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THE MOUNDVILLE PHASE AND ITS POSITION
IN SOUTHEASTERN PREHISTORY

A thesis presented

by

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to

The Department of Anthropology

in partial fulfillment of the requirements

for the degree of

Doctor of Philosophy

in the subject of

Anthropology

Harvard University

Cambridge, Massachusetts

June, 1964

PREFACE

Field Research for this thesis was carried out at Mound State Monument, Moundville, Alabama, in February and March, 1963, and at the Museum of the American Indian, New York, from March to May, 1963. The thesis consists of a review of previously excavated material, and no new excavation was undertaken.

History of the Site

The following chronology outlines the major developments at the site of Moundville from before the Civil War to the present:

- 1857. Land on which Moundville is located purchased by the Prince family. First artifacts found during agricultural work (Moore 1905:131; Guthe 1950:10).
- 1859. Excavations "in one of the mounds" by Prof. N. T. Lipton of the Alabama Polytechnic Institute and former head of the State University (Anonymous 1923).
- 1905-1906. Excavations by C. B. Moore. About two months spent at site.
- 1929. Alabama Museum of Natural History buys 175 acres of the site. Excavations begin.
- 1933. Mound State Park established with the aid of the Federal Emergency Conservation Works Agency.
- 1938. Park renamed Mound State Monument and additional land purchased to increase the area to 301 acres. The CCC, directed by the National Park service, begins large-scale development and improvement of Monument. Museum, administration building, and archeological laboratory constructed. Archeological research continues until the outbreak of World War II (Anonymous 1942; Jones and DeJarnette n.d.).

The Monument is now administered by the Alabama Museum of Natural History in cooperation with the University of Alabama in Tuscaloosa. The Curator is David L. DeJarnette.

As a State Monument, Moundville is open to the public, and professional archeologists may use the laboratory facilities. The site is adjacent to the small town of Moundville, about 18 miles south of Tuscaloosa on state highway 69.

Location of Excavated Material

The material excavated by the Alabama Museum of Natural History and the CCC-National Park Service is stored at Moundville. The collection made by the Museum of Natural History consists mainly of whole vessels, various other artifacts, and burials. The CCC excavated some 100,000 sherds, numerous burials, and other artifacts during the construction of a road through the site (roadway excavation) and of the museum and administration building.

Most of Moore's material is in the Museum of the American Indian, and his field notes are on file there. A small amount is in the collection of the Robert S. Peabody Foundation for Archeology, Andover, Massachusetts. I suspect that a few of Moore's artifacts have been scattered through the United States in museums and in private collections.

Previous Reports

Surprisingly little has been written on Moundville. C. B.

Moore's two publications (1905, 1907a) describe and illustrate many of the more spectacular artifacts. Moore's field methods were advanced for his time and as a result he provides fairly good information on provenience. His reports contain excellent, large-scale photographs. Since these reports are generally available, I have referred to them frequently in this paper. The reader is encouraged to view them in conjunction with this paper.

A report on a Moundville phase site, the Bessemer site, (DeJarnette and Wimberly 1941) contains a trait list of the Moundville phase and description of mounds, house types, and burials. Concise summaries of the Moundville phase have been published by DeJarnette (1952:283, Fig. 151) and Williams (1963).

Acknowledgements

I wish to thank Mr. Douglas S. Byers, Robert S. Peabody Foundation, for permitting me to study the Moundville material at the Peabody Foundation Museum, Andover, Massachusetts.

I should like to express my appreciation to Mr. David L. DeJarnette, Curator, Mound State Monument, for his hospitality during my stay at Moundville.

Thanks are due to Dr. Frederick J. Dockstader for permission to study the material in the collections of the Museum of the American Indian, New York.

I am indebted to Dr. William W. Howells, Harvard University, for advice on statistical problems and for his arranging to have statistical data programmed at the Harvard Computing Center.

I acknowledge the help of Charles H. McKenzie, M.D., Minneapolis, Minnesota, in reprinting some of the photographs.

I wish to express my sincere thanks to Dr. Stephen Williams, Harvard University, without whose invaluable assistance and encouragement this thesis would never have been completed.

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CHAPTER I

INTRODUCTION

Objectives of the Thesis

Moundville, on the Black Warrior River in west-central Alabama, is one of the largest archeological sites in the Southeast. Yet despite its size and its importance in Southeastern prehistory, it is virtually unknown. Although there is no lack of excavated material, a study of Moundville in terms of modern archeological method and theory has never been undertaken. The purpose of this paper is to make such a study.

I have three objectives. First, I wish to provide as complete a description as possible of all aspects of the culture. I conceive of this as the primary objective; for while the reader may accept or reject my hypotheses as he wishes, he is of necessity dependent on my descriptions. When Moundville is excavated by modern techniques as thoroughly as a thousand lesser sites have been, these descriptions will no longer be required.

The second objective is to define the place of Moundville in the Southeast -- origin, date and influence on other cultures. These questions can be answered only hypothetically; but since the outlines of Southeastern prehistory are quite well known, the total picture will be reasonably accurate.

The third objective is to present a model explaining the devel-

opment and decline of Mississippian culture. This is entirely speculative and will remain so until not only the outlines but also the details of Southeastern prehistory are understood. In the course of this paper I hope to supply a few of these details.

This thesis is organized according to the major categories of material culture, usually one chapter for each, with an additional chapter describing the Southeastern Ceremonial Complex. At the end of each chapter I have summarized its content and drawn the necessary conclusions. The last chapter contains a general summary and a presentation of my conclusions in their final form.

Preview

This section is a brief, preliminary statement of the ultimate conclusions of the thesis. It is intended to be a guide for the following pages. Archeological monographs -- and this one is no exception -- are admittedly often confusing, for the details which are so real to the writer may seem remote and unimportant to the reader. An initial summary, therefore, may help to keep the many small facts to be presented in proper perspective.

First of all, Moundville will be considered a phase (Willey and Phillips 1958:22). The traits forming this phase are listed in the final chapter.

The place of origin of the Moundville phase was the northwestern Mississippi-northeastern Arkansas section of the Lower Mississippi Valley, and all evidence points to an actual site-unit intrusion -- a migration -- from that region. Until new excavation provides material

for radiocarbon dating, the date of the phase will remain vague. I am reluctant to say much on the subject, but I suggest a beginning date of ca. A.D. 1250 and a terminal date of ca. 1500.

The tribe or group of related tribes that founded Moundville might have been small and insignificant in their homeland, but Moundville soon became one of the most important Mississippian towns and ceremonial centers. Some of the traits from the home region were abandoned, others underwent specialized development, and new ones were introduced. Moundville maintained close economic connections with the Lower Mississippi Valley, particularly with the area around Memphis and, to a lesser extent, the Yazoo Basin. To the north, the Tennessee-Cumberland cultures exerted limited influences. Moundville received traits from the Plaquemine period of Louisiana and Mississippi and perhaps donated some. It strongly influenced the Fort Walton variant of Mississippian in north-west Florida. In addition, other sites of the Moundville phase developed in northern Alabama. By the fourteenth century Moundville was indeed a small state.

At this period Moundville became a focal point of the ritual activities known as the Southern Cult or Southeastern Ceremonial Complex. Following recent opinion, I have concluded that this represents the Mississippian or even the pan-Southeastern religious system as practiced during the florescence of Southeastern culture. Its prominence at Moundville is due to the unusually large size of the town.

By about 1500 Moundville was in decline or had perhaps already been abandoned. This decline was gradual, and there certainly was cul-

tural and probably genetic continuity with the Muskogean of the historic period.

Moundville, I think, recapitulates the rise and fall of Mississippian culture. This is defined herein as a tradition, characterized by the ramification from a single source, the Lower Mississippi Valley. I suggest that its wide radiation throughout the Southeast from the Mississippi Valley homeland was a response to a relatively sudden population increase in the original area of development. Overpopulation would have led to the formation of strong, centralized states (to protect against aggression) and eventually to migration by weaker states. When a population balance was attained, the reason for existence of this kind of political organization disappeared, and so the Mississippian tradition collapsed because of its own rigidity. The same forces which caused it to flourish also caused its decline.

The Natural Setting

Nature limits but does not determine cultural development -- this statement is almost a platitude. More specifically, particular cultural adjustments are made to particular aspects of nature (and ultimately, culture may alter the natural surroundings). Emphasis on particular interrelationships produces an ecological framework for the study of a culture in its natural setting. In the following pages I intend to devote special attention to geography and climate in their relationships with the Moundville phase.

Geography and Geology

Moundville is situated on the northern edge of the Gulf Coastal Plain physiographic province, just beyond the southwestern corner of the Southern Appalachian province (see Figs. 2 and 3).¹ It is in the Fall Line Hills, an area of low, wooded hills with a maximum relief of about 400 feet. Topography of this kind is typical of western and central Alabama, and it extends into Georgia and the Carolinas. The drainage pattern is mature; the hills are frequently interrupted by relatively broad valleys containing small, slow streams. There is little swampland except in the flood plain of the Black Warrior River.

Geologically the site of Moundville is in an arc-shaped belt of Upper Cretaceous sediments that forms the northern border of the Coastal Plain from Tennessee to North Carolina. In western Alabama these sediments are sands and clays underlain by chalk (Selma chalk). To the south of Moundville there are successively younger bands of sediments, representing the final, long withdrawal of the sea from North America.

The pedological situation around Moundville is complex. The predominant soil on the site is Cahaba fine sandy loam. Ruston fine sandy loam is found in the northeast portion and Cahaba loam on the west (Soil Map, Tuscaloosa County, U. S. Department of Agriculture, 1911). All these are reddish in color, but the soil nearer the river is distinctly grayer. Many small, water-rounded chert pebbles occur in all types of soil. I noted little difference in the light, sandy texture of these soils. All are well drained and should have been easy to work with aboriginal implements. The soil of the river flood plain has a

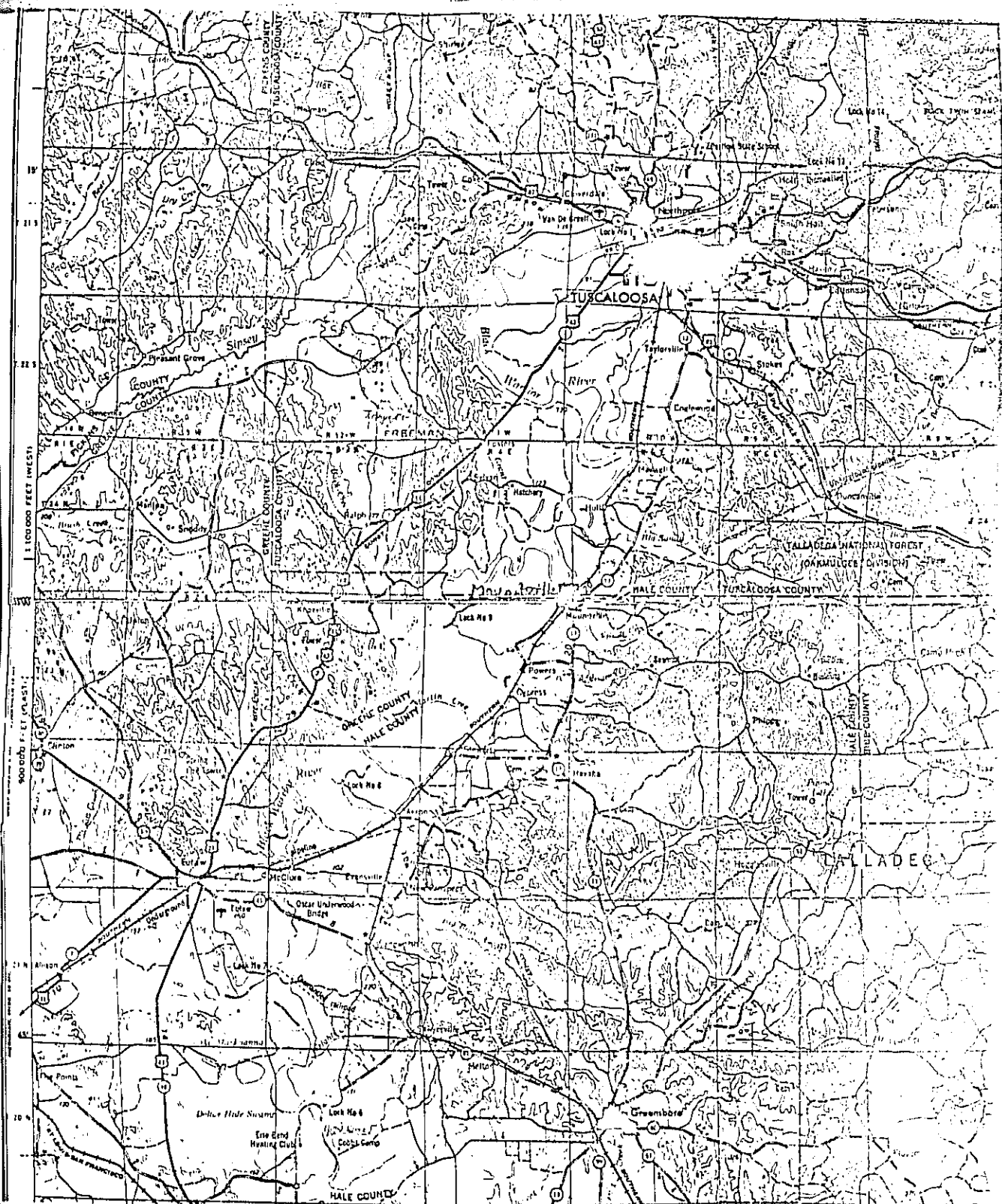


Figure 2: Moundville and Vicinity (REPRODUCED FROM USGS
BIRMINGHAM AND MONTGOMERY QUADRANGLES, EASTERN U.S. 1:250,000 SERIES)

0 5 10 miles
0 5 10 km.
CONTOUR INTERVAL 50 FEET

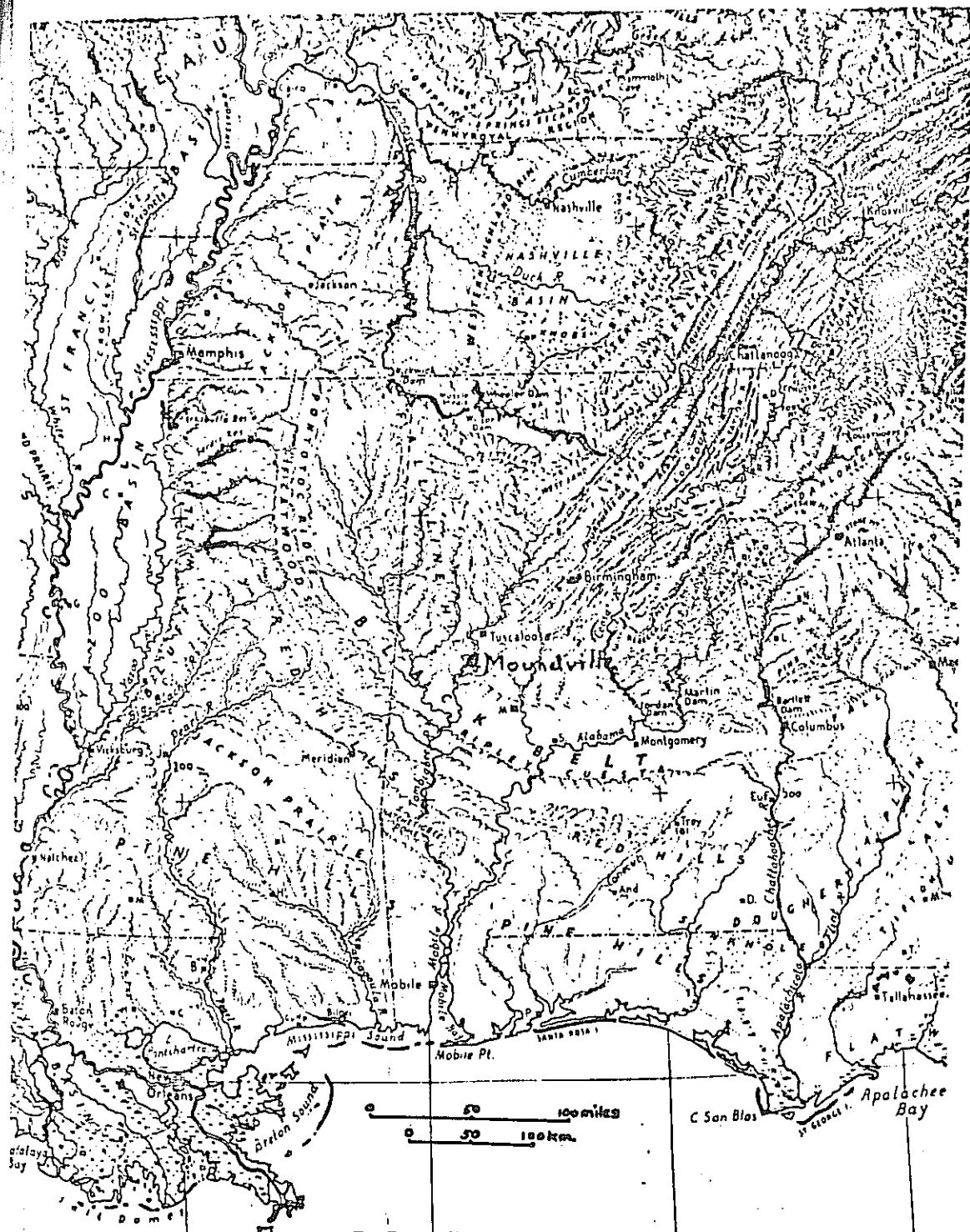


FIGURE 3: THE CENTRAL SOUTHEAST
(REPRODUCED FROM ERWIN RAISZ, LANDFORMS OF THE UNITED STATES, 6TH REV. ED., 1957)

higher clay content, making it more difficult to cultivate, but like all such regions it should be highly fertile.

Just south of Moundville begins the Black Belt (so called because of the color of the soil), a band 30 to 70 miles wide crossing the state. It is now the main agricultural area of Alabama, but I do not feel that it was a major factor in the aboriginal occupancy of the region. Mississippian Indians had a predilection for river-bottom farming and tended to ignore the uplands.

The most significant geographic feature of the Moundville-Tuscaloosa region is the Black Warrior River (sometimes called simply "Warrior"), on which Moundville is located. The Black Warrior proper begins about 20 miles north of Birmingham, but the several streams which combine to form it have their headwaters within 10 miles of the Tennessee River at Gunter'sville. Thus it drains the entire north-western slope of the Appalachians in Alabama as well as part of the Fall Line Hills.

The river flows southwestward in a narrow valley to Tuscaloosa. The fall line is located at this point, and the gradient abruptly changes from 5 feet per mile to 5 inches per mile (Mohr 1901:23). Below Tuscaloosa the river meanders through a flood plain from 2 to 6 miles wide at an elevation of 100 feet. Hills 200 to 400 feet in elevation surround it, but usually do not form bluffs bordering the valley floor.

The Black Warrior enters the Tombigbee at Demopolis, about 40 air miles southwest of Moundville. Its total length by my estimate is at least 160 miles.

The Tombigbee, rising north of Tupelo, Mississippi, flows in a southerly direction through Demopolis and joins the Alabama River about 30 miles north of Mobile Bay. This is the major river of Alabama, flowing southwestward from near Montgomery, where it is formed by the junction of the Coosa and Tallapoosa. These rivers and their tributaries wander through eastern Alabama into Georgia, where they become part of a widespread river system, including the Oostanaula, Coosawattee, and Etowah, which extends almost to the Tennessee line.

The confluence of the Alabama and Tombigbee creates the Mobile-Tensaw river complex which finally brings these diverse waters into the Gulf of Mexico.

The Black Warrior has been much altered by a series of locks and dams, which make navigation possible to above Tuscaloosa. Before these were erected, however, the change of gradient at the fall line caused rises in water level of 50 feet downstream during floods (Mohr 1901:23-24). Records at the Tuscaloosa lock show that from 1884 through 1951 the river exceeded flood stage in all but 7 of the 67 years (U.S. Department of Commerce 1951). Flooding usually occurs between January and March, though occasionally heavy rains in the fall may bring floods. The crests are usually 3 to 10 feet above flood stage. In November, 1929, when the incredible total of 19.25 inches of rain fell, the river crested at 65.1 feet, still only 18.1 inches above flood stage (U.S. Department of Commerce 1951:25-27). As we shall see, Moundville is too high above the river to be affected by floods, but the low-lying plain opposite is inundated annually.

To sum up, Moundville's geographic position was ideal for aboriginal settlement. Here is a region of fairly fertile uplands, allowing protection from floods, and also areas much like the river bottoms of the Mississippi drainage. In broader perspective, Moundville is on an extensive river system. Virtually any point in Alabama, eastern Mississippi, and western Georgia could have been reached by water travel or by routes along the valleys. Moreover, from the upper Black Warrior the Tennessee is readily accessible.

Even without the river system travel would have been relatively easy. Only the Appalachians would have provided much difficulty, although they could be bypassed by a route south of Birmingham or crossed through the Little Tennessee valley. Because hills were low and most streams were small travel was possible in any direction from Moundville.

Another aspect of geography to consider is Moundville's position in relation to natural resources. Since the surrounding sediments are unconsolidated, only chert and flint (from the chalk underlying the sands) are immediately available. The closest region of igneous and metamorphic rocks is in eastern Alabama southeast of the mountains. From here all stone for celts, stone discs, and other ground stone implements must have been obtained. The nearest source of copper is in the southern Appalachians. Both these regions are within 60 miles of Moundville.

Moundville, in short, was in a position of unusual strategic significance in the Mississippian Southeast.

The next section will show that in terms of climate it was also favorably located.

Climate²

Anyone who has been in the Southeast is likely to characterize its climate by two words: hot and wet. There is variation, of course, and the Tuscaloosa region is about in the middle, escaping extremes of both temperature and precipitation. Its mean yearly temperature is 63.8°F . The July mean maximum is 92.2° , equalling that of New Orleans and slightly warmer than Atlanta; the January mean daily minimum is 34.6° , somewhat colder than the Gulf Coastal stations. Average yearly precipitation is 52.8 inches, less than along the Gulf and about the same as in the Mississippi Valley.

These data are not very useful in determining the effect of climate on human life and especially agriculture. We need to know the ranges and patterns of temperature and precipitation. For example, a region subject to early frost or spring drought is obviously less suitable for agriculture than one with the same average temperature and rainfall but a more equable pattern.

The most natural organization of a survey of climate is in terms of the four seasons, beginning with the start of the agricultural year in the spring.

At the vernal equinox the weather in west-central Alabama is already quite warm. March temperatures range from 60° to 35°F ., and occasionally climb into the 70's. Frost can be expected, however, until the last week in March, and once in about 5 years the last frost occurs in early April (Fig. 6).

As the spring progresses the temperature gradient increases rapidly

(Fig. 4). Highs of over 70° can be expected in April, of over 80° in May. Nights are still relatively cool, with temperatures in the 50° 's.

June belongs as much to summer as to spring. The temperature rises above 90° almost every day, and 95° readings are not uncommon.

Spring precipitation is high: an average of 6.1 inches in March, 4.7 inches in April, and 4.0 inches in May. Droughts are rare in this season; a minimum of 5 inches can always be expected for April and May combined. Rain falls both as thunderstorms and as heavy showers associated with larger low-pressure systems. About one day in 3 is cloudy (Fig. 8).

Summer in this region is continuously hot. The daily range is 93° - 70° , and an average maximum of over 95° is experienced on 24 of the 62 days in July and August. Temperatures over 100° occur on several days. The highest temperature ever recorded in Tuscaloosa was 108° .

Brief relief from these temperatures comes from fast-moving cold fronts. These are usually accompanied by heavy thunderstorms caused by rapid cooling of the heated air as it is pushed up by an advancing cool air mass. On the average there are 22 thunderstorms in July and August -- one every three days. As a result a second precipitation peak occurs in July, which has almost as much rain as December (Fig. 5). Thunderstorms are occasionally quite severe, but hail is infrequent.

September is still hot, with a mean maximum of 88° , but the approach of fall soon causes an abrupt drop in temperatures (Fig. 4). The October mean daily maximum is 78° , in November only 65.6° . The first frost usually occurs by mid-November, and occasionally in late

FIGURE 4:
MEAN AND EXTREME MONTHLY TEMPERATURES
TUSCALOOSA 1888-1951

TEMPERATURE
(°F)

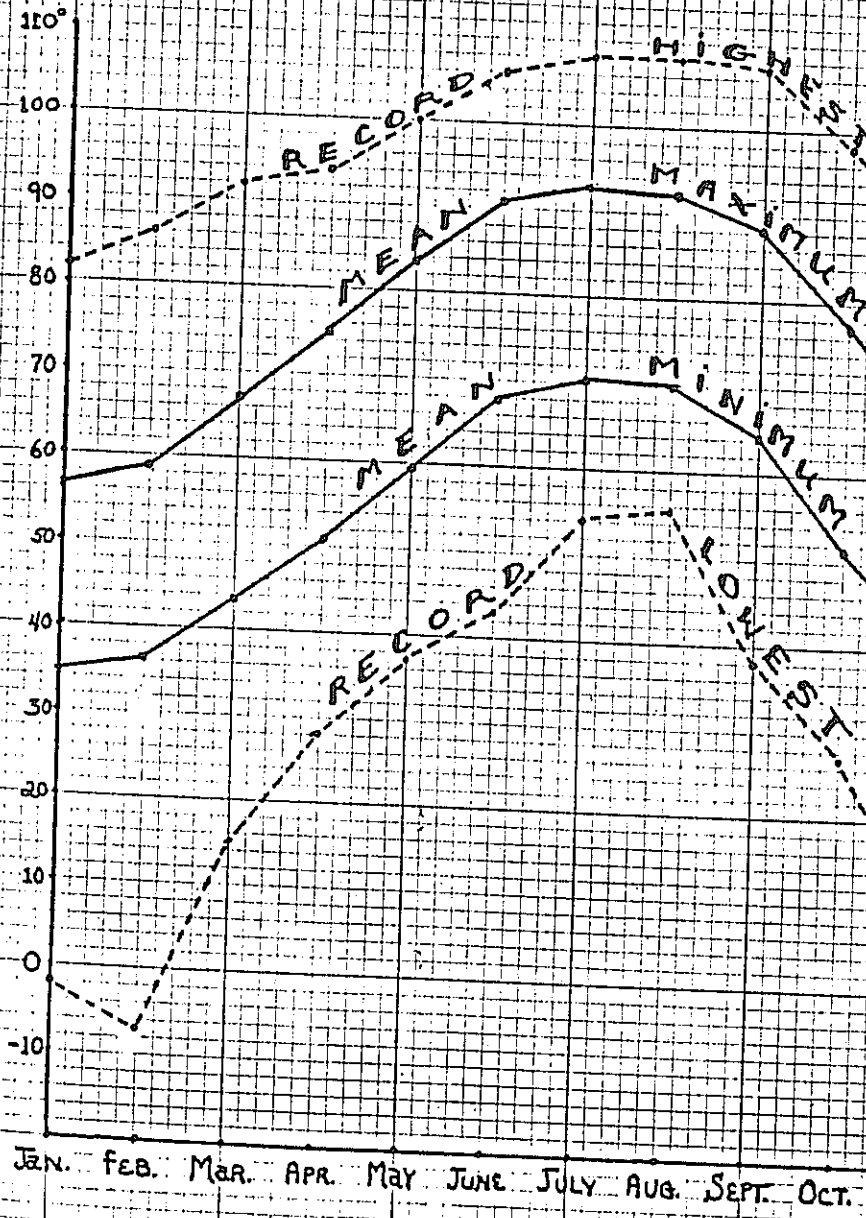


FIGURE 5:
MEAN AND EXTREME MONTHLY PRECIPITATION
TUSCALOOSA 1854-55, 1887-1951

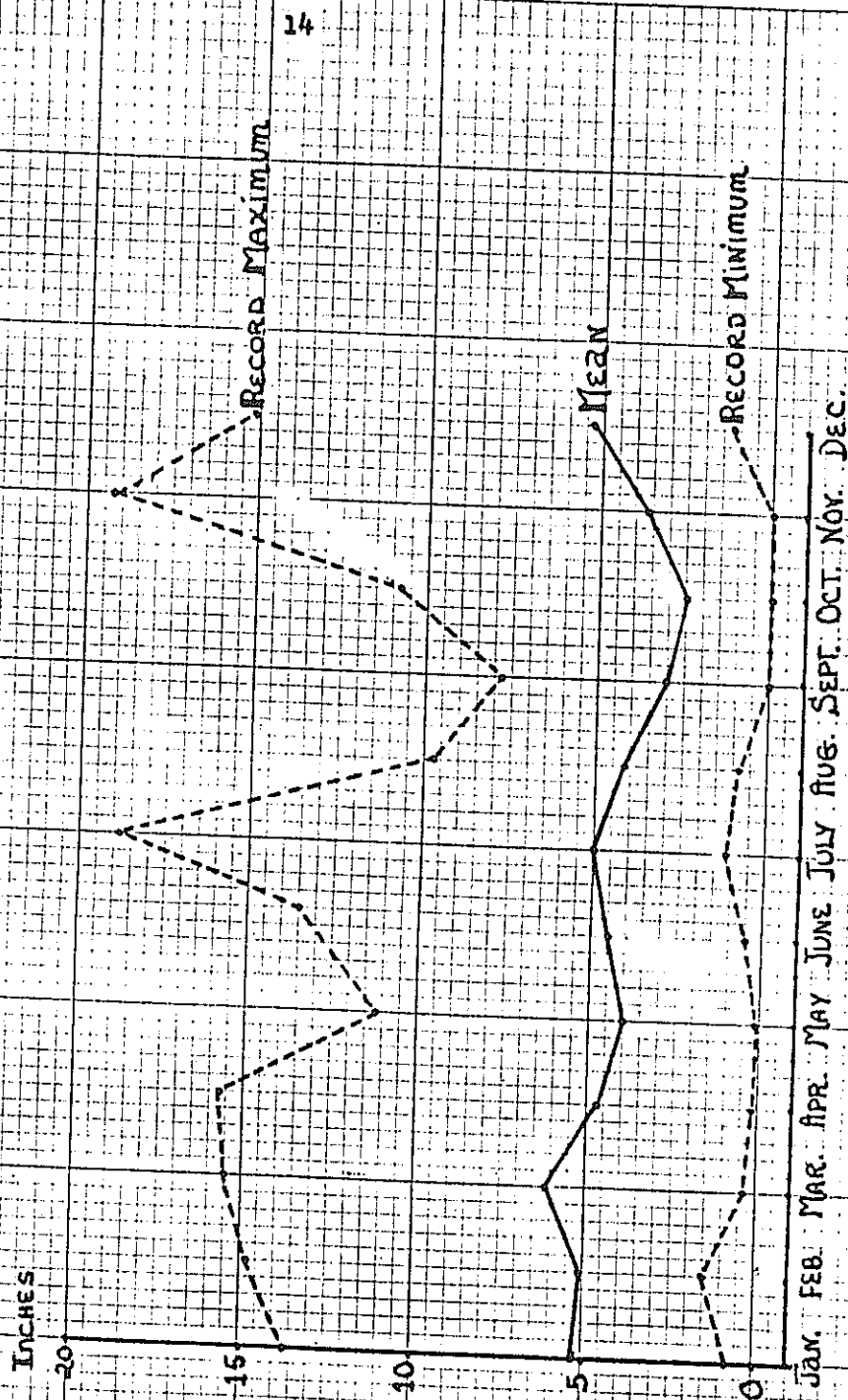


FIGURE 6:

LAST SPRING MINIMUM OF
32° F OR BELOW: 1894-1951 Tuscaloosa

NUMBER OF
OCCURRENCES:

7

6

5

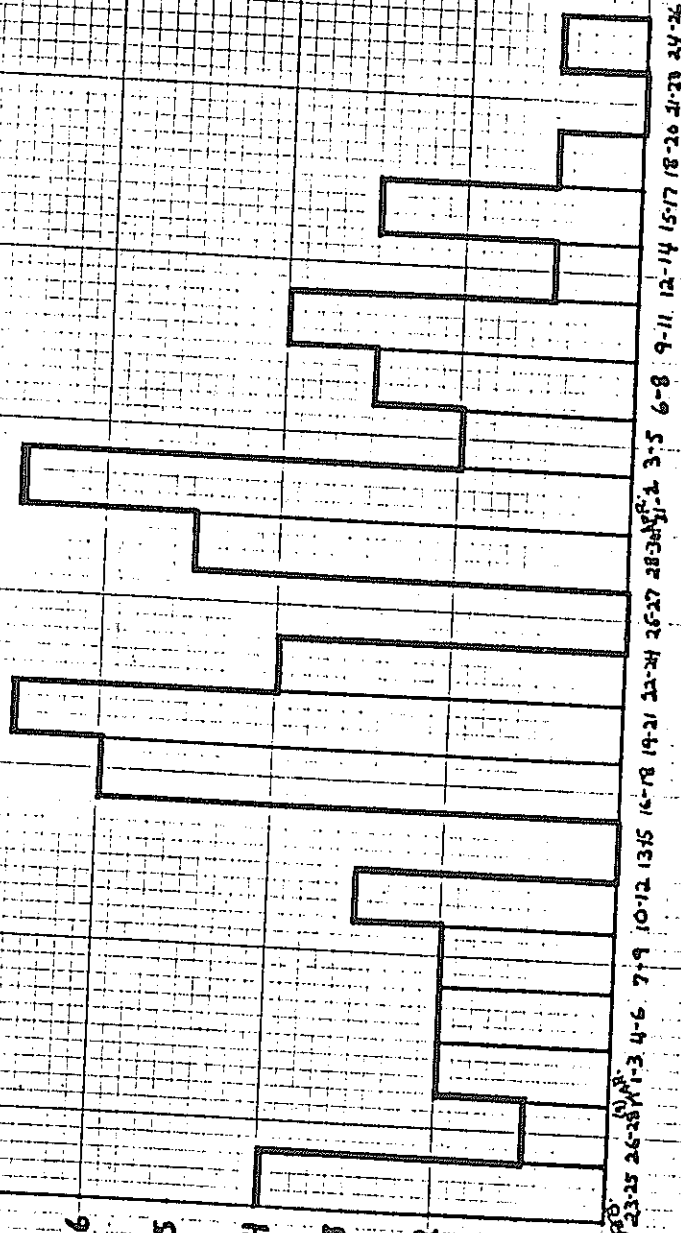
4

3

2

1

15



1894-1951

23-25 26-28 29-31 32-34 35-37 38-40 41-43 44-46 47-49 50-52 53-55 56-58 59-61 62-64 65-67 68-70 71-73 74-76 77-79 80-82 83-85 86-88 89-91 92-94 95-97 98-100

FIGURE 7:

FIRST FALL MINIMUM OF $32^{\circ}\text{F. OR BELOW}$
 1894-1951 Tuscaloosa
 (DATA FOR 1905 MISSING)

NUMBER OF
 OCCURRENCES

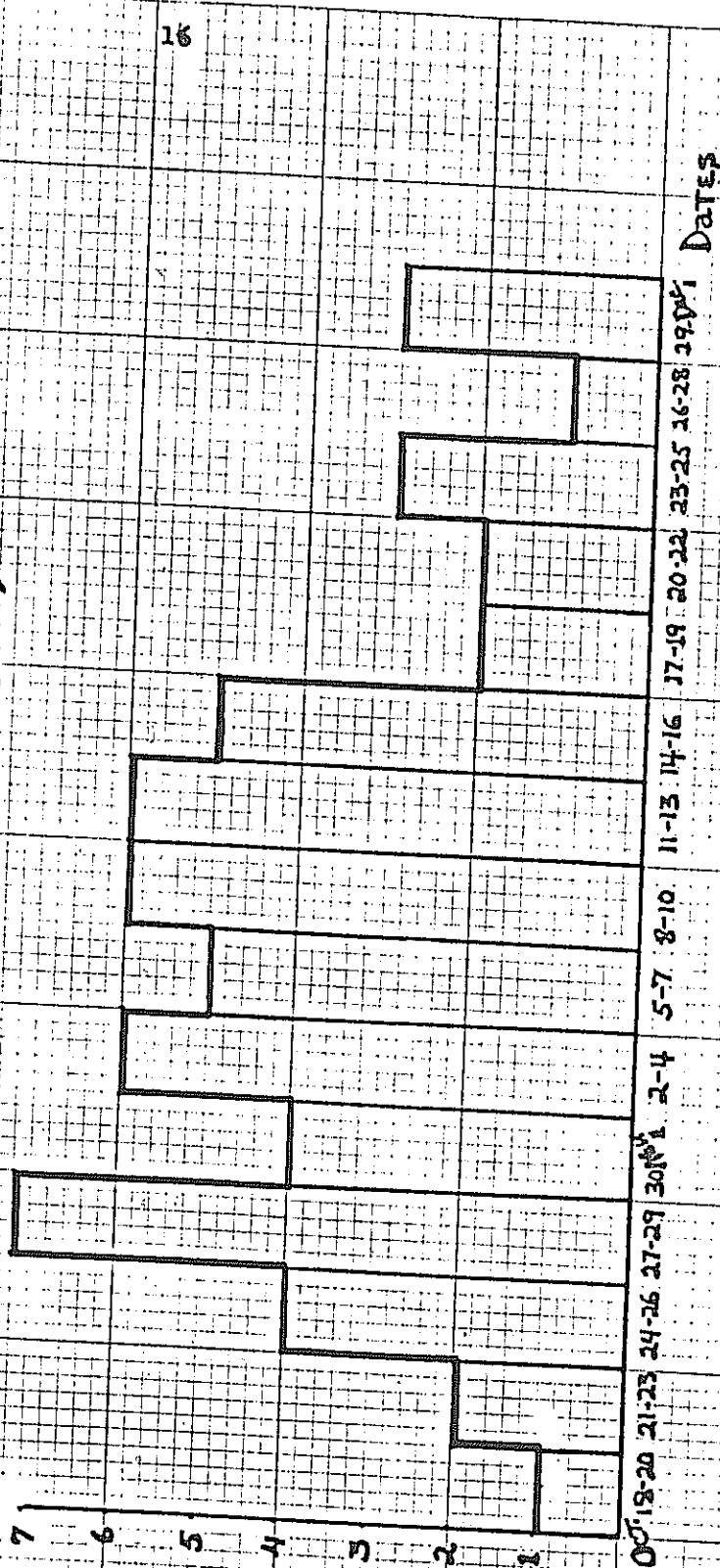
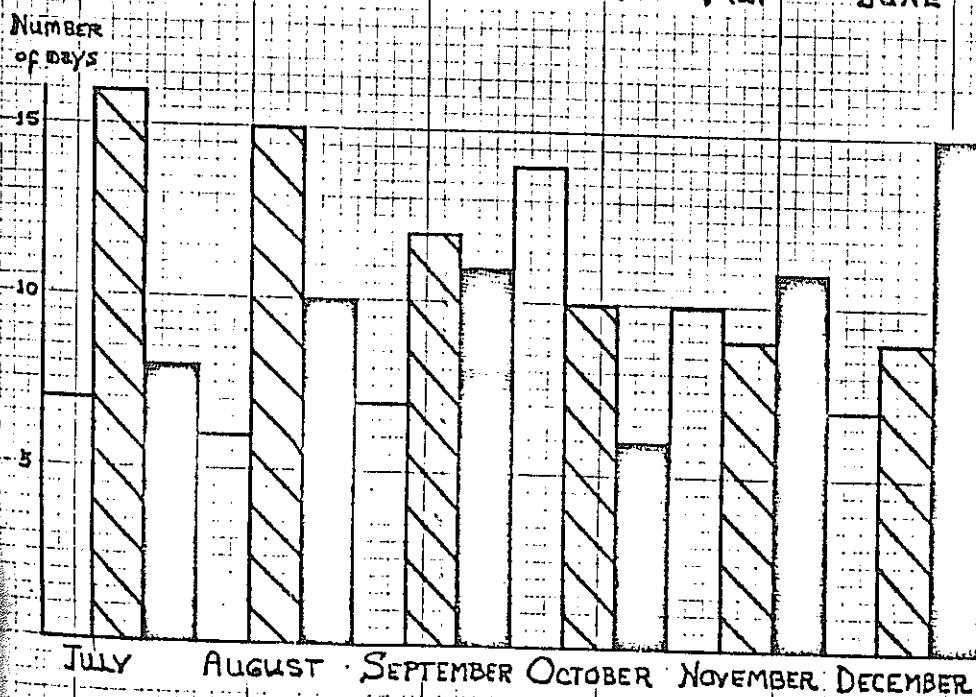
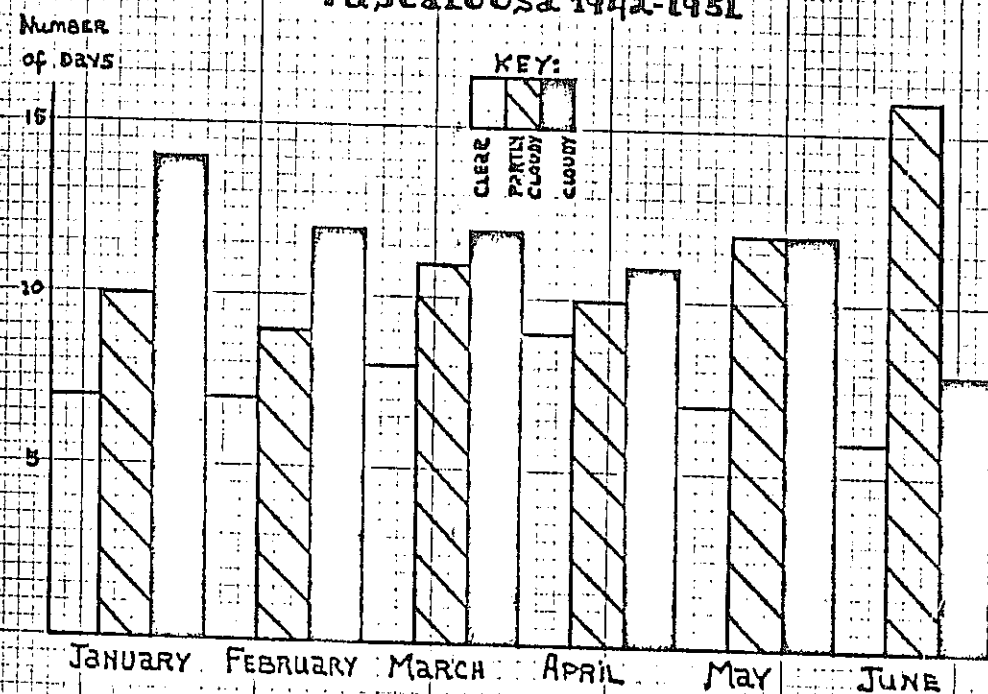


FIGURE 8: AVERAGE NUMBER OF CLEAR,
PARTLY CLOUDY AND CLOUDY DAYS PER MONTH
TUSCALOOSA 1942-1951



October (Fig. 7).

