. In three of the house floors, at depths of 1.2' and 1.5', charred remains of the common bean (*Phaseolus vulgaris*) were found. In one case, a mass of over three hundred beans was found in a hearth. Charred maize was also located in Test Pit C at a depth of 1.0'.

It would appear that these people spent most of their time engaged in agriculture, with a seasonal emphasis on the collecting and eating of the meat of the fresh-water mussel and fish of the Cumberland River. Hunting is seen as supplementary to these regular subsistence activities.

BURIALS

Burials were primarily located in two places. Burial area #1, Excavation Unit B, was located in the south central part of the site and contained the clear majority of the burials. The second area was located to the west along the bank of the creek.

Ganier site graves conform to the description given in Part 1 for the Cumberland Stone Box variety of stone-enclosed burials. Originally these boxes were capped with a layer of limestone but plowing had destroyed most of these.

There seems to be no pattern to the placement of the graves and in one case, #032 and #034, we had an over-lapping of graves. Some patterning of burials is perhaps suggested by clusters in Burial Area #1.

In 102 graves excavated, 68 skeletons were in good enough condition for reporting. The remainder had been destroyed or looted over the years by vandals.

The majority of these burials contained only one individual, but there were ten double burials and three triple burials. In most cases these contained the skeletons of an adult and a child or two adults and a child. One burial contained only three children.

Of the sixty-eight skeletons examined, it is certain that 92.7% had been interred fully extended. If the five burials (in which alignment of skeletal material was unclear) were discarded from the totals this figure would be 100%. Therefore, it can be



Figure 27. Burial #089, adult female 20-25 years old. Small strap-handle bowl located by head.



Figure 29. Burial #094, 20-25 year old adult female.



Figure 30. Burial #02, 3 to 4 year old child.



Figure 28. Burial #082A, 3 year old child. Human effigy bowl and sandstone disk located above the skull.

reasonably stated that the extended position was used exclusively in the area excavated.

Surprisingly, nearly one-half (45.5%) of the total skeletal remains represented infants and children. Approximately 30% were infants ranging from newborn to 3 years of age, leaving only 15.5% in the 3 to 12 year old age group.

A striking majority of deaths among infants occurred from 18 months to 3 years. Here we have 80% of the infant deaths taking place.

Of the children 63.6% were in the 5 to 8 year old group. After the sixth year it seems that an individual had a fair chance of surviving to adulthood.

In the thirty-seven adult burials studied there was a breakdown of twenty-two males, ten females, and five indeterminate. In the aging of these skeletons nearly one-third could not be determined because of the extremely poor condition of the skeletons.

Nearly 80% of the females were found to be less than 30 years old. Only two specimens were over this age grouping. One of these was placed in the 35-40 age bracket while the other fell within the 50-55 age classification.

At the same time only 35% of the males were classified as being under 30 years of age. We find the greatest concentration of males between 30 and 45 years of age (62.5%). We have only two examples of older males with one in the 45-50 group and the other in the 50-55 age group.

ADULTS: AGE AND SEX

<u>Age</u>	<u>Sex Unknown</u>	<u>Male</u>	<u>Female</u>
Unknown	5	6	1
18-25	-	1	4
25-30	-	3	3
30-35	-	3	-
35-40	-	3	1
40-45	-	4	-
45-50	-	1	-
50-55	-	1	1
Totals	5	22	10 = 37

INFANTS AND CHILDREN

Infants

Foetal	1
Age indeterminate	1
Birth to 6 mo.	1
Over 6 mo. to 18 mo.	1
Over 18 mo. to 3 yrs.	16
Total	20

Children

Age indeterminate	-
Over 3 yrs. to 5 yrs.	2
Over 5 yrs. to 8 yrs.	7
Over 8 yrs. to 12 yrs.	2
Totals	11

Artifacts were found in only eighteen burials and were most numerous in the graves of children. In nearly all cases these burial accompaniments were ceramic vessels and shell beads.

Burial #5 - Two children of about 2 years of age, fully extended. A frog effigy bowl was inverted on the pelvis of one of the children. A fish effigy and a plain shell-tempered bowl were at the foot of the grave.

Burial #039 - Two adults, fully extended on a stone floor. The second skeleton, a female 25-30 years old, was placed over 2 male skeletons in the 45-50 age group.

Burial #056 - Triple burial greatly disturbed. Skeletal portions of two adults and one child were scattered on a stone floor. A small strap handle bowl and a notched-rim bowl were near the child.

Burial #079 - Single burial, male adult in a pottery-floored grave. A 5" flint blade was located between crossed lower leg bones.

Burial #089 - Fully extended burial of a female 20-25 years old (Figure 27). The side stones had been removed - probably by the plow. A small, incised, strap handle bowl was located to the left of the skull (Figure 14).

Burial #094 - Fully extended female about 25 years old (Figure 29). The skeleton was in an excellent state of preservation.

Burial #097 - A double burial consisting of an adult male, 40-45 age group, and a child about 6 years old. Both skeletons were fully extended with the child's skull resting on the pelvis of the adult. A fine shell-tempered wood-duck effigy bowl was found between the lower legs of the child (Figure 25 and Figure 17).

Burial #099 - Fully extended adult male skeleton in good condition. A notched-rim sherd was found in the mouth of the skull (Figure 24).

Burial #06 - Fully extended burial was a male in the 30-35 age group. The skeleton was in excellent condition.

Burial #018 - 11 year old child. The bones were in a very poor state of preservation.

Burial #021 - Fully extended adult male, 25-30 years old. The body was slightly on its right side. A small shell spoon was beside the skull. A small side-notched projectile point was in the pelvic region. It could not be determined if the point represented an inflicted wound or not.

Burial #038 - Fully extended adult male, 40-45 age group, on bottom; and an adult female, 40-50 years old, on top.

Burial #040 - Fully extended 35-40 year old male was found in very poor condition. The skeleton had been disturbed and many of the bones were scattered throughout the stone-box. A small clay bead was found under the mandible.

Burial #043 - Adult male, 30-35 years old, and an infant of 8 years. Both skeletons were fully extended with the infant over the adult. A small strap handle bowl was found on the chest area of the adult.

Burial #055 - A single burial of a 6 year old child. The skeleton was in a good state of preservation. A strap handle bowl was left of the skull. A fish effigy bowl and a human effigy waterbottle were at the feet of the child. Several shell beads were under the mandible.

Burial #060 - Fully extended male, 20-25 years old, on a stone floor. The skull was in good condition and has been restored but much of the skeleton had been destroyed.

Burial #062 - This was a large male, 40-45, extended on a stone floor (Figure 26). Below the right hand were twelve bone pins. On the outside of the right femur eighteen triangular projectile points were found. These appear to be very similar to the Dallas points described by Lewis and Kneberg (1946) (Figure 13).

Burial #063 - A double burial containing an adult male, 30-35, and a child 4 years of age. The adult showed extreme dental wear and the loss of four teeth before death.

Burial #064 - This was a triple burial: two children of 6 years of age, and an infant about 3 years old. All of the skeletons had probably been in an extended position but all but the skulls had been subject to great disturbance. A shell pendant and several shell beads were found in the grave.

Burial #067 - Fully extended adult female, 50-55 age group. The teeth showed marked wear and the presence of three very large caries.

Burial #069 - The skeleton was that of a 3 year old infant and was in extremely poor condition.

Burial #082 - Two infants in the 3 year old group were found with one extended from each end of the grave (Figure 28). A shell pendant and a small human effigy bowl were found with one of the infants. Under one of the skulls a crudely carved piece of slate was found. In the human effigy bowl a small round sandstone disk was located (Figure 19).

Burial #090 - Double burial with an adult male, 18-25 years old and an infant of about 3 years of age.

Burial #096 - Fully extended male, 30-40 years old. The mandible contained only four teeth these being the incisors. All other teeth were lost before death. The skull was restored but still lacks the facial bones.

Burial #101 - Fully extended female, 18-25, was greatly disturbed and many of the bones were not present in the burial.

Burial #102 - This was a very poorly preserved burial of a 3 year old infant. The skeleton had been placed on a stone floor and the contents had been scattered.

CONCLUSIONS

The excavation of the Ganier site has revealed at least three occupations of the area. The first two, Late Archaic and Middle to Late Woodland, are represented by only a few scattered artifacts. From this, it can be assumed that the habitation of the site during these periods was on a seasonal camping basis.

The third occupation was by far the largest in both time and space involved, with all of the house floors, pits, and burials being associated with a Middle to Late Mississippian habitation.

These Mississippian people built their dwellings along the banks of the river and creek. Their houses consisted of poles placed upright in the sandy soil, with an interlacing of cane between the poles. All of this was then plastered with daub. The roofs were probably constructed of thatch, most likely obtained from local wild grasses.