The presence of a large high-pressure area over the eastern United States in autumn brings dry weather throughout. In western Alabama this is by far the driest season. The mean precipitation in October is 2.5 inches and in November 3.6 inches, but the median is lower. About half the time less than 1.5 inches falls in each month. Twice in the past 70 years no measurable rain has fallen in October at all, and less than an inch has been recorded for 28 years, or 44% of the total period of record.

In the winter the United States is dominated by large, intense lows alternating with equally large highs. In the Southeast this causes long periods of cloudy weather (Fig. 8) with day-long rains followed by periods of bright, cloudless, and rather cool weather. Winter daily maximums in the 40's and 50's are pleasantly warm, but the temperature drops to near freezing or below every night, and every few years January and February temperatures will be below 20° on a few days. The minimum temperature ever recorded in Tuscaloosa was -7° F. There are indeed frosty morns in Dixie.

Snow falls on about 3 days of the year, occurring from January through early March. Accumulation of more than 2 inches is rare, and the snow is all melted by the next day. The record 8-inch fall on January 30, 1936, was gone within 4 days. There is on the average one sleet storm a year.

In summary, it should be apparent that this climate is, on the whole, benign. Extremes of heat would not be oppressive to life-long

residents, and extremes of cold are of short duration. The major disadvantage is the heavy rainfall. I can imagine that Mississippian Indians would pay scant attention to temperature but would be somewhat discomfited to see their mounds erode and roofing rot in prolonged December downpours.

The climate is well suited to agriculture. It would have been particularly kind to the intensive but relatively unsophisticated aboriginal practices. The warm days and dependable rainfall of the spring are ideal for the planting and germination of maize. The mid-summer heat allows rapid maturation, and the dry autumn would permit a leisurely harvest and preparation for storage. The major danger would be the summer storms. A heavy August thunderstorm can flatten a summer's growth in an hour; a period of rainy weather may cause decay of stalks and ears.

It is unlikely, on the other hand, that a total crop would be lost and that severe damage would occur more than once a decade. The Moundvillians must have learned how to cope with the misfortunes that inevitably disrupt prosperity. We may be assured that climatic problems were among the least of their worries.

Flora and Fauna

Even today the region around Moundville is quite densely forested. Despite the considerable number of small farms and the sporadic lumbering operations, large stands of pine still remain. Second-growth deciduous trees and shrubs form extremely thick woods in places.

Moundville is just within the central belt of longleaf pine. This

is a region from 5 to 25 miles wide extending across Alabama from near Columbus, Mississippi, to Columbus, Georgia. Adjoining on the north is the shortleaf pine belt. To the south the Black Belt includes areas of prairie. Some sub-tropical trees are found in the southern part of the state.

Typical of the central pine belt are post oak (Quercus minor) prairies, forests composed of a number of small shrubs, and longleaf (Southern Yellow) pine (Pinus palustris) forests on the uplands. This zoning of evergreen and deciduous forests is marked and may be observed in the ravines and divides between them at Moundville. The pines invariably choose the light, well-drained, sandy soil of the hilltops, leaving the ravine bottoms to smaller deciduous species.

Other common trees are Spanish oak (Q. pagodaefolia), black oak, (Q. velutina), black-jack oak (Q. marilandica), pignut hickory (Carya glabra), and mockernut (C. alba). At the southern border of the longleaf pine belt the sub-tropical dwarf palmetto (Sabal adamsonii) occurs.³

Animals which now range in central Alabama and which might have been of economic importance to the prehistoric inhabitants are the following (Burt and Grossenheider 1952):

River otter (Lutra canadensis)
 Red fox (Vulpes fulva)
 Gray fox (Urocyon cinereoargenteus)
 Bobcat (Lynx rufus)
 Beaver (Castor canadensis)
 Eastern fox squirrel (Sciurus niger)
 Eastern gray squirrel (Sciurus carolinensis)
 Eastern cottontail (Sylvilagus floridanus)
 Swamp rabbit (Sylvilagus aquaticus)
 Whitetail deer (Odocoileus virginianus)

The fur-bearing animals are listed merely because of the possibility

that they might have been hunted for their fur. There is no evidence that this was the case. The few animal bones in the Moundville collections are apparently of deer. This was the major game, for excepting the rabbit and squirrel no other animal could have been eaten.⁴

In addition, at least 5 species of mice and rats (Cricetinae) range into Alabama. Their economic value might have been of a negative sort -- as thieves of maize in the field and in storage.

A number of species of edible birds winter in the Southeast, although the Moundville region is not on a flyway from the North. The wood duck (Aix sponsa) and turkey (Meleagris gallopavo) are permanent residents. Some of the birds apparently pictured in Southeastern Ceremonial Complex ^{Art} are also natives: ivory-billed woodpecker (Campephilus principalis), pileated woodpecker (Hylatomus pileatus), sparrow hawk (Falco sparverius) and peregrine falcon (F. peregrinus anatum) (Peterson 1947). The falcons are mentioned because they have well-defined "weeping eye" facial markings which might have inspired the forked eye motif (Ryers 1962:212-213).

Until faunal remains are found at Moundville the animals and birds actually hunted are matters for speculation.

Summary of the Natural Setting

The valley of the Black Warrior River below Tuscaloosa was eminently suitable for aboriginal occupation. There were large areas of fertile bottom land which needed only to be cleared of trees. Towns could have been built on the uplands bordering the valley and thus be

made safe from floods. The climate was exceptionally well suited for intensive maize agriculture. Wild food resources readily available were the ubiquitous white-tailed deer and numerous fruit and nut-bearing trees. Stone and copper were available nearby.

In a wider strategic sense Moundville was also well located. Rivers provided convenient avenues of commerce, and there were no obstacles to overland travel. Moundville would have been an ideal spot for a migrating people to begin their new settlement.

The Cultural Setting

The first part of this section describes the site of Moundville. The second part is a brief introduction to the artifacts and other aspects of material culture.

Description of the Site (See Figs. 11-17)

The map of the site (Fig. 1, back cover) illustrates the central and major portion of Moundville. The exact boundaries are not known. The area west of the museum building for perhaps 200 meters was probably occupied, as was the region to the south, outside the park boundary. To the northeast across the Carthage Branch Creek there was heavy occupancy for several hundred meters. The area east of the railway is flat and could have been used as a dwelling area. Across the river, the low flood plain is unsuitable for settlement since it is subject to flooding.

The area of the Mound State Monument is 301 acres or about 120 hectares (Anonymous 1942:2). The total area occupied (not necessarily all of it at the same time) probably was between 250 and 350 acres.

The location of the agricultural lands cannot be determined until the region around Moundville has been carefully surveyed. It is conceivable that small outlying hamlets were scattered for miles in the valley of the Black Warrior and the Big Sandy valley, a tributary several miles upstream from the site.

Moundville is located on the Hemphill Bend of the Black Warrior (Fig. 17). The river, about 130 m. wide at this point, is flowing southwest as it passes the site, but turns to flow north just below it and south above it for several miles. No part of the site is on the valley floor, for it is situated on a flat plateau extending from the base of the hills at the edge of the floodplain. Its elevation is 150-160 feet, that of the river is 100 feet, and that of the hills behind 300-500 feet. The river bank is thus about 40-50 feet high and quite steep. Access to the river is gained through 2 large ravines on the northern edge of the site and several smaller ones (Fig. 1). At present these ravines are actively encroaching onto the site, and one has almost reached the plaza. In 1907 Moore (1907:map), shows them in approximately the same positions as at present, but there is no way of knowing their extent during occupancy of the site. Since lateral cutting with slow downcutting is a typical feature of mature topography, I would surmise that these ravines have been in existence for hundreds of years but perhaps have increased slowly in area.

The ravines now contain small streams issuing from springs at their heads. In February, 1963, the water was clear, cold, and quite

drinkable. A small creek also flows through the northeastern part of the site. The river water is very muddy.

A glance at the map (Fig. 1) will show that the central feature of the site is the plaza, 600x200 m., surrounded by 18 of the 20 major mounds. (Figs. 11-16). Mound B, 17 m. high, dominates the plaza at the north side. The plaza and most of the mounds are oriented slightly north of east. The area of the plaza and of the entire site other than the ravines is almost flat except for three small depressions on the eastern border.

There are four small lakes on the edge of the plaza near Mounds H, L, P, and R. These are reconstructions of alleged "prehistoric reservoirs", made during the 1930's (Anonymous 1942). It seems doubtful that there was ever a need to conserve water, but these might originally have been borrow pits formed during mound construction. While I was in Moundville in February and March, 1963, the lakes near Mound L (Fig. 12) and R were full of water, the former being spring-fed; the lake near Mound P was dry, and that near Mound H was merely a slight depression which filled during heavy rains.

The areas occupied and the intensity of occupation pose an interesting problem. By tabulating the number of artifacts and burials, listed for various sections of the site, I attempted to gain some idea of the settlement pattern. This procedure gives an extremely crude picture, for the number of artifacts is of course partially dependent on the amount of excavation, regarding which no good records exist. More excavation might radically change the picture.

With these qualifications, I suggest that the areas around Mounds C, D, E, and R were most heavily occupied. The region around the museum and west of it also seems to have been intensively occupied. A third area was just east of the plaza near Mounds G, H, and the administration building. These were also the areas most thoroughly excavated, so these data should be considered suspect.

If they are at all valid they show, as we would expect, dwelling areas concentrated on the borders of the plaza right up to the base of the mounds. The plaza itself is sterile and probably never was occupied. The concentration of refuse and postmolds is especially dense between the northern boundary of the plaza and the river. It is likely that different areas were occupied at different period, but proof of this will have to await further excavation.

Analysis of sherds excavated during construction of the road encircling the plaza indicates that there were at least 2 occupations previous to the Mississippian component and one after it. There were 143 sand tempered sherds, presumably related to the Alexander series of northern Alabama, and 1133 clay-grit tempered sherds. These are of the McKelvey series, believed by DeJarnette to precede slightly the Mississippian occupation of the state (1952:280). One "fiber tempered" and 12 limestone tempered sherds were found. Most of these were derived from a "Middle Woodland" occupation area on the western border of the site (Wimberly 1956:18). The final occupancy of Moundville is marked by 255 shell tempered sherds of the McKee Island series, representing the late-prehistoric and proto-historic tribes of Alabama.

It seems, therefore, that the site of Moundville was occupied at least intermittently for the past 2000 years -- evidence that it has always been a favored location for settlement.

Introductory Summary of Moundville Phase Culture

Pottery.--The concept of type is helpful for a quick review of pottery, although detailed analysis must make use of other concepts (see Chap. II). A type is considered in this paper to be an abstraction which nevertheless has some correspondence to an actual behavioral pattern.

By far the most common type at Moundville is Warrior Plain. It is characterized by rather coarse shell tempering, rough smoothing of the surface, and a gray, buff or pinkish color. It is indistinguishable (macroscopically, at least) from the utility ware found throughout the Mississippian tradition. This plain pottery was made in a restricted range of shapes, most commonly the usual Mississippian jar form with strap handles (see, e.g., Fig. 66). Plain shallow bowls also occur.

When incised designs are used to decorate plain pottery a new type results, Moundville Incised. Typically the design consists of upcurved arcs on the shoulder, usually formed by a single line and giving a lobed appearance to the vessel. Short, parallel lines extend outward from these arcs at right angles (Fig. 28). Occasionally the design is made up of zig-zag lines or groups of line-filled triangles. Moundville Incised occurs mostly on jars and bowls.

One of the most distinctive types is Moundville Black Filmed. This is a well-made, shell tempered, polished ware, completely covered by a thin black wash. This was applied after firing and then made permanent by light refiring. Although the method is unique, Moundville Black Filmed is probably related to or even derived from Bell Plain, a polished type in the Lower Mississippi Valley.

This type may have been predominantly for ritual use, since it is common with burials but rare in general excavation. The most frequent vessel forms are small bottles having flattened-globular bodies and rather short necks, shallow bowls, and small "beaker-bowls" with flat base and straight sides (see, e.g., Figs. 32, 55).

The type Moundville Filmed Engraved is defined as Moundville Black Filmed with fine engraving in complex patterns. These are most often variations of the interlocked scroll or meander, frequently bordered by fine crosshatching. Such designs occur almost exclusively on the bodies of bottles (see, e.g., Fig. 40). On bowls a series of 3 to 6 engraved parallel lines below the rim is usually the sole decoration. Southeastern Ceremonial Complex motifs occur on Moundville Filmed Engraved also.

This characteristic type has many similarities to Walls Engraved of the northeastern Arkansas area. It was undoubtedly for ritual use only.

When smooth, shallow indentations, slightly larger than a thumbprint, are combined with Moundville Filmed Engraved designs, we have another type, Moundville Engraved Indented. When it occurs without engraving it is called Moundville Indented. Indentations occur exclu-

sively on bottles (see, e.g., Fig. 48) and sometimes seem to have the same design function as engraved circles and scrolls. This is a ceremonial type occurring almost solely with burials.

A black filmed type which is incised rather than engraved is called Moundville Filmed Incised. It is slightly more common than Moundville Filmed Engraved, and the design is similar though less complex. Major elements are simple interlocked scrolls, bands of parallel lines, and line-filled triangles. Bottles, jars, and bowls are associated with this type (see, e.g., Fig. 34). It may have been a simplification of Moundville Filmed Engraved, but it also has many similarities to Barton Incised of the Lower Mississippi Valley.

These types constitute 99% of the pottery of the Moundville phase. (Figs. 9, 10). There is a little red filmed and white filmed ware, some red and white, red on buff, negative painted, and salt pan fabric marked. The red filmed pottery might have been manufactured locally; the rest was obtained by trade.

Some specialized vessel forms, usually black filmed, were made at Moundville. Rim effigy bowls depicting birds and humans are fairly common. Effigy vessels are in the form of fish, frogs, shells, and very infrequently humans. There are also seed jars, composite-silhouetted (carinated) bowls, conical vessels, double-bodied vessels, and one tripod bottle.

To sum up, Moundville ceramics are distinguished by a polished black-filmed type, frequently engraved, and the predominance of small bottles and bowls. Major relationships appear to be with Mississippian

FIGURE 9:
PERCENTAGES OF MOUNDVILLE POTTERY TYPES
SAMPLE OF 94,690 SHERDS FROM ROADWAY EXCAVATION
(WIMBERLY 1956)

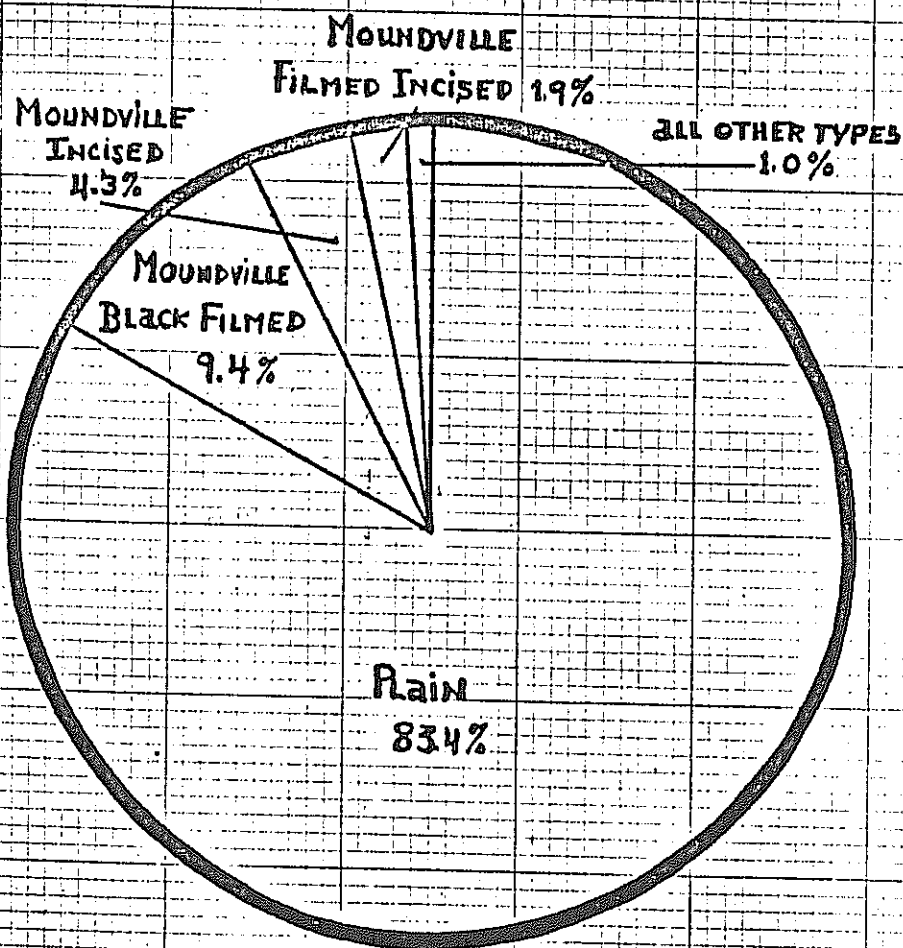


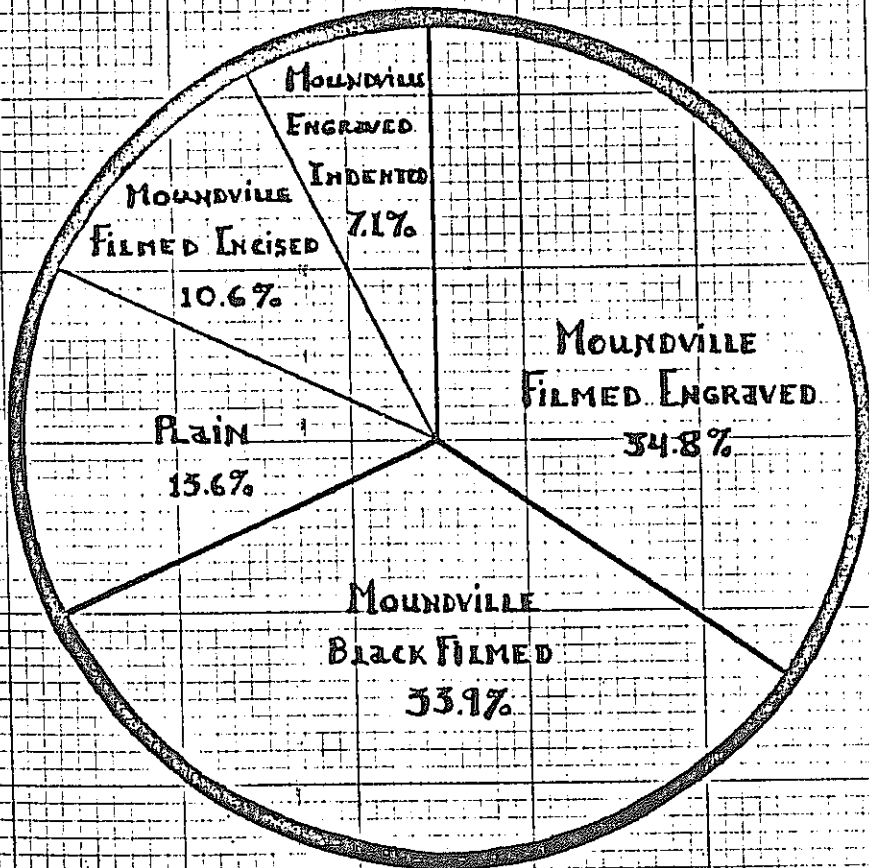
FIGURE 10:

PERCENTAGES OF MOUNDVILLE POTTERY TYPES

SAMPLE: 339 WHOLE VESSELS FROM BURIALS,

BECAUSE THIS SAMPLE REFLECTS RITUAL USAGE,

THE PERCENTAGES DIFFER GREATLY FROM THOSE OF FIG. 9.



phases of the Lower Mississippi Valley.

Other artifacts.--Pottery is by far the most common artifact of the Moundville phase. Stone is comparatively rare. Of chipped stone, the small triangular arrowpoint of variously colored flint occurs in some numbers. There are also a few knives and scrapers. Quite common are small ground stone celts made of greenstone. Other ground stone artifacts include shaft polishers, grinding rocks, pebble hammers, and, rarely, short equal-armed elbow pipes. The only common bone artifact is the awl, a slightly modified long bone of a deer or bird. Bone and antler flakers and antler projectile points are also found. Shell artifacts are mostly disc and spheroidal beads. Conical earplugs made from the conch columella are also present.

Most copper artifacts are associated with the Southeastern Ceremonial Complex (see below). These included gorgets, breastplates, hair or headdress ornaments, and ceremonial celts. Non-ceremonial copper artifacts are rare, consisting mostly of copper-covered wooden ear-spools.

Ceramic artifacts are likewise uncommon, with the exception of pottery discoidals. Other ceramic artifacts are pottery "trowels" and small elbow pipes.

Architecture.--The 18 platform mounds are in every way typical of those at other Mississippian sites. Dwelling houses occur at ground level (there have been no structures excavated on the mounds). They were built by placing small poles in trenches dug to receive them. Single-post houses were also built. The structures have mean dimensions of 5 by 4.5 m., usually oriented with the long axis to the northwest

or northeast. The interior of the house contains a centrally located circular, clay-lined firebasin and scattered postmolds. Center roof supports are absent.

In general, Moundville phase house differ only in detail from house types of other Mississippian phases, but are quite different from non-Mississippian houses.

Burials.--Burials are scattered through the site with tendency towards concentrations north and west of the plaza. They are typically single, primary, extended on back, in shallow pits. Multiple and secondary burials are uncommon. Artifacts accompany about one-third of the burials -- usually pottery, but also beads, stone implements, and Southeastern Ceremonial Complex paraphernalia. Artifacts are placed mostly in the vicinity of the head, arms, and upper body.

Southeastern Ceremonial Complex.--This is well represented at Moundville, which has a majority of artifacts and art motifs that have been defined for this ceremonial manifestation. Moundville is characterized by a large number of notched stone discs, stone discoids, and copper gorgets. At least 3 feline effigy pipes and one eagle effigy pipe have been found. Moundville Filmed Engraved pottery (mostly bottles) engraved with ceremonial motifs is abundant. The predominant motifs on pottery are sun circles, ogee symbols, hand-and-eyes, skulls, long bones, woodpeckers, and feathered serpents. Human figures are not common. Comparison with the two other major "cult" centers, Spiro and Etowah, reveals that differences do exist, but that there is also considerable similarity.

The introductory chapter of this thesis is now complete. The

detailed analyses to follow will, I hope, help to solve the problems presented in the initial section of this chapter.

Notes

1. Exact location is $33^{\circ}00'$ N. Lat., $87^{\circ}38'$ W. Long. The site is in both Tuscaloosa and Hale counties. It occupies the $S\frac{1}{2}$, Sec. 36, T24N, R4E and the NE $\frac{1}{4}$, Sec. 1, T23N, R4E. Even the smaller mounds are clearly shown on USGS Tuscaloosa, Ala., 15' quadrangle (1924).

2. Climatic data from U. S. Bureau of Commerce (Weather Bureau) 1951. This is a summary of Tuscaloosa climate compiled from records at the Tuscaloosa lock and dam and at the airport from 1887 to 1951. Moundville is 15 air line miles SSW. of here. The climate in 1300-1400 was probably not radically different from that of today. If it had been warmer or colder, the extremes mentioned in this summary would have been reached more often.

Figs. 4-8 should be viewed in conjunction with the text.

3. Data on plant life from Mohr 1901:96-97, Pl.1.

4. There were very few molluscan shells in the collections. All appeared to be fresh-water mussels. Molluscs were not used as food or the shells were not saved by the excavators.

Explanation of Figures 11-17 (pp. 35-38)

Fig. 11. Looking northwest across plaza. Mound G in right foreground, museum in background.

Fig. 12. Looking east from to of mound B.

Fig. 13. Mounds A and B (background) from center of plaza.

Fig. 14. Looking south from top of mound B. Mound A in foreground.

Fig. 15. Looking east from base of Mound L. Lake and mound I in foreground, administration building in background.

Fig. 16. Looking south from base of mound R. Mound P in center.

Fig. 17. Black Warrior River from south bank at point about 200 m. northwest of mound R. Looking upstream (northeast). Taken March, 1963.

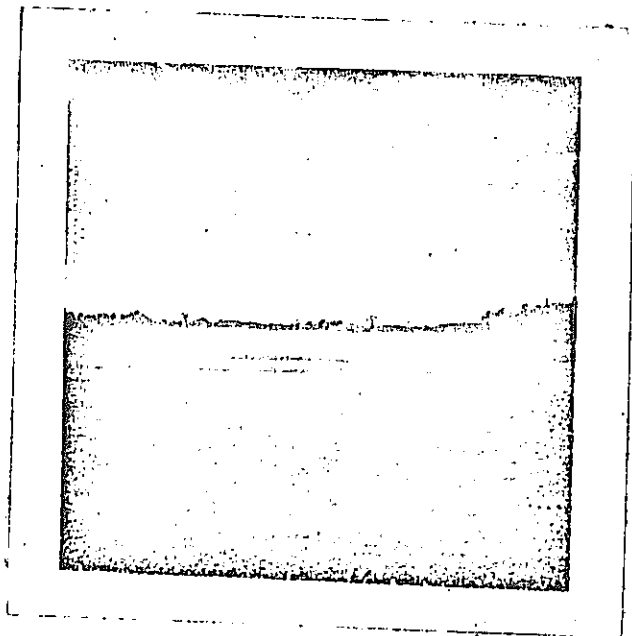


Figure 11

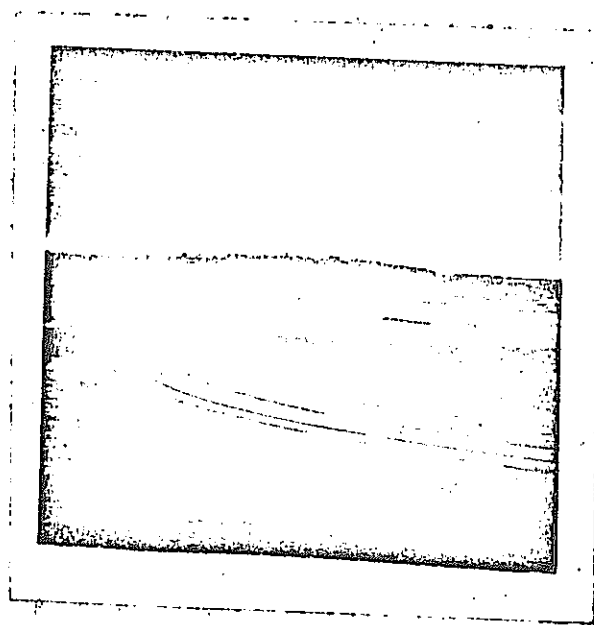


Figure 12

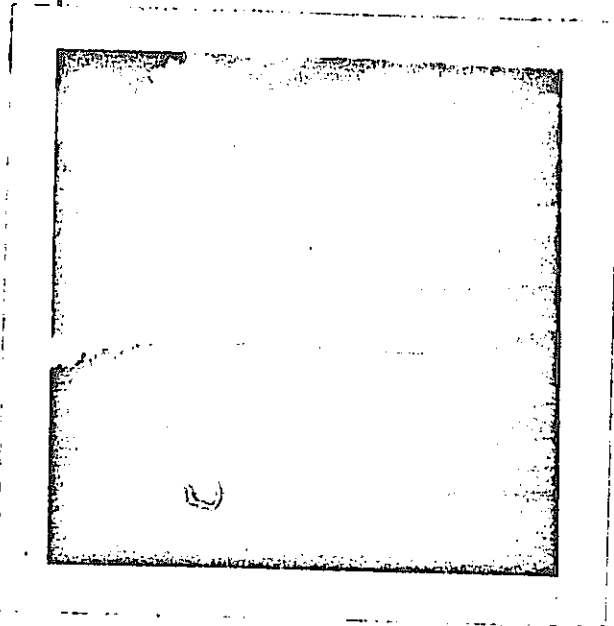


Figure 13

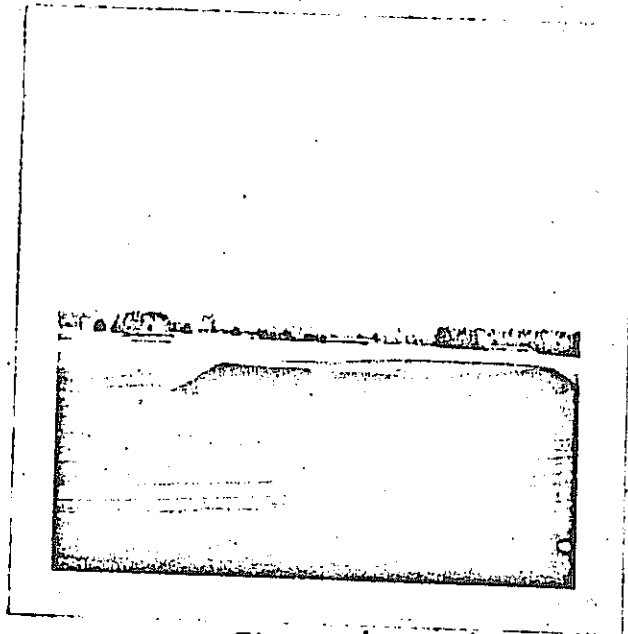


Figure 14

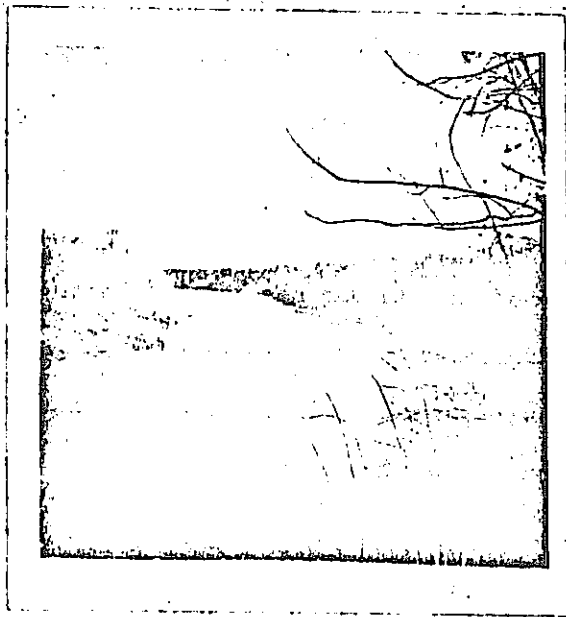


Figure 17

CHAPTER II

POTTERY

Description and Analysis

Introduction

Every archeologist who writes about pottery inevitably comes face-to-face with the concept of type. This has gained such a dominant -- not to say tyrannical -- position in North American archeological theory that it cannot be avoided. Yet in gaining this position it has been given so many different meanings that it has ceased to be an aid to communication and has instead become a hindrance.

The concept of type is evidently a descriptive device, designed to describe in a manner both complete and concise. Like all such devices and especially those emphasizing conciseness, it is inherently arbitrary.

All definitions of type are attempts to minimize or at least allow for this arbitrary quality, and the proliferation of definitions and occasional acrimonious disputes about it result from differing opinions regarding the nature and extent of arbitrariness. The first task in discussing the type concept, therefore, is to specify the ways in which it is arbitrary. I suggest that there are three.

The first is the restriction on cultural reality or the out-

right falsification of it. Our perception of the cultural patterning expressed in prehistoric pottery depends, in the final analysis, upon our own cultural standards. Our unit of description, whether type or mode, does not necessarily correspond to any aboriginal perceptual unit. How closely we think it does correspond is a matter of our philosophic beliefs about cultural relativity and, ultimately, perceptual relativity.

The second kind of arbitrariness is due to the nature of the data and sampling procedures. The data, usually sherds, exhibit only a portion of a possibly complex combination of attributes. The typologist arbitrarily selects what appear to be the most common and consistent combinations and defines these as types. Whether all combinations have been obtained must be judged from the size of the sample. There can be no reasonable doubt for types described on the basis of 10,000 sherds, but many types have been set up from far smaller samples. Types with rim decoration only present another problem, for body sherds must be placed in a residual "plain" category.

The third kind of arbitrariness derives from the continuous variation in standards of behavior and ideas (two views of culture are implied here; ordinarily one emphasizes behavior and excludes ideas or vice versa). Both spatial and temporal continua occur, and a type can be but an arbitrary segment of them.

Archeologists have devised various more or less successful means of coping with the arbitrary quality of the type. The arbitrariness

in regard to cultural reality is an epistemological affair and should be beyond scientific discussion. Both Krieger (1944:278) and Phillips, Ford and Griffin (1951:63-64) are willing to believe that a certain approximation to cultural reality is possible and do not further concern themselves with the question. In his independent writings Ford appears to consider the type (defined essentially in terms of decoration) as a valid indicator of culture change whether or not it reflects actual behavior patterns. Correspondence to cultural reality thus becomes immaterial, but as a result the culture change portrayed is of an extremely general and abstract kind.¹ Spaulding (1960) believes that types which do correspond exactly to the ideas of the prehistoric potters can be established by statistical methods.

The problem of cultural reality seems to have been at the root of Ford's controversy with Spaulding (Ford 1954a, 1954b; Spaulding 1954a, 1954b, 1954c) -- evidence that misgivings over this philosophical sort of arbitrariness still exist. However, I feel that it is the most innocuous of the dangers of the type concept.

The second kind of arbitrariness is methodological. If there are large samples it may be ignored, and if a large number of whole vessels is available (as at Moundville) methodological arbitrariness presents no problem at all. In other words, particular types may suffer from it, but it is not applicable to the type concept in general.

The kind of arbitrariness that results from continuous variation has been emphasized most strongly by Ford (e.g., 1952:328-331; 1954c).

One might object that such a conception, if carried to extremes, reduces Southeastern prehistory to a Heraclitian world of flux. Variation, nevertheless, is a fact -- culture obviously is not static -- and difference of opinion will arise only as to its degree. While the questions of cultural reality and methodological arbitrariness may be safely disregarded, variation cannot. It can be controlled by defining types from a single component of a single site, but they will be completely valid only for that component. Moreover, there is variation within even the smallest component or phase, arising from the idiosyncrasies of individual potters.

By this reasoning, a type definition has two objectives: (1) to define an inferred cultural pattern, (2) to delimit the variation seemingly associated with this pattern. When variations appear to have originated in another pattern, they are summarily assigned to it, and another type is born.

Before proceeding, a brief note about modes and varieties may be advisable. In degree of arbitrariness the concept of mode has little advantage over the type. Since a mode is usually of an extremely simple nature, such as a single design element, it probably approaches a common denominator of cultural reality: a simple element of culture is more likely to be a universal than a complex one. But a mode does not necessarily reflect cultural reality. Although "each mode. . . is a cultural pattern or standard of behavior. . . a community-wide technique, design, or other specification to which the artisans conformed" (Rouse 1939:20). In fact, they are selected so as

to have historical importance (Rouse 1939:12; see also Rouse 1960, where the arbitrary nature of modes does not seem to be so strongly emphasized). Modes are also artificial because prehistoric cultural patterns and behavioral standards can only be inferred from ethnological analogy.

The mode effectively eliminates methodological arbitrariness by analyzing single elements rather than combinations of them. In handling variation, however, it is not so successful. Modal analysis can too readily become fixated on single elements so that they gain an enduring, invariant quality. An illusory sense of concreteness may lead to a neglect of change and variation. In order to avoid this it is necessary to establish an inordinately large number of modes and constantly refer to their interrelations. As an example, engraved diagonal crosshatching and rectangular crosshatching may well have potential historical significance and must be defined as two separate modes. Yet at Moundville both sometimes occur on the same vessel. Obviously here both are individual variants of the basic idea of crosshatching; but to define them as two modes tends to imply that they are separate entities.

In short, the greatest value of modal analysis is its precision and detail. But this very precision leads to an awkward rigidity that is also a major failing of the type. It is certainly no replacement for the type concept (see Ford 1962:16-17).

The variety (Whit and others 1958; Phillips 1959; Gifford 1960) is again no improvement and in fact is somewhat of a disappointment. Upon inspection the variety turns out to be nothing more than a nar-

newly defined type. The "ceramic cluster" (or what is confusingly called the "type") is simply a way of conceptualizing relationships between these narrowly defined types. The "ceramic system" is then a means of expressing relationships between a number of old style (broadly defined) types. In the eastern United States, at least, the idea of variety is not applicable (Phillips 1959). Ceramic systems, for example, may become so large that they have doubtful historical validity (Williams 1962:55-56). In any case, the only advantage that emerges from this terminological reshuffling is that we have a convenient way of referring to relationships between types. Otherwise the present concept of type and that of variety are essentially the same (Ford 1962:16).

To return to the main theme, at the beginning of this chapter I implied that archeologists did not clearly distinguish between the different types of arbitrariness inherent in the type concept. Since variation due to continuous cultural change was seen to be the main problem, I am now going to accuse typologists of unclear thinking in regard to this.

For ceramics, variation occurs through the gradual, continuous selection of elements of manufacture and design. A broad view would theoretically show a continuum of technique, shape, and design throughout a region and through time. This continuum is actually composed of thousands of decisions, made at the level of the individual potters, about which standards or ideas to employ. At a higher level, the imperceptible change of cultural standards also contributes to variation. There are thus two kinds of variation to take into account.

On the level of individual selection, variation also takes two forms. In regard to size and shape a mean dimension or typical shape is selected. Variation then occurs around the mean due, for example, to the expertness of the potter. When standards as to what the ideal mean is change, so does the typical size and shape of the vessel. In both cases variation is continuous.

In regard to design elements and their combination the potter is dealing largely with discrete data. If one element is chosen, a comparable one must be discarded. The simplest decision is between decorating a vessel and not decorating it. Or the decision may be between filling a triangle with parallel lines or with crosshatching. This kind of variation is mutually exclusive or discontinuous.

This means that variations occur in some stages of manufacture as continua, with extremes as polar opposites. In other stages, however, the varying elements are discrete and variation is actually a process of successive exclusion of alternatives. This simple distinction is generally ignored in North American archeology. Reference is made to bottles with high necks and low necks, and to black filmed and plain vessels. There is no difference in the wording of such statements, although bottle neck height varies continuously (because it is based on an ideal dimension) and filming varies discontinuously (because it is based on a choice between two decorative techniques).

I suggest that ceramic variation occurs within the six categories listed in the following paragraphs.

Category of variation I: shape.--Variation in vessel shape can be either continuous or discontinuous. At Moundville beaker-bowls

and broad hemispherical bowls intergrade and are thus polar opposites. Perhaps the cultural standard determining bowl shape was changed during the existence of the Moundville phase, or perhaps there was no clear-cut, "emic" cultural distinction between the two shapes. Bowls, however, form no continuum with bottles, since these were independent, non-comparable shapes.

Category of variation 2: size.--All dimensions of a vessel vary widely and continuously around an abstract central tendency which is our mathematical model for the inferred cultural ideal. Large jars and small jars are obviously polar opposites. Size has a close relation to shape. For example, lip diameter of jars and bottles have separate means and variances since the two shapes had different functions. Size is not comparable.

Category of variation 3: technique of manufacture.-- This includes the qualities of paste, temper, surface finish, slipping, etc. Theoretically discontinuous, technique of manufacture tends to be invariant over large areas for long periods. It is not a sensitive indicator of culture change.

Category of variation 4: selection of design elements.-- Since design elements are discrete, this variable is discontinuous. However, an element varies continuously in size -- the width of an incised line, for example. Selection can be made only between equivalent elements, that is, those which occupy analogous positions in the total decorative pattern. If triangles and festoons pendant from the rim were both in the ceramic "repertory", they would be equivalent and mutually exclusive selection could be made between

them. But a π triangle is evidently not equivalent to a concentric circle on the vessel shoulder. Thus, taken as a pair, these two elements do not contribute to variation.

Category of variation 5: combination of selected elements.--

The preference for single design elements and combinations can be ascertained simply by counting the elements in a sample of whole vessels. Most present types are based upon this category. Variation presumably occurs because of change in cultural artistic standards.

Category of variation 6: total design.-- Total design refers to the general pattern of decoration. It describes aspects such as area covered, repetition of like elements, and symmetry. In some ways it varies discontinuously (e.g. an element may be symmetrical or asymmetrical), in other ways continuously (e.g., decoration may extend over the entire vessel or be confined to a limited area). Judging from the total design on Moundville vessels, the individual was allowed considerable liberty, with the result that there is a broad Moundville style rather than a definite pattern.

These categories of variation should be recognizable as the headings of any standard type description. This describes size, shape, technique, the elements of the design, and the way they are arranged. The difference is that a type is a vertically structured concept. It is composed of arbitrary segments of the categories of variation. These, however, are horizontally structured and can be used to follow ceramic variation through a region or through time. The type cannot follow such variation; in fact, it tends to fragment it. A continuous process of change must be conceptualized as composed of several types.

Despite its shortcomings, the type will always be with us, and we must learn to live with it. But we do not have to make it the central concept in ceramic analysis and relegate variation to a secondary position. In this paper I am going to reverse things completely. The basic synthetic concept will be the category of variation, and Moundville pottery will be discussed under the six headings listed above. However, I have also informally defined seven types. These will be mentioned when discussing each category of variation, but only as subsidiary concepts, marking merely transitory and arbitrary foci in a continuum. If I could, I would also use categories of variation to relate Moundville pottery to that of other regions. Unfortunately, the present inadequate knowledge of North American prehistory makes it impossible fully to trace categories of variations across the Southeast. The type concept still must be used. As knowledge increases the type will eventually become obsolete. Then, perhaps, pottery descriptions may be written without lengthy theoretical prologues.

Moundville Pottery Types

There are seven pottery types, five previously described and two defined for the first time in this paper.