Only one house floor pattern was in good enough condition for determining the shape of the house. From the position of the postmolds, the house was square with a diameter of approximately 16 feet. Roughly circular hearths of burnt clay were located within the floors of these dwellings. No wall trenches were observed, which would have indicated the presence of underground supports for the walls. There seems to have been some rebuilding of the dwellings, but plowing disturbed the area greatly.

The subsistence base of this cultural system was balanced between agriculture and the procurement of shellfish, fish, and other aquatic foods from the river and stream. Examples of beans (*Phaseolus vulgaris*), 312 in number, were excavated from the hearth of one of the houses. All of these were charred and well preserved. Three additional beans were recovered from Burial #102. Some twenty-eight kernels of maize (species un-

known) were present in the 0.5-1.0' level of Test C.

The author believes, from the abundance of cultigens, that approximately 65% of the diet was derived from an agricultural system. Another 25% of this diet consisted of shellfish, with a larger dependence on them during certain times of the year (possibly spring). Hunting accounted for the remaining 10% of the subsistence base, and was important during winter along with dried agricultural products. Relative minor importance of hunting is suggested by a low concentration of animal bone. That game was pursued more intensely in winter is a conclusion based on a total lack of immature specimens.

The relatively small size of the site and the number of artifacts recovered would suggest a rather small sedentary-farming village. It is believed that no more than 15 to 20 houses existed at any one time.

The lack of any great depth to the village midden indicates that the site was not inhabited for a great length of time. A population size of five people per house unit can be established for the Mississippian occupation. This would certainly not be too great a population for the ecological setting to support even if the village was much larger than we presently believe.

We have placed this occupation in the Late Mississippian, but it probably continues back into late Middle Mississippian. A carbon date of 700 ± 95 years B.P. was taken from Burial #055. This places this particular burial well within the Mississippian range. We believe that a date of 1200 to 1450 A.D. can be established for this component of the site.

The reason for the abandonment of the site is unknown, though village population pressures, change in the ecological setting, or outside pressures may have been factors. We do know that the site was deserted before the advent of European traders since no trade goods have been found in the excavation of the site.

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Part Three

A COMPARATIVE STUDY OF THE ARNOLD AND GANIER POPULATIONS
BASED ON OSTEOLOGICAL OBSERVATIONS

James William Ward, Jr.

A COMPARATIVE STUDY OF THE ARNOLD AND GANIER POPULATIONS
BASED ON OSTEOLOGICAL OBSERVATIONS

James William Ward, Jr.

It was the design of this study to take a reasonable sample of skeletal remains from both the Arnold and Ganier sites and to compare them from a qualitative and quantitative standpoint.¹ It was hoped that from the information gathered it would be possible to prove or disprove the hypothesis that these two populations were genetically related. That is, whether or not interbreeding occurred between them.

Before beginning the actual lab work of the study, it was first necessary to consult several sources of background material. Population comparisons made by W. W. Howells and J. M. Crichton may be found in Vol. 57, No. 1, Papers of the Peabody Museum, 1966. These studies deal with multivariate analysis which employs mathematics and computers in comparing the groups. A paper by Orville Elliot and Mary Heisler, "A Field Manual for Determination of the Sex and Age of Human Skeletons," also contains helpful information. The appendix of Up From the Ape, by E. A. Hooten, is invaluable in a study of this type. It suggests measurements, equipment, and gives a short course in anatomy. "A Guide to the Identification of Human Skeletal Material" by Wilton Marion Krogman was published by the FBI and proved indispensable in providing criteria for aging and sexing.

The project itself was begun by taking an inventory of the collected material. For the Ganier remains this only entailed sorting the bones within individual specimen boxes and recording the presence or absence of skeletal parts. The preliminary Arnold investigation involved the reboxing and labeling of findings brought straight from the field. These bones were also inventoried and the lists compared. General charts were made for this purpose to allow rapid analysis.

From the initial comparison of the two populations it was decided which measurements in the literature would be possible based on the limits of the presence of skeletal features common to each group. Very few specimens had intact skulls or complete compliments of long bones due to general damage and erosion. The Ganier material was in a particularly poor state of preservation. Realizing that some measurements would have little

¹This study was performed on human skeletal remains from the Arnold and Ganier sites deposited at Vanderbilt University and was conducted under the general supervision of Professor Ronald Spores.

comparative value, as many determinations as practicable were taken.

It seemed advisable to take as many measurements as possible from the mandible since it was the most prevalent find throughout. The facial portion of the skull was examined with the same objective but due to erosion and deterioration, some of the anticipated measurements could not be taken in statistically reliable quantities.

In taking actual measurements on the skeletal material, a few simple devices proved helpful. One was a measuring board which consists of a base and upright portion against which bones may be placed and their dimensions immediately read off the surface which is calibrated in millimeters.

A second tool which aided in measuring the gonial angles consisted of two wooden arms hinged together at one end by a single pin. Friction, due to tightness of the pin, makes it possible to hold the angle obtained by letting it rest against the specimens gonial angle. The "goniometer" may then be superimposed over a protractor in order to convert to degrees.

A sliding caliper was the most valuable measuring device along with an ice pick and brush for cleaning purposes.

Measurements actually taken were made with the aforementioned equipment and recorded on an individual data sheet for each specimen. These were then compiled into a table which included all the data believed meaningful for any reason. Also found in Table III are the average values for all measurements and calculated indices which are explained in Table I.

Here is a brief description of the measurements utilized in Table I.

Cranial Measurements

- 1) Orbital height - the greatest nearly vertical height of the orbit.
- 2) Orbital breadth - the greatest width of orbit when measured perpendicular to orbital height.
- 3) Nasal height - the distance measured from the nasion to the lowermost margin of the nasal aperture on the left side.
- 4) Nasal width - the greatest transverse width of the nasal aperture.
- 5) Symphysis height - the distance between the gnathion and the infra-dentale (point on alveolar border between middle incisor teeth of mandible).

6) Mandible length - the distance obtained by placing the mandible on a measuring board with its condyles tangent to the upright portion. The length is read from the basal portion of the board with the aid of a square touching the most anterior point of the mental process.

7) Bi-gonial diameter - the distance between gonion (the most external points of juncture of the ascending ramus and horizontal ramus).

8) Bi-condylar width - the distance between the most external points of mandibular condyles.

9) Gonial angle - the angle obtained by placing the goniometer so that its arms are tangent to the ascending and horizontal rami.

10) Humerus length - the distance obtained from the measuring board when the humerus is placed in upright position and measured from trochlea to the topmost tangent of the head.

11) Humerus head diameter - the maximum diameter of the humerus head when measured with a sliding caliper.

12) Radius length - the distance read off the measuring board when the radius is placed against the upright portion in its normal position and overall length is measured.

13) Radius head diameter - the maximum diameter of the radius head when measured with a sliding caliper.

14) Femur length - the measurement obtained when the femur is placed directly against the upright portion of the measuring board in its normal position and overall length is taken.

15) Femur head diameter - the maximum diameter of the femur head when measured with a sliding caliper.

16) Antero-posterior diameter of femur - the width of the femur shaft from front to back taken just below the greater tuberosity when the femur is in its natural position.

17) Lateral diameter of the femur - the width of the femur shaft from side to side taken at the same level as 16) and perpendicular to that measurement.

18) Tibia length - the distance obtained from the measuring board when the tibia is placed in its normal position against the upright and distance is read from the medial malleolus to the lateral condylic surface.

19) Lateral diameter of the tibia - the width of the tibia shaft from side to side taken at the level of the lowermost

border of the nutrient foramen when the tibia is in its normal position.

20) Antero-posterior diameter of the tibia - the width of the tibia shaft from front to back taken at the same level as 19) and perpendicular to that measurement.

Analysis of the raw data consisted of applying various height determining formulas (see Table II) and calculating indices (see Table I) as well as figuring averages for all measurements as a whole and also subdivided by sex. It should be said regarding the determination of averages with respect to sex that whenever sex could not be determined due to youth, the value was not included. When, however, the sex was not determined due to lack of data or conflicting characteristics, the value was computed once as male and once as female.

For determination of height, Wilton Krogman's formula for Northern European men was used for the males. This was because when height was determined for the same individual using different long bones the range was quite narrow. With other formulas the range was much larger suggesting that this particular one suited the overall stature of these populations. A formula for Southern European women was used for the female height calculations. The application of these formulas gives the height in millimeters which is quickly converted to inches by division by 25 mm. Height was calculated using the femur, humerus, radius and tibia in that order of priority as availability allowed.

Along with other information gained from this study, a determination of sex and approximate age at death of each individual was sought. These observations, in most cases, became fairly routine once a workable procedure of analysis was found. A knowledge of tooth eruption, epiphyseal formation, suture closure and sex distinguishing characteristics must be at hand to achieve any accuracy in these estimations.

Sexing criteria in the literature were fine for the perfectly constructed laboratory models but not so clear cut when applied to actual field specimens. It was necessary at first to display the skulls and long bones of each population together in order to get a comparative view. Once each population's features were recognized, sexing became no problem for the majority of specimens past age twelve.