Warrior Plain (DeJarnette and Wimberly 1941:82-83). A shell tempered plain utility ware, comparatively crudely made. Temper particles are large and angular; paste is contorted. Color of core is usually gray, surface color ranges from dark to light gray, buff, and rarely to salmon-pink shades. Forms are standard Mississippi jars, bowls and plates.

Moundville Incised (DeJarnette and Wimberly 1941:83; Heimlich 1952:24-25. This will be abbreviated hereafter as "MI"). Warrior Plain plus incised decoration. Decoration occurs only on jar shoulders. A one, 2, or 3 line continuous arch is most common, sometimes with short parallel lines extending at right angles to the arched line; also chevrons composed of parallel lines, line-filled triangles, and groups of parallel lines. See Fig. 28.

Moundville Black Filmed (DeJarnette and Wimberly 1941:83-84 -- "Moundville Filmed"; Heimlich 1952:29-32. To be abbreviated as "MBF"). Shell tempered with fine temper and paste. Exterior of deep vessels and both sides of shallow ones is entirely covered with a thin, black, organic-based wash. This was applied after initial firing and the vessel was refired after application. Surface is often highly polished and never decorated. Bottles are the most common form; shallow hemispherical bowls and beaker-bowls, often filled with rim effigies, are also common. The open bowls usually have notched lips or a notched fillet added just below the lip on the exterior.

Moundville Filmed Incised (DeJarnette and Wimberly 1941:84. "MFI" hereafter). MBF plus incising. Decoration is varied, consisting of concentric circles, multi-line meanders and interlocked scrolls, crosshatching, parallel lines encircling the vessel below the rim, line-filled triangles, and simple Southeastern Ceremonial Complex symbols. Incising is usually broad. Forms are open bowls, sometimes with rim effigies, bottles, and jars in descending order of frequency. See Figs. 25-27.

Moundville Filmed Engraved (Not formally described. To be abbreviated as "MFE"). Engraving on black filming. It definitely was done after painting (and therefore after the first firing). Decoration is basically composed of variations on complex multi-line meanders and interlocked scrolls surrounded by or enclosing crosshatched areas. Concentric circles and overlapping arcs also occur. On small bowls 3 to 7 parallel lines often encircle the vessel below the rim, sometimes developing into paired festoons. Over half the MFE whole-vessel specimens are bottles, the remainder being bowls and beaker bowls. Effigies occur frequently, and the Southeastern Ceremonial Complex reached its highest artistic expression at Moundville on MFE bottles. See Figs. 21-23.

Moundville Engraved Indented (new type, abbreviated "MEI"). This consists of MFE designs, commonly multi-line arcs or meanders, combined with smooth oval indentations slightly larger than a thumbprint. There are frequently only 2 pairs on the vessel body, although there are occasionally more. Exclusively found on bottles. See Figs. 48-49.

Moundville Indented (new type, abbreviated "MInd"). Indentations without engraving on MBF. Bottles exclusively. See Figs. 46-47.

The only other type possibly manufactured at Moundville is red filmed. The color is fairly intense and rather light. Hemispherical bowls were apparently the only form.

Categories of Ceramic Variation

Category of variation 1: shape.--A sample of 404 whole vessels was

available for determination of shape. The majority were associated with burials, so that the sample is definitely not random. Utilitarian cooking jars, for example, were rare, though in actuality they must have been the most common vessel.

There are three basic vessel forms, which do not intergrade: (1) "standard Mississippi jar" (Phillips, Ford and Griffin 1951:105); (2) bottle; (3) bowl. In addition a number of specialized forms are present, usually recognizable derivations from the basic forms.

Of 339 vessels (omitting specialized forms) 42 or 12.4% are standard Mississippi jar forms. The jar varies the least in shape of all the vessel forms, not only at Moundville but in the entire area of Mississippian culture. As an exclusively utilitarian vessel, probably used primarily for boiling liquids (Linton 1944:370), it was subject to little artistic elaboration.

The jar typically has a horizontally flattened globular body with a rounded base, a vaguely defined shoulder, constricted neck, and short, recurved or flaring rim. Strap handles are almost always attached, extending from the upper body to the lip. Paired groups of 2 or 4 are most common, but one vessel has 10 pairs (Fig 67). One to 3 small nodes frequently decorate the handle.

The major variation is in body shape, which may be quite flattened or almost globular, and in the rim, which may be low and rudimentary or have a pronounced flare. Figs. 29, 30, and 66 illustrate whole jars and handles.

Of 42 jars, 25 (59.5%) are plain, 11 (26.2%) are MBF, and 6 (14.3%) are MFI. The other types never include jar forms.

Of the 339 vessels in the sample, 119 (35.2%) are bowls. This form may be viewed as a continuum in which the diameter-at-lip/height ratio steadily increases. At one pole are the forms Willey alliteratively called "beaker-bowls" (1949:500). They frequently are supplied with rim effigy heads, mostly stylized birds, and a flat, horizontal tail extending from the lip opposite. Sometimes the head is omitted and the tail alone remains, as if it were a little handle.

Fig. 1. Gradual increase in lip diameter and the diameter-at-lip/ height ratio produces hemispherical bowls, often with an encircling notched rim fillet. With the addition of head and tail appendages, these are transformed into effigies, commonly fish.

Fig. 2. As bowls become shallower, they resemble "soup plates". Only 2 whole plates (distinguished from the "soup plate" by its thickened rim) were found in the collections (Fig. 61). The extremely wide "soup plate" bowl is at the opposite pole of the straight-sided beaker-bowl.

Fig. 3. Variation in bowl shape is shown in Figs. 35, 36, 39, 40. Clearly the terms beaker-bowl, hemispherical bowl, soup plate, etc. are simply descriptions of tendencies toward a fixed shape. They are linguistic conveniences to describe continuous variation and in precise usage should be qualified.

Of the 119 bowls in the sample, 49 (41.3%) are MBF, 29 (24.3%) are MFE, 21 (17.7%) are plain, and 20 (16.8%) are MFI. The engraved bowls are mostly beaker-bowls. This is because the sides of the hemispherical bowls are too low to allow exterior engraving to be seen (interior engraving was not practiced at Moundville.)

The bottle is the most common form found in the sample -- 178 out of a total of 339 (52.4%). Most were found associated with burials and apparently were for ceremonial use. The preponderance of bottles can also be credited to Moore's esthetic values; about two-thirds of the vessels he left for posterity were bottles.

Bottles vary greatly in shape, though not as much as bowls. The body is flattened-globular, varying from elongate (pear-shaped) to virtually triangular in cross-section. The latter is formed by a low, sharp shoulder. The range of forms is shown in Figs. 32-53.

The base tends to be flat -- much more so than on jars. On elongate and shouldered bottles a low, hollow pedestal frequently forms the base. This is usually less than 10 mm. high, ranging up to 15-20 mm.

The neck is sharply demarcated from the body on globular and shouldered specimens. In some examples this is so pronounced that a flat area rings the neck (Fig. 51). Elongate bottles have a more gradual neck-body junction. The neck is straight and vertical, slightly flared, or recurved, with a flat, unthickened lip.

Eighty-nine (50.0%) of the 178 bottles are MFE, 55 (30.9%) are MBF, 24 (13.5%) are MEI and MInd and 10 (5.6%) are MFI. Several of the MBF bottles may be plain with accidental smudging.

There are a number of classes of specialized forms -- 65 vessels in all -- most of which are derived from one of the 3 basic forms.

Seed jars (seed bowls) are similar to the Southwestern form (Fig. 81).

Of 7 specimens, 5 are MBF, one MI, and one plain. Heights range from 50-178 mm., maximum diameters from 123 to 278 mm.

Pedestalled bowls are similar to Plaquemine and Wooden Island forms. The 2 specimens at Moundville are MFE (one is pictured in Moore 1907:Fig. 15).

Barrel-shaped vessels are large, flat-bottomed, straight-sided beakers. One MBF specimen is 186 mm. high and 172 mm. wide at the lip (Fig. 82). There are 2 examples at Moundville.

Composite-silhouette bowls are hemispherical with an added flaring rim (Figs. 62-65). These are sometimes called "casuela bowls" and bear some resemblance to the Caddoan carinated bowl. Several specimens, varying in rim height and degree of flare, occur at Moundville.

Cylindrical bottles (Moore 1905:Fig. 52) are represented by one MFE and one MBI example.

The 2 lobed bottles are pictured in Figs. 83-84.

There is one square bottle, a curious specimen which is black filmed and incised. As far as I know it is unique. Unfortunately it is about three-quarters reconstructed.(Fig. 86).

The single three-necked bottle (Fig. 85) seems to be a variant of the stirrup-spout bottle. The base is slightly off-center, so that when placed on a flat surface the vessel tilts backward. Type is MBF.

The sole tripod bottle, a rather crude plain (possibly black filmed) specimen; is pictured in Moore (1905: Fig.172).

Composite vessels are a sub-category of the specialized forms. They should be distinguished from the composite-silhouette bowl, which is a single form. Composite vessels are characterized by the combination of two basic forms in a single vessel. Those found at Moundville are described below:

Bottle in jar (Moore 1905:Fig.72; this paper, Figs. 91-92).

The bottle neck appears to have been added to a jar with a flared rim.

Jar in bowl (?) (Fig. 89). This MBF vessel has elements of the jar, bowl and bottle.

Rectangular double bowl (Fig. 87). This is a fake composite vessel, for it is actually a rectangular single bowl with an added central partition to make it appear double. The exterior is neatly grooved to simulate the junction.

Double hemispherical bowl (Fig. 88, center).

Finally, there are some eccentric forms that do not fit into any category. These are as follows:

Conical vessel. Two examples, shown in Moore 1905:Figs. 25, 173.

Types are MBF and MFE respectively.

Castellated form (Moore 1907a:Fig. 22; this paper, Fig. 90).

These two MBF vessels are reminiscent of the Southwest.

"Scoop" vessels (Moore 1905:Figs. 76, 135). This rather inappropriate name refers to a small bowl with a section of one side lowered, so that it resembles a cup with a piece broken from the rim. The 4 examples are MBF.

Another kind of ceramic specialization is the effigy. The varieties of rim effigies and effigy vessels in the Moundville phase are illustrated in Figs. 68-80 and summarized in Tables 1 and 2. All are appended to, or elaborations of, the bowl, with the exception of 3 bottles: one human, one frog, and one blank-faced effigy. The bird and human head rim effigies are stylized, and the fish vessels are simply hemispherical

bowls with clay fillets on or near the rim forming the head, tail and fins. Frogs and shells, however, are quite carefully modelled.

TABLE 1.--Rim effigies arranged according to types.

Effigy	Pottery Type						Total
	MBF	MFE	MEI	MFI	MI	Plain	
Bird	6	4	0	2	2	0	14
Human head	5	0	0	0	0	0	5
Alligator	1	0	0	0	0	0	1
Unident. animal	1	0	0	1	0	0	2
Total	13	4	0	3	2	0	22

TABLE 2.--Effigy vessels arranged according to types. There are no MFE, MEI, MFI or MI.

Effigy	Pottery Type		
	MBF	Plain	Total
Fish	8	2	10
Frog	4	1	5
Shell	4	1	5
Human	3	0	3
Unident. animal	1	0	1
Bat	1	0	1
Blank-faced	0	1	1
Turtle	0	1	1
Total	21	7	28

Category of variation 2: size.--Size and shape are obviously interrelated: for example, if the neck diameter of a bottle equalled the maximum body diameter, it could hardly be called a bottle but would have changed into a sort of bowl. For this reason variation in size is discussed under the headings of the 3 basic forms, jar, bowl and bottle.

Table 3 presents metrical data on a sample of 339 vessels, the same sample that was used in the analysis of shape.² Although 405 vessels were actually present, some had to be omitted because they were specialized forms or were broken and poorly reconstructed. This sample, although emphasizing non-utilitarian vessels, probably encompasses all extremes of variation.

Measurements were made with sliding and spreading calipers. An error of ± 3 mm. should be expected due to surface irregularities and misjudgement on my part. The measurements are defined as follows:

Height (H)	maximum height from lip to base.
Height of body (Hb)	maximum height from neck-body junction to base (applicable to bottles only).
Height of neck (Hn)	maximum height from lip to neck-body junction (applicable to bottles only).
Maximum diameter (Dm)	diameter across widest part of body. On bowls this is equivalent to diameter at lip.
Diameter at lip (Dl)	external diameter of orifice.
Diameter at neck (Dn)	maximum diameter at neck-body junction. Not applicable to bowls.
Length of rim (Lr)	maximum length from lip to junction with body. Applicable to jars only.

In Table 3, V refers to the coefficient of variability (or variation). It is a measure of relative variability, and, expressed as a percentage, is defined as: $V = \frac{100s}{\bar{x}}$ (Moroney 1956:64).

Figs. 18-20 show the distribution of each dimension. Chi-square tests, using the 5% significance level, were made to determine if the distributions differed significantly from normality. Height of bottles is significant at .02, maximum diameter of bottles at .05, height of bowls at .02, and maximum diameter of bowls at .01. Lip diameter of jars is also obviously highly skewed. Tests were not significant for

TABLE 3.--Means, standard deviations, and coefficients of variability of vessel dimensions, arranged by form and type.

Table 3A.--Jars.

Dimensions	Total Sample (N=42)			Moundville Black Filmed (N=11)			Moundville Filmed Incised (N=6)			Plain (N=25)		
	\bar{X}	s	V	\bar{X}	s	V	\bar{X}	s	V	\bar{X}	s	V
H	106.90	22.08	20.7	106.45	22.20	20.8	112.33	13.35	19.0	105.80	23.47	22.2
Dm	139.33	23.59	16.9	135.73	18.97	13.0	151.17	11.65	7.8	135.68	25.70	19.2
D1	121.74	20.18	16.6	122.73	16.59	13.5	126.17	9.04	7.1	120.24	23.16	19.1
Dn	116.59	18.64	16.2	122.91	14.88	12.2	125.33	9.59	7.7	111.72	20.42	18.3
Lr	21.50	7.64	35.4	24.09	7.30	30.2	21.00	7.90	37.6	20.48	7.45	30.0

Table 3B.--Bowls

Dimensions	Total Sample (N=119)			Moundville Black Filmed (N=49)			Moundville Filmed Engraved (N=29)			Moundville Filmed Incised (N=20)			Plain (N=21)		
	\bar{X}	s	V	\bar{X}	s	V	\bar{X}	s	V	\bar{X}	s	V	\bar{X}	s	V
H	71.17	23.85	32.2	76.94	25.48	30.9	71.41	13.04	18.0	76.10	25.89	34.0	52.67	14.37	27.3
Dm	159.92	43.19	30.8	161.86	47.51	29.4	124.55	41.25	33.1	131.13	21.43	16.4	118.29	27.78	23.4

Table 3C.--Bottles.

Dimensions	Total Sample (N=178)			Moundville Black Filmed (N=55)			Moundville Filmed Engraved (N=89)			Moundville Engr. Incised (N=24)			Moundville Filmed Incised (N=10)		
	\bar{X}	s	V	\bar{X}	s	V	\bar{X}	s	V	\bar{X}	s	V	\bar{X}	s	V
H	137.85	31.13	22.6	136.55	33.81	24.8	135.20	24.92	21.4	247.67	31.34	20.6	145.00	28.28	19.5
Dm	145.49	32.11	22.1	137.73	32.27	23.4	136.89	31.43	21.4	151.71	30.61	20.2	160.80	30.25	18.2
D1	80.88	17.20	19.4	74.60	19.44	26.1	82.46	15.29	18.5	87.33	16.55	19.0	85.80	9.27	10.6
Hb	92.80	24.82	24.8	92.71	26.85	29.9	91.03	23.40	25.8	96.87	25.46	26.4	93.40	21.55	21.6
Dn	44.21	9.08	20.4	42.53	10.75	25.7	44.49	7.95	17.9	46.42	8.30	18.0	43.60	6.69	18.9

Notes:

*Distribution significantly different from normal.

\bar{X} and s are measured in millimeters; V is a percentage.

FIGURE 18: Size Distribution: Jars

NOTE: EXTREME VALUES IN FIGS. 18a, b, c AND d HAVE NOT BEEN DIAGRAMMED IN ORDER TO SAVE SPACE. A NOTATION OF THE RANGE HAS BEEN INCLUDED WITH EACH FIGURE.

FIGURE 18a: HEIGHT DISTRIBUTION: JARS

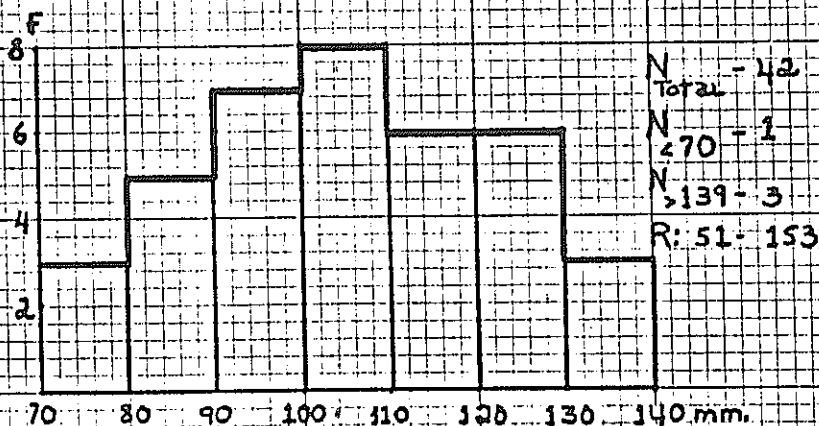


FIGURE 18b: DISTRIBUTION OF MAXIMUM DIAMETER: JARS

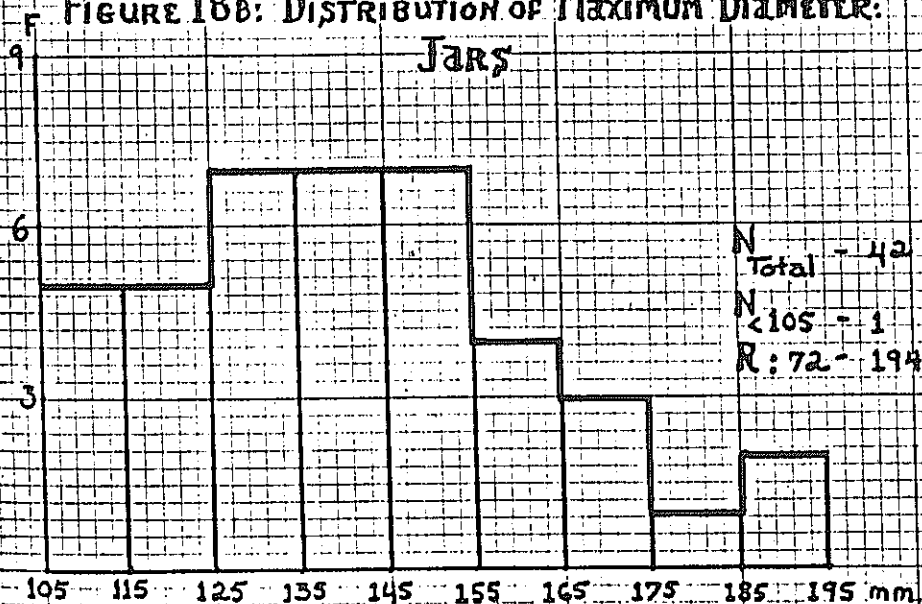


FIGURE 18c:
DISTRIBUTION OF DIAMETER AT NECK: Jars

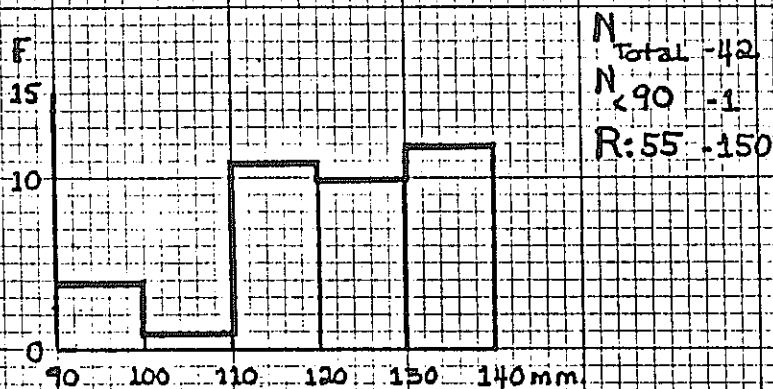


FIGURE 18d:
DISTRIBUTION OF DIAMETER AT LIP: Jars

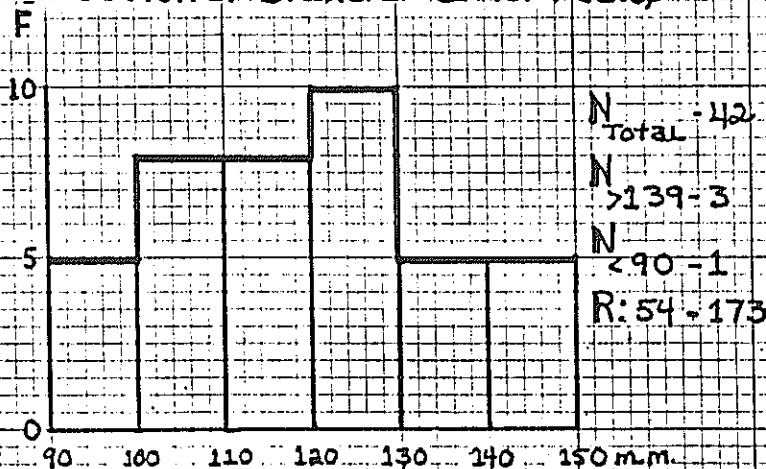


FIGURE 18E:
DISTRIBUTION OF RIM LENGTH: JARS

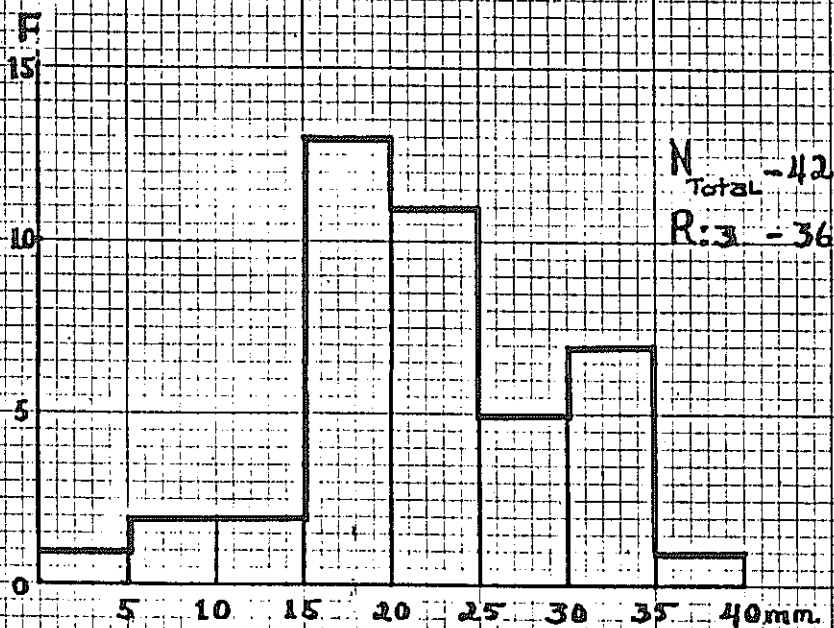


Figure 19:

Size Distribution: Bowls

Figure 19a:

Height Distribution: Bowls

F

62

N-119

R:21-145

30

25

20

15

10

5

20

30

40

50

60

70

80

90

100

110

120

130

140

150 mm

160

170

180

190

200

210

220

230

240

250

260

270

280

290

300

310

320

330

340

350

360

370

380

390

400

410

420

430

440

450

460

470

480

490

500

510

520

530

540

550

560

570

580

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630

640

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660

670

680

690

700

710

720

730

740

750

760

770

780

790

800

810

820

830

840

850

860

870

880

890

900

910

920

930

940

950

960

970

980

990

1000

1010

1020

1030

1040

1050

1060

1070

1080

1090

1100

1110

1120

1130

1140

1150

1160

1170

1180

1190

1200

1210

1220

1230

1240

1250

1260

1270

1280

1290

1300

1310

1320

1330

1340

1350

1360

1370

1380

1390

1400

1410

1420

1430

1440

1450

1460

1470

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1490

1500

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1520

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1930

1940

1950

1960

1970

1980

1990

2000

2010

2020

2030

2040

2050

2060

2070

2080

2090

2100

2110

2120

2130

2140

2150

2160

2170

2180

2190

2200

2210

2220

2230

2240

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2800

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2890

2900

2910

2920

2930

2940

2950

2960

2970

2980

2990

3000

3010

3020

3030

3040

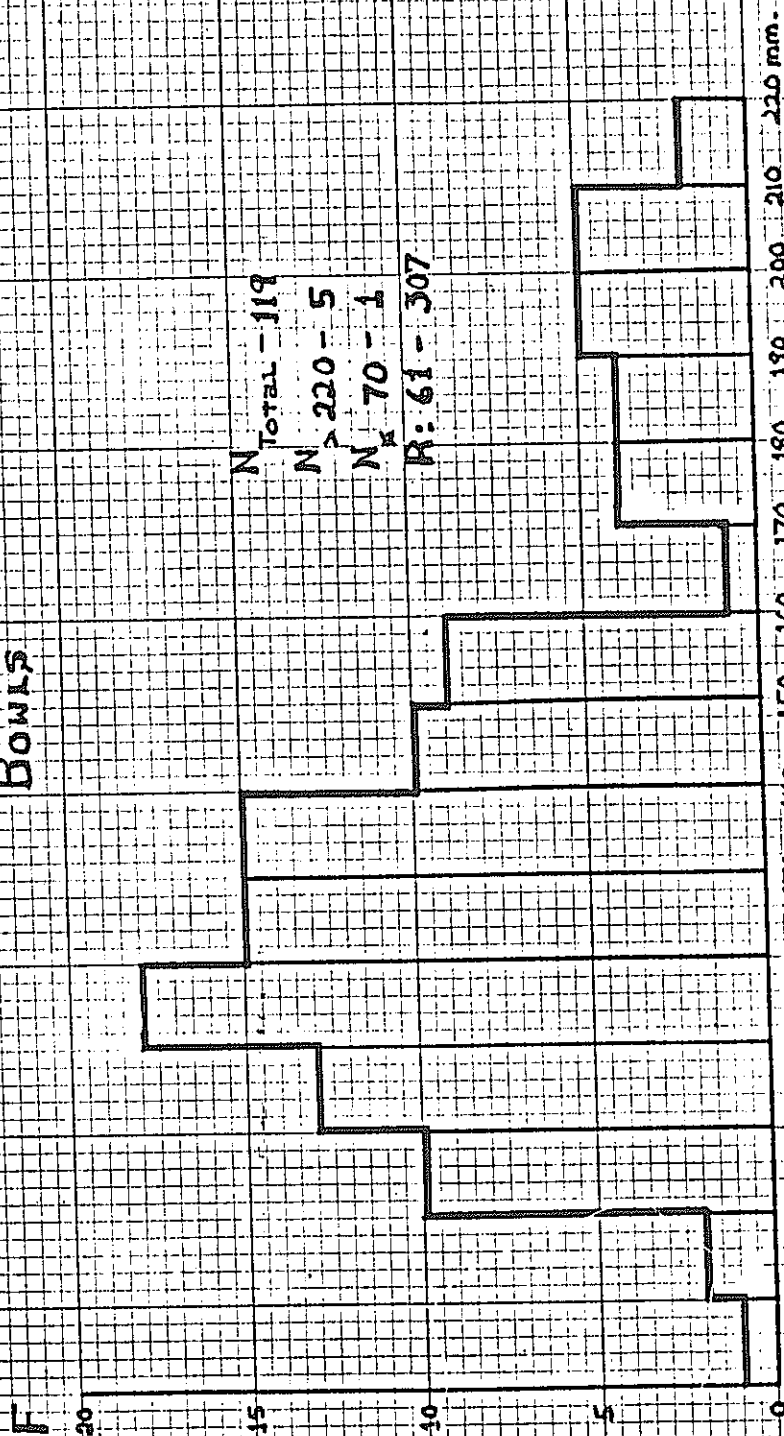
3050

3060

FIGURE 19B:

DISTRIBUTION OF MAXIMUM DIAMETER:

BOWLS



$N_{\text{Total}} = 119$

$N_{>220} = 5$

$N_{<70} = 1$

$R = 61 - 307$

Figure 20a:
HEIGHT DISTRIBUTION: BOTTLES

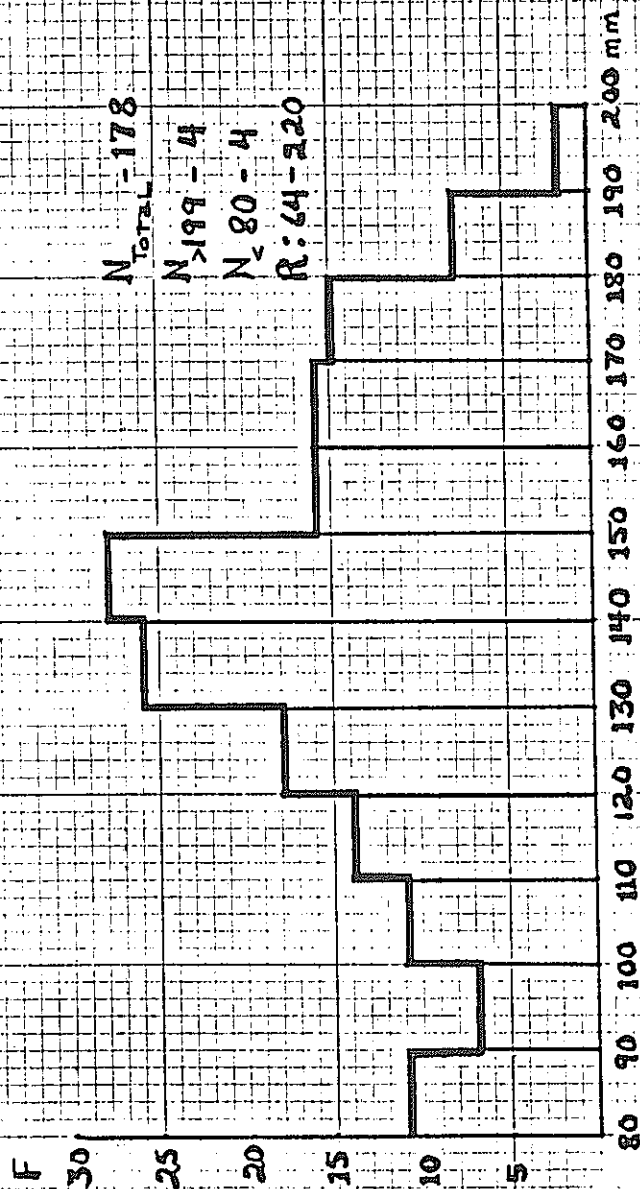


FIGURE 20B:

DISTRIBUTION OF MAXIMUM DIAMETER: BOTTLES

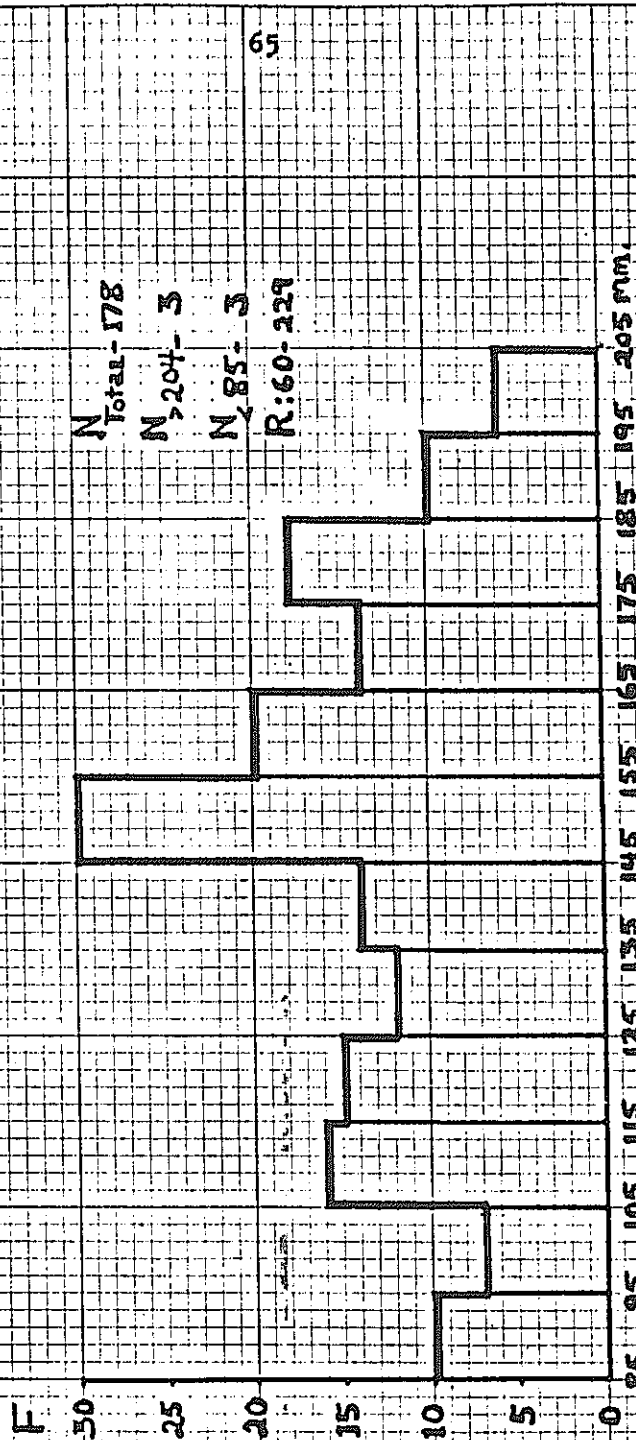


Figure 20c:
Distribution of Body Height: Bottles

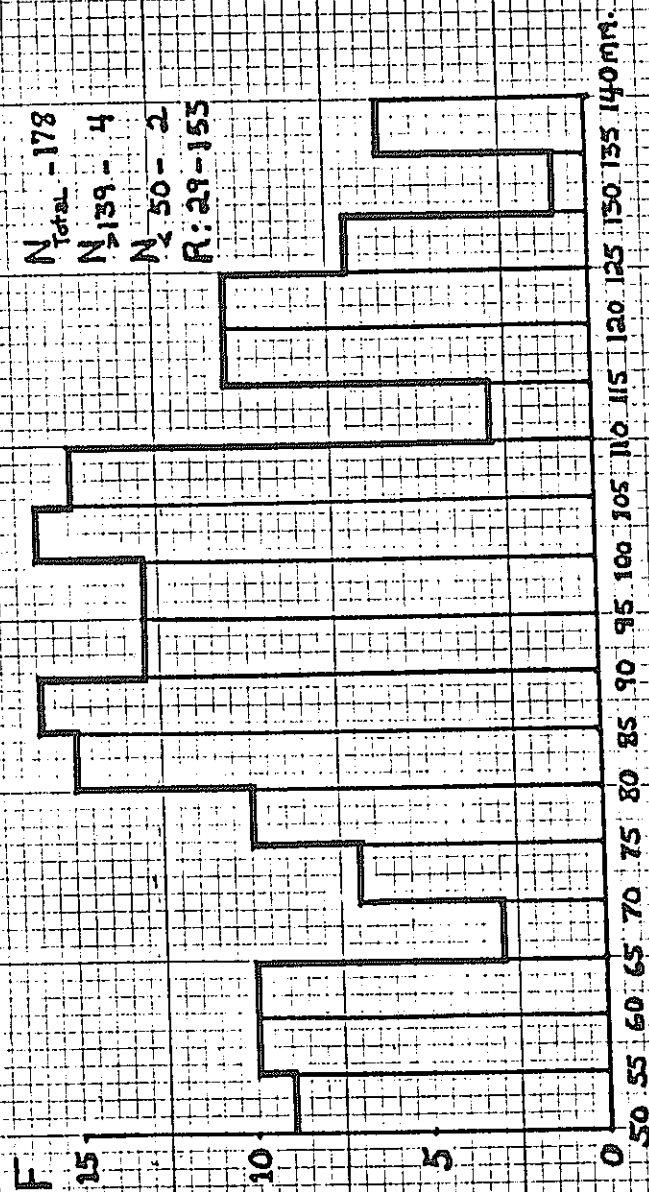


FIGURE 20D:

DISTRIBUTION OF NECK HEIGHT:

BOTTLES

F

40

35

30

25

20

15

10

5

0

mm.

75

70

65

60

55

50

45

40

35

30

25

20

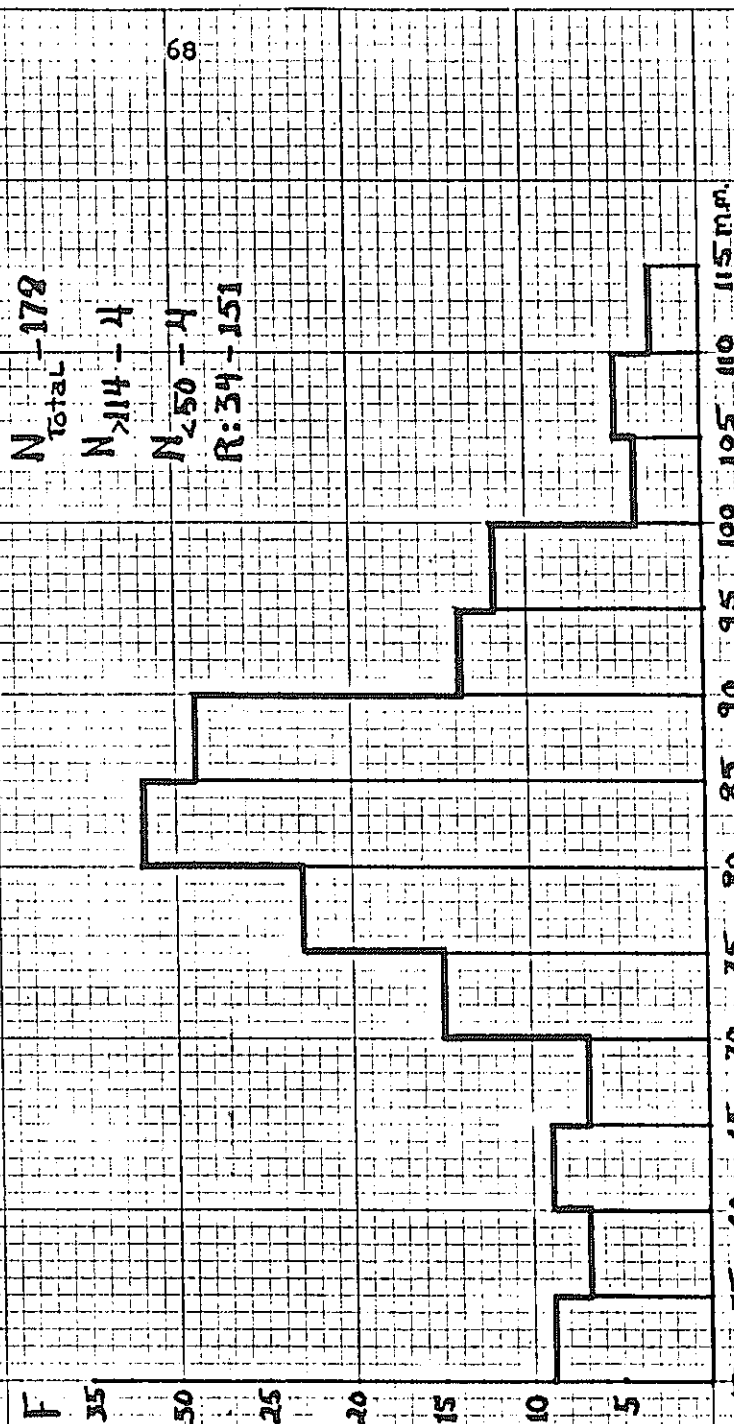
15

N = 178

R = 15 - 73

FIGURE 20E.

DISTRIBUTION OF LIP DIAMETER: BOTTLES



the other dimensions.

271. Within each of the 3 forms, analysis of variance tests were made to determine if significant size differences existed between the types. If the test for any dimension indicates that differences do exist, the type can be said to influence size.

286) Turning first to jars, (Table 3a), the analysis of variance tests between the 3 types produced the following results:

Height H	F=0.20
Dm	F=1.91
Types, D1	F=0.21
Dn	F=2.17
Lr	F=0.84

287) With 2 and 39 degrees of freedom F must equal or exceed 3.23 to be significant at the 5% level. Obviously jar size was not influenced by type.

288) The coefficient of variability of jars is somewhat smaller than that of bottles and bowls, with the exception of rim length. This high variability is possibly due to measurement errors, for it was often difficult to locate the neck precisely.

Distributions of H, Dm, and Dn (Fig. 18 a, b, d) probably do not differ significantly from normality. The skewed distribution of D1 (Fig. 18c) is probably a reflection of general sizes: lip diameter of less than 100 mm. would occur only on very small jars. There were too few class intervals to test the distribution of Lr (Fig. 18e), but it seems to approach normality.

Considering bowls next (Table 3b), we have 2 dimensions and 4 types. In the analysis of variance tests, the MFE sample was inadvertently omitted and the error realized only after the total output had been re-

turned. It is probably safe to include MFE bowl height with MBF and MFI, and MFE bowl diameter with MFI and plain.

F ratios for the MBF, MFI, and plain groups were highly significant: $F=8.43$ for H, $F=10.75$ for Dm. At the 1% significance level, F must equal or exceed 3.07. In ^{the} case of height Scheffé's test (McNemar 1962: 286) indicates that MBF and MFI (and presumably MFE, had it been included) can be separated as one group from plain. For diameter, Scheffé's test locates the difference between MBF and the other 3 types.

In other words, plain bowls were significantly lower in height than the remaining 3 types (which do not differ among themselves), and MBF bowls are significantly wider than the other types.

This apparent discrepancy occurs because the plain sample includes the smallest bowls of the entire sample -- shallow, miniature specimens -- while MBF bowls, particularly hemispherical and "soup plate" forms, are quite large. The only meaningful conclusion is that large bowls tended to be black filmed while smaller bowls were left plain.