Age was determined on the basis of tooth eruption and epiphyseal formation when it ranged from one to twenty. From the ages of twenty to fifty, development of cranial sutures was the primary criterion but general condition of the bones and tooth wear helped in many cases.

Age at death often could not be pinpointed exactly and had to be expressed as a range. When this situation occurred, the

mid-point of the range was used for statistical purposes. When an age had to be expressed as N plus years, it was obvious that the individual had developed to the N year stage but how much further was impossible to know from the material at hand. Again for statistical ease, five years was arbitrarily added. This seems reasonable due to early death in the populations.

Of the 82 specimens examined from the Ganier population, the average age at death was 21.1 years while the 80 Arnold specimens showed an average life span of 27.0 years. It is interesting to note that in the Arnold group 20.2% of those studied died before the age of ten and 7.6% lived past fifty. In the Ganier group, 38.3% died before age ten and only 3.7% lived past fifty.

In the Arnold population, there were 43 males, 16 females and 19 specimens of undetermined sex due to their death before the clear manifestation of sex differentiating characteristics. The Ganier group contained 24 males, 19 females, and 39 undetermined specimens. With regard to sex, the comparison of the two peoples is meaningless due to the greater frequency of child death at the Ganier site thus preventing the sexing of a larger portion of the population than in the Arnold group.

Although most of the measurements do not afford any striking features, there are some subtle differences in segments of the populations. For example, the nasal aperture index taken as a whole does not distinguish either population. However, the Arnold women have an index which is broader in character than any other group in the study.

The average orbital index for each quantitative population places it in the category of "mid height and breadth" but again females in the Arnold group stand out as having "high and narrow" orbitals. Measurements taken from the mandible of the two populations are indistinguishable.

There seems to be a slight general trend that the Ganier men have more massive long bones than those of the Arnold site. However, this only amounts to femur length averages differing by eleven millimeters and this difference is deemed unimportant in a genetic consideration. The values obtained for radius length should be ignored for the purposes of this study because of insufficient sampling.

The tibia index of platycnemia (see Table I) of Ganier women places them in the category of Eurycnemic. This is an arbitrary classification for individuals with an index above seventy. The Arnold females are classed as platycnemic (50.0 - 62.9). There seems to be no significant difference between populations when considering platycnemia of the femur (see Table I).

Quantitatively the two populations appear to resemble each

other in more ways than they differ. However, there are a few general differences which show up when representative specimens from each population are observed simultaneously.

The mastoid processes of the Ganier people are smaller in overall volume than those of the Arnold group. However, they protrude further downward and may even slant inward. This is accompanied by a more pronounced fluting in the bone just medial to the point of attachment.

Another small difference in the two groups is seen in the shape of the palate. Arnold palates are on the average slightly deeper and longer than those of the Ganier site. The Ganier collection shows a more noticeable protrusion of the alveolar portion of the maxillary bone than does the Arnold.

Irregularities in suture closure are seen to appear in the Arnold skulls but not in the Ganier. Three examples were found. Two involved the formation of an extra bone by the lambdoid suture and a third concerned the premature closure of the sagittal suture in a six year old. This resulted in an out-pushing of the left side of the skull and could have caused death.

When comparing the overall skull characteristics of the two populations, Ganier skulls appear sturdier and more rugged. They are also more rectangular while the Arnold skull is much rounder in its natural state when seen from above. Ganier skulls also have a more pronounced temporal ridge than do the Arnold.

Most of the Arnold skulls have been warped apparently during childhood by pressure applied to the back of the head. This warping varies in degree and in angle of pressure. Some skulls are symmetrically flattened while others are rather disharmonically deformed to one side or the other. This warping not only distorts the skull into being wide posteriorly and narrowing toward the face but also disturbs the articulation of the mandible with the skull proper. This results in an off-center occlusion and irregular tooth wear. Evidence of possible cranial surgery is found on some of the Arnold specimens and not in the Ganier group.

Postcranial osteological comparison is relatively indistinguishable except for the infrequent occurrence of extra bone deposits on the linea alba on some of the Arnold femurs.

In this particular study, the raw data taken from the available specimens does not show any great deviation between these populations. This fact immediately suggests that gene flow occurred between the two populations.

The similarity of the two groups of measurements might also mean that another set should be taken which would show a greater separation. In this case, this possibility was out of the question due to poor specimen condition. However, in a study of two populations in which the remains are well preserved, computers should be used under a system of multivariate analysis.

A multivariate analysis study tells the investigator not only which measurements will best represent each population but also which ones will best separate the two populations. In this way a great deal of time can be saved since one would take only the necessary measurements. Also he could be sure of having results which were pertinent to his comparison.

Another statistical approach to the utilization of raw data collected involves the concept of standard deviation. Standard deviation is a measure of dispersion in a frequency distribution equal to the square root of the mean of the squares of the deviations from the arithmetic mean of the distribution. Mathematically, the formula for standard deviation is $\sigma = \sqrt{\frac{\sum(m-x)^2}{n-1}}$

From the formula, standard deviation (σ) is equal to the square root of the summation of the squares of the deviation of every point from the mean divided by one less than the total number of measurements for a particular population or group.

If the standard deviation from the mean value is σ , then on a normal distribution curve, 68.3% of the measurements will fall within $\pm \sigma$ of the mean value and 95.4% will fall within $\pm 2\sigma$ of the mean value. Thus if one wishes to determine whether or not two collections of bones belong to a single population, he compares each individual measurement of one group with the standard deviation of the other group. If the measurement is within the $\pm 2\sigma$ range from the mean value, the specimen is considered genetically related based on osteological similarity. If the measurement is outside the range, the specimen is considered unrelated to the large population. The percentage of measurements from one group which comes within the required zones is an indication of the degree of genetic relation. An example of the application of this concept may be helpful in showing the value of this approach. The Ganier group is found to have fairly consistent measurements for anterior-posterior diameter of the tibia. The standard deviation is calculated to be 3.74 mm. with a mean value at 34.0 mm. If a measurement from the Arnold site was found to be 39.0 mm., then that specimen could be considered genetically to be a part of the Ganier group. However, if the measurement were 42.0 mm., then it would fall outside the range of 2σ or 7.48 mm. from the mean and could be considered genetically different.

It was decided not to use this particular statistical approach on the data found from actual measurements here for two reasons. One was that the measurements are very closely correlated between the two groups and also in many cases there were very few measurements for which a large sampling could be

obtained. This method works best in a situation when there is a large set of data which makes the curve more normal and the standard deviation more meaningful. See Table IV for illustration.

Considering the limitations placed on this study by sample shortage, particularly from the Ganier site, it is difficult to make a hard and fast statement concerning the genetic relationship between the two populations. Based on the raw quantitative data which show almost no difference in the populations, interbreeding seems likely. However, qualitative observations show a slight deviation between the groups. The appearance in the Arnold group alone of possible cranial surgery and skull warping practices suggests that cultural exchange between sites may have been very limited.

Although there seems to be some conflict in the evidence, the similarities found in the actual measurements should outweigh the usually observed differences on the basis of sample size and the subtlety of some of the differences. Therefore, from the anatomical data available, it seems proper to suggest that there was intermarriage between populations which inhabited the Arnold and Ganier sites either near or during the period of existence of the specimens under study.

TABLE I. INDICES USED

- 1) Index of Platymeria (Femur)

$$\frac{\text{Antero-posterior diameter of femur} \times 100}{\text{Lateral transverse diameter of femur}}$$
- 2) Index of Platycnemia (Tibia)

$$\frac{\text{Lateral diameter of tibia} \times 100}{\text{Anterior-posterior diameter}}$$
- 3) Gonial Index (Mandible)

$$\frac{\text{Bi-gonial diameter} \times 100}{\text{Length of mandible}}$$
- 4) Orbital Index

$$\frac{\text{Height of orbit} \times 100}{\text{Orbit width}}$$
- 5) Nasal Index

$$\frac{\text{Width of nasal aperture} \times 100}{\text{Height of nasal aperture}}$$

TABLE II. HEIGHT DETERMINATION FORMULAS

<u>Male</u>	
Femur	1.645 plus 943.1 mm
Humerus	2.715 plus 832.1 mm
Tibia	1.988 plus 955.9 mm
Radius	2.968 plus 970.9 mm

<u>Female</u>	
Femur	1.945 plus 728.44 mm
Humerus	2.754 plus 714.75 mm
Tibia	2.352 plus 747.74 mm
Radius	3.343 plus 812.24 mm

From:

"The Skeleton in Forensic Medicine"

KROGMAN, Wilton Marion

Second Richard Herman Jaffe Memorial Lecture,

April 9, 1946

TABLE III
(ARNOLD SITE)

Burial	Sex	Age	Orbital Height	Orbital Width	Orbital Index	Nasal Height	Nasal Width	Nasal Index	Gonial Angle	Symphysis Height	Bicondylar Diameter	Bigonial Diameter	Mandible Length	Mandible Index
A-10	?	5-10												
A-11	?	5-10												
A-26	F	15												
A-19	F	18												
A-20	M	50-60	33.0	39.0	84.5	52.0	29.0	56.8	115.0°	28.5	134.0		98.0	
A-133-1	F	30-40												
Spores	M	20+												
A-181	M	40-50	32.5	40	81.5	51	23.5	46.1	117.5°	37.0	135	102	115	103
Lot #133	M	25-30												
A-1001	M	45	33.0	41.0	80.5	51.5	25.5	49.6	120.5°	35	104			
A-115	M	30-40							125.0°	39.0	94			
AW-2000	M	20												
AW-2000	F	20												
A-114	M	40-50							125.5°	42.0	120.0	97.0	98.0	99.0
A-112	F	35-40												
A-100	?	5-6												
A-103	F	20-25												
AR-87	M	50	35.5	41.0	86.5	50.5	22.0	40.2	116.0°		126.0	99.0	93.0	106.0
A-86A	F	30	36.0	40.0	90.0	48.0	27.0	56.3	125.5°	31.0	115.0	97.0	105.0	92.4
A-83	F	45	35.0	39.0	90.0	49.5	26.0	52.0	115.0°	36.0	115.0	91.0	97.0	94.0
A-76	M	65-70	35.0	43.0	81.5	56.0	22.5	40.2	121.0°	36.0	128.0	107.0	107.0	100.5
A-63	M	40							128.0°	36.0	122.0	109.0	102.0	107.0
A-53	?	6-7												
A-54	?	4-6												
Ar. Parr.														
Lot #61	M	25							122.0°	34.5	89.5			
A-60	M	25												
A-63	M	32							112°	34.0	135.0	95.0	100	95
A-38	M	50	31.0	41.0	75.5	51.0	26.5	55.8						
A-40	?	6-10												
A-41	M	50+												
A-42	M	20+												
A-48	M	17-19												
A-49A	M	50+												
A-52	M	30												
A-38	F	26-30	32.0	38.0	84.3	47.5	26.0	54.8						
A-25	M	25-35							124°		87.0	87.0	100	
A-26	M	12-18												
A-29	?	6-7												
A-30	M	30-35	31.0	29.0	79.5	49.0	23.0	47.0	125°	34.0	126.0	99.0	99.0	100.0
A-36	M	50-60	35.0	42.0	83.5	54.5	28.0	51.3	116.0°	38.0				
A-14	M	18-20							122.0°		97	75.0	68.0	110.0
A-11B	M	20												
A-17B	M	50-60												
A-18 or 16	F	25	33.0	33.6	98.5	41.0	21.0	51.2						
A-17A	F	20-30												
A-17	M	40-50							119.0°	34.0	126	97	99.5	97.5
AW-18	?	6-7												
AW-18B	?	10												
B-3	M	28	31.5	41.5	76.0	50.0	25.0	50.0	110°	32.2	125.0	106.0	99.0	107
A-4	M	45							124°	33.5	104			
A-5	M	48												
A-2	F	25	32.0	37.0	86.5	45.0	26.0	37.7	117.0°	32.5	115.0	89.0	95	93.8
A-7 unknown														
child	F	26	32.0	36.0	89.0	43.0	23.0	53.5	119.0°	27.5	110.5	78.5	79.0	99.5
A-008	M	48	34.5	36.0	96.0				118.0°		130.5	118	103	115.0
A-9	M	50							117.0°					
B-10	F	40							129.0°	28.0				
A-0010	F	15							128.5°	24.0	96.5	84.0	79.0	106.5
A-34	M	30												
A-204	M	20-30							115.5°					
A-Bca	M	40-50							118.0°	24.5	79.0			
A-12	?	7-8												
A-25	M	25-30												
A-122	?	6												
Lot #143														
Sewer	M	20												
A-121	M	20												
A-33	?	4-5								41.0				
A-13	M	20-30												
A-200	?	6-7											95.0	
A-42	F	20-23	34.0	37.0	92.0	43.0	26.0	65.0	133.0°	36.0				
A-28	M	50-60							126.0°					
A-120	M	20-24												
A-37	?	8							120°	23.0	80.0			
A-32	?	8-10												
A-7	?	8-12												
A-36	?	12-16												
AW-6	?	5							138.0°	18	68.0	55.0	51.0	107
A-57	?	5												
A-99	?	20-50												
A-49b	?	6-8	30.5	36.0	85.0	36.5	22	61.0	133.0°		98.0	72.0	74.0	97.0
AVERAGES														
Male			33.0	40.6	81.6	51.5	25.2	49.2	118.5°	36.0	124.0	107.3	97.8	103.5
Female			33.4	37.0	90.0	45.3	25.0	55.4	123.1°	31.7	112.0	89.3	92.5	97.5
Total			27.0	33.2	39.2	84.8	49.1	25.1	120.0°	34.5	120.0	101.8	95.9	100.8

Burial	Femur			Tibia			Femur Length	Femur Head Diameter	Humerus Length	Humerus Head Diameter	Radius Length	Radius Head Diameter	Tibia Length	Total Height
	Ant-Pos	Lateral	Index	Lateral	Ant-Pos	Index								
A-10														
A-11														
A-26														
A-19														
A-20														
A-133-1	22.	28	78.5	20.5	30.0	68.5	39.5	307	40.0					62.5"
Spores				22.0	37.0	59.5								
A-181														
Lot #133														
A-1001	25.0	31.0	80.6	22.0	34.0	64.0	410.0	43.0	298.0	41.5			343.0	64.8"
A-115	24.0	28.0	85.6				451.0	42.0						67.5"
AW-2000														
AW-2000														
A-114	26.0	34.0	76.4				468.0							68.5"
A-112														
A-100										37.0				
A-103														
AR-87														
A-86A														
A-83														
A-76														
A-63														
A-53														
A-54														
Ar. Parr.														
Lot #61	25.0	25.0	100.0	21.5	28.0	76.8	426.0	41.5	294.0	39.5		20.5	342.0	65.8"
A-60	24.5	30.0	81.6				434.0	43.0	308.0	42.0				66.3"
A-63														
A-38									410	45.5	303.0	44.0	23.5	22.0
A-40														64.8"
A-41	22.5	30.5	74.0				386.0	43.0						63.0"
A-42	25.0	33.0	75.8	30.0	30.0	100	426.0	45.0						65.8"
A-48	22.0	29.0	76.0	21.0	27.0	78.0	415.0	39.0	276.0	37.0		19.5	332.0	65.0"
A-49A	31.5	30.5	103.0	23.0	37.5	61.4	438.0	45.0	323.5	43.0			363.0	66.5"
A-52	27.0	32.0	84.8	29.5	34.0	87.0	445.0	44.5	305.0	42.0				64.3"
A-38	22.0	36.0	73.4	18.0	32.0	56.3	453.0	49.0	315.0	43.0				67.8"
A-25														
A-26														
A-29														
A-30	22.0	28.0	78.5	22.0	35.5	62.0	408.0	44.0	291.0	41.5	223.0	20.0	328.0	64.4"
A-36														
A-14	24.0	32.5	74.0	23.0	35.5	65.0	445.0	43.0	322.0	42.0				67.0"
A-11B								41.5						
A-17B														
A-18 or 16														60.7"
A-17A	23.0	27.0	85.0				405.0	41.0	299.0	39.0	216.0	19.5		
A-17														

TABLE III
(GANIER SITE)