In general, bowls show great variation in size, with coefficients of variability over 25%. Both the H and the Dm distributions are positively skewed (Fig. 19a, b). In both distributions the right-hand tail represents a few unusually large specimens, low in relation to their width but having high absolute values in both dimensions. This would include very shallow bowls and plate-like forms.

Dimensions of the large sample of bottles is shown in Table 3c. The analysis of variance tests for each dimension produced the following F ratios:

H	F=1.22
Hb	F=0.59
Hn	F=1.21
Dm	F=2.22
Dl	F=4.30

With 3 and 179 degrees of freedom, F must equal or exceed 2.66 at the 5% level of significance. Thus size differences are probably significant only in the Dl dimension.

Applying Scheffé's test, this difference can be specifically located between the MBF sample ($\bar{X}=74.60$) and the MFE-MEI-MFI group (combined $\bar{X}=83.64$). No ready explanation for this difference presents itself other than that it falls between the decorated and undecorated types. Since the difference is only 9 mm., it is hard to believe that the Moundville potters actually would have made such a minute distinction. I think that this is an example of a Type I error.

The fact that 3 of the 5 dimensions are normally distributed (Fig. 20a-e) implies that despite the large variation there was a definite ideal to be emulated. Lack of normality in height distribution seems to have been caused by the presence of a number of low, squat miniatures and also to a series of about 45 in the 150-180 mm. range (Fig. 20a). The maximum diameter distribution is skewed because of a number of elongate forms having relatively small diameters.

A glance at Table 3c will show that bottles are surprisingly small. Most can be held in one hand. However, the standard deviation is large and variation is extreme. There is actually a wide range of all dimensions, including some miniatures that are sometimes identified as toys. On the other hand, some bottles have large bodies and quite long necks.

In summary, variability in size closely follows variability in shape. Bowls, which have a considerable range of measurements, also vary the most in shape. Jars are uniform both in size and shape.

The analysis of variance tests indicate that there is little relation between size and type. Evidently a vessel of any size was eligible to receive any combination of decoration.

While the range of all dimensions is considerable, and variability is relatively high, it must be remembered that measurements are in millimeters. In most cases the majority of vessel dimensions can be included within a range of from 4 to 8 cm. Much of the variation would hardly be noticed if measuring instruments were not available. Since this sample includes vessels throughout the time range of the Moundville phase and also the products of many different potters, each with her own idiosyncrasies, the variation is surprisingly (and encouragingly) small. It is much easier to characterize briefly the size of Moundville pottery than the shape. Perhaps the relative uniformity indicates that esthetic experiment was permitted on shape but not on size.

Category of variation 3: technique of manufacture.--This category includes construction technique, kind of paste, thickness of vessel walls, and the process of black filming.

Construction. Sherds broken along coil junctures show that coiling was the technique of construction. On plain vessels rough striations are often apparent on the interior and occasionally on the exterior, as if they had been crudely smoothed or scraped. MBF, MFB, MEI, and MFI sherds are polished. Some retain even now a remarkably high gloss,

and when new the vessels must have been extremely lustrous.

Paste. The texture of the clay varies from fine and homogeneous in MBF, MFE and MEI bottles to coarse and contorted in large plain jars. Temper is exclusively shell; angular particles one to 5 mm. in greatest dimension. Larger vessels have larger fragments, and jars and plates seem to have a higher proportion of temper than small bowls and bottles.

Surface color. This varies greatly. Probably the modal color could be called light gray. However, a few quite dark gray sherds and some buff to salmon-pink to almost brick-red sherds are found. The color of the core is usually the same gray as that of the surface, but it is occasionally buff or pink on sherds with these surface colors.

Thickness. A sample of 48 MI sherds has a mean of 6.6 mm. with a range of 4-11 mm. No plain sherds were measured, but they should be similar to this sample.

Ninety-four MFE sherds have a mean of 5.3 mm. and a range of 3-8 mm. MEI sherds should be similar to this.

The mean of 93 MFI sherds is 5.8 mm. with a range of 3-10 mm. MBF sherds were not measured but should be the same.

Ninety-one red filmed sherds have a mean of 5.3 mm. and a range of 3-8 mm.

No hardness tests were made because the appropriate mineral specimens were not available.³ DeJarnette and Wimberly (1941:82) found that weathered sherds from the Bessemer Site had a hardness of less than one but that better preserved sherds were "noticeably harder".

Filming. In Wimberly's sample of 97,561 shell tempered sherds

on the roadway excavation (1956:19; Fig. 9, this paper), 94,690 are Moundville phase types. Of these, 11,067 are black filmed. There are a few red and white filmed and negative painted sherds, none of which are definitely indigenous.

In regard to the black filmed sherds, I will summarize the results of Matson's experiments of locally-made black filmed sherds from the Moundville Basin (Heimlich 1952:29-31).

An examination of a group of Moundville Black Filmed sherds showed that several of them had an oxidized gray core buff to salmon in color, while other pieces with gray cores had an oxidized area at one or both surfaces. Upon these surfaces themselves, covering this light area, appeared the black film. That this film could not have been produced while the vessels were being fired was indicated by the oxidized region just beneath it. When the sherds were refired in the laboratory the black very quickly disappeared, leaving the surface approximately the same color as the body.

It would be possible to obtain such a black surfacing either by using a slip containing iron which when fired under reducing conditions would produce a black iron oxide coating, or by applying an organic paint that in a reducing atmosphere would carbonize. A series of fragments broken from several sherds were refired in an electric furnace under oxidizing conditions to 700°C. The black color quickly disappeared and the resultant surface colors were but slightly deeper than those of the oxidized bodies. If iron had been present as a slip the surfaces would probably have become quite red. After refiring, the polished surfaces were still as glossy as before. Thin sections of the sherds studied ...gave no indication that there was a slip present except in one instance that was also obvious megascopically. Instead the black color penetrated into the body to a depth of about 0.15 mm. with no clear cut boundary line....

On none of the sherds examined was any evidence of paint strokes seen. Several had burnishing marks which remained just as clear after the sherds had been refired in an oxidizing atmosphere as they were before....

It would appear that the Moundville Black Filmed pottery was burnished when dry and was fired with no attempt being made to retain a smoky reducing atmosphere. Sometimes the body wall was well oxidized, but frequently the temperature and time were not sufficient to completely burn out the carbon in the core, although usually that near the surface was removed. After firing, an organic paint of some type...was applied to the surface and

the vessel was then lightly refired under reducing conditions sufficiently to carbonize the surface. The resultant ash was brushed off and the vessel rubbed to restore its luster.

The salient point here is that the black filmed pottery was fired before application of the paint. An organic wash was then applied, and finally the vessel was refired to make the color permanent. This technique of double-firing is most unusual, if not unique in North America. Its significance will be discussed in the next section of this chapter.

Category of variation 4: selection of design elements.--

A single element of an incised or engraved design is very roughly the equivalent of a mode. It is not conceived of as an absolute unit, as the mode is, but as a part of a varying sequence of similar elements. There are technical elements, such as engraving, and decorative elements, which form the design.

Engraving. Lines are engraved through the black film so that the unpainted surface can usually be clearly seen. Since filming occurred after the initial firing, there is no question that this is true engraving. Moreover, since the surface color that appears in the engraved lines is not perceptibly darkened, the engraving probably took place after the second firing also. On a few engraved sherds, red pigment was rubbed into the lines. (DeJarnette and Wimberly 1941:90-91).

It appears that the engraving implement just scratched the surface of the clay, never penetrating deeply. While most of the lines are readily visible, a few are so faint as to resemble pencil marks. Very fine lines less than one mm. in width were used for fine cross-

hatching, some fine meanders, and Southeastern Ceremonial Complex zoomorphic figures. Lines 1-2mm. wide are more common and appear as meanders, hatched areas, and as bounding lines.

Incising. Lines vary from 2 to 5 mm. in width. Those on the rims of plates and shallow bowls are frequently almost as wide as they are deep. On MFI sherds the incised trough is U-shaped and is smoothed so that there is no ridge of clay adjacent. Incising on MI sherds is frequently deep and rough -- more V-shaped -- and the extruded clay has not been smoothed away.

Indenting. The types MEI and MInd have been defined by this element. Indenting was done before firing (except on one bottle, Fig. 47, on which a broad meander was excised after firing). Indentations are less than 5 mm. deep and are well smoothed. A thumb impression in soft clay would form such an indentation, although a small oval pebble would leave a similar mark.

Elements of decoration. Seven are defined, as follows:

1. Straight lines:
 - a. single lines. Used only to bound areas of decoration or to outline figures.
 - b. parallel lines. Surrounding vessel below rim or arranged in closely-spaced groups (Fig. 55).
 - c. zig-zag lines. Rare on Moundville pottery (Fig. 22j).
2. Curved lines:
 - a. arches or arcs (Fig. 4d,e; 50a; 34b, 56).
 - b. circles and concentric circles (Figs. 34, 51).
 - c. scroll-meander (Figs. 24, 40, 41a, 44, 58a).
3. Indentations (Figs. 48, 49).
4. Groups of opposed parallel lines and line-filled triangles (Fig. 25a,c).
5. Chevrons. A rare element (Fig. 22a,d).

6. Crosshatching, both diagonal and rectangular (Figs. 6a-k, 26 b, 62).
7. Herringbone patterns (Figs. 22k, 53).

The design elements of Moundville may generally be viewed as elaborations on arrangements of straight parallel or curvilinear concentric lines. Short parallel lines (10-60 mm.) are arranged vertically, horizontally, or diagonally to form triangles or bands. When these lines are crossed, a crosshatched pattern is formed. This category varies greatly: squares, rectangles, parallelograms, or rhombuses result depending on the angle at which the lines cross.

The basic curvilinear element is the group of concentric lines. In Fig. 34 a true concentric circle is formed. In Fig. 22a-c an S-shaped curve or scroll appears. When scrolls interlock the interlocking portions form a kind of concentric circle (Fig. 58). In some instances one of the lines forming a scroll becomes continuous, as in Fig. 42.

On the elongated bottle pictures in Fig. 37 the scroll has become fully continuous, and the interlocked portion has been replaced by a simple reverse turn. The final step in this progression is the meander, which varies in complexity (Figs. 34-40, 43-45, 58a). It may be single or multi-line, continuous or repeated (as in Fig. 40: an identical meander occurs opposite that shown), and it varies from broad and sweeping to tight and constricted. To use a term from geomorphology, some might be said to be almost "cut-off".

It seems, in short, that there is a transition from a complete circle to a broad meander. The circle has been unwound, so to speak; it has become looser and more undulating. The meander is essentially

an incomplete circle, or rather two, for each turn of the reverse curve forming it can be measured in degrees of arc. The scroll is an intermediate form possessing the continuity of the meander but preserving elements of the complete circle.

The significant point is that design elements vary within a wide range, starting from a few simple ideas. Elaboration is the keynote in Moundville ceramics.

The various types, also, differ in degree of decorative elaboration. MFE, MEI, MFI, and MI have some of the same design elements in common. The main differences lie in technique, preponderance of certain elements, and care of execution. Aside from the difference in technique, MFI differs from MFE in lacking complex meanders and fine crosshatching. On MFI parallel lines encircling the rim, chevrons and opposed groups of parallel lines are more common. MI designs are crudely drawn and simplified forms of MFI. Simple arcs on vessel shoulders bordered by short parallel lines have replaced elaborate band patterns. MEI possesses the same elements as MFE with the addition of indentations. MI is decorated solely with indentations.

Category of variation 5: combination of design elements.--

Despite the considerable continuity between the design elements, they will be taken as units in order to ascertain how they are combined. Using the engraved and incised vessels in the size and shape sample, I tabulated the occurrences of single elements and the kinds of combinations. The results are shown in Table 4 (p. 79). This table should give an idea of the frequency of both individual elements and their

TABLE 4.--Combination of design elements

Combination of elements	MFE bowls	MFE bottles	MEI bottles	MPI jars	MPI bowls	MPI bottles	MI jars
1b	7		1		11		
1b-2a-4					2		
1b-2a-6	1						
1b-2b	1				3		
1b-2c		4	1			1	
1b-3-6			1				
1b-6		1					
1b-7	2						
1c	3			1			1
2a	1						
2a-2b-4	1						
2a-3			2				
2a-6	5		2				
2b				1	2		2
2b-3			2				
2b-4	1						1
2b-4-5					2		
2b-6		1					
2c	3	10			5	5	
2c-3			16				
2c-3-6			5				
2c-4				1			
2c-6	4	18				1	
2c-7	1						
4	1			1	1		
7		2					

- 1b parallel lines in bands or groups
- 1c zig-zag arrangement
- 2a arches or arcs
- 2b circles and concentric circles
- 2c meander-scroll
- 3 indentations
- 4 groups of opposed parallel lines and line-filled triangles
- 5 chevrons
- 6 crosshatching
- 7 herringbone pattern

combinations. The only important elements seem to be arrangement of parallel lines (1b) and the meander-scroll (2c) with or without other elements. Parallel lines usually occur alone as a single band or 4 to 6 lines just below the rim on bowl exteriors (Fig. 27). On MFE bottles they sometimes encircle the upper body above the other decoration (Fig. 38) and on bowls are occasionally combined with concentric circles (festoons) (Fig. 55a).

The meander-scroll frequently stands alone but it is more commonly combined with crosshatching (6) or indentations (3) or both (2c-3-6). The crosshatching functions either to bound a multiple-line meander, usually in the form of small crosshatched triangles extending from it, or to fill in between the curves of the meander and in the "peninsulas" (Figs. 42, 43).

Indentations, when combined with meanders, serve as the center of the circle around which the meander runs or as the center of the concentric circle formed by the scroll. It is thus closely integrated with the engraving (Figs. 49, 50).

To recapitulate, a brief characterization of Moundville design should mention (1) the multi-line meander and scroll with crosshatching; (2) indentations; (3) groups of opposed parallel lines; (4) bands of encircling parallel lines. It would be instructive to make a similar analysis of the pottery of a related phase, say Nodena, and compare the changes in elements and their frequencies.

Moundville potters were inventive and ingenious in combining single design elements, but their standards were rigid. All 10 elements theoretically could have been used to decorate a single vessel. Taken 3 at

a time, there are 120 possible combinations; in fact only 6 were used. Forty-five twofold combinations are possible, but the actual number is 13. There are no combinations of 5 elements, although they could theoretically be combined in 252 different ways. The typologist's task could be much more difficult than it is!

Having all the design elements before us, we may proceed to determine the equivalent elements. As defined on page 46, these are elements which are interchangeable, so that the replacement of one by its equivalent does not disrupt the design.

Parallel lines in a band around the vessel are probably equivalent to the little-used zig-zag, for both can be used to encircle the upper body. The circle is equivalent to the concentric circle, and the indentation. The arc pendant from the rim can replace the concentric circle or pendant triangle in the same position. The meander-scroll has as its equivalent on MI jars a single-line continuous arc on the upper body, but otherwise no apparent equivalents. Crosshatching is equivalent to simple hatching on the body and perhaps to the rare herringbone pattern. In triangles it is equivalent to groups of parallel lines.

Equivalents are important because they provide basic evidence of ceramic change. Of the 4 aspects of this, frequency change, addition of elements, abandonment of elements, and replacement, equivalents can give us clues regarding replacements. If we determine alternatives within a particular design style, we are better able to judge its probable course of development. We can partially predict where replacement may occur as the style is slowly altered. Thus the concept of equivalence is not so much an analytic device as a predictive and comparative one.

Category of variation 6: total design.--This is a summary of the over-all pattern, making use of very general artistic concepts that are assumed to be nearly universal. The concepts chosen should permit an economical synthesis; for Moundville, I think, these five will suffice: (1) degree of abstractness; (2) emphasis on rectilinearity or curvilinearity; (3) integration of elements; (4) symmetry; (5) spatial arrangement.

1. Degree of abstractness. The Southeastern Ceremonial Complex uses many of the elements mentioned in the preceding pages but combines them with naturalistic figures (See Chap. V). All other decorative patterns are quite abstract, the emotional appeal being derived from qualities inherent in the design itself.

2. Emphasis on rectilinearity or curvilinearity. Rectilinear patterns may occur alone (e.g., arrangements of parallel lines), but curvilinear patterns are usually associated with many rectilinear elements, such as the meander bordered by crosshatching. In these instances the curvilinear element is primary, and rectilinear elements function as fillers or boundaries. Impressionistically, I would view curvilinearity as basic to Moundville style.

3. Integration of elements. A decorative pattern is weakly integrated if the separate elements fail to supplement one another in the formation of the pattern. A band of separate scrolls would be less integrated than a band of interlocking scrolls; two paired but separate meanders less integrated than a continuous meander. The crucial factor is whether the eye is led to focus on the separate units rather than to comprehend the design as an entity.

Integration is defined here also to refer to the appropriateness of the design to the vessel shape. Pendant arcs would thus be inappropriate on a bottle body, for there is nothing to which to append them. They are natural, however, on a beaker-bowl, where they seem to hang from the rim. Likewise, large single-line arcs give a lobed effect to the globular body of a jar (as on MI jars), but would conflict with the angularity of a beaker-bowl.

Of course, all this is a matter of personal opinion. It is my feeling that Moundville design is closely integrated. The emphasis is on continuity, and single elements rarely occur alone. The indentation is a rather striking element, yet it is usually closely combined with the scroll or meander, forming the center of circles and the turning point of meanders. The flowing quality of the latter also seems appropriate to the bottle. This is a vessel form which can be held in any position (except upside-down, obviously), but at any angle of view the meander seems to be sweeping up, down and out of sight around the circumference. The band of parallel lines below the rim of bowls nicely supplements this form. It tends visually to reinforce the line of the rim, which is weakly defined because of the uniform curvature of the body. It is notable that the composite-silhouette bowl, with a strongly accentuated rim, never has this kind of decoration.

4. Symmetry. All vessels except some effigies have perfect bilateral symmetry. Most of the design elements -- triangles, circles, arcs -- are also bilaterally symmetrical. Single design elements, handles, and effigy heads are always placed opposite one another on the vessel body,

usually as one or two pairs. The scroll and the meander do not appear at first glance to be symmetrical, but they actually have a special kind of symmetry called by Shepard bifold rotational (1948:218). Asymmetrical design is definitely not characteristic of the Moundville phase.

5.. Spatial organization. This category defines how the total area is covered and to what extent it is covered.

In answering how the total area is covered it is necessary to determine if the design is composed of figures or bands. A figure here is defined as an enclosed space, whether naturalistic or abstract. A human face and a circle are both figures. A band is simply an arrangement of lines -- a meander is a band.

If figures are formed they must be either solid or outlined (although solid figures may also be outlined). Solid figures can be made by painting, crosshatching or similar techniques, which outline figures containing no interior design.

Moundville ceramic style has a definite tendency toward bands. Meanders and bands of parallel lines encircling bowls are examples. Circles and indentations are figures in common use (but see Fig. 46, where the indentations form zig-zag bands around the vessel). The arc has characteristics of both the figure and the band depending on its position on the vessel and the surrounding elements.

Solid figures are uncommon on Moundville pottery and are generally rare outside of regions where painting is the major technique. Moundville techniques were incising and engraving, both natural outlining techniques. Crosshatched triangles on MFE bottles and bowls are the

most numerous solid figures, but no other class is very common.

The panelled arrangement of design elements is definitely not typical of Moundville ceramics. If the design is not continuous, the elements are paired on opposite sides of the vessel. They are not enclosed in panels, either vertical or horizontal.

There is great variation in the area covered by decoration. For example, the broad sweeping meander in Fig. 45 fills the entire body surface, yet the 2 tight meanders in Fig. 37 cover only about half of it. On the bowl in Fig. 59 there is hardly a square centimeter without design.

Bottle surfaces are generally more completely covered than those of bowls and jars, although bottle necks are never decorated. Space is effectively filled by the use of crosshatching or merely by increasing the size of the primary element. Thus meanders range from 2 to 10 lines in width, and bands encircling the body below the rim from 4 to 8.

To sum up, Moundville decorative style is characterized by: (1) abstractness, (2) predominance of curvilinear elements, (3) integration of elements, (4) bilateral and bifold rotational symmetry, (5) emphasis on bands rather than figures and on continuity rather than panelled segments, (6) variation in amount of surface covered by design, with tendency toward filling most of the available space.

SUMMARY

The length of the first part of this chapter reflects the perennial archeological preoccupation with pottery and also the almost obsessive concern with theory. The chapter began with a discussion of the meaning

of type, which was held to be a compromise between conciseness and arbitrariness. Further consideration of the arbitrary nature of the type revealed that the main problem was cultural variation. For all its advantages, the type concept did not seem to be very successful in handling variation.

A proposal was then made to describe the ceramics of a phase in terms of categories of variation rather than types. In the subsequent discussion the 7 Moundville types were subordinated to the 6 categories of variation.

Variation was emphasized throughout the discussion and was found to be important but not excessive. In size and combination of design elements quite definite patterns emerged, although they are presumably applicable to the Moundville phase only. Finally an attempt was made to characterize the Moundville style in terms of a few general artistic concepts.

In the following section the problem of Moundville's ceramic relationships to other regions in the eastern United States will be considered.

The Relationships of Moundville Ceramics

Relationships will be discussed largely in terms of types. Single elements will be brought into the discussion when information is available. Because of the distinctiveness of black filming, the first subsection to follow will deal with it. The relationships suggested by decoration and form will then be reviewed.

Black Filming

Since Mexico must have been the source of a large part of Mississippian culture, it seems logical to begin investigations into the origin of black filming here. The area closest to the Southeast is the Huasteca region of Tamaulipas and Vera Cruz.

Ekholm (1944) made several extensive stratigraphic tests in this region and provided the first systematic description of the pottery. Relevant to this discussion are Zaquil Black and Zaquil Black Incised, which are characterized as follows:

All surfaces appear to be slipped, but their color is dependent more, if not entirely, on the amount of smudging received in the firing. The surface color ranges from nearly pure black through brown to reddish....The finest incised vessels are the most uniformly black.

All surfaces are fairly well polished, while there is a very fine polish of the best class of incised ware..... (Ekholm: 1944:352)

From Huaxcama, San Luis Potosí, a black pottery without type designation has been reported (Du Solier, Krieger, and Griffin 1947). It is unpainted, but the firing leaves a carbon film which is polished. MacNeish (1947) has described a polished black ware from the Pueblito culture of Tamaulipas, also apparently unpainted.

Polishing of black smudged ware seems to have been widespread in Northern Mexico. Ekholm dates Zaquil Black Incised in his periods IV and V. Period IV "can....be....tentatively equated with the latter part of the Teotihuacan period" (Ekholm 1944:427). This would be approximately A.D. 650-900 by modern chronology. Period V "belongs quite certainly to the Aztec I-Mazapan horizon...." (Ekholm 1944:427). Presumably the other black smudged types are contemporary, dating into the

second millenium A.D.

Both the time and the place make it a possibility that this pottery was the inspiration for Mississippian ideas about black coloring -- but black coloring, it should be noted, not black painting. The technique of polishing over a smudged or naturally black surface occurs in (the lower Mississippi Valley (Bell Plain), but not at Moundville or in the Tennessee-Cumberland, where true painting was known.

The Southwest is another obvious candidate. Perhaps it is a stronger one than Mexico, for Southwestern trade sherds have been found across the southern Plains and the Caddoan area to the Louisiana-Texas border. The handful of sherds discovered here are Chupadero B/W, a Rio Grande type from the thirteenth through seventeenth centuries (Krieger 1946:143, 208). This is not impressive evidence, but it is supported by similarities in vessel shape (to be discussed below). All that can be said at present is that some sort of contact must have taken place between the Southwest and the Southeast and that the idea of black painting could conceivably have been derived from the Southwest.

The astonishingly elaborate development of black filming at Moundville should not cause us to forget that black pottery -- whatever its origin -- was a widely disseminated Mississippian trait. A very early occurrence was at the Obion site in western Tennessee, where a few negative black and white sherds were found (Kneberg 1952:195, Fig. 106g). This site is probably one of the earliest Mississippian manifestations.

On a later time level black negative painted vessels, mostly bottles, are quite common. Black paint was used to form the overlying color, on the natural surface or on a white or red slip. The black pigment is

fugitive (Phillips, Ford and Griffin 1951:174), which implies that the vessel was painted after firing or that the coloring matter is not true paint. Negative painting is centered in the Cumberland region, where it is also the only form of decoration, and in Southeast Missouri. It is also present at Kincaid (Cole and others 1951:148) and Dallas (Lewis and Kneberg 1946:96), to name only two widely separated sites. Occurrences outside the home region are rare and probably the result of trade. At Moundville there are a few sherds and two bottles, the latter with Southeastern Ceremonial Complex designs (one is pictured in Moore 1907:Fig. 20).

Crystal River Negative Painted (Willey 1949:391) on a Hopewellian horizon, deserves mention as a possible progenitor of painting in the Eastern United States. Some red filmed is found in Illinois Hopewell, and Larto and Woodville Red Filmed occur in the middle Baytown period in the Lower Mississippi Valley (Phillips, Ford and Griffin 1951:101-105). These, however, are of the wrong color to be direct antecedents of Moundville Black Filmed.

At the Tolu site in northern Kentucky Webb reported black ware with incised decoration (Webb and Funkhouser 1931:396-399). Similar ware occurs at Jonathan Creek as small bowls, bottles, plates, and jars with loop handles. Webb conjectured that the color was produced by rubbing with graphite (Webb 1952:96-100).

Along the Mississippi one of the dominant types in later periods is Bell Plain, having a range from near St. Louis to the Louisiana border (Phillips, Ford and Griffin 1951:122-126). Bell Plain is rarely slipped, but the high polish on a naturally dark surface gives it a close resem-

blance to Moundville Black Filmed.

Black painted sherds are not uncommon in northern Alabama and were probably derived from Moundville or were local copies of its black filmed ware.

To summarize, I believe that any direct relationship between Moundville and either the Southwest or Mexico cannot be proven. These may well have been the ultimate source of black pottery, but that is about all that can be said at present. Moundville's black filming must have originated in the Southeast.

The following factors are important in determining its origins

1. The unusual technique of painting implies (a) a technique that specified polishing before firing and, seemingly, painting afterwards; (b) an understanding that unfired paint is fugitive and a desire to retain it by a second brief firing.

2. The surface color of Moundville plain sherds is predominantly light gray with a considerable portion of buff or even pink shades.

Thus filming materially changed the color of the vessel. In this MBF contrasts with Bell Plain, the surface of which was naturally dark.

3. Color of fired pottery is dependent not only on the method of firing but also on the composition of the clay. Thus clay from two different regions may differ in color even though fired by identical methods (Shepard 1957:103-104).

4. Mississippian culture possessed a variety of painting techniques in all regions.

5. Moundville has extremely close connections (as will be shown) to the northeastern Arkansas region; and Bell Plain, which is common here,

is very similar to MBF.

Drawing these diverse strands together, I hypothesize that black filming at Moundville was an attempt to reproduce the color of Bell Plain on a clay which, because of a different composition, would not fire to a dark hue. This failure led Moundville potters to accept some ideas about painting from other regions, possibly the Tennessee-Cumberland. The technique, however, remained that of Bell Plain; and the painting was accomplished in an awkward fashion, as if the potters were reluctant to abandon completely their old techniques.

An implicit assumption in this hypothesis is that the relationship between the Moundville phase and northeastern Arkansas was extremely close. An attempt to copy a complex behavior pattern suggests at the very least infrequent and significant economic interaction and, at the most, actual migration. Skipping ahead to the conclusion of this paper, I believe that the latter is more likely.

Engraved and Incised Decoration

MFE, MEI and MI will be considered together since their design is basically similar. Specific reference to each type will be made when necessary.

The closest relationships of MFE lie to the northwest of Moundville, particularly in the Nodena and Walls phases, and also south along the Mississippi. Walls Engraved (Phillips, Ford, and Griffin 1951:127-129) is characterized by crosshatched bands and "swastika whorls". On MFE bands are generally composed of parallel lines, although crosshatched bands do occur. The "swastika whorl" is similar to the interlocked scroll, but in

the latter lines do not radiate out from a single point (there is one swastika whorl design at Moundville, however, Fig. 62). Southeastern Ceremonial Complex motifs are rare on Walls Engraved, but the few examples are identical with those on MFE.

Opposed groups of parallel lines, occurring mostly on MFI and MI, strongly resemble Barton Incised elements (Phillips, Ford and Griffin 1951:114-119). This common type ranges from well up the St. Francis down the Mississippi and into the lower Yazoo Basin. It is reported to occur around Montgomery, 100 miles southeast of Moundville (Phillips, Ford and Griffin 1951:118).

True meanders are characteristic of Leland Incised, a type centered near Greenville, Mississippi (Phillips, Ford, and Griffin 1951:137-140). The surface treatment of this type is described as polishing producing "a highly lustrous, generally black finish". Leland meanders are usually two or three lines wide, unlike the multi-line forms on MFE and MEI. Both Leland Incised and MFE have some resemblance to the Fatherland-Bayougoula-Natchez Incised group (Quimby 1957:123-128) and, vaguely, to Chickachae Combed, an historic Choctaw type (Quimby 1942:265). Leland probably forms a continuum with these later types, while the relationship to MFE is indirect.

A rather uncommon tentative type in the Lower Valley, Mound Place Incised (Phillips, Ford and Griffin 1951:147-148), is well represented at Moundville. It is usually the only design on MFI bowls and, when engraved, on MFE bowls (Figs. 26, 55, 68, 69).

The overlapping arcs of Hull Engraved and its incised counterpart Ranch Incised (Phillips, Ford and Griffin 1951:119, 129), are similar

to designs on some MFE and MFI sherds (Fig. 21a,c,d,e).

Indentations occur solely in the Memphis subarea of the Lower Mississippi Valley (Phillips, Ford and Griffin 1951:159), where they are often combined with Walls Engraved designs. Holmes (1886:400; 1903:90) describes and illustrates an indented vessel from "Arkansas", calling it "charming" and noting that it "...is still more characteristic [than previous vessels pictured] of the South". Presumably the material Holmes studied was derived from the extensive cemeteries of northeast Arkansas.

Jumping the Mississippi Valley, we note engraved scrolls and meanders with bordering crosshatching on several Caddoan types. MFE most closely resembles Hodges Engraved and Holly Fine Engraved (Suhm and Jelks 1962: 73-76, 77-80), both of which are contemporaneous with the Moundville phase. Nevertheless, neither type directly inspired engraved decoration at Moundville, for MFE's relationships with Walls Engraved are far closer than with any Caddoan type.

Relationships to the north do not extend beyond the Tennessee River in northern Alabama. McKee Island Incised, a northern Alabama late prehistoric or historic type, is much like MI (Heimlich 1952:28). Probably it would be hard to separate MI from McKee Island, and they may form a continuum. Moundville incised and engraved designs do not penetrate into Tennessee, Kentucky, Southeast Missouri, or Illinois. Mississippian phases in these regions concentrated on painting and elaboration of form rather than engraving or incising.

To the south and southeast of Moundville simplified scrolls and arcs and some black filming decorate sherds of central and southern Alabama, which is sometimes sand tempered. The similarity to McKee Island Incised

indicates that this pottery is late. The late prehistoric or protohistoric burial "urns" of the Alabama River region also resemble McKee Island and MI (Brannon 1938; DeJarnette 1952:283-284).

Along the Florida Gulf coast the broad, multi-line arcs characteristic of MFI turn up on Indian Pass Incised of Weeden Island I and II. The relationship is of course indirect: Weeden Island ceramic ideas influenced Lower Valley Mississippi pottery, and from here design concepts were transmitted to Moundville (Ford 1952:381-382). Another surprising Florida trait is indenting. Indentations occur on an obscure and very infrequent Weeden Island type, which Willey designated Hare Hammock Surface Indented (1949:429, Fig. 48e). It is stated to have no obvious relationships, but the indentations of the single vessel pictured are strikingly similar to those on MEI and MInd. Some connection between indenting and the larger punctations on Weeden Island Incised is also conceivable.

The Fort Walton period marks a Mississippian intrusion to northwest Florida, and the contemporary Safety Harbor period to the south was Mississippian influenced while partially retaining Weeden Island culture patterns (descriptions in Willey 1949:452-488). In Fort Walton a variety of interlocked scrolls and simple meanders and arcs characterize Fort Walton Incised and Pensacola Three-Line Incised. The latter bears a close resemblance to the Mound Place Incised like-variant of MFI (Willey 1949:460-466). The Safety Harbor type Pinellas Incised (Willey 1949:482-486) with its simple scrolls and arcs is somewhat like MI and post-Moundville Alabama types.

Finally, the scrolls and parallel bands on the rims of Lamar Bold Incised bowls (Haag 1939) must have some indirect relation to MFE and MFI

because the designs are quite similar. Since Fort Walton was contemporary with both Moundville and later with Lamar in the Chattahoochee Valley (DeJarnette 1952: 283) it presumably was the intermediary.

Form

Tracing cultural relationships through vessel form is not especially productive. Most forms have extremely wide distributions, and distinctive, specialized ones are too rare to permit many conclusions.

Of the three basic forms at Moundville, the jar is ubiquitous in Mississippian culture. The small beaker-bowl has close similarities to the rim effigy bowl of the Memphis and St. Francis subareas (Phillips, Ford, and Griffin 1951: Figs. 101, 102), although at Moundville it frequently lacks the effigy head. The shallow bowl with notched rim strip occurs in the Lower Valley and seems to be the typical form in the Nashville region (Thruston: 1890: Pl. 6). The affinities of the Moundville bottle are definitely with Northeast Arkansas. As Williams points out, (n.d.: 2):

The hypothesis of a Moundville horizon style in Northeast Arkansas is based most firmly on [the] short necked, wide mouth water bottle which has a globular body and a flat base. It occurs most frequently in Bell Plain.... This bottle is just one of a wide variety of bottle shapes.... in this region, but when the bottle described above has engraved decoration and often four or more dimples [i.e., indentations], its connection with Moundville Black Filmed Engraved is apparent.

Comparison of the pictures of bottles in the paper with those of from the Memphis subarea (Phillips, Ford and Griffin 1951: 158, Fig. 104f, g) should make the similarities apparent. The bevelled lip said to characterize this form is not present at Moundville, where lip form is not diag-

nostic. The few high-necked forms at Moundville might indicate slight influence from Southeast Missouri or Tennessee.

For a discussion of specialized Mississippian vessel form the reader is referred to Griffin's summary in Phillips, Ford and Griffin (1951:160-180). The following remarks are based on it unless otherwise noted.

The proportion of human rim effigies approximates that of the Memphis subarea, but the proportion of birds is more like that of the St. Francis. Four of the five human rim effigy bowls have four paired heads, a form which calls to mind the "prayer-bowl" of the Cumberland (Myer 1928:537, Pl. 115a; see also examples pictured in Thruston 1890). Moundville effigy heads face either outward or inward. Unlike the Cumberland specimens, they lack the precise delineation of eyebrows, ears and other facial features (Figs. 72, 73, 76b). At Moundville most of the human heads have a pointed occipital region, possibly the representation of a headdress or hair style.

Bird rim effigies are more stylized than those of the Lower Mississippi Valley or the Cumberland. It may be worthwhile to note, however, that both Moundville and Cumberland forms are occasionally topped with a serrated crest. Thruston (1890:145) considered these examples to be roosters and went on to infer a chicken-raising industry in the Cumberland Valley.

Body effigy vessels at Moundville (as distinguished from rim effigy bowls) are predominantly fish and frogs, which are common in Northeast Arkansas. Of the three human effigies, Griffin considers the "chac-mool" (Fig. 94) to be "reminiscent" of the Cumberland. The other two are

typical of those in the Memphis, Southeast Missouri, and Cumberland areas: rather fat, apparently female, squatting figures, hands on knees or breast, back slightly bent.⁵ The facial and body features of those at Moundville are not carefully modelled. The composite forms at Moundville have counterparts in Southeast Missouri, the St. Francis subarea, and the Memphis subarea. The rectangular composite form in particular resembles a rectangular vessel shown by Holmes (1886:Fig. 371) from Pecan Point. The stirrup-neck, lobed and tripod specimens can also be found in this region and may have been traded to the Moundville phase. The bottle-in-jar vessels (Moore 1905: Fig. 72; this paper: Fig. 92) are much like St. Francis specimens (cf. Moore 1910: Fig. 25; Phillips, Ford and Griffin 1951: Fig. 104k, 1).

The pedestal or platform base on bowls is found in Northeast Arkansas. However, higher bases occur on Natchez types (Ford 1936: Fig. 9g,i; Jennings 1952:Fig. 144e,f,g; Quimby 1957: 124, 128), and the pedestal base is frequently associated with Weeden Island Incised and plain vessels, mainly effigies (Moore 1907b: Figs. 3,77, 14, 15).

The seed jar and castellated bowl almost certainly are derived from the Southwest, although the mechanism of transmission is unknown. Those at Moundville are typical MBF specimens, probably copied from Lower Valley forms. Direct Southwestern influence on the Moundville phase is highly unlikely.

The two conical vessels (Moore 1905: Figs. 25, 173) have a "Florida look" to them (cf. Willey 1949: Pl. 54a,b), but apparently lack definite relatives.

The Moundville composite-silhouette bowl resembles the Caddoan

carinated bowl, although the rim of the Caddoan form is vertical or nearly so while it is flared on Moundville bowls. Similar forms are found in Fort Walton, Safety Harbor, and Lamar, usually with a less prominent shoulder and with the rim slightly incurved (Willey 1949: Figs. 57a,c, 60b,c, 66a).

Form relationships tend to support the conclusions regarding decoration: many close similarities to the Lower Mississippi Valley, fewer to the Cumberland, and the problematical similarities with northwest Florida and the Natchezan area. A comparative lack of emphasis on effigies and specialized forms in general is noticeable at Moundville -- the restricted faunal range of rim effigies, for example (Table 1). A really detailed analysis of effigies might reveal temporal and spatial subgroupings, but at present inadequate data on proveniences make this impossible.

Summary and Conclusions

Interpretation of the nature and extent of these ceramic relationships cannot be reduced to a neat system. The failings of trait lists are well-known, and statistics derived from them which purport to indicate degree of similarity have a misleading appearance of objectivity. Summarized here are the relationships of Moundville ceramics with six regions of Mississippian culture and three regions of non-Mississippian culture:

- (1) Memphis subarea (northeastern Arkansas and northwestern Mississippi);
- (2) remainder of the Lower Mississippi Valley; (3) Southeast Missouri;
- (4) Tennessee-Cumberland; (5) Fort Walton; (6) Alabama-Georgia on a late prehistoric and historic time level; (7) Weeden Island; (8) Caddoan;

(9) Natchezah.

Memphis subarea.--The close similarity between MBF, MFE, and MFI, on the one hand, and Bell Plain and Walls Engraved on the other has been emphasized. The bottle form of the Moundville and Nodana and Walls phases is identical, and this form occurs nowhere else in the Southeast. Hemispherical bowls, rim effigies, and effigy vessels are also very similar. Specialized vessel forms also have much in common.

I find these relationships striking and feel that they prove beyond reasonable doubt that the origin of the Moundville phase lies in this region.

Lower Mississippi Valley.--The type Barton Incised, common throughout the Mississippi Valley, appears to be related to MFI. Leland Incised, centering in the Yazoo Basin, possesses a meander-scroll element much like that of MFE. Bell Plain and Neeley's Ferry Plain, closely resembling Warrior Plain, also occur in this region. These similarities are fairly specific although not numerous. They indicate to me that contacts between Moundville and this region were common but never intensive.

Southeast Missouri.--I am unable to find any specific relationships with Southeast Missouri, outside of some specialized vessels which could well have been derived from the Memphis subarea. Southeast Missouri products might have reached Moundville in trade, but this region contributed no traits actually adopted by the Moundville phase. This should not be surprising, for Southeast Missouri is over 400 miles from western Alabama.

Tennessee-Cumberland.--The idea of black filming could have been derived from this region where black is the common color in negative painting. Bird rim effigies and hemispherical bowls with notched rim strips are very similar to Moundville specimens and this vessel form may have been a Tennessee derivative. On the whole, relationships with the Tennessee-Cumberland are present but not especially noteworthy. They imply intermittent economic contacts.

Fort Walton.--Ceramically, the Moundville phase provided several ideas to the Fort Walton culture. Among these were the continuous scroll and the band of parallel lines (Mound Place Incised). In the other direction, Fort Walton may have introduced the composite-silhouette bowl to Moundville.

Historic Alabama and Georgia.--Moundville certainly left a ceramic legacy to many of the late prehistoric and historic cultures of this region. This probably was a result of the gradual fusion of Moundville culture with those tribes that became the historic Muskogean. The most apparent ceramic relationship is MI to McKee Island Incised and, perhaps, Lamar Bold Incised.

Weeden Island.--The relationships of the Moundville phase with this culture, of a different tradition and a different age, are purely speculative at the present time. It is quite conceivable that elements of the tenacious Gulf Tradition persisted in northwest Florida long after Weeden Island Society disappeared and that a few traits, such as indenting, eventually made their way to Moundville.

Caddoan.--I am convinced that the general similarities between Moundville engraved types and Caddoan types is due to mutual relations

with Northeastern Arkansas. In view of the current dispute over Caddoan dating (Griffin 1961; Webb 1961), further discussion is futile.

Natchezan.--Ceramic relationships with Natchezan culture are suggestive rather than definitive. The pedestal base is typically Natchezan and is also found at Moundville. Some scroll and meander elements of MFI resemble elements of Fatherland Incised, although this could have resulted from mutual contact with Leland Incised. Since the Natchez proper were much later than the Moundville phase, it is perhaps best to conceive of a Plaquemine-Natchez continuum which was in occasional contact with Moundville.

To conclude, Moundville was a recipient of a variety of ceramic ideas and the donor of some also. Relationships are overwhelmingly with the Mississippi Valley to the northwest. Discussion of the meaning of these relationships will be deferred to the final chapter.

Notes

1. This is rather paradoxical, for Ford is one of the few archeologists who has bothered to define culture, and his definition is quite specific (Kroeber and Kluckhohn 1963:132, 136). Of course Ford may not agree with my views, which are not intended as criticism.

2. IBM cards containing data on type, form and size, one for each vessel, were prepared, and a program was worked out for the IBM 7090 in the Harvard Computing Center, which produced the statistics in this section.

3. I take comfort in Griffin's statement that "hardness tests by means of the Moh scale are unreliable....and of no great utility in the differentiation of pottery types anyhow" (Phillips, Ford and Griffin

1951:70, n.8).

4. The meander is peculiarly appropriate on Mississippian pottery. Some of the Moundville examples, fancifully viewed, resemble an aerial photograph of the Mississippi River.

5. It is interesting to compare the passive endomorphy of these creatures with the lithe and active "Dancing Warrior" figure depicted (always in outline) on Southeastern Ceremonial Complex artifacts.

Explanation of Figures 21-94 (pp. 107-145)

The catalogue number follows the description. Vessels from the Moundville collection are catalogued with a combination of letters and numbers, e.g., NE15. Vessels from the Museum of the American Indian are catalogued with a double number written as a fraction, e.g., 17/3367. Catalogue numbers of the R.S. Peabody Foundation are written with five numerals.

Fig. 21. MFE from roadway illustrating the coarser variety of engraving. Sherd d is upside down.

Fig. 22. a-b, MEI or MInd; c-g, j-k, MFE; h-i, L'Eau Noire Engraved (?). Roadway excavation.

Fig. 23. Fine engraved MFE. Roadway excavation.

Fig. 24. Portion of broken MFE beaker-bowl, lines filled with red pigment. SEH71.

Fig. 25. MFI. Sherd b has a Southeastern Ceremonial Complex hand incised on the rim. Roadway excavation.

Fig. 26. a-f, h, MFI; g, MInd. Forked eye (?) on sherd f. Roadway excavation.

Fig. 27. MFI resembling Mound Place Incised from roadway excavation.

Fig. 28. MI. Surface of Mound P.

Fig. 29. a, MBF lug; b-e, MBF strap handles. Roadway excavation.

Fig. 30. a-d, MBF bowl rims, showing notched rim and rimstrip; e-f, plain jar rims. Roadway excavation.

Fig. 31. Bird effigy heads. a-c, woodpecker (?); d-e, swan (?); f, duck (?); g, ?.

Fig. 32. Typical MBF bottle. From Moundville collections, catalogue number missing.

(5) Fig. 33. a, MBF jar with bottle neck added; b, c, MBF bottles. (NEI5, WR85).

Fig. 36. MBF bottles showing elongated body and flaring neck. a, 26606; b, 26609.

(WR85) Fig. 37. MFE bottle with very simple three-line meander. Note elongated body and pedestal base. RW43.

a, Fig. 38. MI (?) bottle strongly reminiscent of Natchez in form and decoration. SWG 16.

Fig. 39. MFE bottle with low shoulder. Two paired meanders form the decoration. NN'41.

Fig. 40. MFE bottles with paired meanders (outlined with chalk for visibility). EE2.

Fig. 41. Variations of meander. a, MFE, b, MEI, c, MFE. Catalogue numbers of a and c missing; b, SD585.

(Vear) Fig. 42. MFE bottles with interlocked scroll, one line continuous (outlined with chalk for visibility). SD5.

Fig. 43. MFE bottle. Continuous meander bordered by crosshatching

chalk added). E115.

Fig. 44. MFE bottles (chalk added). a, Rho364; b, NE133.

Fig. 45. MFE bottle. Rho66.

Fig. 46. MInd bottle. Chalk added in indentations. NR100.

Fig. 47. MInd bottle. The meander was etched out after firing and
firing. 17/3633.

Fig. 48. MEI bottle. From Moundville collection, catalogue num-
ber missing.

Fig. 49. MEI bottles. a, 27951; b, 27952.

Fig. 50. a, MEI bottle (NR162); b, MFE bottle (chalk added)
(WMI88).

Fig. 51. MFE bottle. Note flattening on top of body. 17/3371.

Fig. 52. MFE bottle. NR 129.

Fig. 54. a, MFE beaker-bowl (SWM166); b, fragmentary MEI bottle
(R51).

Fig. 55. MFE beaker bowls, design similar to Mound Place Incised.
SED16; b, SEH8.

Fig. 56. MFE bowl (chalk added). WR11.

Fig. 57. An assortment of miniatures. a, crude plain jar (NE20);
MBF bottle, (NR21); c, MI bowl (NE 28); d, MBF bowl (RHo57).

Fig. 58. a, fragmentary MFE bottle (SEH 19); b, white-filmed bowl
with red filmed lip (SD1).

Fig. 59. MFE bowl. 17/3640.

Fig. 60. Same vessel as in Fig. 59, showing elaborate design.
Vessels of this shape are rarely decorated on the body.

Fig. 61. MBF plate. Rho18.

Fig. 62. Composite-silhouette MFI bowl. NR24.

Fig. 63. Composite-silhouette MBF bowl. NE89.

Fig. 65. Composite-silhouette MBF bowl. 17/4377.

Fig. 66. Plain jars. a, WR46; b, NN39.

Fig. 67. Plain jar with 10 pairs of handles. E1140.

Fig. 68. MFI bird rim effigies. From Moundville, Catalogue numbers missing.

Fig. 69. MFI bird rim effigy, showing crest. From colored picnic building excavation, 18-36 in. level.

Fig. 70. MFE bird rim effigy, showing high degree of stylization. Partly reconstructed. Mound W.

Fig. 71. MBF human rim effigy bowl, two pairs of heads. NR118.

Fig. 72. MBF human rim effigy bowl. NE86.

Fig. 73. MBF (plain?) frog effigy bottle. NR20.

Fig. 74. MBF frog effigy bowl. SW61.

Fig. 75. MBF frog effigy bowl. NE94.

Fig. 76. a, MBF frog effigy bowl or jar (WR58); b, MBF human rim effigy bowl (NE77).

Fig. 77. MBF human effigy vessel, head missing. SG25.

Fig. 78. MBF fish effigy vessels, a, WP34; b, from Moundville collections, catalogue number missing.

Fig. 79. MBF alligator (?) effigy vessel. NG1.

Fig. 80. MBF shell effigies. a, Rh0136; b, EE396.

Fig. 81. MBF seed jar. NE36.

Fig. 82. MBF barrel-shaped vessel. WR3.

Fig. 83. Plain lobed bottle. SW26.

Fig. 84. MBF lobed bottle, neck reconstructed and probably incorrect. From Moundville collections, catalogue number missing.

Fig. 85. MBF stirrup-spout bottle. NN'14.

Fig. 86. MFI square bottle. Fragmentary and crudely reconstructed. SEE75.

Fig. 87. MBF rectangular bowl with center partition added to give composite appearance. SW21.

Fig. 88. a, white-filmed jar (SWMB); b, MBF double bowl (Moundville collections, catalogue number missing); c, MBF beaker-bowl (SWM 226).

Fig. 89. MBF vessel, possibly composite form. From Moundville collections, catalogue number missing.

Fig. 90. MBF castellated vessel. Mound W.

Fig. 91. a, MI (?) bottle, also shown in Fig. 38; total height 195 mm. (SWG16); b, bottle in jar, total height 210 mm. (REF35).

Fig. 92. Bottle in jar. Total height 248 mm. NE81.

Fig. 93. MBF effigy depicting bat hanging from limb. Height 69 mm. SD816.

Fig. 94. MBF "chac-mool" bowl. Total height 165 mm. WR66.

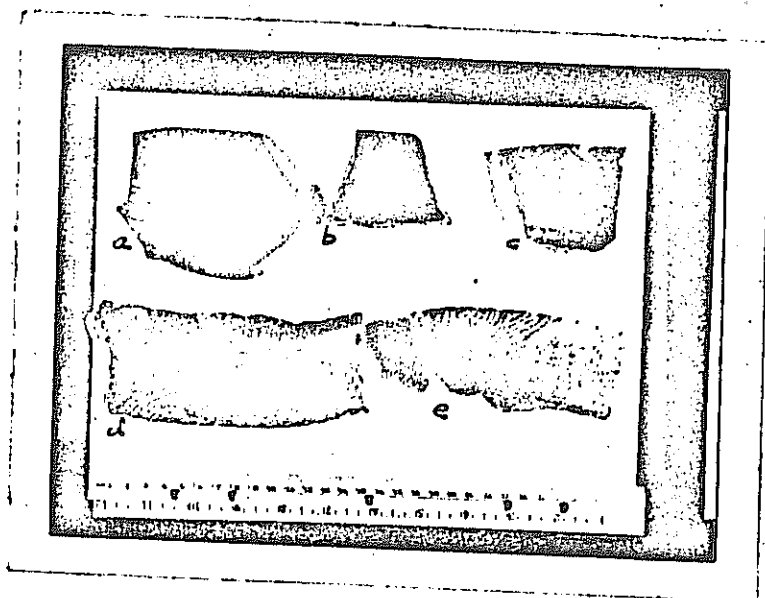


Figure 21

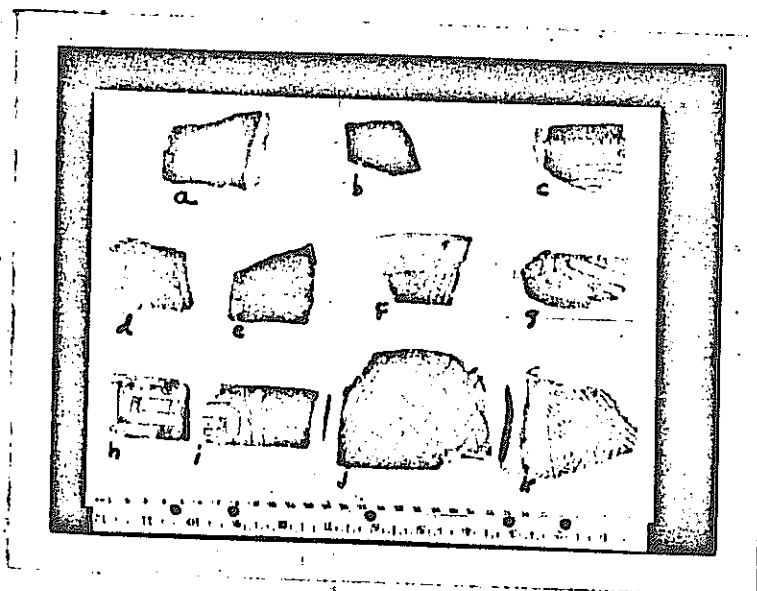


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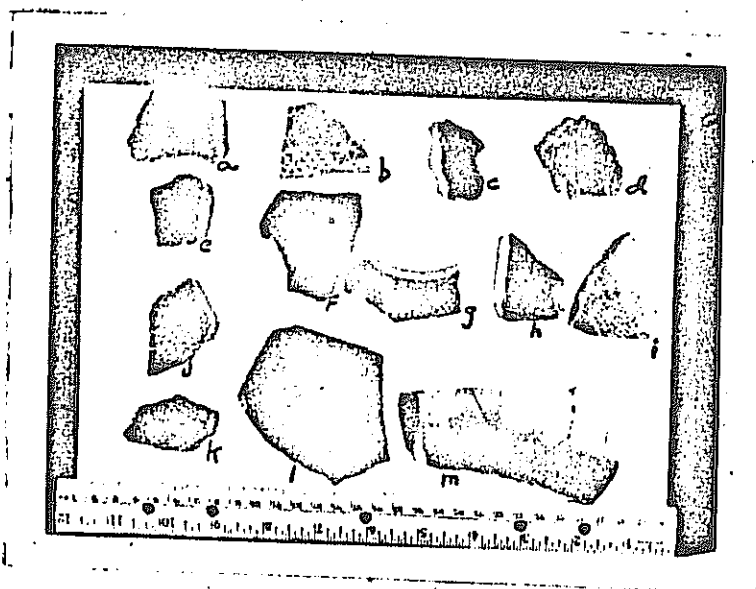


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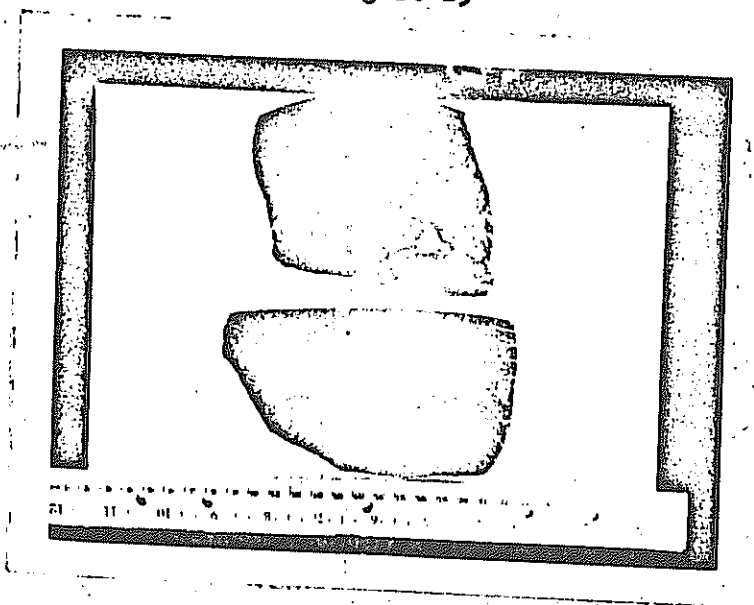


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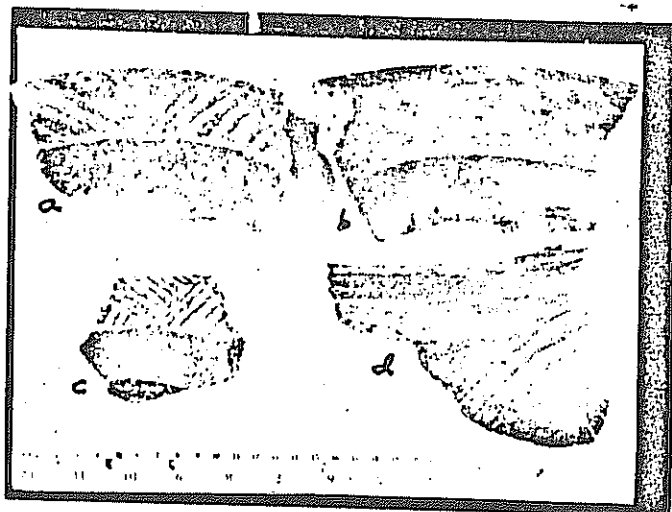


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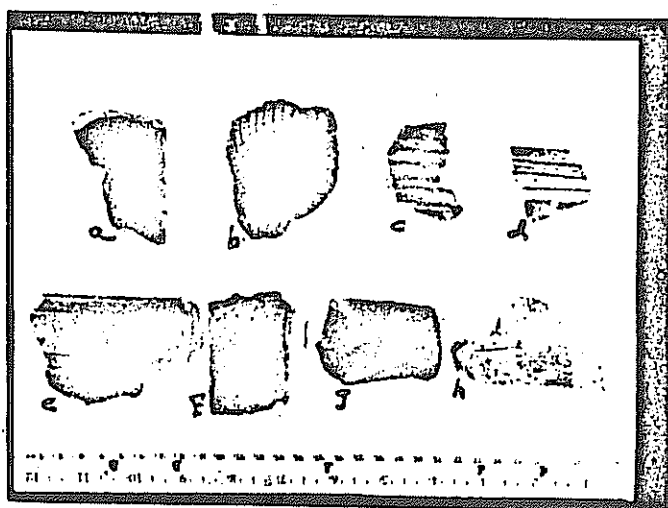


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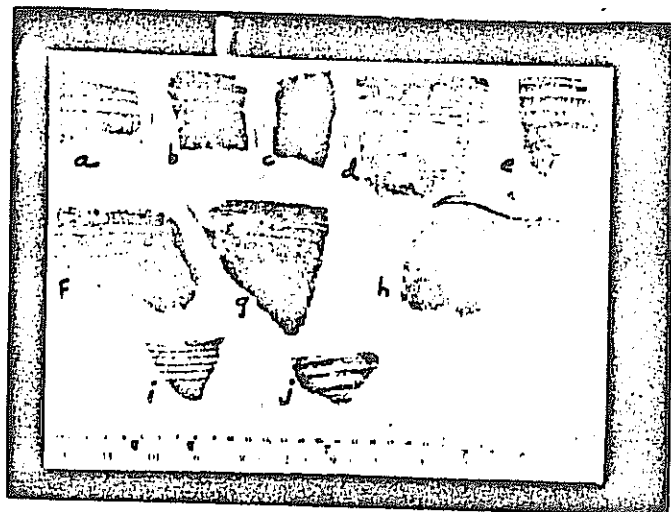


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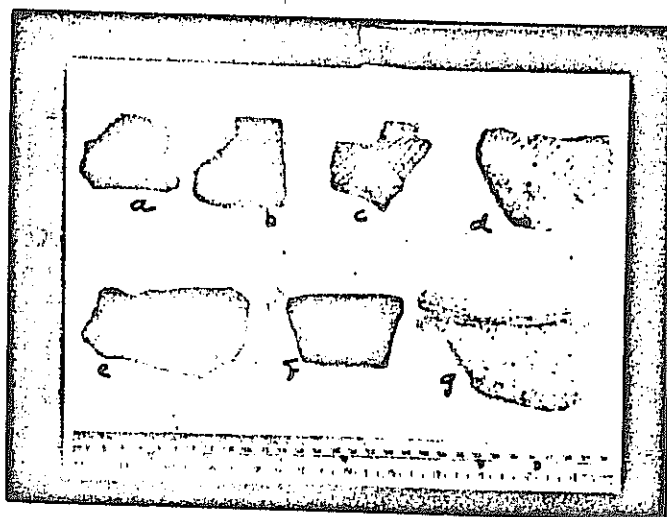


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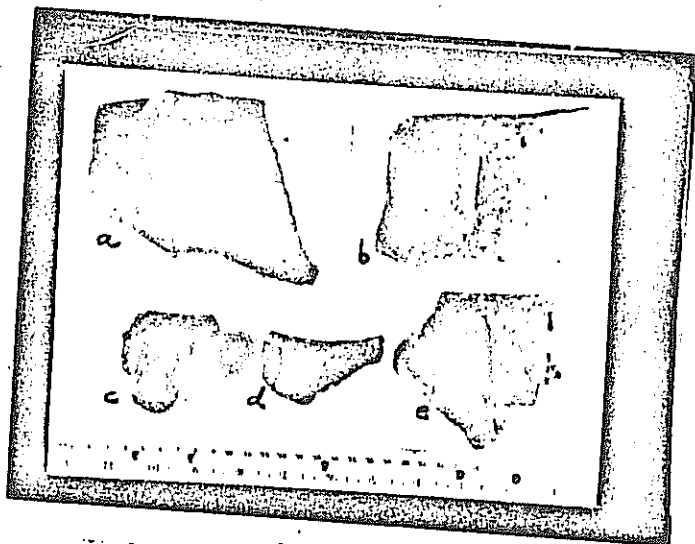


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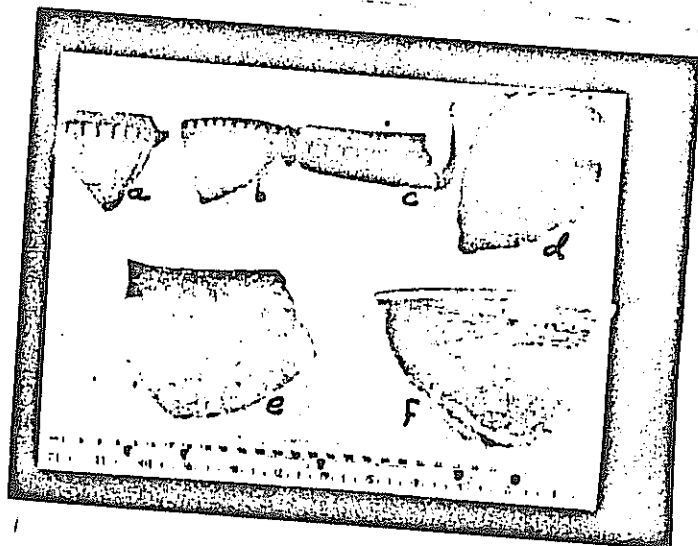


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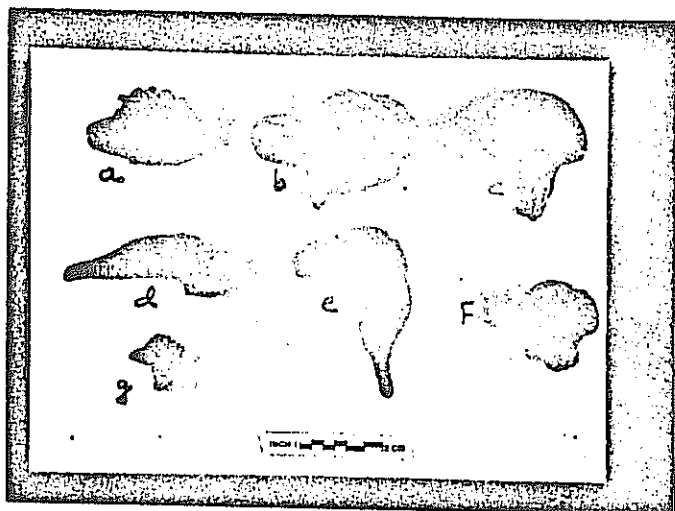


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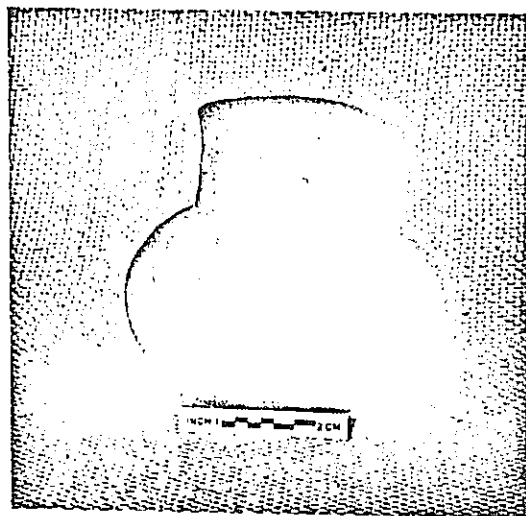


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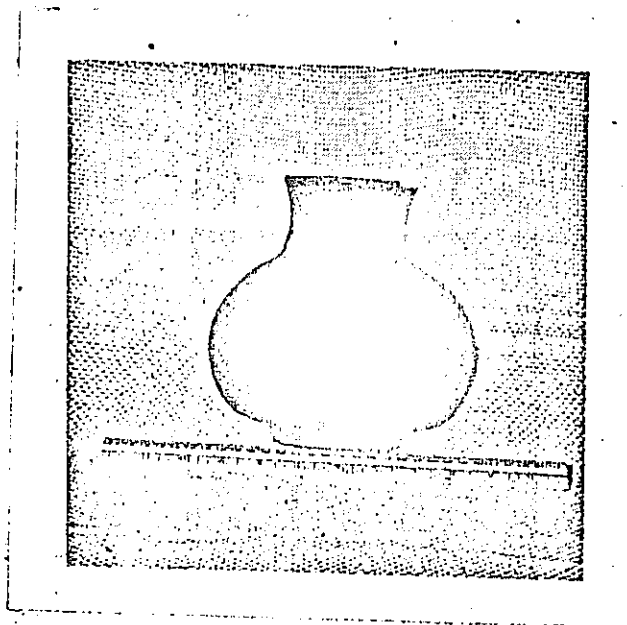


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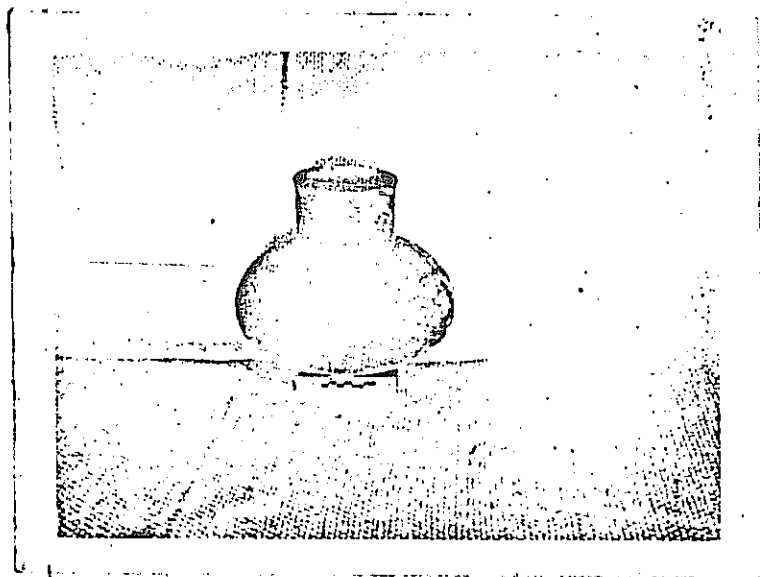


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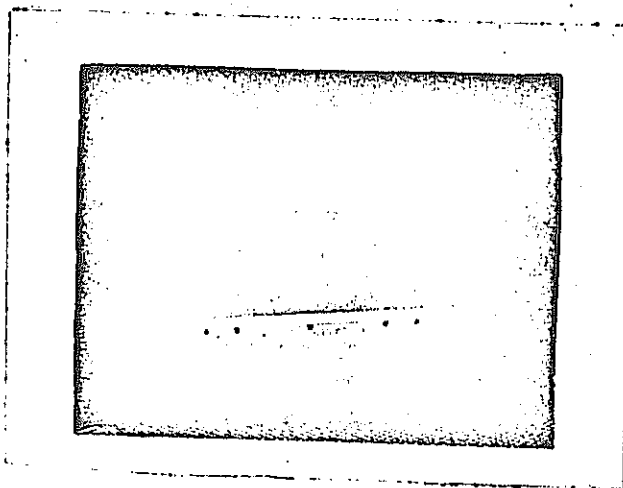


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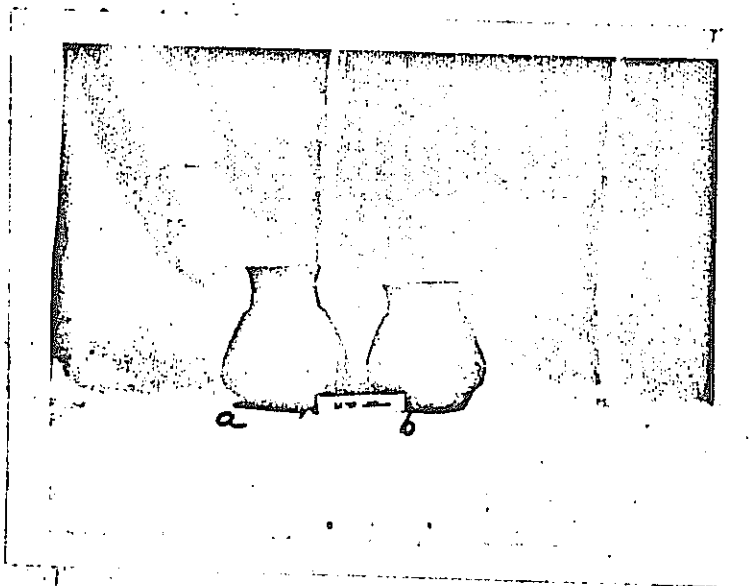


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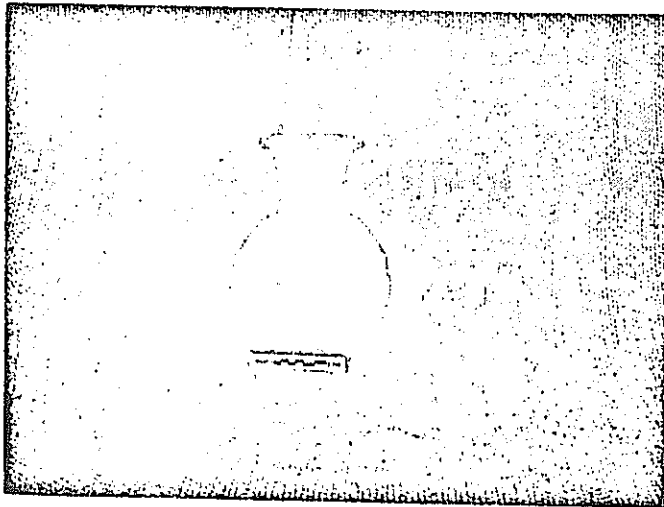


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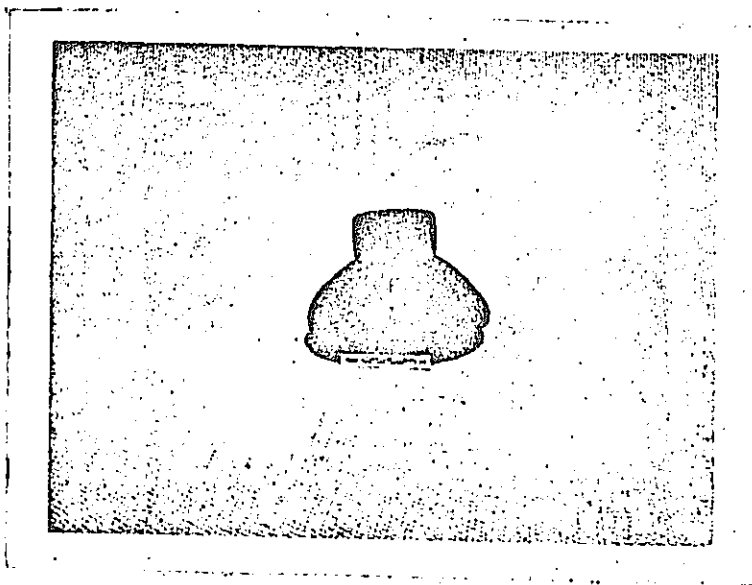


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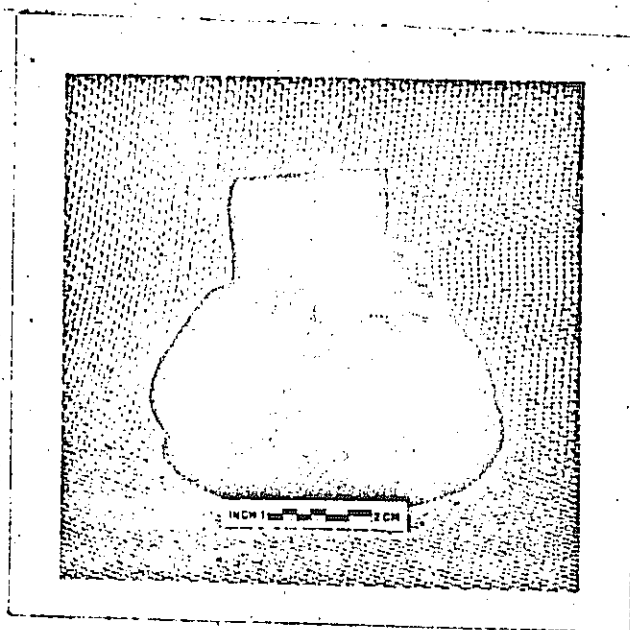


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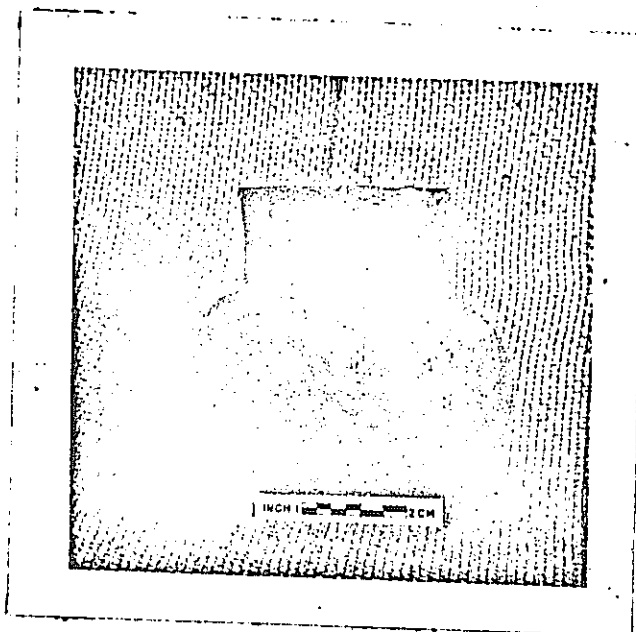


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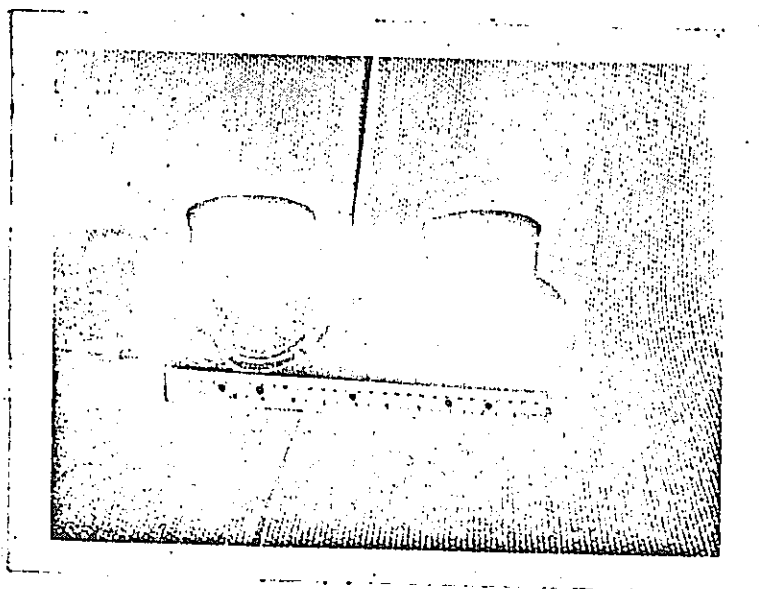


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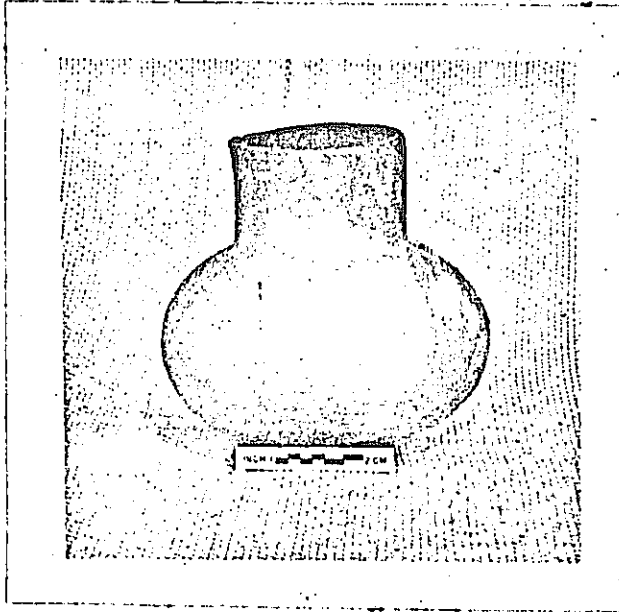


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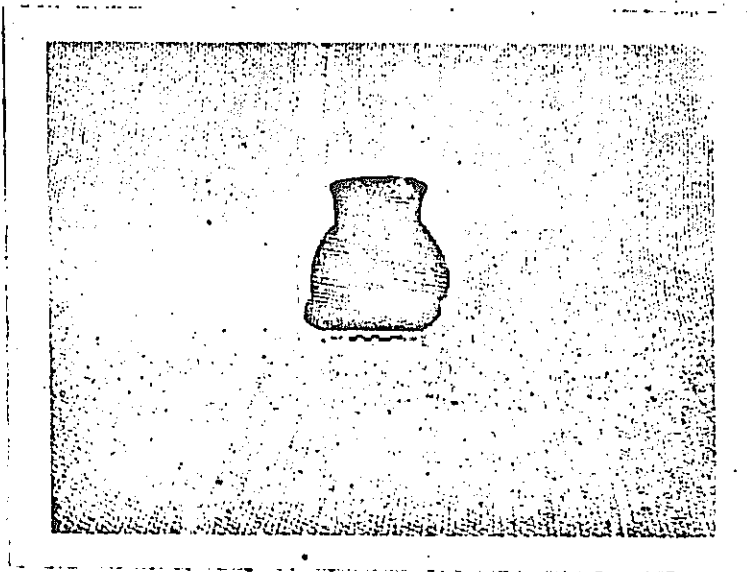


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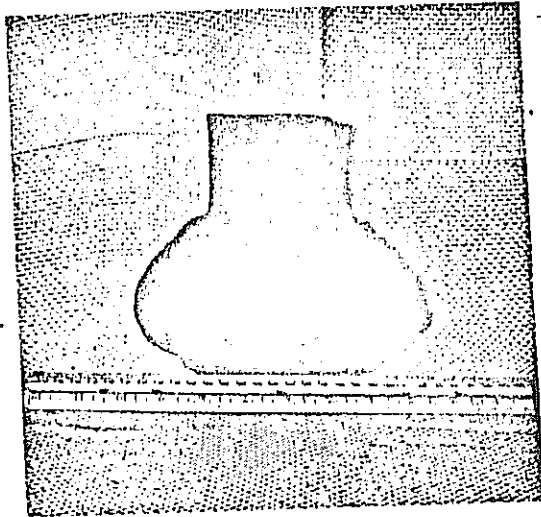


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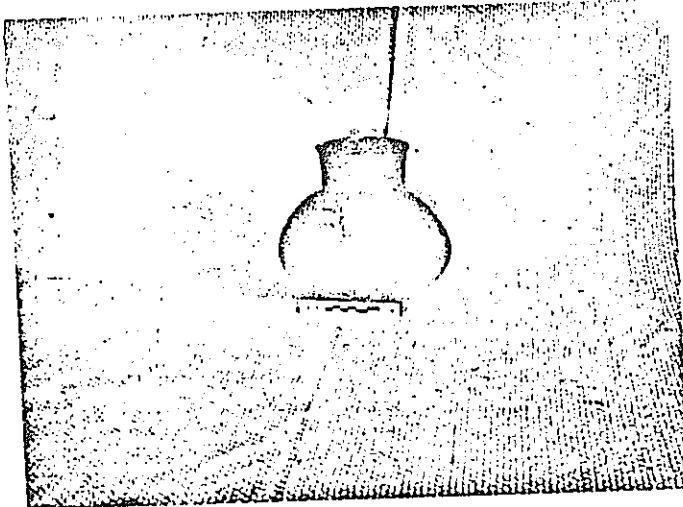


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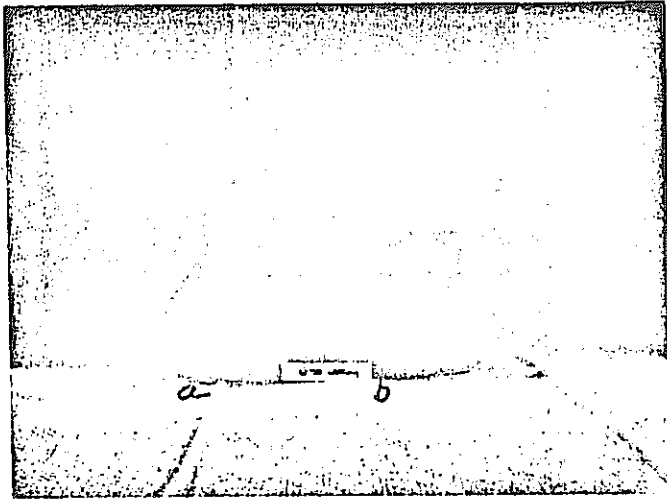


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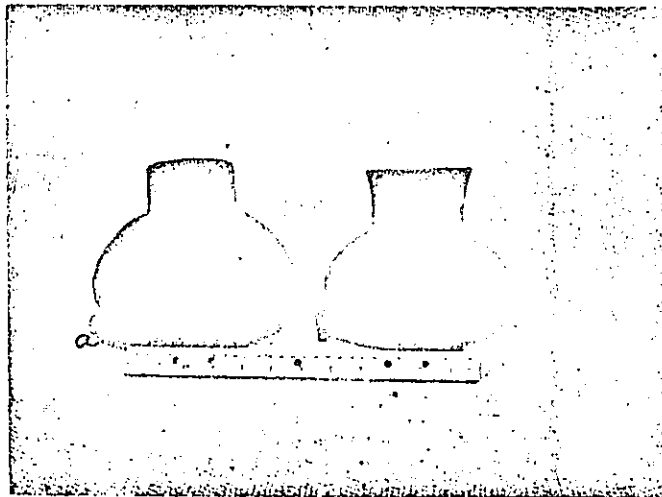


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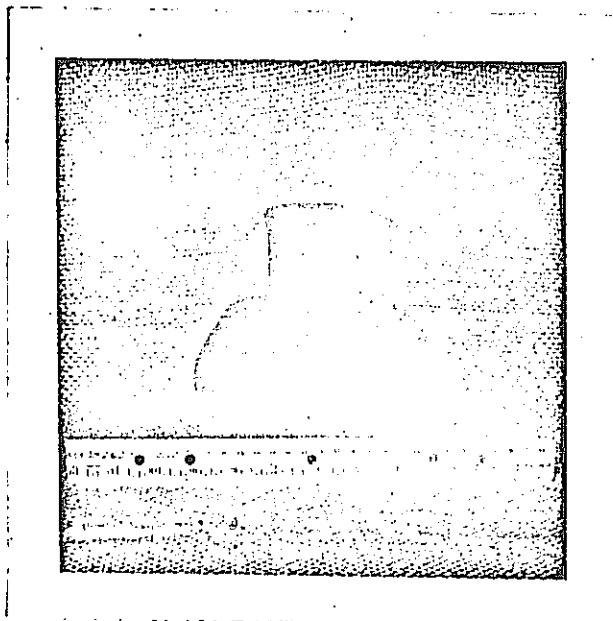


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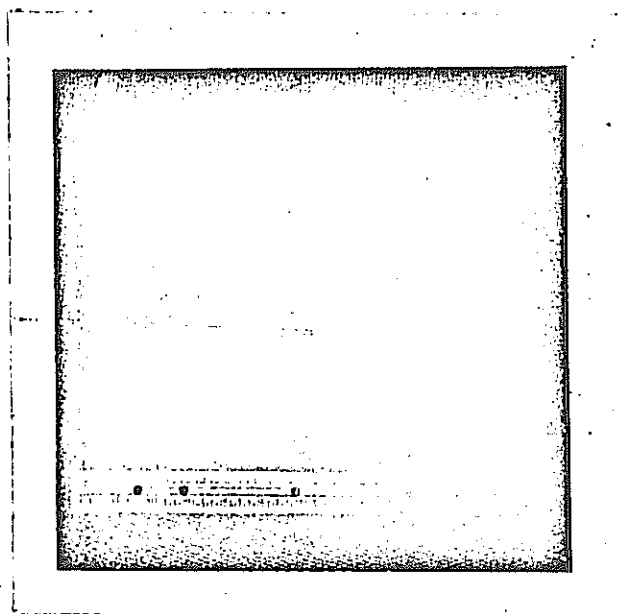