Specimen Number	Sex	Age	Orbital Height	Orbital Width	Orbital Index	Nasal Height	Nasal Width	Nasal Index	Gonial Angle	Symphysis Height	Bicondylar Diameter	Bigonial Diameter	Mandible Length	Mandible Index
G-01	?	5												
G-1	?	6-9												
G-2	?	2-5												
G-3	?	5												
G-03	F	30-40												
G-04B	F	15-18												
G-5 A&B	?	3-5												
G-5 A&B	?	3-5												
G-06	M	40	36.0	43.5	82.8	52	29.0	55.8	116.5°	39.5	126.5	108	103	105
G-7A	F	30-40												
G-7B	F	20+								32.0				
G-018	?	15												
G-021	M	25-30	31.0	39.0	79.6	48.0	23.0	48.0	114.5°	34.5	116.0	91	96	94.8
G-042	M	20-30												
G-041	M	20+												
G-039B	F	25-30	30.0	41.0	73.3	47.0	23.0	49.0						
G-040	M	25-30								36.0				
G-038A	F	40-50	32.5	39.5	82.4	48.0	22.5	47.0		35.5				
G-039A	M	40							117.0°					
G-037	M	22-27												
G-034	?	5-6												
G-035	?	6-7												
G-030	M	50-60												
G-032	?	20+												
G-045	?	2-5												
G-043A	M	30-45	31.0	42.0	74.0	48.5	26.0	53.6	128.°	27.0	96.0	81.0	79.0	102.0
G-043B	?	8-10												
G-047	?	5-10												
G-049	?	5												
G-050	?	5-7												
G-052	?	20+												
G-051	?	20+												
G-056C	?	4												
G-056B	?	20+												
G-054	M	25												
G-062	M	45-55												
G-066B	M	30+								36.0				
G-066A	M	40-50												
G-065	F	20-40												
G-067	F	50-60	32.0						127.0°	36.5				
G-067	?	8-10							132.5°					
G-056A	M	30+												
G-056A	F	25-40												
G-057A	M	40-50							118.5°	34.0		95.0		
G-057B	F	20+												
G-058	F	30												
G-061	M	20+												
G-060	M	22-25	38.5	41.0	94.0	54.0	24.5	45.4	115.0°	35		103		
G-063A	M	25-35							114.°	36.0				
G-063B	?	6												
G-064A	?	6												
G-064C	?	6-8							126.5°	24.0	97.0	78.0	71.0	110.0
G-064B	?	5-6												
G-069	?	4-5							128.0°	25.0		72.5		
G-076	M	25-40												
G-079B	?	2-4												
G-079A	M	20-50												
G-082B	?	3-4												
G-082A	?	5-6							125.0°	22.5	95.0	77.0	69.0	112.0
G-082C	?	20+												
G-083	F	18-20												
G-084	?	20-50												
G-085-A	?	7-8												
G-085B	?	3-5												
G-085C	?	6-8												
G-086	?	3-6							124.5°	19.5				
G-091	F	40-50							125.0°	33.5		70.0		
G-087 A&B	M	40-50							121.0°	38.5	128.5	107		
G-088	F	25-35								31.0				
G-089	F	25-30							123.5°		102.5			
G-090B	?	5-6												
G-090A	M	15-19												
G-093	?	3-5												
G-075	F	25-30	33.0	37.0	89.2	48.0	21.0	43.8	119.5°	32.5	114.0	94.0		
G-094	F	17-20	37.0	37.0	100.0	47.5	24.0	50.6	129.0°	38.5		98.0	106.0	92.4
G-095	M	30-40							120.0°				94.0	
G-096	?	25-35												
G-097B	?	6-8	31.5	33.5	94.	40.0	21.5	53.8	117.0°	36.0				
G-097A	M	30+												
G-099	F	20+												
G-0101	F	20												
G-102	?	4-6												
AVERAGES														
Male			34.1	41.4	82.5	50.6	25.6	50.5	118.0°	36.4	123.5	100.5	99.8	97.5
Female			31.9	39.2	81.6	47.6	22.6	47.6	123.5°	32.4	114.0	98.4	94.0	
Both			21.1	33.1	40.4	49.1	24.1	49.0	119.5°	34.8	121.25	98.5	98.5	97.5

Specimen Number	Femur Platymeria			Tibia Platycnemia		Femur Length	Femur Head Diameter	Humerus Length	Humerus Head Diameter	Radius Length	Radius Head Diameter	Tibia Length	Total Height
	Ant-Pos	Lateral	Index	Lateral	Ant-Pos								
G-01													
G-1													
G-2													
G-3													
G-03													
G-04B													
G-5 A&B													
G-5 A&B													
G-06				26.5	37.0	71.6			45.5			367.0	67.4"
G-7A													
G-7B													
G-018													
G-021													
G-042	23.0	27.0	85	21.0	29.0	72.4		42.0	37.0			340.5	65.3"
G-041									38.5	185.0	21.0		
G-039B	19.5	24.0	81				399.0		249.0	23.0			
G-040											41		
G-038A													
G-039A	27.0	25.0	108										
G-037											256.0		68.2"
G-034													
G-035													
G-030													
G-032	24.0	32.0	75					39.0					
G-045													
G-043A													
G-043B													
G-047													
G-049													
G-050													
G-052													
G-051				21.0	29.0	72.4		39.5					
G-056C													
G-056B													
G-054													
G-062													
G-066B	27.5	33.0	83.5				461.0	50.0					68.2"
G-066A									45.0				
G-065				27.5	36.0	76.5		315	47.0	41.0	22.		63.3"
G-067													
G-067													
G-055													
G-056A													
G-056A													
G-057A													
G-057B	21.0	31.0	68.0					38.0					
G-058													
G-061	23.0	33.0	69.7										
G-060	23.5	31.5	74.5	23.0	35.0	65.8	440.0	44.5	430.0		21.5	353.0	66.7"
G-063A													66.0"
G-063B													
G-064A													
G-064C													
G-064B													
G-069													
G-076													
G-079B	27.0	36.0	75.0					50.0					
G-079B													
G-079A												386.0	68.9"
G-082B													
G-082A													
G-082C	26.0	30.0	86.5				432.0	43.5					66.2"
G-083													

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April 9, 1946.



Part Four

LITHIC ARTIFACTS AT ARNOLD VILLAGE AND GANIER SITES

James W. Cambron

LITHIC ARTIFACTS
AT ARNOLD VILLAGE AND GANIER SITES

James W. Cambron

Abstract

Consideration is given a sampling of lithic artifacts from two Middle Cumberland Culture sites in the Nashville, Tennessee, area. The artifacts indicate a time depth of several thousand years--from Transitional Paleo-Indian to late prehistoric times. The area itself produced identifiable cultural characteristics of its own, while sharing in the general North American developmental stages. Fluted points and other early materials, not present in the Arnold Village and Ganier collections, have been sufficiently reported from the area to verify the presence of man in Paleo-Indian times.

THE ARNOLD VILLAGE SITE

Projectile Points

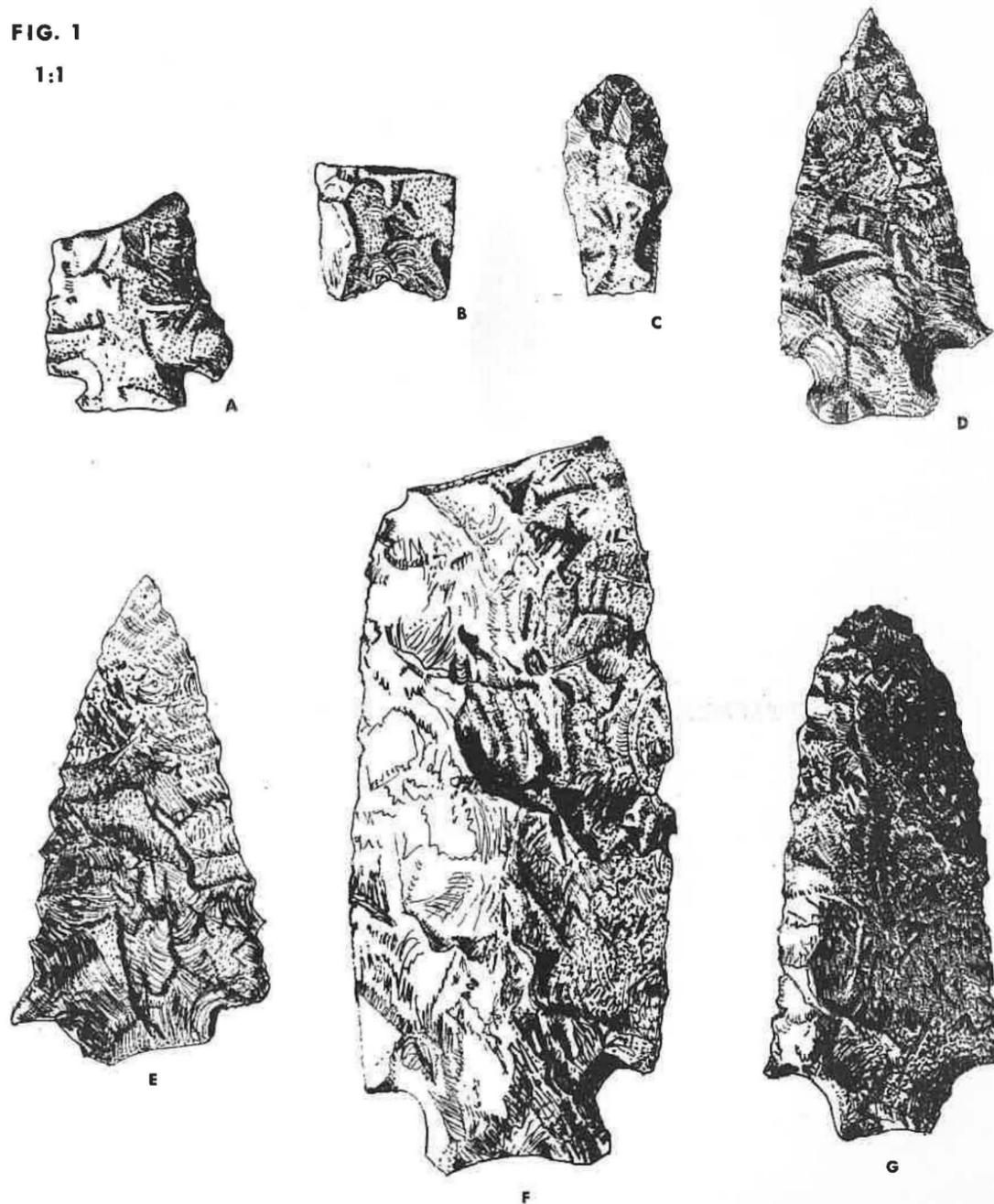
TRANSITIONAL PALEO-INDIAN TYPES: In the collection are two Decatur points, one of which was made from an exotic flint which had been fashioned into a chisel end scraper. Decatur points were found in association with Big Sandy and Dalton points at Cave Spring near Decatur, Alabama, as were Jude points (Cambron et al, n.d.). The one questionable Jude point from Arnold Village had been severely reworked along the edges. The basal section of a Frazier point was also recovered and represents a late Transitional Paleo-Indian or Early Archaic tradition in the area. These points suggest connections with the Tennessee River Valley.