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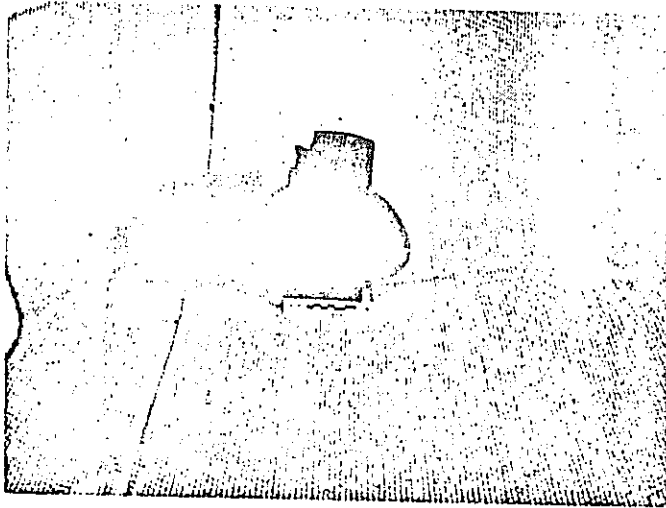


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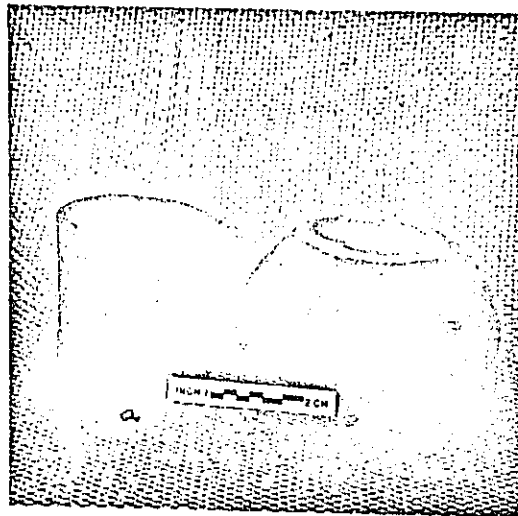


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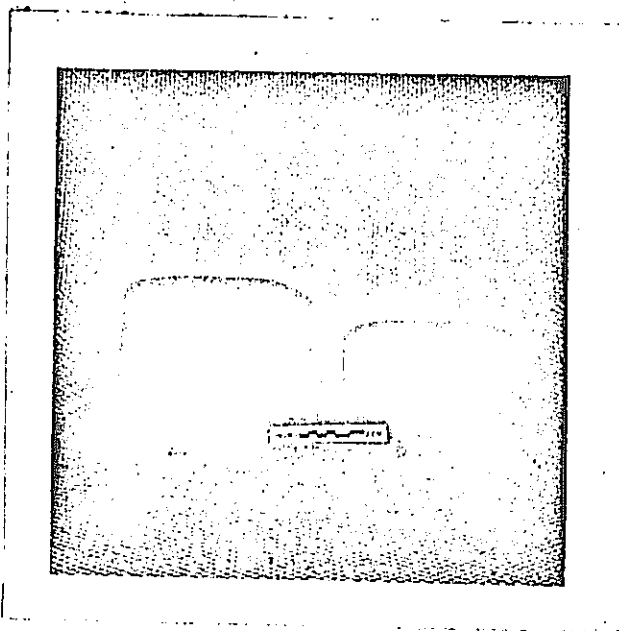


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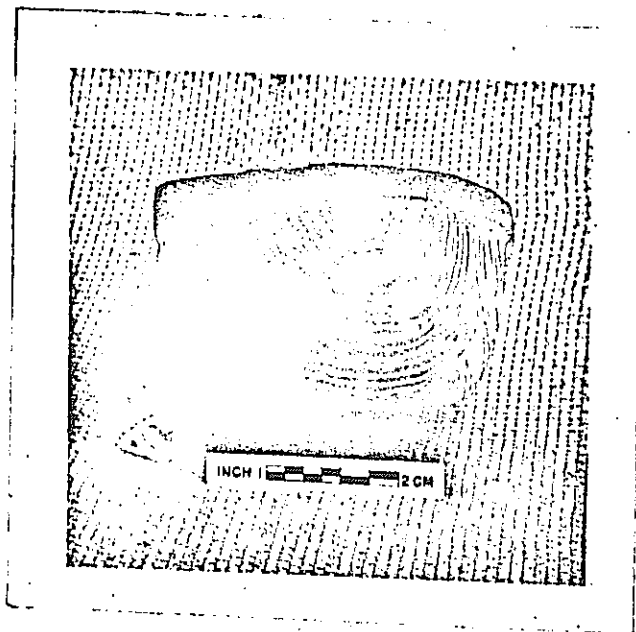


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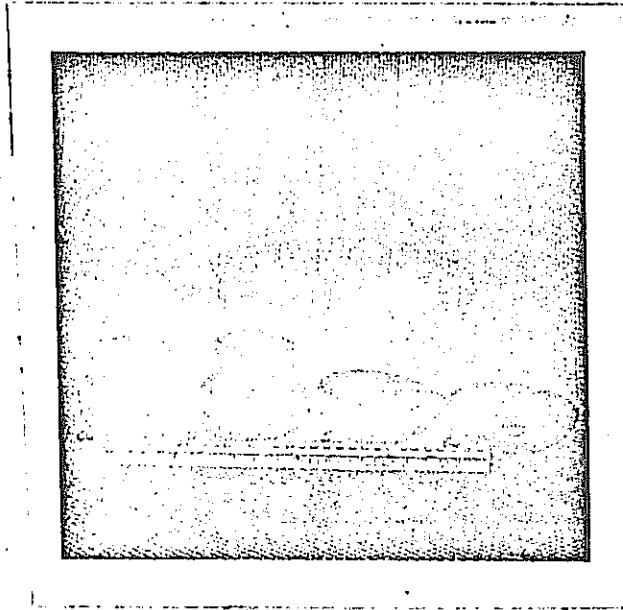


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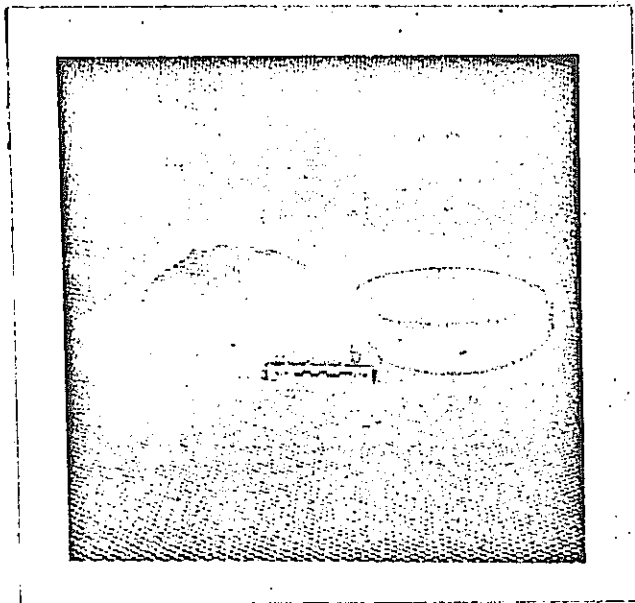


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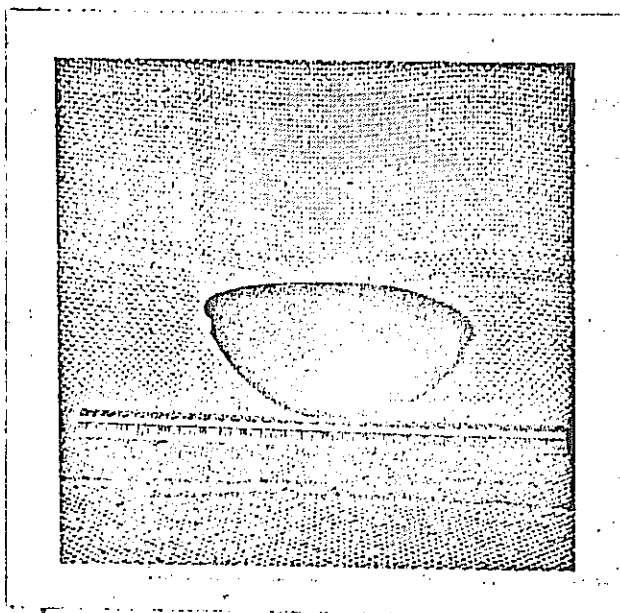


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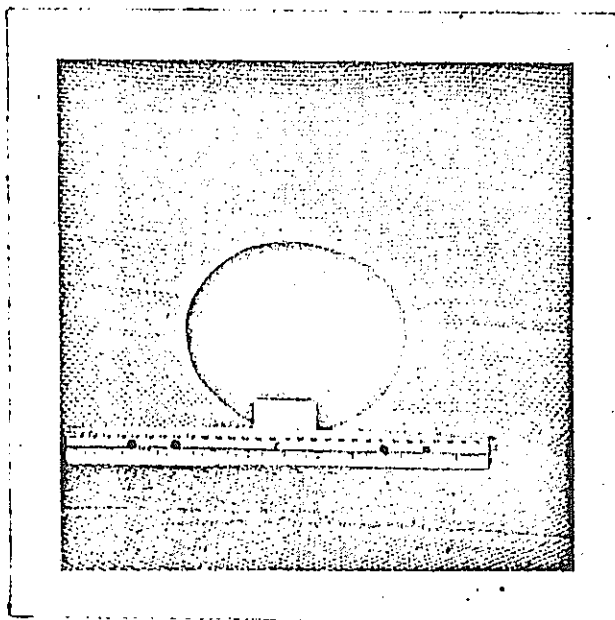


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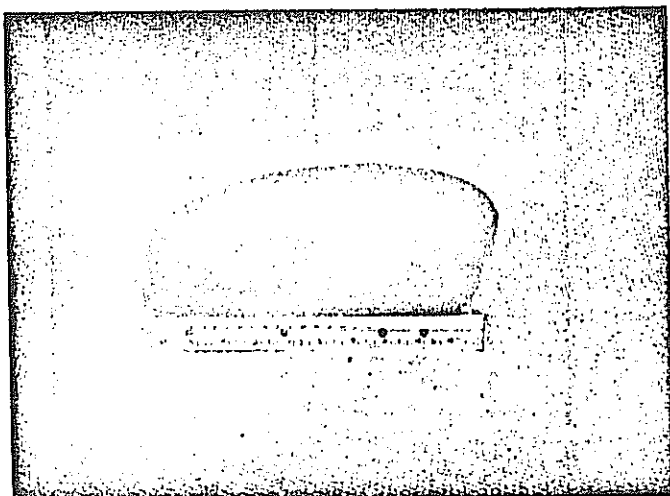


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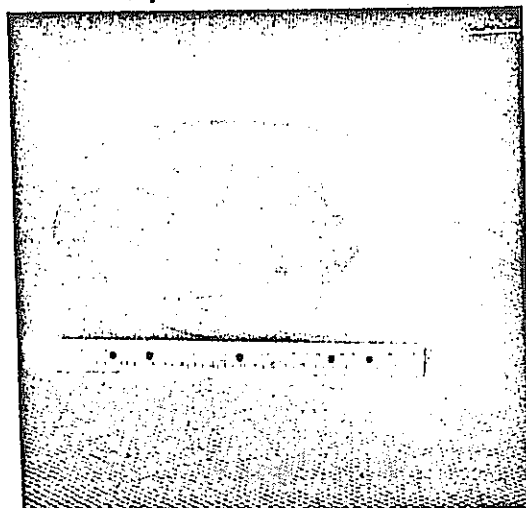


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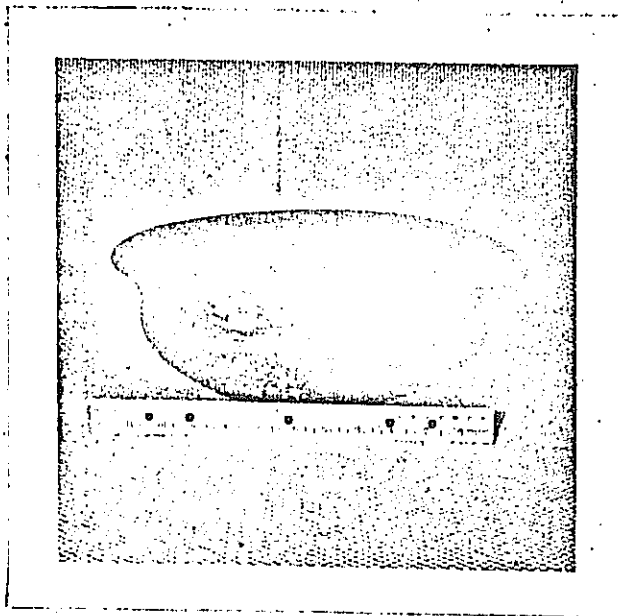


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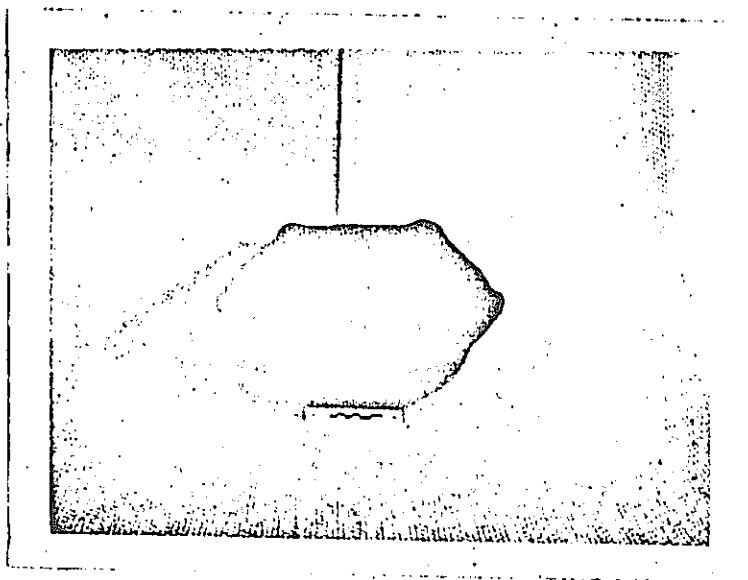


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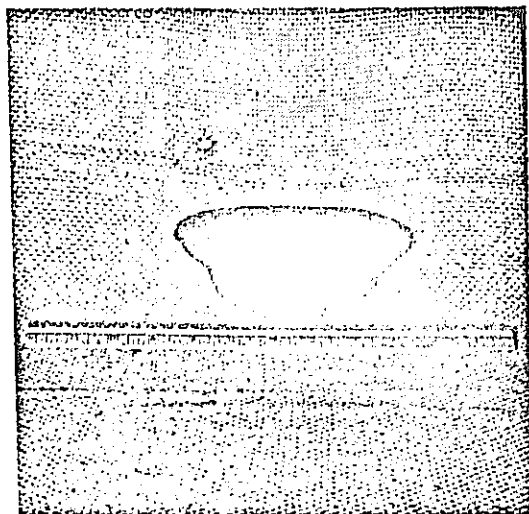


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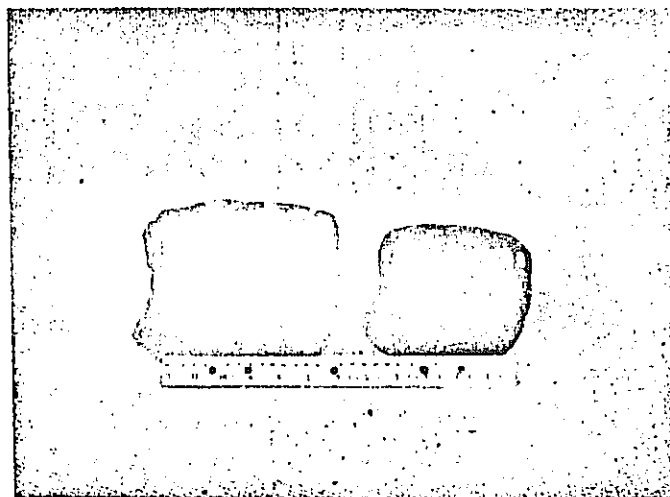


Figure 66

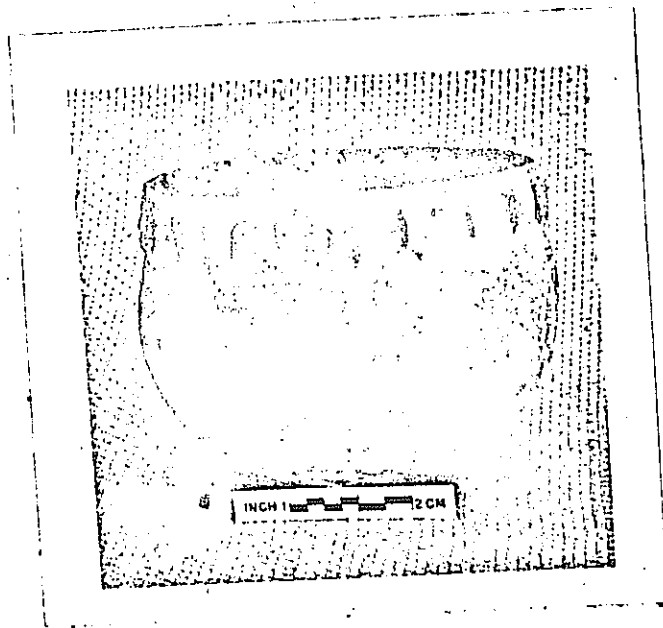


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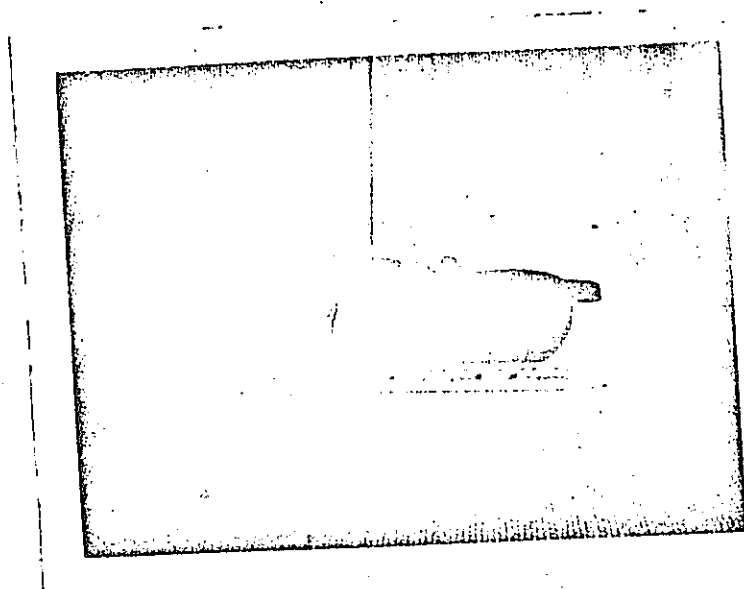


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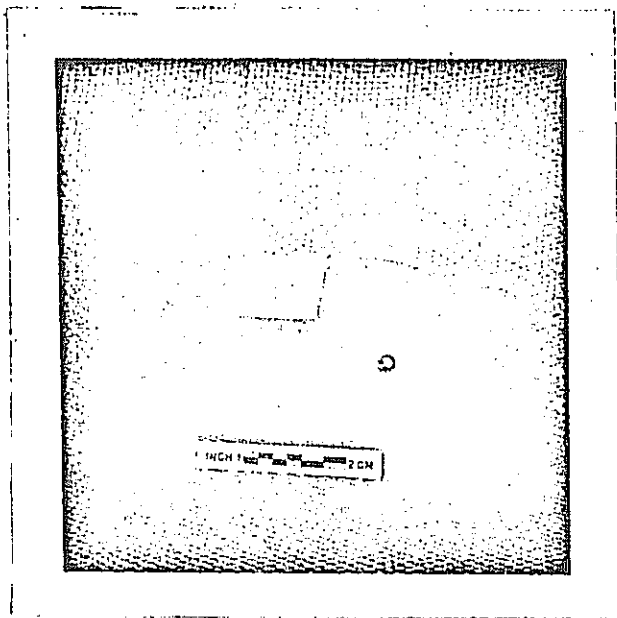


Figure 69



Figure 70

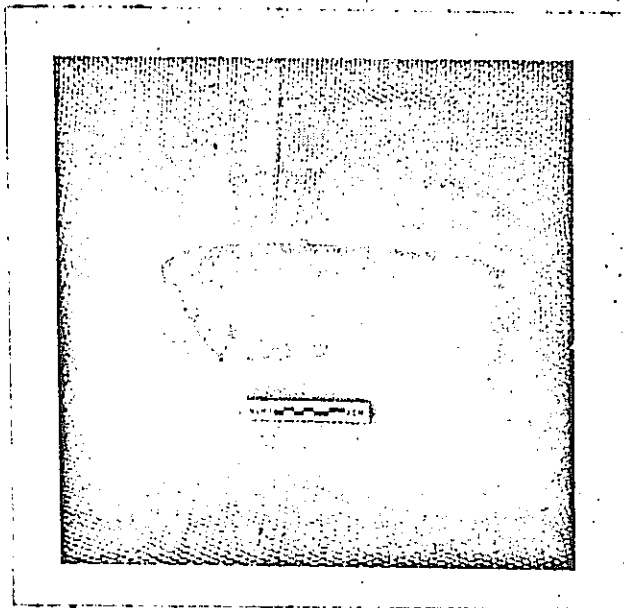


Figure 71



Figure 72

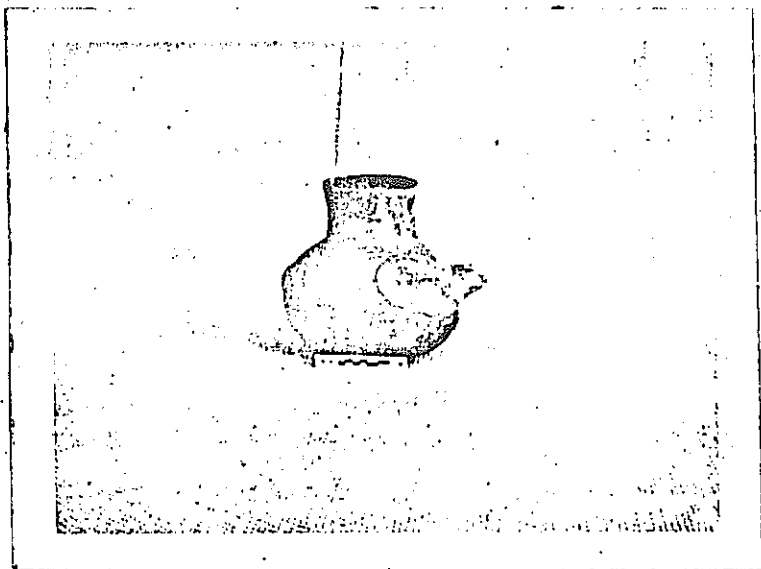


Figure 73



Figure 74

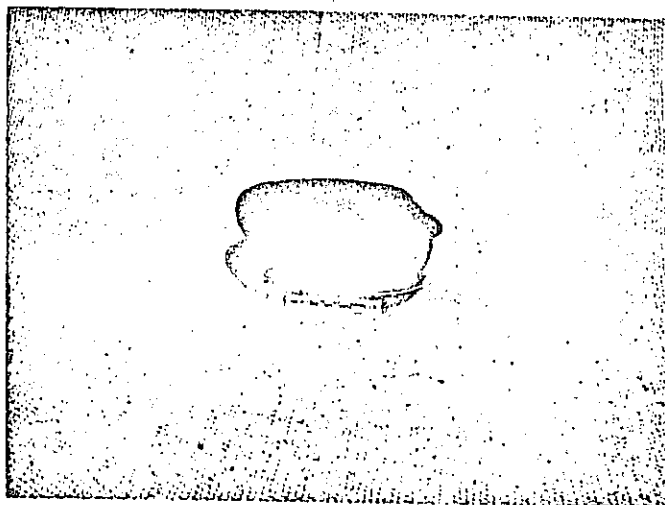


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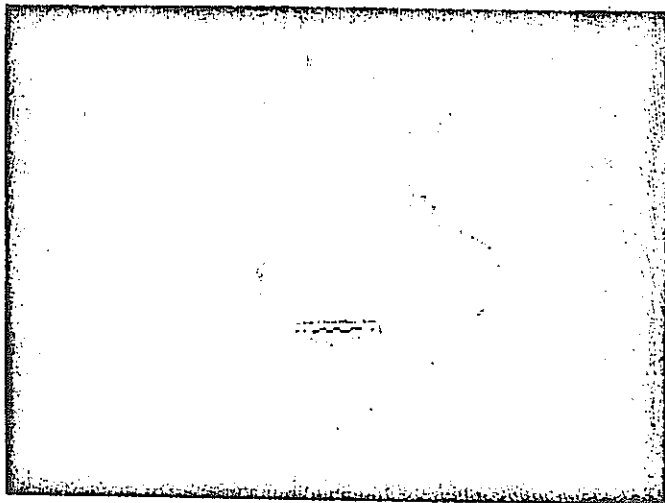


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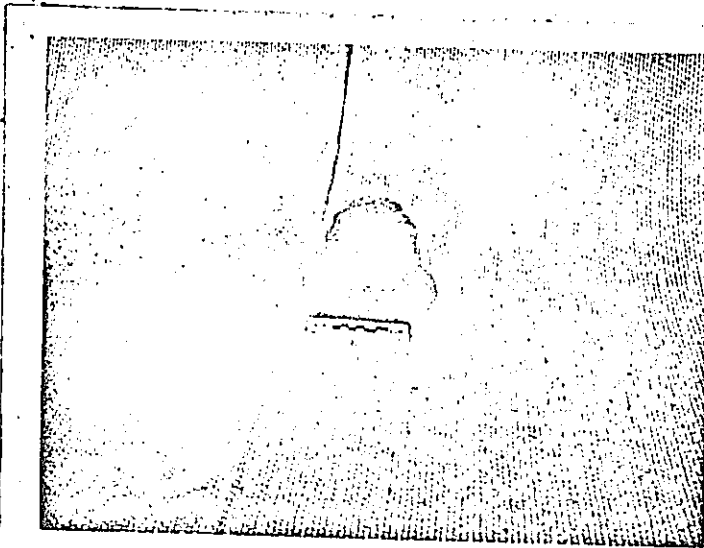


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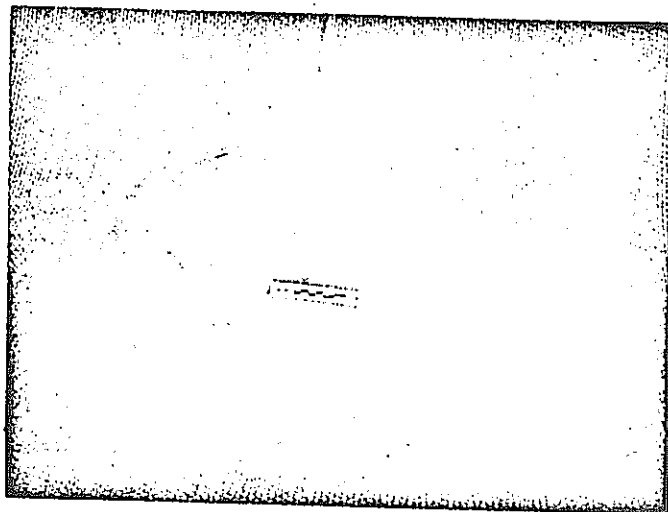


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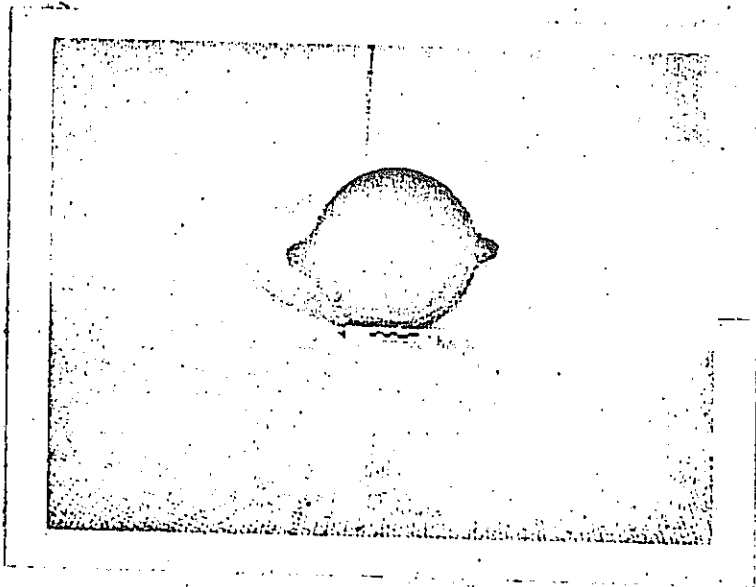


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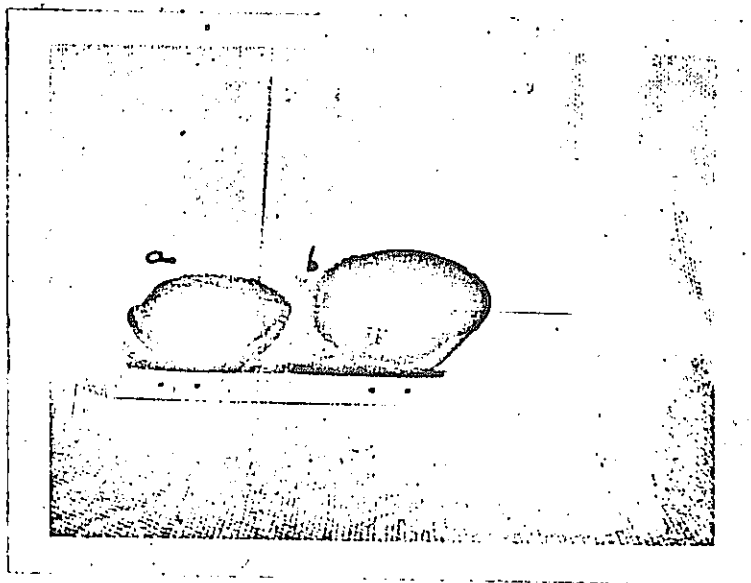


Figure 80



Figure 81

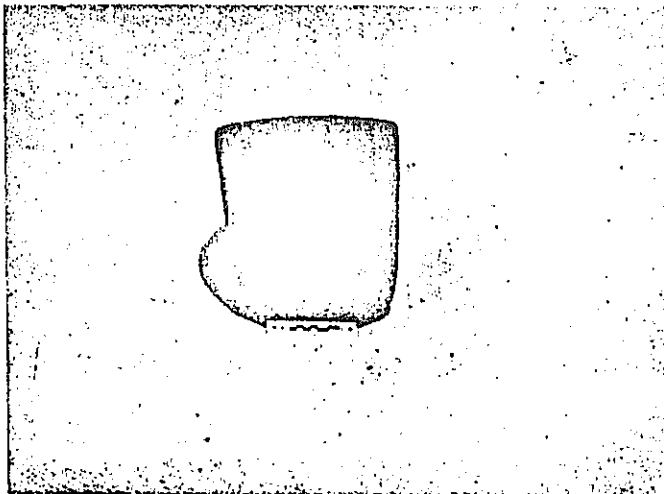


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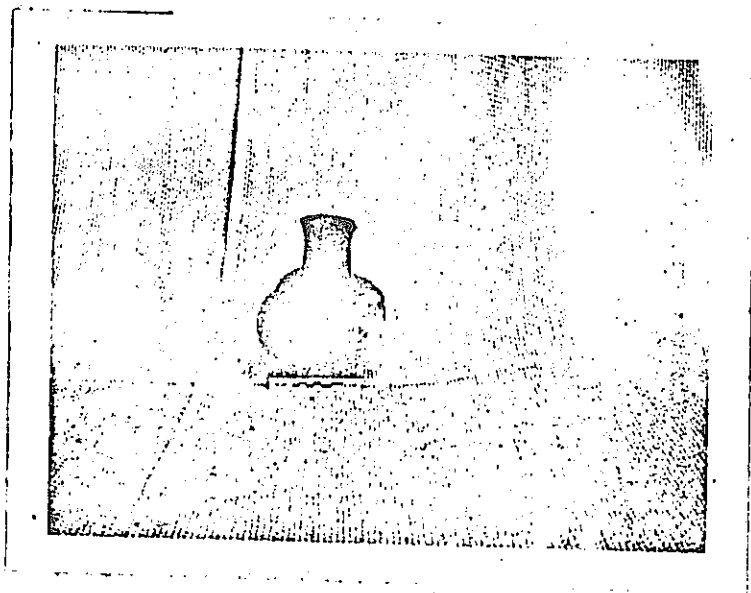


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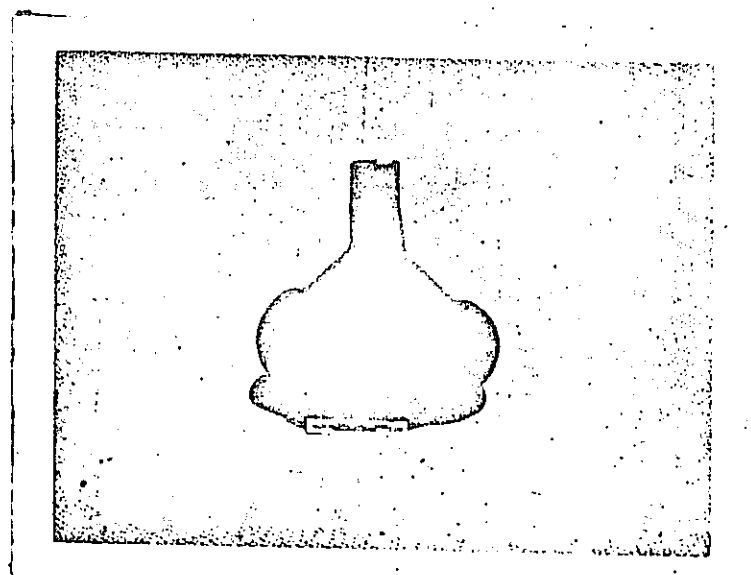


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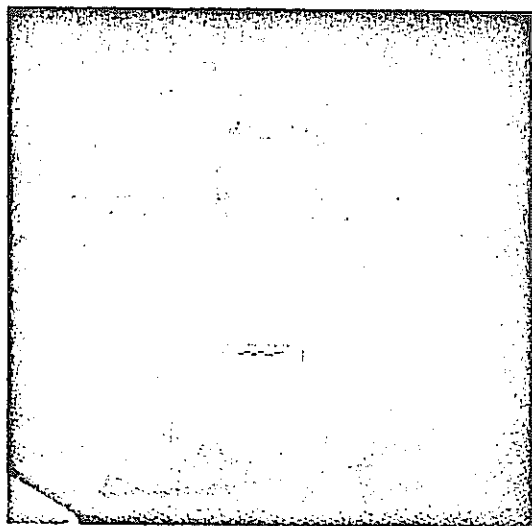


Figure 85

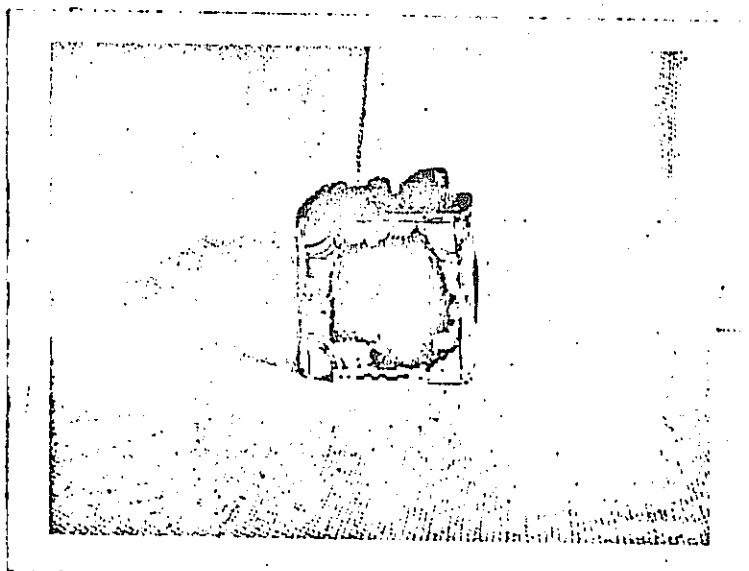


Figure 86

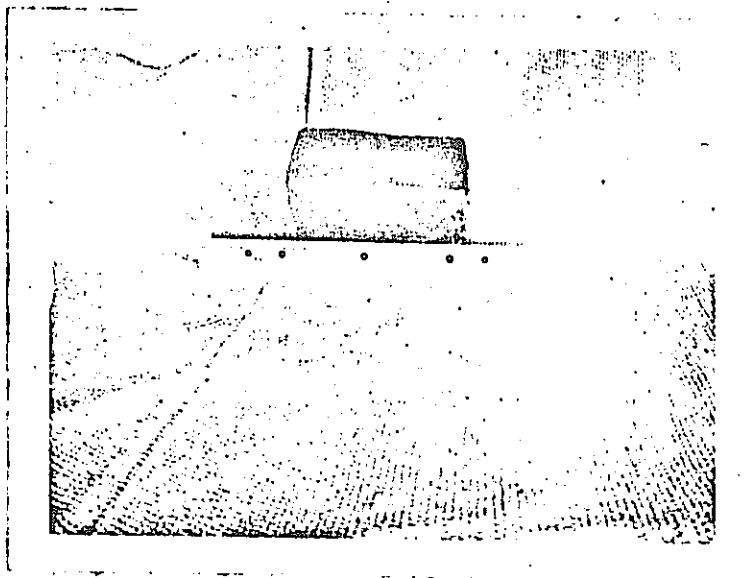


Figure 87



Figure 88

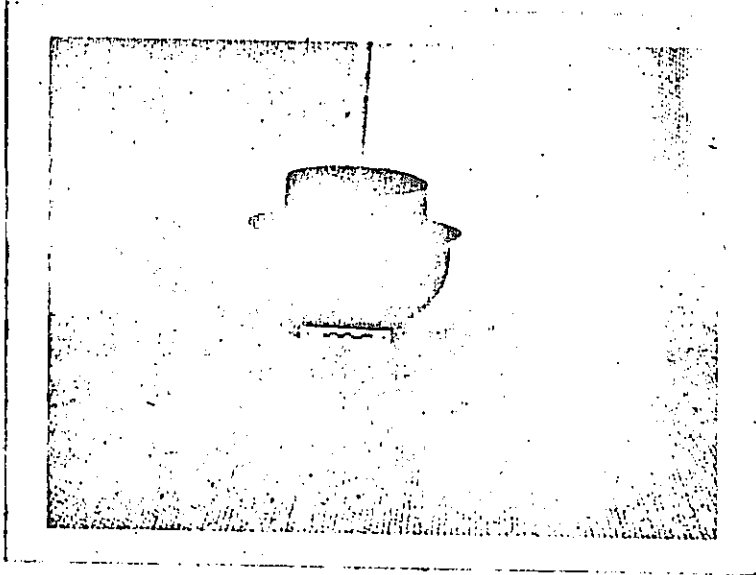


Figure 89

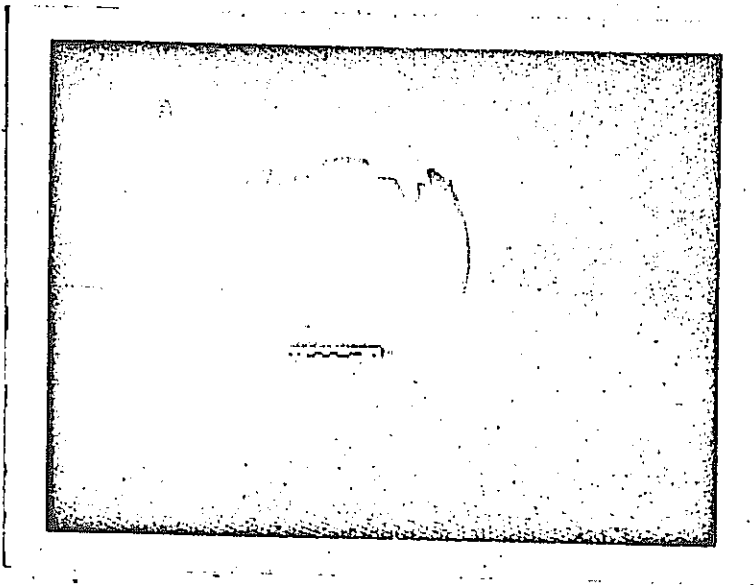


Figure 90



Figure 91

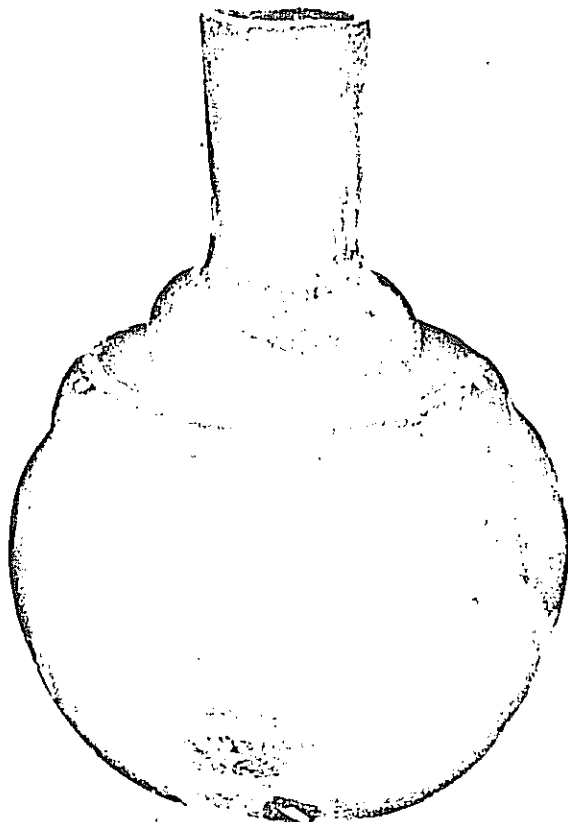


Figure 92



Figure 93

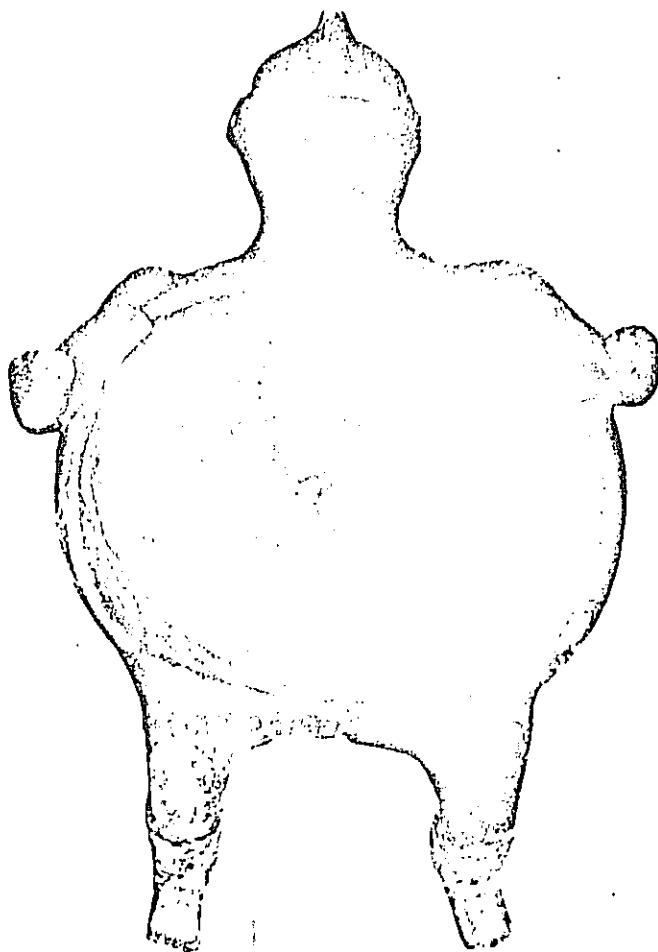


Figure 94

CHAPTER III

CORRELATIONAL ANALYSIS OF WHOLE VESSEL DIMENSIONS

In chapter II simple statistics were used to describe variations in vessel size. This chapter is an exploratory attempt to apply the concepts of product-moment correlation and regression in order to describe and analyze vessel size and technique of manufacture.¹

The statistical data are presented in tables 5 through 13. Samples used are exactly the same as those in Chapter II (see p. 58).² Because of the number of correlations and the size of the sample, scattergrams to accompany the regression equations were impracticable. However, in the preparation of this chapter several were constructed, using small random samples ($N=30$) from several pairs of variables. Upon inspection these appeared to confirm the assumption of homoscedasticity and linearity of relationship. In any case, the general nature of the data would seem to support these assumptions -- and at least it does not disprove them.

In regard to the correlation of bottle measurements (Tables 5 and 6), the diameter at lip (DL) is correlated separately from the other 4 dimensions. This is necessary because, as explained on p. 71 , significant size differences exist between Moundville Black Filmed bottles and the remainder of the types (MFB, MEI, MFI). For the lip diameter only, then, separate correlations were required, as shown in Table 6.

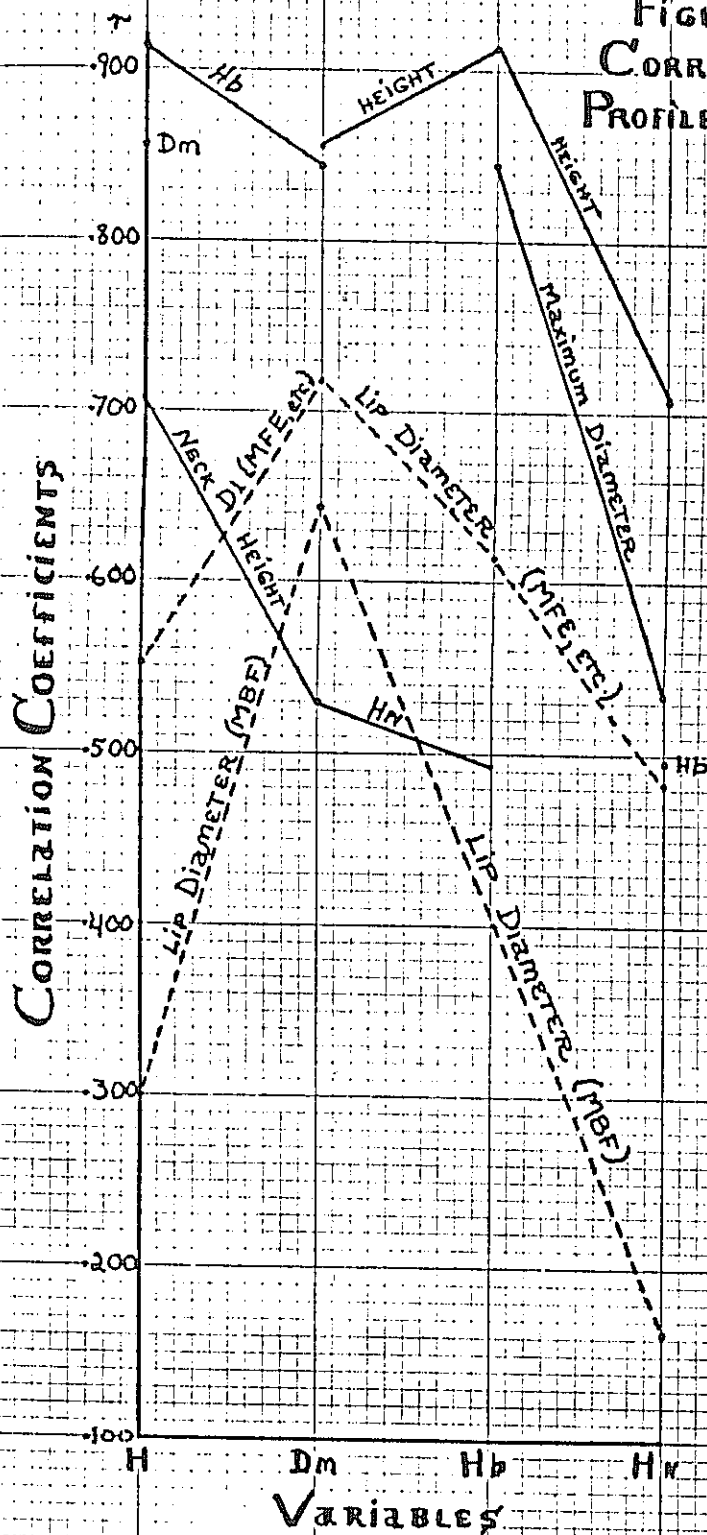
In Table 10 the dimensions of each type of bowl are correlated separately, although analysis of variance indicates that certain types may be grouped (see p. 70). These separate correlations were advisable because of the wide divergence in values of r .

Directing our attention to the data on bottles (Tables 5-9), we immediately notice that all correlations are positive and unusually high. Correlation between height, body height, and neck height is partly spurious since total height includes the latter 2 dimensions; but correlations between independent variables are still high (e.g., maximum diameter and height). Neck height and lip diameter do not correlate as strongly with the other dimensions or with each other. This is markedly true of the MBF sample (Table 6), in which the lip diameter-neck height correlation of .162 is not significant at the 5% significance level. The probable explanation for this low value is that the MBF sample contains several large vessels with both high and narrow necks (i.e., approaching the carafe form) and also miniatures with low and broad necks.

While neck height and lip diameter produce relatively low values of r , they do not form a significant cluster. Using the technique outlined by Fruchter (1954:12-17), I attempted a cluster analysis. It indicates no groups of variables that correlated more highly among themselves than with the remaining variables. The correlational profiles in Fig. 95 illustrate this.

Because of the high correlations, the standard errors of estimate fall within reasonable limits (Tables 7-9). Quite accurate prediction is therefore possible. If one dimension is known -- say body height --

FIGURE 95:
CORRELATIONAL
PROFILES OF BOTTLES



the dimensions of the missing section, e.g., the neck, can be reconstructed fairly accurately. The equations treat each dimension as both the independent and dependent variable. That is, they express the regression of, for example, body height on neck height and vice versa. Thus a vessel from which only one measurement is available can be in theory entirely reconstructed.

What can we conclude from these statistics about construction of bottles? First, it is apparent that the body dimensions (excluding necks) are closely related. For example, some 70% of variation in body height is associated with variation in maximum diameter ($r^2 = .714$). Once body height was decided upon, diameter was virtually fixed; or perhaps there was a standard of total size that controlled each dimension and caused the correlation.

A second conclusion is that neck dimensions are not as closely related to body dimensions as the other measurements. Apparently necks were partially independent of the body in respect to size, although they by no means varied at random.

On MBF bottles diameter at lip and neck height are very weakly related ($r = .162$), if at all; moreover, these vessels tend in general to vary most in size of all the types. Lacking decoration, perhaps their esthetic attraction was produced through variation in shape and size.

Turning to bowls, only 2 measurements were taken, height and maximum diameter (= diameter at lip). While the correlation is not as great as that of bottle dimensions, it does indicate that height

increased regularly with increase in diameter (Tables 10-11). A notable exception is the extremely low correlation of the MFE sample ($r = -0.05$), which is not significant at the 5% level. This occurs because such vessels were mostly beaker-bowls with a rather invariant height of 7-8 cm. but a widely varying diameter. The variation is essentially a function of the base-body wall angle; as the angle increases the side slopes outward more and more and simultaneously increases in length to maintain the total height of the vessel.

Dimensions of jars (Tables 12-13) are, like those of bottles, highly intercorrelated without significant clusters (Fig. 96). This is as might be expected, even allowing for spurious correlation, for in both size and shape jars are the most uniform of the 3 vessel forms. The implication is that jars were conceived of and constructed as a unit. Their utilitarian nature also might have discouraged experiments in construction.

In summary, these remarks merely reaffirm the conviction that vessel construction was guided by systematic, definite standards. The statistics used in this chapter are unsophisticated. The next step would be to make more measurements and attempt a factor analysis, so that the inferred standards of technique could be more clearly isolated. Such a study could be programmed on an electronic computer with little difficulty.

FIGURE 96:
CORRELATIONAL PROFILES of Jars

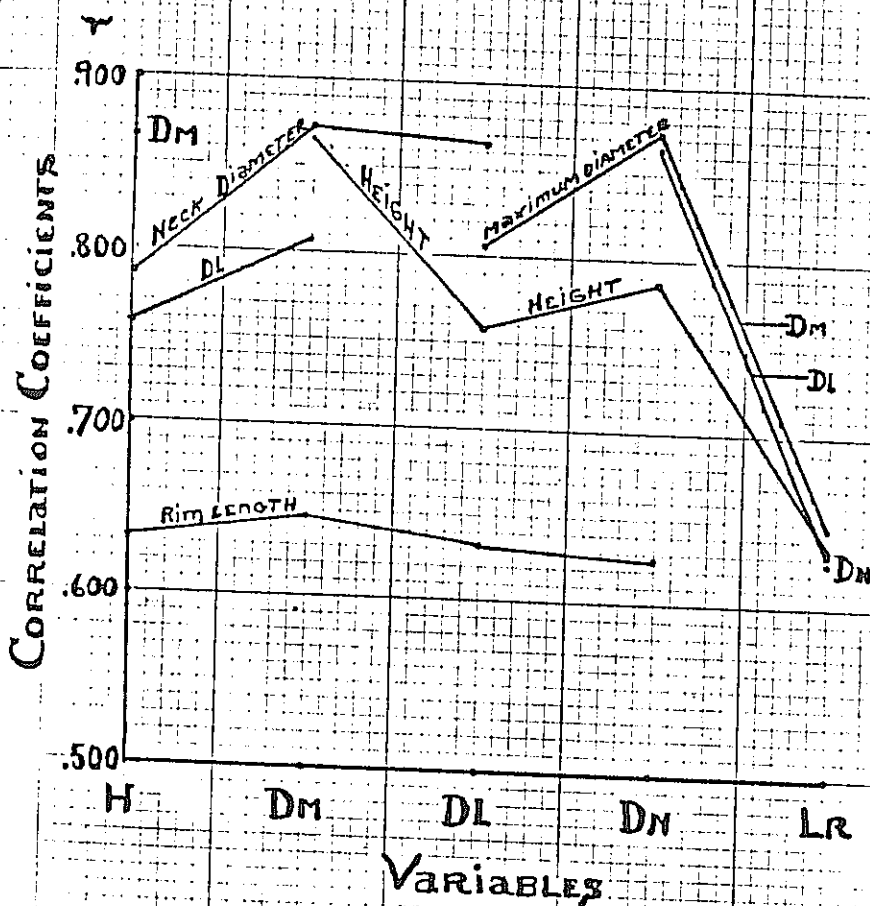


TABLE 5.--Correlations of bottle measurements. Lip diameter omitted. N=178.

Variable	H	Dm	Hb	Hn
Height	--	.855	.911	.707
Max. Diameter	.855	--	.845	.531
Body Height	.911	.845	--	.496
Neck Height	.707	.531	.496	--

TABLE 6.--Correlations of bottle measurements: lip diameter with other variables. Sample of MBF (N=55) separate from combined samples of MFE-MEI-MFI (N=123).

Variable	MBF	MFE-MEI-MFI
Lip Diam.-Height	.300	.561
Lip Diam.-Max. Diam.	.641	.719
Lip Diam.-Body Height	.376*	.614
Lip Diam.-Neck Height	.162*	.481

Note: *MBF neck height correlation not significant at 5% level.

TABLE 7.--Regression equations and standard errors of estimate of correlated pairs in Table 5.

Variables	Regression Equation	S.E. of Est.
X=H, Y=Dm	$Y=23.89+0.88X$	16.75 mm.
X=H, Y=Hb	$Y=-7.31+0.73X$	10.31
X=H, Y=Hn	$Y=15.77+0.21X$	6.46
X=Dm, Y=H	$Y=17.27+0.83X$	16.23
X=Dm, Y=Hb	$Y=-2.26+0.65X$	13.34
X=Dm, Y=Hn	$Y=22.36+0.15X$	7.74
X=Hb, Y=H	$Y=31.87+1.14X$	12.93
X=Hb, Y=Dm	$Y=44.01+1.09X$	17.25
X=Hb, Y=Hn	$Y=27.37+0.18X$	7.93

TABLE 7.--Continued

Variables	Regression Equation	S.E. of Est.
X=Hn, Y=H	$Y=30.78+2.42X$	22.14
X=Hn, Y=Dm	$Y=62.51+1.88X$	27.37
X=Hn, Y=Hb	$Y=32.90+1.35X$	21.68

TABLE 8.--Regression equations and standard errors of estimate of correlated MBF pairs in Table 6.

Variables	Regression Equation	S.E. of Est.
X=H, Y=Dl	$Y=51.12+0.17X$	18.47 mm.
X=Dm, Y=Dl	$Y=21.44+0.39X$	14.91
X=Hb, Y=Dl	$Y=49.30+0.27X$	18.00
X=Hn, Y=Dl	$Y=62.26+0.29X$	19.19
X=Dl, Y=H	$Y=97.61+0.52X$	32.12
X=Dl, Y=Dm	$Y=58.65+1.06X$	24.75
X=Dl, Y=Hb	$Y=53.92+0.52X$	24.89
X=Dl, Y=Hn	$Y=41.86+0.09X$	10.61

TABLE 9.--Regression equations and standard errors of estimate of correlated MFE-MEI-MFI pairs in Table 6.

Variables	Regression Equation	S.E. of Est.
X=H, Y=Dl	$Y=83.64+0.43X$	15.73 mm.
X=Dm, Y=Dl	$Y=18.99+0.43X$	13.22
X=Hb, Y=Dl	$Y=33.02+0.55X$	15.11
X=Hn, Y=Dl	$Y=33.84+1.11X$	16.66
X=Dl, Y=H	$Y=76.29+0.74X$	20.83
X=Dl, Y=Dm	$Y=49.51+1.19X$	21.88
X=Dl, Y=Hb	$Y=34.75+0.69X$	16.85
X=Dl, Y=Hn	$Y=8.65+0.43X$	7.23

TABLE 10.--Correlations.
between height and maxi-
mum diameter of bowls.

Type	r	N
MBF	.775	49
MFE	-0.05*	29
MFI	.507	20
Plain	.678	21

Note: *MFE correlation
not significant at 5%
level.

TABLE 11.--Regression equations and standard errors
of estimate of the correlated pairs in Table 10.

Type	Variables	Regression Equation	S.E. of Est.
MBF	X=H, Y=Dm	$Y=50.62+1.45X$	30.32 mm.
	X=Dm, Y=H	$Y=9.62+0.41X$	16.26
MFE	X=H, Y=Dm	$Y=136.45+0.17X$	41.95
	X=Dm, Y=H	$Y=73.49+0.02X$	13.26
MFI	X=H, Y=Dm	$Y=99.19+0.42X$	18.97
	X=Dm, Y=H	$Y=-4.28+0.61X$	22.92
Plain	X=H, Y=Dm	$Y=49.23+1.31X$	20.94
	X=Dm, Y=H	$Y=11.17+0.35X$	10.83

TABLE 12.--Correlations of jar measurements. N=42

Variable	H	Dm	Dl	Dn	Lr
Height	--	.865	.759	.788	.633
Max. Diameter	.865	--	.807	.872	.648
Lip Diameter	.759	.807	--	.863	.631
Neck Diameter	.788	.872	.863	--	.627
Rim Length	.633	.648	.631	.627	--

TABLE 13.--Regression equations and standard errors of estimate of correlated pairs in Table 12.

Variables	Regression Equation	S.E. of Est.
X=H, Y=Dm	$Y=40.46+0.92X$	12.11 mm.
X=H, Y=Dl	$Y=47.60+0.69X$	13.48
X=H, Y=Dn	$Y=44.71+0.67X$	11.88
X=H, Y=Lr	$Y=-1.92+0.22X$	6.06
X=Dm, Y=H	$Y=-5.93+0.81X$	11.33
X=Dm, Y=Dl	$Y=25.59+0.69X$	12.22
X=Dm, Y=Dn	$Y=19.60+0.70X$	9.45
X=Dm, Y=Lr	$Y=-7.73+0.21X$	5.96
X=Dl, Y=H	$Y=5.90+0.83X$	14.74
X=Dl, Y=Dm	$Y=24.55+0.94X$	14.29
X=Dl, Y=Dn	$Y=18.57+0.81X$	9.76
X=Dl, Y=Lr	$Y=-7.58+0.24X$	6.07
X=Dn, Y=H	$Y=-0.77+0.92X$	13.93
X=Dn, Y=Dm	$Y=12.02+1.09X$	11.84
X=Dn, Y=Dl	$Y=13.96+0.92X$	10.46
X=Dn, Y=Lr	$Y=-8.15+0.25X$	6.10
X=Lr, Y=H	$Y=67.55+1.83X$	17.51
X=Lr, Y=Dm	$Y=96.30+2.00X$	18.41
X=Lr, Y=Dl	$Y=85.87+1.67X$	16.04
X=Lr, Y=Dn	$Y=83.34+1.55X$	15.04

Notes

1. McNemar's Psychological Statistics (third edition, 1962), although more advanced than most introductory textbooks, provides a clear and detailed explanation of correlation and regression.

2. As in Chapter II, the Harvard IBM 7090 was used to compute these statistics.

CHAPTER IV

NON-CEREMONIAL ARTIFACTS

In comparison to the great quantity of pottery and ceremonial artifacts (see Chaps. II and V), non-ceremonial artifacts of stone, clay, bone, shell and copper are uncommon at Moundville and not at all elaborate.

The scarcity of these artifacts is undoubtedly due in some degree to Moore's interest in objets d'art. While he is wont to describe an attractively engraved vessel in great detail, his descriptions of such unprepossessing things as projectile points and bone awls are brief and vague. He might have disregarded many such artifacts. In the collection at Moundville, too, utilitarian artifacts, with the exception of ground stone celts, are not well represented.

Those artifacts present are described in the chapter. Exact frequency counts of the particular classes were not made because of the obvious incompleteness of the sample and the fragmentary condition of many specimens, which sometimes made it difficult to ascertain what they were.

Chipped Stone

Projectile Points

These were relatively abundant, but there were still not over 90 of them. About one-quarter of these were broad, triangular forms with

square stems. A few others were barbed or corner-notched. Since almost all of these types came from the western part of the site, where the pre-Mississippian occupations were concentrated, they can probably be ascribed to Woodland components.

The typical projectile point of the Moundville phase was a small triangular point frequently having a slightly concave base (Fig. 97). It was finely chopped from flint or occasionally quartz of various colors. On a few specimens the edges are finely serrated.

A sample of 27 complete projectile points yields the following data on sizes:

mean maximum length	26.5 mm.
median length	25.0
standard deviation	5.5
range	18-36
mean maximum width	12.4
median width	11.5
standard deviation	2.3
range	9-18
mean maximum thickness	3.9
range	3-6
width/length ratio	0.47

Other chipped stone artifacts are inordinately rare, numbering not more than 50. There are several large blades or knives (Fig. 98), a few crude rectangular or ovoid flake scrapers, drills worked from projectile points, and irregular flakes. Some of these, if not all, might have come from the Woodland occupation.

Ground Stone

Celts

The most common artifact at Moundville other than pottery is the

ground stone celt. In the collections at the site there are literally hundreds, mostly fragmentary.

Size varies considerably. Length ranges from approximately 50 to 250 mm., with a mean of about 125 mm. Most specimens are rectangular, tapering to a blunt point, but the bit of many celts is straight or even slightly convex (Fig. 99). Cross-sections are rectangular with rounded corners, tapering to the bit. The cross-section of the more pointed forms is circular or ovoid. The celt is always ungrooved.

Material is mostly greenstone, a fine-grained, green-black stone found in the Appalachians and the Piedmont. Limestone and quartzite were occasionally used.

Quality of workmanship varies. In general the smaller celts are highly polished and show no signs of wear. These were probably ceremonial and could have been described as well with the large, meticulously manufactured celts associated with the Southeastern Ceremonial Complex (Chap. V). The larger utilitarian celts are more roughly finished and show pitting and chipping at the bit. A discolored band around the head of a few specimens indicates that they were hafted.

Hammerstones

These moderately common artifacts are rounded-rectangular pebbles or cobbles of igneous and metamorphic rock. They are roughly shaped and battered at one or both ends.

Pebble Hammers

This term refers to unshaped pebbles, usually of quartz, quartzite, or sandstone. Uncommon.

Grinding Rocks

Flat, irregular sandstone or quartzite slabs, smoothed on one or both surfaces, sometimes pitted.

Pestles

Crudely shaped conical implements of limestone. Rare.

Shaft Polishers

Rectangular sandstone fragments with one or more grooves on the surface. These are identical to the characteristic Oneota shaft polisher. Relatively common.

Stone Balls

Spheroids of sandstone. Rare.

Hoes

Long-rectangular or ovoid implements 150-300 mm. long, roughly fashioned of limestone, sandstone, or greenstone slabs. Uncommon.

Pipes

The stone effigy pipes associated with the Southeastern Ceremonial

Complex are described in Chapter V. Moore found a fragmentary turtle-effigy pipe (1905:221) and one other steatite specimen. It is composed of a short stem (30 mm.) and a rounded bowl with a flared rim (40 mm. long) at right angles to the stem. The bowl is decorated with large nodes (Moore 1905:Fig. 95). This pipe is interesting because it is virtually identical to a clay pipe from Etowah (Moorehead 1932:Fig. 62d). West (1934:I, 298-299) calls these "coffee-bean" pipes and notes that they are found mostly in Georgia. However, occurrences are reported from North Carolina, Tennessee, Illinois, and Wisconsin. Cultural affiliations are not mentioned.

Miscellaneous Stone

Miscellaneous stone artifacts, each represented by a single specimen, are a hematite plummet, a mammiform object of sandstone, and a stone bead. Deposits of hematite, mica, and a cube of galena were found associated with burials.

Clay Artifacts

Baked Clay Discs

At least 100 of these are in the collections at Moundville. They are thin discs, 30-70 mm. in diameter, often perforated in the center. Some were obviously worked plain or black filmed sherds, others may have been originally molded in a circular shape.

Clay Pipes

In contrast to the elaborately carved stone effigy pipes (see Chap. V), clay pipes for every day use are crude. The several found are equal-arm elbow types with the bowl slightly expanded or flared (Moore: 1905; Figs. 82-83; Fig. 106a,c, this paper). One extremely crude pipe is merely a lump of clay with a hole through it (Fig. 106b).

Figurines

The few fragmentary and crude specimens seem to represent humans, possibly female (Fig. 105):

Pottery Trowels or Anvils

These mushroom-shaped implements are tempered with coarse shell and the paste resembles that of plain vessels (Fig. 105 d-g). They might have been used as smoothing or pounding tools in pottery manufacture. That shown in Fig. 105d is a white-filmed lug or other such appendage worked into a smoothing implement.

Bone and AntlerBone Awls and Pins

About 70 individual specimens in the collections are made from the long bones of birds and from deer ulnae. They range in size from 4 to 16 mm. (Figs. 100, 101). The larger are pointed and slightly polished at the distal end, and projections on the proximal end have been smoothed. They were occasionally found near the skulls of burials, indicating their

use as hairpins or ornaments.

Fishhooks

In the Museum of the American Indian there are several bone fishhooks cut from one piece. They are unbarbed and grooved at the top of the shank.

Antler Projectile Points

These are antler tips with concave bases. Rare.

Miscellaneous Bone and Antler Artifacts

These include short bone pegs, antler pegs and flakers, bone barrel-shaped beads, two strips of bison horn associated with copper ornaments (identification by Moore 1905:162-163), a beaver incisor, several bear (?) canines perforated through the root, and at least one perforated shark tooth. The perforation of the bear canines is drilled from both sides.

Shell

Beads

Evidence from burial associations show that beads were commonly worn as bracelets, anklets, or necklaces. Moundville beads are typically spheroidal with center perforation. Three sizes, large, medium, and small, with no overlap in size, are clearly distinguishable. Large-size beads average 26 mm. in diameter and weigh on the average 19 gm. Medium-size beads average 16 mm. in diameter and weigh 5.5 gm. The

small beads are 8 mm. in average diameter and weigh only 2 gm. This rapid decrease of weight in relation to size is probably due to the fact that the perforation in all three sizes has a relatively constant diameter, with the result that the smaller beads have a larger hollow center (Fig. 102).

Judging from burial associations, medium-size beads were most popular for necklaces, and large beads for bracelets, and, worn singly, or in pairs, for hair ornaments.

Disc and cylindrical beads were less common than spheroidal beads. A few small square or rectangular beads with two center perforations were found.

Earspools

Since copper-covered wooden earspools were the preferred type, shell ear ornaments were rare. Two types are present: flat shell discs with center perforation and an earplug made from the conch columella (Fig. 103).

Miscellaneous Shell

Several sections of the conch columella up to 150 mm. long might have been pins. A few large mussel shells seem to have been shaped by smoothing the hinge area, possibly for use as spoons.

Copper

As might be expected, copper was not much used outside of ceremonial context. When used for ornaments, it was usually associated with

wood.

Earspools

Moore recovered several copper-covered wooden earspools, and there were at least eight in the collections at Moundville (Fig. 104c-e). Descriptions of burials in the field notes indicate that they were rather common. Earspools are discs of wood (cedar?) 40-50 mm. in diameter having a solid convexity on one side which is perforated. A thin covering of copper is applied to both sides of the disc. Moore (1907a: 402) pictures a bone pin extending through one earspool; a small piece of string, apparently aboriginal, extends through one at Moundville. Evidence from burials shows that they were worn in pairs, two in each ear. Their frequency as burial association suggests that they were worn as everyday apparel (unless, of course, the individual was dressed in ceremonial attire before interment).

Miscellaneous Copper

A puzzling copper and wood artifact, probably ceremonial but discussed here because it is not specifically a Southeastern Ceremonial Complex trait, is a fragmentary wooden "face" originally covered with thin sheet copper. It is displayed in the Museum of the American Indian (Cat. No. 17/3) and is alleged to have been found with burial No. 155, south of Mound D. Moore, however, makes no mention of it.

The face is a thin, ovoid piece of wood about 80 mm. from top to bottom and 40-60 mm. wide. An indented band runs across the forehead. There is a hole where the nose should be, but the wood is too badly de-

teriorated to make out the facial features. The resemblance to the Long Nosed God mask is discussed in the final chapter.

There are two small, unbarbed copper fishhooks, one found near a prehistoric "lake" (Moore 1905:Fig. 164; Jones and DeJarnette n.d.: Pl. 3c). Other copper artifacts are a few tightly rolled copper strips about 10 mm. long, several disc beads 5 mm. in diameter, and a few unidentifiable fragments.

Artifacts from Other Moundville Phase Sites

To supplement the data from Moundville itself, I reviewed the artifact inventories of three related sites, Koger's Island (Webb and DeJarnette 1942:226-234) and the Perry site (Webb and DeJarnette 1948), both in the Pickwick Basin, and the Bessemer site (DeJarnette and Wimberly 1941), near Birmingham.

Artifacts at Koger's Island were mostly associated with burials. Artifacts present at this site but absent at Moundville are the followings:

- perforated stone gorgets
- perforated bird sterna gorgets
- pottery effigy pipe representing a dog (seemingly a copy of the Tennessee "dog pot"; see Webb and DeJarnette 1942:Pl. 252, Fig. 2)

Perforated bear and canine tooth pendants and conical antler projectile points (some barbed) are more common than at Moundville.

At the Perry site Nerita shell pendants, not found at Moundville (unless they occur among the unidentified shells) are present. Perforated shark teeth are more common than at Moundville.

The Bessemer site has actually fewer artifacts than does Moundville;

it adds nothing to the Moundville phase inventory.

Summary and Conclusions

The non-ceremonial artifacts of the Moundville phase may be characterized as follows:

Chipped stone: small, triangular flint projectile points of typical Mississippian form. Scrapers, knives, etc. are very rare.

Ground stone: distinctive are greenstone celts. Also present are hammerstones and various grinding and polishing implements.

Clay: small discs, sometimes perforated, are numerous. Pipes are right-angle elbow form. Pottery trowels are present. Figurines are crude and rare.

Bone and antler: bone awls and pins, bone fishhooks, bone and antler flaking and pounding implements, and antler projectile points are present. Bone beads and perforated beaver, bear and shark teeth are rare.

Shell: spheroidal beads were commonly worn. Sections of conch columella were used as earplugs and pins.

Copper: copper-covered wooden earspools were probably rather common ornaments. Copper beads are rare. Two copper fishhooks are present.

I am struck by the paucity and comparative crudity of these utilitarian artifacts. To be sure, shell and copper were probably reserved for ceremonial use, and many small bone implements may have disintegrated. Nevertheless the lack of projectile points and scrapers is hardly credible, as the Moundville phase must have manufactured many hunting and skin-dressing implements.

I feel that many utilitarian artifacts were not noticed or dis-
garded

by the excavators, who were doubtless overwhelmed by the plethora of pottery. This sample should not be considered representative in variety or quantity of the artifacts of the Moundville phase.

Explanations of Figures 97-106 (pp. 169-173)

Fig. 97. Projectile points. b and f are probably not Mississippian.

Fig. 98. Knives or blades. a is doubtfully Mississippian. a and b, flint; c, slate (?).

Fig. 99. Greenstone celts.

Fig. 100. Bone awls.

Fig. 101. Bone awls.

Fig. 102. Spheroidal shell beads. a, small; b, medium, c, large.

Fig. 103. Shell earplugs.

Fig. 104. a, fragment of copper; b-d, copper covered wooden earspools.

Fig. 105. Clay figurines.

Fig. 106. a-c, pottery pipes; d, white filmed lug (?) reworked into trowel; e-g, pottery trowels or anvils.

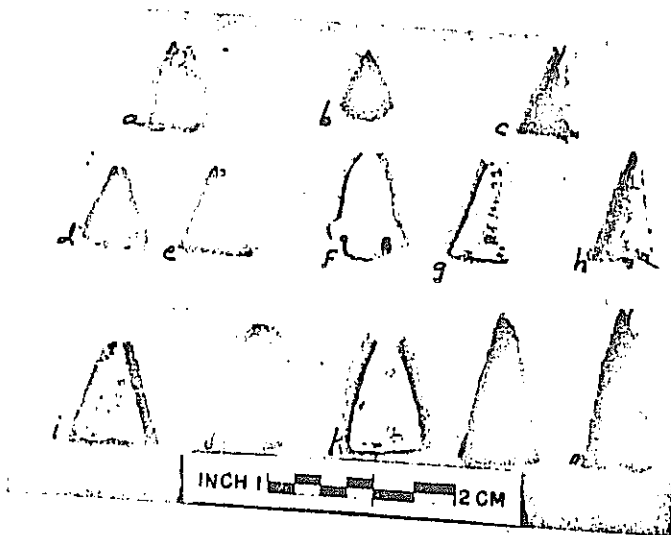


Figure 97

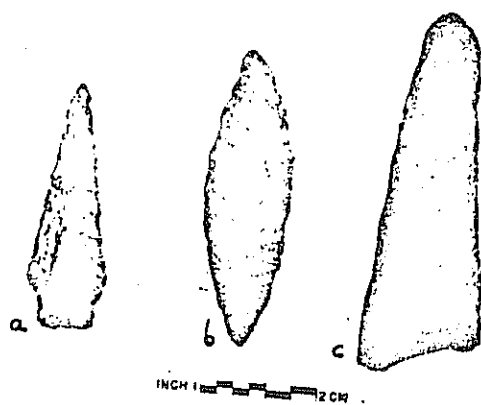


Figure 98

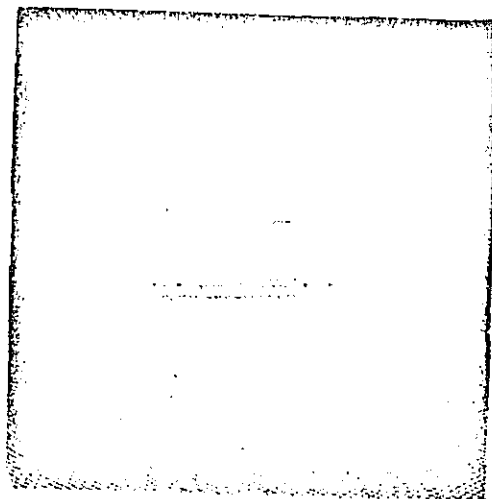


Figure 99

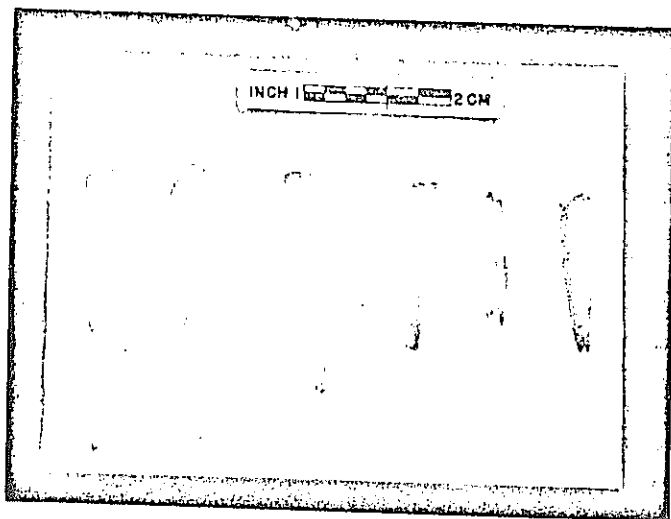


Figure 100

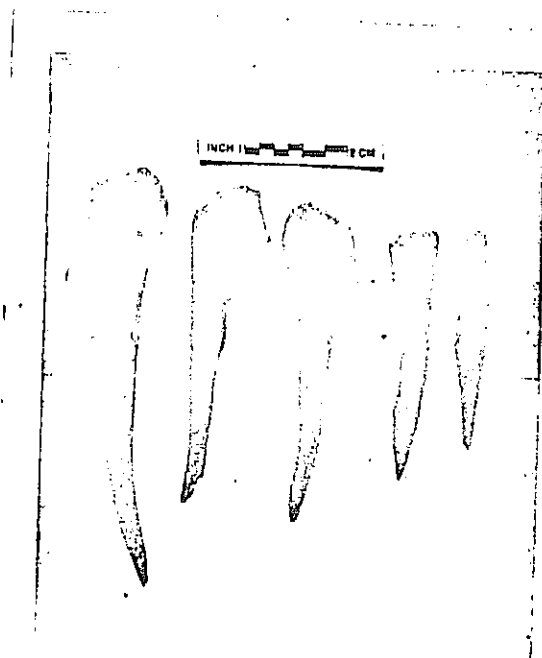


Figure 101

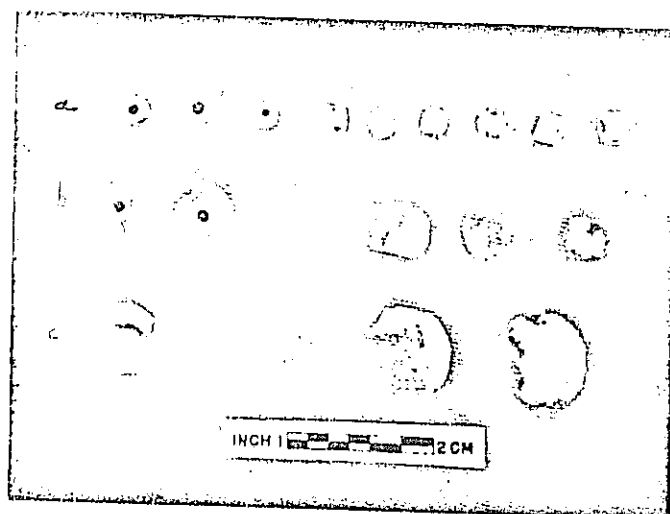


Figure 102

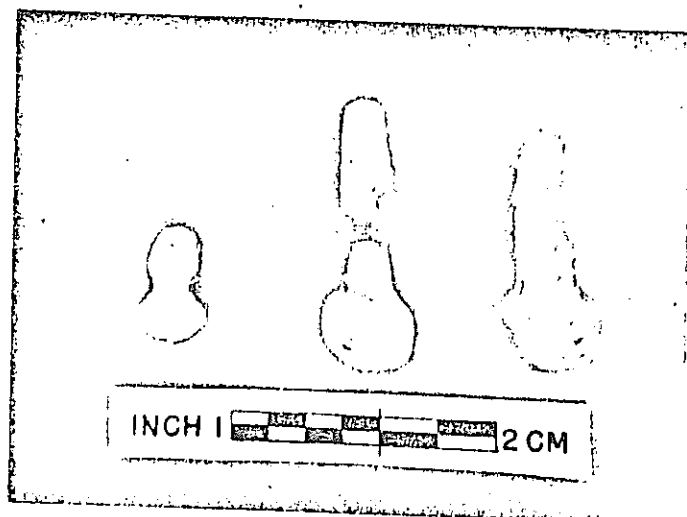


Figure 103

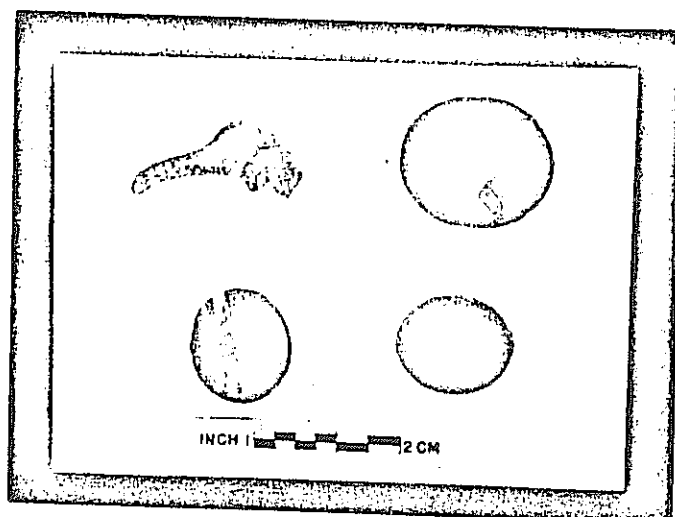


Figure 104

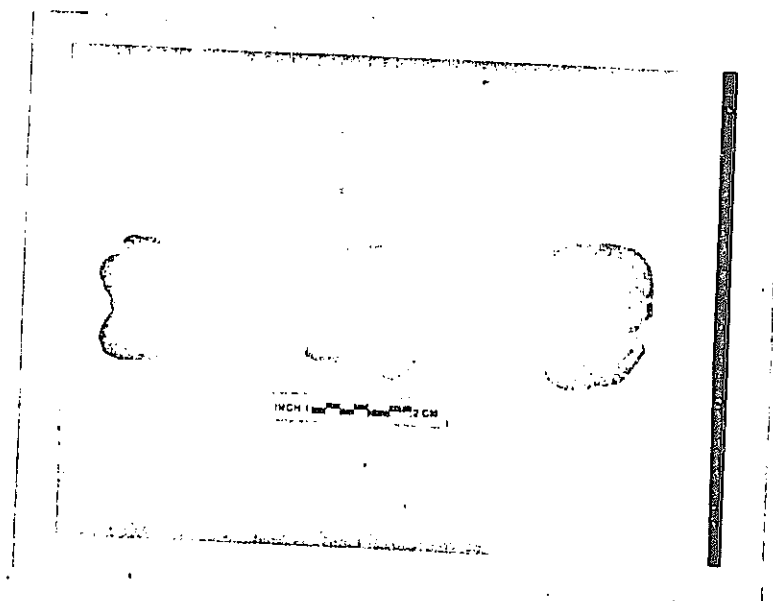


Figure 105

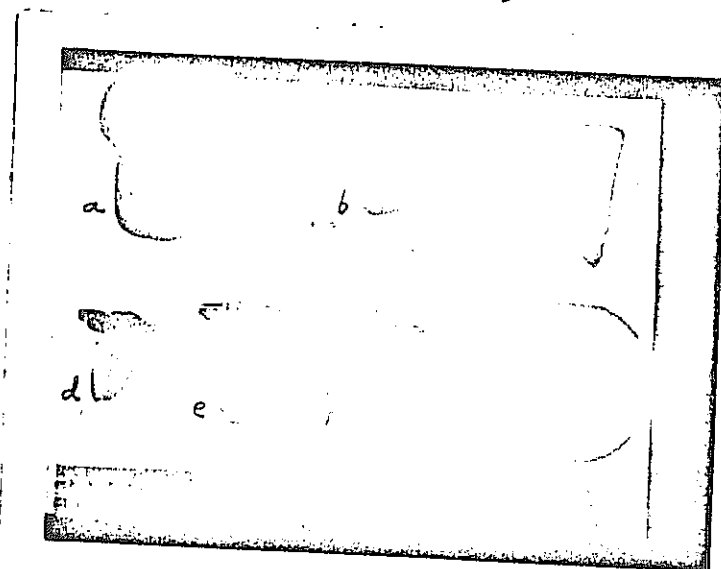


Figure 106

CHAPTER V

THE SOUTHEASTERN CEREMONIAL COMPLEX AT MOUNDVILLE

Introduction

Moundville has become famous as a "center" of the Southeastern Ceremonial Complex (abbreviated as SECC hereafter).¹ There is not a large number of SECC artifacts in the Moundville phase, although there are probably more than at any other site excepting Spiro. What is notable, however, is the variety of objects and the artistic complexity of the motifs.