ARCHAIC TYPES: Three Early Archaic projectile points were classified. One each of Damron, Kirk Corner Notched and Kirk Serrated. The Damron point reflects a Tennessee Valley association. The Kirk Serrated point represents possible ties with the area extending from the Tennessee Valley east to the fall line of North Carolina. The Kirk Corner Notched point is an example of a corner notched tradition in Early Archaic times that needs further work and will probably be sub divided into several types.

The Shellmound, or middle to late Archaic, is represented on the Arnold Site by five projectile points. Two Buzzard Roost Creek points, one a large ceremonial, are a part of the Benton Complex from the shellmounds of the Tennessee River Valley. Two Normanskill points were recovered and date from Shellmound Archaic into Woodland times. The type is plentiful in New York where it was named (Ritchie, 1961). After examining 3,000 points from New

FIG. 1

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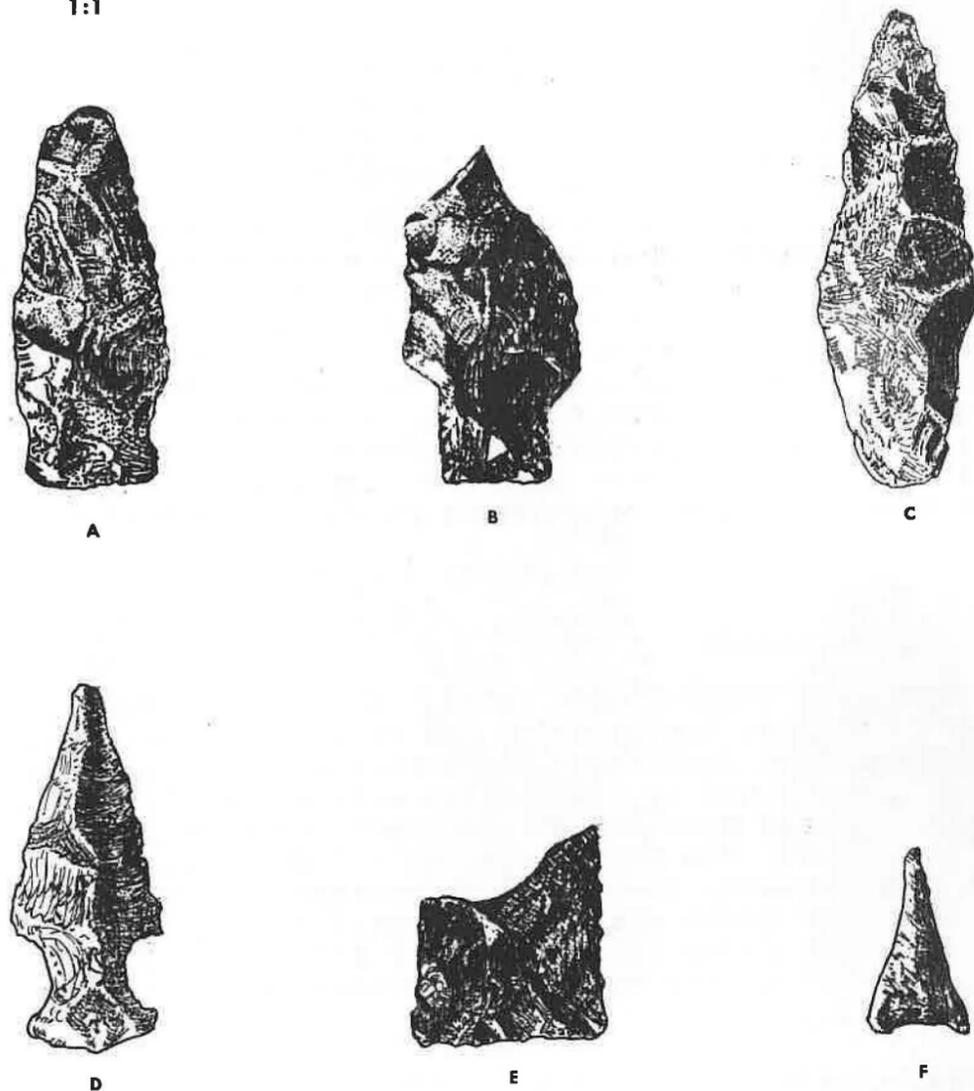


Arnold Village

Figure 1. A) Decatur; B) Frazier; C) Jude; D) Kirk Corner Notched; E) Kirk Serrated; F) Buzzard Roost Creek (ceremonial); G) Buzzard Roost Creek.

FIG. 2

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Arnold Village

Figure 2. A) Flint Creek; B) Mud Creek; C) Gary; D) Motley; E) Copena Triangular; F) Hamilton.

York sites I was able to identify scattered examples of Normanskill points in the Provisional Type 2 - Expanded Stem from Alabama and surrounding area.⁽¹⁾ The one example of Mud Creek point represents a late Archaic type that lasted into early Woodland times.

WOODLAND TYPES: The Woodland period is represented by 13 points of 10 different types. Three of the types--Flint Creek, Gary and Motley--started in late Archaic times and became more abundant in Early and Middle Woodland times. The Flint Creek point, named in the Tennessee River Valley, again reflects an association with that area. The Gary point was named in Texas (Suhm, Krieger and Jelk, 1954) but is found over most of the Eastern United States. Two examples were recovered from the Arnold Site. One Motley point was recovered. The Motley point was named for the Motley Place in northern Louisiana (Ford, Phillips and Haag, 1955). It appears on sites of the Poverty Point Culture in the lower Mississippi Valley as well as sites in Alabama, Kentucky, Illinois and Tennessee. It is similar to Normanskill points of New York (Ritchie, 1961).

Two Adena points and one Narrow Stemmed Adena point from the Arnold Site are examples of the widespread Adena Culture in the eastern United States. They may appear on both Archaic and Woodland sites. One specimen each of Copena Triangular and Greeneville points was recovered. These are considered part of the Greeneville Complex, Middle Woodland, which exists archaeologically along the western edge of the southern Appalachians and for a few hundred miles westward. Two Swan Lake points and one each of Hamilton and Jacks Reef Corner Notched points refer to late Woodland. Hamilton points were named for the Hamilton Culture of Tennessee. Jacks Reef Corner Notched was named in New York (Ritchie, 1961) but are prevalent over most of the eastern United States. Swan Lake points were named for Swan Lake in the Tennessee Valley near Decatur, Alabama (Cambron and Hulse, 1964) and are found over most of the Eastern United States. They were probably made earlier in the north than in the south.

MISSISSIPPIAN TYPES: The Mississippian period is represented on the Arnold Site by five Madison points (Ritchie, 1961), one Sand Mountain point (Cambron and Hulse, 1969) and one Mississippian ceremonial blade of Dover chert. The small, triangular Madison type is prevalent over most of the eastern United States. The small, triangular and serrated Sand Mountain point is not as numerous but was found in goodly numbers in excavated sites on Sand Mountain in North Alabama.

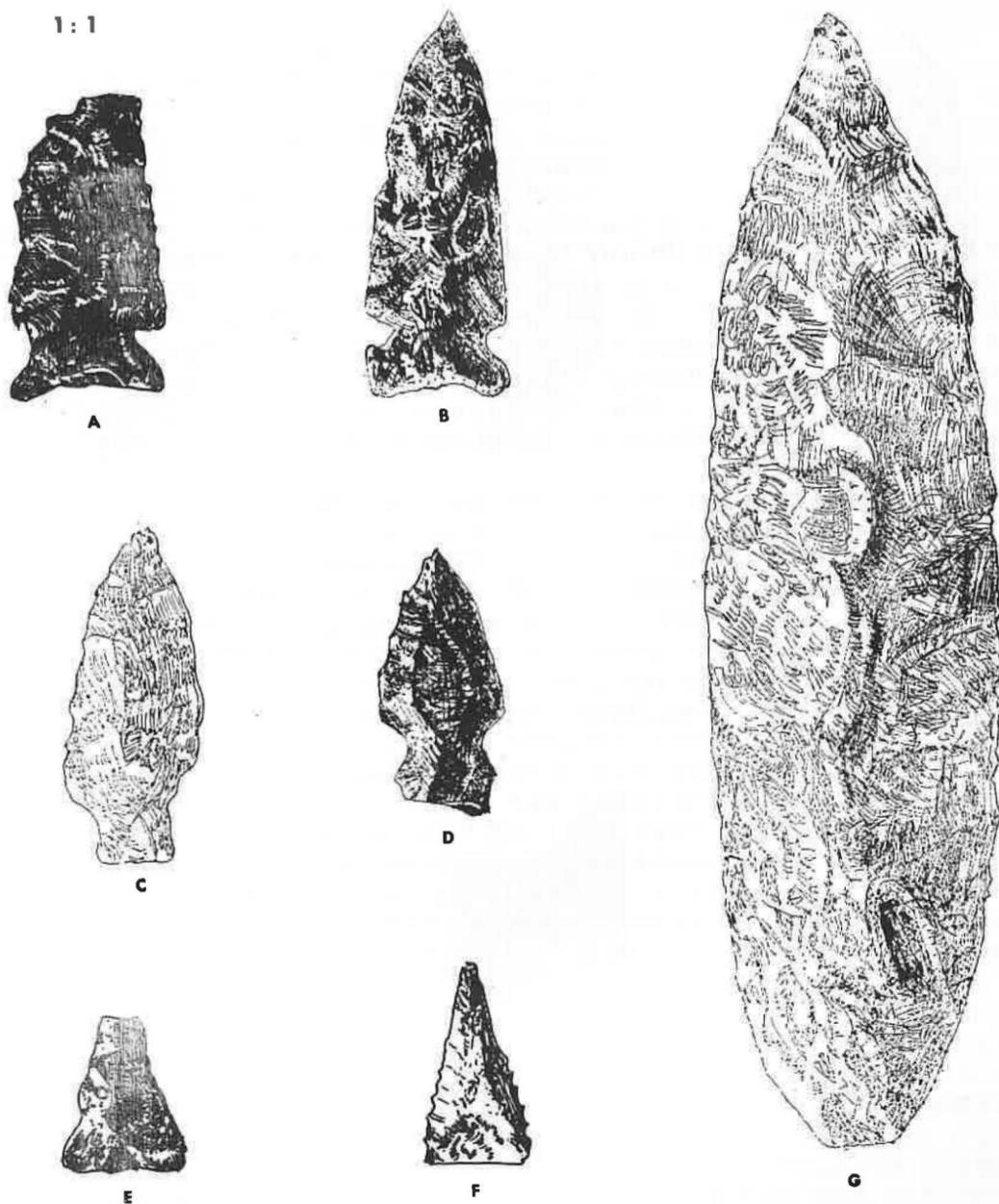
PROVISIONAL TYPES: Provisional types from the Arnold Site include 6 P-1 Stemmed, 4 P-2 Expanded Stemmed and 4 P-11 Triangulars.

There were 11 distal ends and 11 mid-sections of points. One

1. The reader is referred to Cambron and Hulse, 1969, pp. 117-122, for general descriptions of Provisional types mentioned herein.

FIG. 3

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Arnold Village

Figure 3. A) Jacks Reef Corner Notched; B) Knight Island; C) Mountain Fork; D) Swan Lake; E) Madison; F) Sand Mountain; G) Mississippi Ceremonial Blade.

mid-section was reworked on one end into a scraper.

Other Lithic Implements

UNIFACE TOOLS: Uniface tools include 1 uniface knife, 5 flake knives, 1 chisel end scraper (of the same material as a Decatur point) and 1 microlith. The microlith belongs in the Mississippian period. The other uniface tools represent the Transitional Paleo-Indian and Early Archaic periods. The flake knives may belong in Archaic, Woodland or Mississippian (Cambron and Hulse, 1967).

BIFACE TOOLS: There are 37 biface tools in the collection from the Arnold Site. These biface tools include 5 biface knives, 2 flint celts, 4 polished flint celts, 2 flint chisel celts, 2 polished flint chisel celts, 3 flint gouges and 19 crude tools. The biface knives may be Archaic, Woodland or Mississippian. More than likely they are either Archaic or Woodland. The flint celts, flint chisel celts and gouges are probably Archaic. The polished flints and polished flint chisel celts belong in the Woodland period. The crude tools may be Archaic, Woodland or Mississippian. Crude tools are defined as unfinished artifacts, unclassifiable crude tools, or any piece of flint modified by flaking.

THE GANIER SITE

Projectile Points

Cultural association and distribution of projectile points discussed in the previous section will not be repeated. Distribution and affiliation of types not found at the Arnold Village site will be noted.

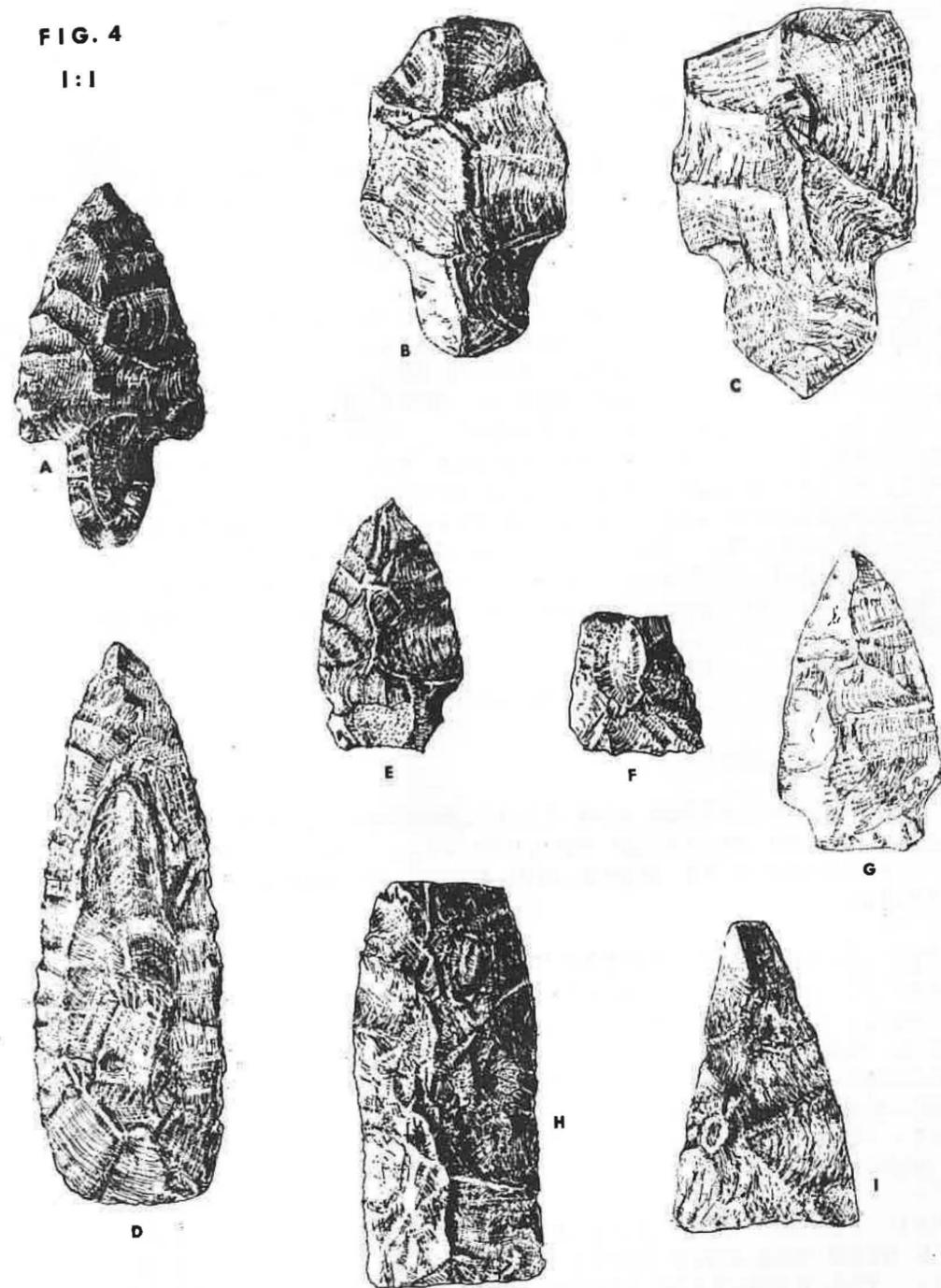
TRANSITIONAL PALEO-INDIAN TYPES: Projectile points from Ganier generally relegated to this time period include 5 Big Sandy and 6 Osceola points. Big Sandy points are found over most of the United States and were named for the Big Sandy Site in west Tennessee (Lewis and Kneberg, 1959, Lewis and Lewis, 1961). I am presently making an effort to divide these points into subtypes. Osceola may be a large variety of the Big Sandy type in the eastern United States.

ARCHAIC TYPES: Two Damron points and one Pine Tree Corner Notched point were the only Early Archaic types classified from the Ganier Site. The Pine Tree Corner Notched point represents connections with Tennessee Valley area.

Shellmound Archaic projectile points from this site include 2 Elk Rivers, 1 Kays, 1 Pickwick, 1 Wade and 3 Normanskills. Elk River, Kays and Pickwick points appear on many sites in the Southeast. Wade points are strongly Archaic but continue into Middle Woodland times in the Southeast.

FIG. 4

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Ganier

Figure 4. A) Adena Narrow Stem; B) Adena; C) Turkey Tail; D) Benjamin; E) Brewerton Side Notched; F) Camp Creek; G) Coosa; H) Copena; I) Greeneville.

WOODLAND TYPES: Among the Woodland points from this site are 2 Adenas, 2 Adena Narrow Stemmed, 2 Greenevilles, 1 Jacks Reef Corner Notched and 6 Swan Lakes which were discussed in the Arnold Site report. Other Woodland points from the Ganier Site include 5 Benjamins, 3 Brewerton Side Notched, 1 Camp Creek, 1 Coosa, 3 Copenas, 2 Knight Islands, 2 Mountain Forks and 2 Turkey Tails. Of the latter both Benjamin and Turkey Tail types start in Archaic and increase in Woodland times. Brewerton Side Notched points (Ritchie, 1961) appear as far north as New York and south into Georgia where they are an important part of the Brewerton series. The Camp Creek type is an important part of the Greeneville Complex. Coosa is more prevalent in south Alabama along the Coosa River. Knight Island points appear in Alabama, Tennessee and Kentucky as part of the Jacks Reef series. Mountain Fork points are related to the Lamoka series of New York but were named in Alabama where they appear in association with Swan Lake points, which are also related to the Lamoka series.

MISSISSIPPIAN TYPES: Two Madison points and one Sand Mountain point represent the Mississippian culture on this site.

PROVISIONAL POINT TYPES: This group includes points that are probably extreme variants of named types, unfinished points, and points that have not proven distinctive enough to be recognized as definite types. As further work is carried out and more specimens become available for observation, definable, named types may replace provisional categories. Some original provisional types have thus been eliminated.

Provisional types from the Ganier Site include 27 P-1 Stemmed, 6 P-2 Expanded Stemmed, 9 P-8 Corner Notched, 8 P-9 Side Notched and 9 P-11 Triangulars. There were 14 distal ends and 13 mid-sections of points from this site.

Other Lithic Implements

UNIFACE TOOLS: Uniface tools include 2 uniface knives, 1 side and end scraper and 6 flake knives.

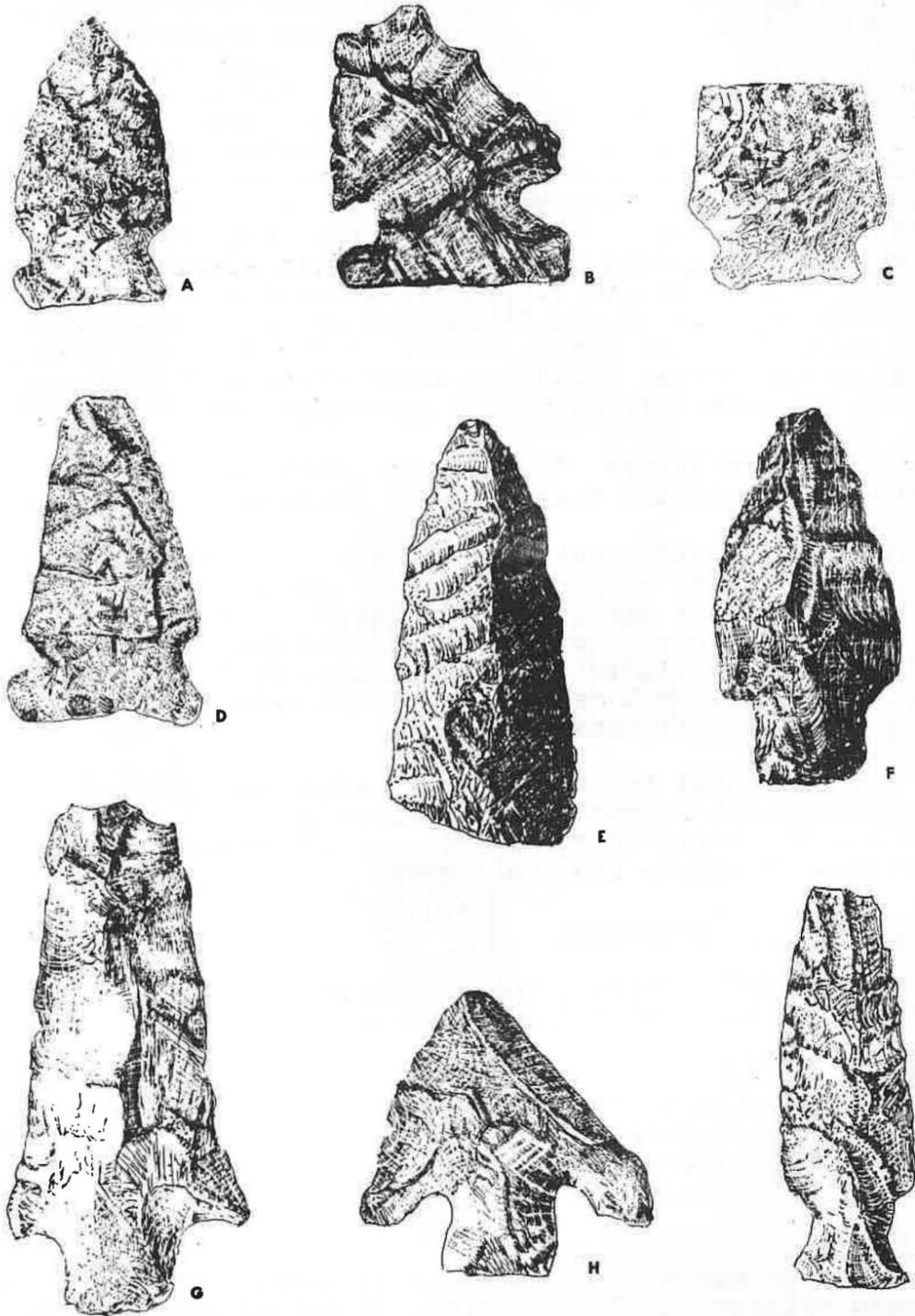
BIFACE TOOLS: There are 81 biface tools from the Ganier Site. Included are 13 biface knives, 3 flint celts, 3 polished flint celts, 1 flint chisel celt 2 polished flint chisel celts, 1 flint gouge, 2 flint drills, 1 flint hammer-abrader and 17 crude tools.

CONCLUSIONS

On the basis of my analysis of lithic implements from the Arnold Village and Ganier Sites, it can be inferred that the sites were utilized to greater or lesser degree at various times from the Transitional Paleo-Indian period to late Mississippian times. It appears that the Ganier Site was probably occupied first by people utilizing Big Sandy and Osceola projectile points. Decatur, Jude and Frazier points probably appeared later and lasted longer than Big Sandy and Osceola points. If this is the case, the

FIG. 5

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Ganier

Figure 5. A) Big Sandy; B) Osceola; C) Damron; D) Pine Tree Corner Notched; E) Elk River; F) Kays; G) Pickwick; H) Wade; I) Normanskill.

Ganier Site was settled before the Arnold Village Site.

Available evidence clearly suggests that both sites were lightly used during the Early Archaic and only slightly more in later Archaic times.

The Ganier Site, during Woodland times, appears to have been associated with cultures to the north and, to a lesser degree, with the Greeneville Complex to the southeast. The higher incidence of Woodland lithic artifacts suggests that there was a marked increase in occupation during this period. The artifact inventory of the Arnold Village Site indicates relatively equal affiliations with both north and south during Woodland times.

Finally, the Middle Cumberland Culture, as evidenced by lithic artifacts from these two sites, is closely affiliated with similar Mississippian Period cultural manifestations in the larger river valleys of the Southeast. There are, however, strong ties with the northeast. Some lithic forms, such as large Mississippian blades, seem to have been developed locally.

CULTURAL PERIODS

Approximate dates for cultural periods in Southeastern United States are based on radiocarbon dates and assemblages of artifacts from Alabama and elsewhere.

<u>CULTURAL PERIOD</u>	<u>APPROXIMATE DATES B.P.</u>
HISTORIC	150 to 400
MISSISSIPPIAN	400 to 1,000
WOODLAND	1,000 to 3,500
ARCHAIC	3,500 to 5,000
EARLY ARCHAIC	5,000 to 8,000
TRANSITIONAL PALEO-INDIAN	8,000 or after to 10,000 or before
PALEO-INDIAN	10,000 to 40,000

(Cambron and Hulse, 1967)

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