The Ceremonial objects and motifs will be described within the framework of Waring and Holder's original formulation (1945). Comparisons will be made with Spiro and Etowah in order to define a stylistic pattern for the Moundville SECC. The concluding discussion will consider the nature of this ceremonial manifestation.

Ceremonial Objects

Circular Shell Gorgets

These are flat discs of shell, about 60 mm. in diameter, engraved with SECC motifs and perforated for suspension by 2 holes in the edge. All were associated with burials, and one was placed on the sternum, indicating that it was indeed suspended on the chest. Description of the gorgets follows:

- (1) Fragmentary, depicting 2 woodpeckers with outspread wings dia-

metrically opposite on the circumference of a central circle (Moore 1905:Fig. 149; all references in the following pages will refer to Moore's publications unless otherwise noted).

(2) a cross in center circumscribed by 2 concentric circles; outer border edged by contiguous arcs (1905:Fig. 163).

(3) Highly stylized serpent (?) (1907a:Figs. 94-95).

(4) Head of eagle warrior (1907a:Figs 96-97).

(5) Human with feline attributes (1907a:Fig. 398).

(6) Fragmentary; described by Moore as "two birds facing each other with a shrub or bush in between" (1907:396). These may be turkey cocks.

Circular Copper Gorgets

These were associated with burials and appear to be metal counterparts of the shell gorgets. At Moundville they are never decorated with zoomorphic figures. Descriptions follow.

(1) Cross (3 specimens). See 1905:Figs. 29,30 for typical examples.

(2) Star or scalloped circle (3 specimens). The scallops are cut out of the copper disc, so that a 5 to 8-pointed star is negatively outlined (e.g., 1905:Figs. 43, 106, 139).

(3) Open eye within scalloped circle (1905:Fig. 102).

(4) Circle with open center (1905:Fig. 42). This is a simple doughnut-shaped ring.

(5) Swastika whorl (1905:Fig. 134). The figure is excised and surrounded by a multi-line concentric circle. It has 4 arms, but if it had

3 it would form a trikele.

Oblong Copper Gorgets

At Moundville these are in the form of isosceles triangles with rounded apex and base, 10 to 6 cm. long. Moore pictures 6 of them (e.g., 1907a:399-401), and similar ones were found at Koger's Island (Webb and DeJarnette 1942:228-229). They are usually decorated with a cut-out or repousse' swastika at the end opposite the apex. Perforations at this end indicate that the base was uppermost when worn. One is decorated with an ogee symbol in a cut-out scalloped circle, from which a repousse' hand and eye extends downward. Moore found one gorget with a pearl attached to the top.

Copper Hair Emblems

The baton-shaped emblem with a bone pin inserted was found on the skull of a burial in Mound H (1905:Fig. 105).

Hafted Celts

There are 8 copper specimens, some with part of the wooden haft still attached (1905:Figs. 27, 28, 61) and 2 of greenstone (1905:Fig. 26; Fig. 117, this paper). Probably many of the greenstone celt fragments were hafted also. The bit on these specimens is flared, so that they may be called spud axes.

Pierced Celts

Two specimens, presumably made of greenstone (1905:Fig. 11; 1907a:

Fig. 90). There is a clearly-defined haft which is narrower than the bit. The perforation is in the center at the end of the bit nearer the haft. Moore also found a small shell pendant in the shape of these celts (1907a:Fig. 99) which shows the method of hafting. The haft was inserted through the handle, and 2 pieces of cord were strung through the perforation and wound tight around the handle.

Monolithic Axe

The single specimen was found in the last century (1905:Fig. 6). It is made of highly polished igneous rock, identified by Moore as amphibolite (the major mineral of which is hornblende). It closely resembles the few other specimens found in the Southeast.

Effigy Pipes

- (1) Feline effigy (1905:Figs. 1-3, 165; Thruston 1890: Fig. 84.)

One of the first artifacts found at Moundville in the nineteenth century.

- (2) Eagle effigy (1907a:388-390).
- (3) Human effigy holding pipe bowl (1905:Figs. 1-3).
- (4) Crouching human effigy (1905:Figs. 131,132).

These will be fully described in a later section of this chapter.

Notched Stone Discs

At least 30 whole and fragmentary notched discs are in the Moundville collections, and Moore recovered at least 10. If unnotched discs are included the total comes to about 50. The rectangular slabs pictured

by Moore (1905:Fig. 24; Figs. 114-116, this chapter) probably should be included also.

With the exception of the elaborate carving on the disc pictured by Moore (1905:Fig. 7), depicting a hand-and-eye surrounded by 2 intertwined serpents, the design is uncomplicated. From one to 3 lines are etched about 2 cm. from the outer edge and concentric with it. Triangular notches are cut in the circumference, and the area between the notches is usually slightly rounded, giving a scalloped appearance to the disc. The major variation is the spacing and size of the notches, which may be small or quite deep.

Most of the discs are greenstone, though a minority are limestone or sandstone. Typical diameter is about 20 cm., with little variation.

Discoidals

These and greenstone celts are the most common non-ceramic artifacts at Moundville. I estimate that there are over 100 discoidals in the collection. The raw material is predominantly sandstone, but limestone, granite, and greenstone specimens are found. The R. S. Peabody foundation has one made of chert conglomerate (Cat. No. 27971). Diameters range from 3 to 8 cm.; width is less than the diameter. Most specimens are well finished -- but not polished -- with neatly rounded edges.²

Ceremonial Flints

The single ceremonial flint object, a pointed, double-barbed blade, is pictured by Moore (1905:Fig. 127). If there were others they are now fragmentary and cannot be distinguished from utilitarian chipped flint

objects.

Conch Shell Bowls

Moore briefly mentions finding several conch shells and pictures one engraved with the warrior figure (1905:Fig. 34). There may be some conch shell bowl fragments in the collections at Moundville.

Negative Painted Vessels

These have been discussed in Chap. II. I personally do not consider this a SECC trait, but rather a characteristic of the Tennessee-Cumberland and Southeast Missouri which may occasionally bear SECC designs.

Not all the ceremonial objects defined by Waring and Holder have been listed here because several do not occur at Moundville or at other sites of the Moundville phase. These are shell mask gorgets, columella pendants, embossed copper plates, and the baton or mace (excepting the baton-shaped copper hair emblem). Of course, further excavation may reveal that these objects are present.

Motifs

Cross-Sun Circle

I have combined these two motifs since the cross is almost invariably associated with the circle (for exceptions see Moore 1907:Fig. 40 and Webb and DeJarnette 1942:Pl. 253, Fig. 1).

The equal-arm Greek cross is uncommon and is supplanted by the curvi-

linear swastika. This figure has no resemblance to the Nazi symbol, but consists of 4 slightly curved arms expanding at the tips. The result is somewhere between the Greek cross and the Greek letter chi.

Typically this swastika-cross is circumscribed by concentric circles, as on the oblong copper gorgets at Moundville. A variation on this combination is found on several MFE vessels (e.g., 1907a:347; Fig. 50b, this paper). Here the 4 arms of a right-angled cross radiate outward from a central circle. An unusually elaborate example is shown in Fig. 109a).

There are approximately 15 cross or swastika motifs on oblong copper gorgets and on MFE pottery, mostly bottles.

The sun circle without accompanying cross is represented by about 30 examples. They are especially typical of copper gorget design. The sun circle is made up of several closely concentric circles which circumscribe a scalloped circle. This, in turn, may contain an ogee symbol. On pottery the center of the circle may be occupied by a star composed of 4 lines intersecting at a point -- an asterisk-like figure -- which would seem to be the equivalent of the scalloped circle on copper ornaments (Fig. 51).

It is of interest to note that the cross-sun circle on copper gorgets was formed by three techniques: positive excising, negative excising, and repoussé. Positive excising refers to the technique of cutting out the central figure (e.g., 1905:Fig. 134). The negative excising technique is just the opposite; for the figure, frequently a swastika, is formed by cutting out the area around it (e.g., 1905:Fig. 41). This technique is analagous to negative painting of pottery, which apparently

was not indigenous to Moundville. The repoussé technique is similar to that on Etowah copper sheets and the Wulffing plates (Watson 1951), though less elaborate.

Bilobed Arrow

Of the 6 examples, one is etched on a stone disc, 4 are engraved on bottles in pairs, and one, made up of several separate arrows, in on the bottom of a beaker bowl (1907a: Fig. 44).

As Waring and Holder noted, this figure varies considerably. It is essentially a shaft with a rather large triangular point and some indication of feathers and the neck. The shaft is bordered on both sides by scalloped, semi-lunar figures, which are sometimes connected to the ends of the arrow.

The few bilobed arrows at Moundville seem to be relatively crude. The point and feathering may be small or may occupy about one-half of the shaft. The bordering semi-lunar figures may or may not be scalloped. On 2 specimens (1905: Figs. 87, 148) an indentation forms the center of the shaft, making the vessel of the type MBI.

Forked Eye

This motif is rare and seems to be used to characterize the eagle-like birds carved in stone or depicted on pottery. The fork is either double or triple and the points are frequently filled with crosshatching. A typical example is shown by Moore (1905: Fig. 114).

Ogee Arch (Open Eye)

This symbol may indeed be a stylized eye, but the term ogee arch,

taken from architecture, is preferable since it is more descriptive. At least 15 examples are found at Moundville and at the Museum of the American Indian, mostly on pottery but occasionally on copper gorgets (1905: Figs. 121-122; 1907a: Figs. 100-101). The motif is formed by 2 ogee arches, one pointing up and one pointing down, connected to form an ovoid enclosure. This usually contains a small, flattened oval, which is crosshatched on MFE vessels. The ogee is drawn with considerable care, without significant variation.

Hand and Eye

Eight representations of this motif occur on MFE bottles and bowls (e.g., Figs. 108a-c, 111); 2 are engraved on circular stone discs (1905: Figs. 5, 7); and one on an oblong copper gorget (1907: Figs. 100-101). On one of the vessels the hand alternates with a skull; on one the eye, rather than being inside the hand, is separate; and on one the hands, lacking a central eye, are outlined in low relief. The hands are customarily paired around the circumference of the vessel, alternately pointing up and down.

The anterior (palm) side of the hand faces the viewer. Fingers are pressed close together, the joints usually being indicated. The thumb is held somewhat apart and is often somewhat pointed and slightly hooked. The eye is in the center of the palm, either a simple oval or a semi-circle containing a small circular pupil.

The occurrence of this motif with the skull suggests that it might be combined with the latter as a "death motif". Also, one example pictured by Moore (1905: Fig. 21) has what might be a bone (radius?) ex-

tending downward from the base of the palm.

Death Motifs

The Skull-and-longbone motif is represented by 3 specimens. One bottle (1907a:Fig. 20) is negative painted. The faded design consists of a skull alternating with a hand palm outward. As I have said, negative painting is foreign to Moundville. This vessel was probably obtained by trade from Tennessee or Southeast Missouri.

A small MFE bowl (1905:Figs. 146-147) shows 3 skulls, one upside down, alternating with 3 hand-and-eyes; and a MFE bottle (1905:Fig. 146-147) shows 4 skulls alternating with 2 long bones and 2 unidentified oval figures slightly resembling the sash of the dancing warrior. Long bones are also depicted on several MFI sherds (Fig. 107a-c).

The artist seems to have been quite careful in delineating cranial features, as if he were familiar with them. The sutures of the skull are represented in stylized fashion by arcs on the top of the skull. The eye is shown wholly visible -- Egyptian style -- and is a simple of concentric circle. The teeth are unduly emphasized and can be said to be a characteristic feature of this motif. Most peculiar is the offset mandible; the ascending ramus is shown to the rear of the skull. This may be an attempt to show that the mandible was disarticulated.

The longbones are also drawn with care, although detail is lacking. They appear to represent the humerus, radius and ulna. The latter 2 bones are definitely distinguished (e.g., 1905: Fig. 147), though the articulation of the hand in this figure is not anatomically correct.

Representations of Animals and Humans

Bird

The bird figure is pictured on at least 6 MFE bottles and one bowl (1905: Figs. 8-9, 84-85, 112-114, 117-118; 1907a: Figs. 34-38), one stone effigy pipe (1907a: Figs. 83-86), and 2 stone effigy vessels (1905: Figs. 167-171; 1907a: Figs. 76-79). One bottle shows only a pair of tails, presumably of the woodpecker (1905: Figs. 89-90).

Six of the bird figures on MFE vessels are probably pileated or ivory-billed woodpeckers. The complete bird is seldom depicted; rather, 2 heads are shown extending from a central circle. One head points up, the other down. A pair of triangular wings extends outward from the circle at right angles to the heads. Only one example, on the bottom and sides of a beaker-bowl (1907: Fig. 37, 38) shows the woodpecker in full. The bird's legs and wings are spread and its head is shown in profile facing left, much like the eagle on the United States seal. The tail extends behind the legs. On the body and wings of the bird the single "barred oval" motif at Moundville is found.

All woodpeckers have certain specific features: (1) the round head and long neck is always crested with a comb-like extension at the top of the head and back of the neck; (2) the eye is a single or concentric circle, usually left blank; (3) the central part of the beak is cross-hatched; (4) the beak is prominent (Fig. 108e); (5) the wings are crossed by crosshatched bands, and the scalloped or notched wingtips are usually crosshatched.

In 3 examples the prominent beak contains several round objects,

the outer one of which has a pointed projection extending outwards (Fig. 112a). Moore plausibly identifies these as speech symbols, although they might also be berries.

Sun circles containing swastikas appear on the wings of the bird shown by Moore (1905:Fig. 8-9).

The single eagle on a MFE bottle (1905:Figs 114-115) is represented only by a head, neck, and wing. The prominent hooked beak and forked eye identifies it as a bird of prey. Other features are crosshatched bands on the neck and crosshatched circles on the wing. The woodpecker's serrated crest has been replaced by 4 triangles on the head, which probably represent feathers.

The two remarkable stone effigy vessels may have been associated with the SECC, although this is not certain. Moore found both in association with burials. One (1905:235-240) is a small diorite beaker-bowl engraved with a Mound Incised-like design. The effigy head has a long neck, bent double, a small crest and a wide beak. The neck and beak are crosshatched, as on the MFE woodpecker figures, but there are no other specific SECC traits.

The second vessel (1907a:383-386) is a hemispherical bowl of limestone representing a long-necked bird with a hooked beak and a wide tail. Feathers are engraved on the sides and bottom of the bowl. It looks like a flamingo as much as anything else, but the hooked beak may link it to the SECC bird of prey.

The eagle effigy pipe (1907a:80-86) was in association with the burial of 2 adolescents. It is a limestone block having 2 holes in the top. The bird is shown in low relief with its head resting on the wing

the side. The tail protrudes slightly from the bottom of the pipe. The eagle has a hooked beak which is open and from which a forked tongue protrudes.³ It is also equipped with a forked eye and talons. This is obviously the SECC eagle or falcon.

Moore describes one shell gorget which may have depicted fighting turkey cocks. Other than that, the turkey cock is absent from theOUNDVILLE phase SECC.

Serpent

Thirteen representations of feathered serpents are on MFE bottles, and one (2 figures) is on a stone disc (1905:Fig. 7). On pottery, they usually occur in one or two pairs without other accompanying figures.

The body of the serpent is slightly curved and the head and tail raised so that the total figure forms a broad "U". The body excluding head and tail is usually crossed by transverse bands of crosshatching or parallel lines, which often alternate with ovals and concentric circles. Three serpents contain within the body a step-like element identified by Moore as "leg symbols" (1907a:369, 372, Figs. 52-54). He notes that these are found in northwestern Florida.

The distinguishing feature of the feathered serpent is its wings, which are fastened to the back about midway between the head and tail (Figs. 112b, 113). They are composed of a vertical feather, which rises from the body, and 3 elongated horizontal feathers attached to the vertical one. These trail backwards almost to the tail, capturing the effect of flight rather well. The feathers are decorated with concentric arcs appended from the upper edges, ovals and concentric circles, and

crosshatched bands. The tips of the feathers are usually crosshatched. These elements also are found on the wings of birds.

The head is set off from the body by a series of transverse lines. The head is invariably supplied with a beak-like mouth. The 2 sections of the beak are opened and from them emerges a thin forked tongue. Several teeth or fangs extend from the upper and lower portions of the mouth. The eye is a simple circle sometimes surrounded by the fork of the beak. The beak is often crosshatched and the head may be filled with vertical or horizontal lines (1907a: Figs. 52-55).

Crosshatched triangles are attached to the heads of some serpents, perhaps representing feathers or, as Moore suggests, antlers (e.g., 1905: Fig. 152).

The tail is pointed and usually crosshatched. The rattles are decorated by several heart- or bell-shaped objects (usually 3) at the tip. On one specimen they are replaced by triangular feathers (1907a: Fig. 64). On another they closely resemble the shape of the ceremonial mace (1907a: Fig. 65).

In addition to whole birds and winged serpents, unattached pairs of wings are used to decorate MFE bottles. On one MFE vessel (1905: Fig. 161), the head is separated from the wings and tail so that the decoration consists of a tail, a wing, the head, and another wing. This treatment is reminiscent of the Northwest Coast art style of dismembered and combined animals.

Despite the difference in detail, the feathered serpent is an easily recognizable motif characteristic of the Moundville phase SECC.

Feline Figures

Three stone effigy-pipes are carved to represent felines (1905: Figs. 1-3, 165-166; see also Thruston 1890:187 for a large illustration of the pipe shown in Moore 1905:Fig.1, right). All are in the form of a crouching, cat-like animal with prominent teeth in an open mouth. The nose is large, flat, and rather pig-like. The pipe originally in Thruston's collection (1890:Fig. 84) is engraved with a forked eye and 2-line scrolls somewhat reminiscent of Leland Incised designs. It may be significant that a similar pipe carved to represent a crouching feline with bared fangs was found at Selsertown (Emerald Mound) near Natchez and that others are reported from that area (Brown 1926:263-264, Fig. 221).

A shell gorget found by Moore in association with a burial (1907a: Fig. 98) shows a crouching feline figure with human head and feet. The front feet have claws attached to the posterior portion, the tongue protrudes, and a long tail curls up from the rear. The figure wears a belt with a heart-shaped apron and knotted sash appended, a necklace to which are attached 2 oval gorgets (?), and a headdress (partially obliterated) consisting of two pins and a square reticulated object. Bands and circles on the legs and body may represent some kind of ornament. The round eye is encircled by a fork symbol. Evidently this depicts a man dressed in feline costume and other SECC regalia.

Human Figures

Only 4 human figures have come from Moundville, one on a fragment of a shell cup, one on a shell gorget, and 2 carved in stone.

The fragment of conch shell cup has engraved on it a warrior figure with one arm upraised, possibly holding a rod (1905:Fig. 34). The body, most of which is missing, is shown in front view but the head is turned to the side. The figure wears a large earspool, some sort of crested headdress, and a pin extending down over the forehead.

The shell gorget pictures the head of a warrior (1907a:Figs. 96-97). It is shown in profile. The eye is ovoid, the nose slightly hooked, and the mouth, having rather thick lips, is open. The head is covered with a crested headdress, from which 10 small circles, possibly pearls, extend over the parietal region. The warrior is wearing an occipital hair knot and a circular earspool.

Both the stone figures are effigy pipes. One is seated and holds the bowl of a right-angle elbow pipe. One opening is between the clasped arms, the other at the base of the figure at the front (1905:Fig. 2-3). It seems to be made of limestone and is rather crude.

The second pipe described by Moore as claystone (1905:Figs. 131-132), is carved to represent a squatting human figure, of indeterminate sex, clasping its knees with its back bent. The bowl of the pipe is in the back, the stem opening between the feet. Eyes and nose are clearly shown, and the tongue protrudes. The ears appear to be elongated.

There is a band around the forehead and what may be an occipital hair knot.

Neither of these pipes have definite SECC characteristics and cannot be ascribed to the Complex with certainty. They have been described with the other human figures for the sake of convenience.

Summary

Most of the ceremonial objects ascribed to the SECC are found at

Moundville. Stone discoidals, stone discs, and copper gorgets are the most common. Other objects are represented by only a few specimens. In fact, most of the elaborate motifs are pictured on MFE and MEI vessels. It might be said that the SECC at Moundville is largely a ceramic expression.

All the motifs associated with the SECC are found, although the barred oval occurs only on one figure. The cross is usually combined with the circle, which circumscribes it. The bilobed arrow is rare.

Birds of prey, felines and serpents are marked with the forked eye motif. It does not appear apart from zoomorphic representations.

The ogee arch (open eye) is quite common on pottery and copper gorgets. The hand-and-eye and death motifs are also relatively common. They are highly stylized and are virtually limited to pottery.

Of animal figures, the woodpecker and feathered serpent are by far the most common. Woodpeckers usually occur in pairs, around the circumference and are characterized by their long beaks, crests, and cross-hatched head and neck. The snake is always feathered and supplied with fangs, a forked tongue, and rattles.

Eagle figures are distinguished by the curved beak and forked eye. One stone bowl may represent a duck, although this is not certainly a SECC item. Turkey cocks seem to be absent.

Feline figures are fanciful, monster-like creatures occurring as effigy pipes and on one shell gorget. In contrast to Etowah and Spiro, human figures are very rare in the Moundville phase.

The style of SECC art does not differ greatly from non-SECC style. For example, crosshatching is a common element in MFE design and is trans-

ferred to SECC motifs without alteration. Other similarities are fine-line engraving and the use of concentric circles and indentations. The SECC brought no stylistic innovations.

It is even conceivable that the scroll-meander element is derived from the feathered serpent -- Moore thought so -- but I doubt this. A complex interlocked scroll is quite dissimilar to the slightly curved, sausage-shaped snake. Moreover, the snake's wings are pennant-like, not at all the same as the short triangular "wings" that are so often attached to the MFE scroll.

This similarity in style implies that the SECC was not a totally foreign idea suddenly introduced to Moundville. If it was a case of borrowing, the process was slow enough to leave previous stylistic standards unchanged.

Now it is possible to define a SECC pattern for the Moundville phase, as follows:

- (1) Use of engraving on pottery as a medium for SECC art.
- (2) Stone discoidals very common.
- (3) Stone discs common.
- (4) Copper gorgets with excised or repoussé design relatively common.
- (5) Swastika circumscribed by concentric circle common.
- (6) Death motifs relatively common and distinctive.
- (7) Representatives of woodpecker and feathered serpent common and distinctive.
- (8) Human figure very rare.
- (9) Elaborate feline effigy pipes.

How this pattern differs from those of Etowah and Spiro will be discussed in the following pages.

Comparison: Moundville and Etowah

Until the results of present excavations at Etowah are fully pub-

lished, it is necessary to depend largely on Moorehead's quite unsatisfactory report (1932), supplemented by the more recent publications of Byers (1962) and Larson (1954; 1959).

Etowah appears to lack 3 motifs: the ogee, the barred oval and the hand-and-eye. Woodpeckers are found only on shell gorgets and are shown facing each other (some of these may be turkey cocks). Serpents are highly conventionalized and occur only on shell gorgets, as do the turkey cock and spider, both absent at Moundville. Eagles, rare at Moundville, are shown on repousse copper plates (Moorehead 1932: Fig. 32; Byers 1962: Figs. 10, 11). Feline figures do not occur. The human figure is prominent on copper plates in several variations of the eagle warrior (e.g., Byers 1962: Figs. 2, 3, 8).

All types of ceremonial objects are found, but most are represented to date by one or two specimens. Discoidals and stone celts are fairly common; notched stone discs, however, are rare, perhaps absent altogether. Ceremonial flints are found in limited numbers. There is one monolithic axe. The 3 stone images (Moorehead 1932: Figs. 69a, 75, 76; Larson 1954: 20-21) are probably associated with the SECC and may also be indicative of Tennessee-Cumberland relationships.

Copper is quite common, although there are few gorgets. Embossed copper plates are, of course, well-known (e.g., Moorehead 1932: Figs. 7-16). Small copper hair ornaments in the shape of maces and bilobed arrows seem to occur fairly frequently. (Byers 1962: Figs. 7-16). The arrow-shaped pendants or "spangles" pictured by Moore (1905: Fig. 104) are identical to some from Mound C at Etowah (Byers 1962: Fig. 13). Larson (1959) has identified these artifacts as parts of a feather headdress.

Shell gorgets are similar to Moundville types, but are comparatively more common. Engraved conch shell is rare or absent.

It is difficult to draw any firm conclusions about these differences, for they may be due to nothing more than lack of excavation at Moundville. It should be remembered that Moore's excavations were in the nature of tests, while Moorehead embarked on a full-scale destruction of Mound C. The Etowah copper plates may have been lucky finds, and similar specimens could still be found at Moundville.

Tentatively, then, the SECC at Etowah is characterized as follows:

- (1) Lack of ogee, hand-and-eye, barred oval, and death motifs.
- (2) Emphasis on the human figure, less emphasis on bird figure, virtual lack of serpent representations.
- (3) Considerable use of copper and shell.
- (4) Moderate use of stone.
- (5) Lack of SECC motifs on indigenous pottery, which is stamped or incised in simple patterns.

To sum up, Moundville differs from Etowah in possessing a greater range of SECC motifs and materials, particularly in regard to pottery. The rarity of the human figure at Moundville compared to its dominant position at Etowah is interesting, but further excavation is necessary to verify this difference. Ground stone seems to be somewhat more common at Moundville, chipped stone less common. With the exception of Etowah's embossed copper plates, both sites seem to have an approximately equal amount of copper artifacts.

Comparison: Moundville and Spiro

The site of Spiro was probably occupied for a long time, to judge from the spread of C-14 dates (see discussion later in this chapter), but the florescence of the SECC occurred about midway in the occupation

(Orr 1946:235-239). It is known almost entirely from the Craig Mound, and I have used Hamilton's summary of the material "excavated" from it (Hamilton 1952; see also Burnett 1945).

The ogee symbol is not found at Spiro, but all other motifs are represented. None, however, is especially common. The cross and sun circle decorate a few shell gorgets and, in somewhat atypical forms, stone earspools (Hamilton 1952:Pl. 81). They occur occasionally in association with zoomorphic and anthropomorphic figures carved on shell. In one case, the asterisk-like cross found at Moundville (Fig. 51) appears on a woodpecker-like bird (Hamilton 1952:Pl. 101A).

The bilobed arrow is rare also, being depicted only as a hair ornament on human figures. This would imply, of course, that sheet copper bilobed arrows were used.

The forked eye is quite commonly shown on humans and snakes and may also occur separately (Hamilton 1952:Pl. 70).

The barred oval is quite commonly shown on the bodies of snakes (Hamilton 1952:Pl. 108A, B, 111) felines (Pl. 133B) and on the costumes of humans (Pls. 98, 99A).

The hand-and-eye is not typical of the Spiro SECC. It is represented on 2 shell gorgets and engraved shell fragments (Hamilton 1952: pls. 82D, 84A). Death motifs are likewise sporadic (Hamilton 1952: Pls. 110, 138E).

In contrast to the scarcity of abstract motifs, zoomorphic and anthropomorphic representations are abundant. The rattlesnake is prominent on Spiro engraved shell and has become, compared with those at Moundville, a most elaborate beast (Hamilton 1952:Pls. 108-117). There are multi-

headed snakes and intertwined and contorted snakes, all heavily decorated with crosshatching, circles or barred ovals. Some shell engravings represent men holding snakes (Hamilton 1952:Pls. 104, 106, 107).

Examples of bird figures are conventionalized eagles carved on shell (Hamilton 1952:Pls. 100, 102) and a repoussé copper plate (1952: Pl. 76) depicting a "spread-eagle" strikingly like the one at Etowah (Moorehead 1932:Fig. 7). There are also fragmentary bird designs, unidentifiable but unlike Moundville or Etowah types (Hamilton 1952:Pls. 101B, 103).

Two feline engravings on shell and a stone "jaguar" pipe (Hamilton 1952:Pl. 17D) are present, the latter quite similar to the Moundville feline pipes.

The human figure, warrior, god-impersonator, etc., are very common and extremely complex. However, the small sample of human figures at Moundville does not allow comparison.

Most of these motifs are engraved on shell, particularly gorgets and bowls. In addition, there are shell mask gorgets (actually a single bead in the form of a mask) and columella pendants. Moundville lacks both of these.

The Craig Mound was especially rich in chipped stone, notably maces and large blades (Hamilton 1952:Pls. 34-47). Ground stone is well represented by spud axes with long hafts, pierced and hafted celts, monolithic axes, a few discoidals, and 2 stone effigy bowls. One of the latter is very similar to the typical Moundville duck rim effigy.

Spiro pipes, many of which have ended up in the Museum of the American Indian, are renowned. The large submarine-shaped pipes are definitely

not SECC artifacts, but there are 3 eagle effigies (Hamilton 1952:Pls.6, 8, 16; that in Pl. 6 is probably spurious). The pipe shown by Hamilton (1952:Pl. 8) bears some resemblance to the Moundville eagle effigy.

A stone effigy pipe depicting a man holding the bowl of an elbow pipe is also reminiscent of the similar Moundville specimen (Hamilton 1952: Pl. 13), although there is no reason to associate it with the SECC.

In view of the abundance and variety of stone SECC artifacts, it is curious that notched stone discs are not reported from Spiro.

Copper is moderately abundant, particularly embossed sheet copper. The typical Moundville circular and oblong gorgets are missing.

The Spiro SECC pattern may be summarized as follows:

- (1) Great emphasis on ceremonial stone weapons.
- (2) Abundance of engraved shell.
- (3) Comparative paucity of copper artifacts in comparison to the amount of shell artifacts.
- (4) Occurrence of all motifs (ogee excepted), but predominance of human and serpent representations over abstract motifs. Bird figures comparatively infrequent. Barred oval common on snakes and humans.

The Moundville SECC pattern differs in several respects. First, it emphasizes the ogee, hand-and-eye, and death motifs, while Spiro prefers the barred oval and forked eye. The bilobed arrow is also more common at Moundville, the Greek cross somewhat less so.

Secondly, Moundville emphasizes the woodpecker, which is rare at Spiro. The serpents of Moundville are considerably less complex than their Spiro relatives, and the human figure at Moundville is much less abundant.

Thirdly, Spiro ground and chipped stone knives, maces, and axes are very common, but these artifacts are rare at Moundville. On the other

hand, discoidals and notched discs, characteristic of Moundville, are not frequently found at Spiro.

Finally, shell, unusually common at Spiro, occurs in moderate amounts at Moundville. The latter site tends to have more single copper ornaments than does Spiro.

Comparisons: Summary

Obviously the Moundville phase, Etowah and Spiro reveal many differences in their SECC manifestations.⁴ Yet these differences are mainly stylistic peculiarities and varying emphasis on the several artifact classes. What is favored at one site may be rare at the others. These are differences in pattern rather than in content. Moreover, many artifacts, such as the monolithic axe, are found at all three of the sites. The different expressions of the SECC were specializations of a common heritage.

Discussion and Conclusion

This chapter is not meant to be a complete review of the SECC. A paper longer than this one could be written on that subject. Nevertheless, a brief discussion of theories about the SECC is necessary in order to assess Moundville's place within it.

The pre-radiocarbon short chronology in the eastern United States initially led to the belief that the SECC was extremely late -- after Spanish contact, in fact. Griffin (1944) once hypothesized that it might have been partly caused by the DeLuna expedition in 1559-61. Others suggested that it might have been a sort of nativistic movement (Orr 1946).

Martin, Quimby and Collier 1947:361-363), and Waring and Holder
 ted that it appeared "suddenly and late" (1945:28). The late
 required that the SECC be compressed into a few decades, since it
 otally disappeared by the time of intensive French exploration
 e seventeenth century.

To my knowledge Krieger (1946) was the first to suggest a lengthen-
 of Ford and Willey's original short chronology. Basing his dates
 abloan intrusives in "Caddoan" sites, he expanded the chronological
 ework; and, what is more important for our subject, dated the SECC
 the Caddoan area as "no later than 1400 A.D. and probably close to
 " (1946:252).

Phillips, Ford and Griffin (1951:455), writing on the verge of
 dating, placed time B in the Memphis subarea, equivalent in time
 culture to Moundville, at about 1300; and Griffin (1952a:Fig. 205)
 grammed the major SECC sites between ca. 1200 and 1300. Cotter (1951:
 considered the SECC to date about 1300-1400.

Thus by the time C-14 dating arrived in 1951, most authorities
 eed that the SECC had flourished around A.D. 1300. This was also
 o date set for the florescence of Mississippian culture.

C-14 dates have on the whole supported these estimates. I will
 scuss 3 sites, each with SECC material, for which series of dates
 ve been obtained.

The first is the Lake George site, Yazoo County, Mississippi.
 even C-14 dates "make it evident that the Classic Southern Cult con-
 ctions, which seem to be on a Plaquemine level in the Lower Valley,
 at date well after A.D. 1000 and most probably at A.D. 1300[±]100"

(Williams 1961:41). A SECC rattlesnake motif on a vessel was found here in a context dated nearly 1500 (Williams 1961:41).

The second site is Etowah, from which 7 dates have been obtained (Crane and Griffin 1959, 1960, 1961, 1962). Three dates from 2 burials in Mound C in direct association with SECC objects are A.D. 1040 ± 200 , 1125 ± 200 , and 1450 ± 200 (M542, M402, M543 respectively).⁵

Four other dates from Mound C are 1100 ± 150 , 1280 ± 200 , 1500 ± 200 , and 1725 ± 150 (M1064, M1061, M1062, M1060 respectively). The latter date represents the final occupation of the mound.

Although the range of these dates is considerable, it is not excessive, for it is quite conceivable that Etowah was in existence for several centuries. An early Mississippian pottery type, Hiwassee Island R/Bf, is in fact found there (Fairbanks 1950:148). Since all dates have large standard deviations, there is no conflict, and those specifically dating the SECC do not differ significantly. They place the SECC at Etowah between about 1100 and 1400, or during a portion of that time.

The third site is the Craig Mound at Spiro. Disregarding an earlier series of Michigan dates ranging back to 300 B.C. as due to laboratory error (the carbon black method was used), there are 5 dates from the mound:

- (1) M816. Charcoal in basal portion of mound just south of central chamber: A.D. 780 ± 150 (Crane and Griffin 1960:37).
- (2) Tx4. Timber of central tomb: A.D. 806 ± 165 (Stipp and others 1962:45-46).
- (3) M54. Wood from mound, exact provenience unknown: A.D. 1310 ± 250 (Crane and Griffin 1956:665).
- (4) M815. Conch shell fragments from multiple burial in mound. Engraved conch shell, engraved shell gorgets, and stone mace among the associated artifacts: A.D. 1370 ± 75 (Crane and Griffin 1963:238).
- (5) M309. Conch shell fragments from surface of mound, "almost certainly" from the large cache near the central chamber: A.D. 1470 ± 200 (Crane and Griffin 1959:180).

In addition, 10 Gibson Aspect sites range from ca. A.D. 800 to 1000, averaging about 1000 (Campbell 1961:148-150; Griffin and Yarnell 1963). None of these necessarily dates the SECC.

A 690-yr. range of mean dates obviously does not reflect reality. Either the later dates resulted from contamination of the sample by more recent organic material (shell is susceptible to this form of contamination), or the divergence is in fact not significant but due to sampling error. The former assumption cannot be tested, but the latter can, by the method described by Spaulding (1958). This is an application of simple analysis of variance to determine the significance of difference between three or more radiocarbon dates. In the present case, the F ratio derived from the 2 variance estimates is 3.42. With 1 and infinite degrees of freedom (between squares and within squares, respectively), this is significant at the 1% significance level. The dates probably are significantly different.

It is thus necessary to choose between the 2 earlier dates, which would imply that the Craig Mound was in existence before A.D. 1000, and the 3 later dates in the fourteenth and fifteenth centuries. Since the 1370 date was made directly on SECC material and since there is compelling typological evidence favoring a fourteenth century date for Spiro SECC activity (Griffin 1952b), I am inclined to disregard the pre-1000 dates. Perhaps a compromise should be made: SECC activity may have begun somewhat earlier than at Mississippian sites to the east, perhaps in the 1100's. This does not mean, however, that a climax was reached at that time; probably florescence did not occur until the thirteenth and fourteenth centuries.

As Southeastern prehistory becomes better understood, it is more and more apparent that the SECC was not a "cult", which connotes exclusiveness, nor a Ghost Dance-like movement that sprang up abruptly and as abruptly disappeared (Griffin 1952a:364; Krieger 1961:49; Phillips 1961:37). Its antecedents may have been the ceremonialism evident at Macon Plateau and the Old Village phase at Cahokia, the Long Nosed God ritual manifestation (Williams and Goggin 1956), and, of course, elements from Mexican religion.

Indeed, there is at least a 200-year spread of C-14 dates for the SECC, as we have just seen; moreover, isolated SECC traits are found in the Northern Plains until late prehistoric times (Howard 1953; Wedel 1962:223, Pl. 20). The Tukabachee copper plates of the Creek (Swanton 1928a:503-510) may be faint remnants of it. The SECC just seems to have faded away.

Also, the SECC was not a wholly uniform complex. The differing patterns at Moundville, Etowah and Spiro have been described, and a more thorough study would reveal as many different patterns as there are SECC sites. These patterns give the impression of a slow, natural development of many ritual practices. In this connection I call attention to the similarity, mentioned previously, of abstract MFE design and engraved SECC motifs. The implication is that the SECC was not a totally foreign concept, but one which could easily be integrated with old ideas.

Griffin (1952b:105) has neatly summarized present opinion by interpreting the SECC as the Mississippian (and general Southeastern) religious system. Its variant patterns would consequently be tribal variants of this pan-Southeastern ritualism. Its long life would correspond to the

developed Mississippian period (radiocarbon dating has shown SECC and other Mississippian material to be contemporary), and its efflorescence would have been a result of increasing population size and the size of the specialized priesthood.

Equated with Southeastern -- and particularly Mississippian -- religion, the SECC should logically be defined as a tradition, just as Mississippian is a tradition. It cannot correctly be called an horizon, as it has been in the past. If the SECC is conceived of as an horizon, it could mark only developed Mississippian as distinct from early Mississippia. Such a horizon marker would be superfluous, since the distinction is quite clear from other evidence, notably ceramics.

The definition of the SECC as a horizon presumably stemmed from the many striking similarities of SECC artifacts from widely separated areas -- the monolithic mace, for instance. Yet beside these similarities are other SECC traits which have only vague resemblances between different regions, such as depictions of the human figure, or which are simple and generalizable like the discoidal.

It seems, therefore, that the SECC tradition was characterized by the widespread dissemination of specific kinds of artifacts for brief periods. These would be true horizon styles and would contrast with other widely shared ritual concepts which could have developed in parallel ways from a common base.

Possible horizon styles may be these: (1) mask gorgets, (probably late), (2) monolithic axe, (3) notched stone disc, (4) ceremonial blades (5) specific forms of effigy pipes, e.g., feline, (6) embossed copper plates, (7) certain zoomorphic figures, e.g., the Moundville-style snake

pider. I can visualize the time range of some of these traits as
mely short, perhaps less than a century.

General SECC traits, of broad temporal and areal range, are, in
, (1) circular shell and copper gorgets (although the figures por-
ed on them vary), (2) copper hair or headdress emblems, (3) hafted
pierced celts, (4) discoidals.

Large-scale distributional analysis combined with detailed studies
specific artifact types may reveal the temporal range of these hori-
styles. Perhaps, in fact, they represent true "cults" existing with-
the framework of the larger SECC religious system. Were they possibly
teric and short-lived movements, analagous to the heretical movements
the early Christian Church? But these problems are beyond the scope
this paper.

In conclusion, I believe that the SECC is nothing more than the
religious aspect of Southeastern culture and that it existed simultaneously
th its climax, from 1200 to 1400. Moundville, because of its large size,
as the site of a relatively great amount of ritualism. There is no evi-
ence that it was merely a religious "center" -- the Mecca or Lourdes of
Alabama. Indeed, the plentiful house remains show that it had a large
permanent population. Moundville possesses a readily distinguishable pat-
tern of ritualism, setting it apart from other towns of similar size.
But while evincing differences in pattern, it is closely linked to the
total Southeastern development.

Notes

1. Not "Southern Cult", which, though easy to write and easy to

say, is a misnomer. This will be discussed later in this chapter. Phillips has long advocated abandonment of the term and its bizarre offspring ("Buzzard Cult", "Southern Death Cult") (Phillips 1961:37; Anonymous 1948:153). Watson (1950:51) abbreviated Southeastern Ceremonial Complex to "Scerco". Following military and aerospace terminology (e.g., SAC, NASA), I propose to abbreviate it to "SECC", pronounced "seek".

2. These were undoubtedly used for a game similar to chunky, played by the historic Southeastern Indians. Among the Creek, this had no ritual aspects but was a gambling game. The discoidal was rolled down a smooth, sand-covered field, and 8-foot poles were thrown after it. The player who placed his pole closest to the discoidal after it had stopped was the winner (Swanton 1928:466).

3. Similar pipes occur in the Selsertown collection (Brown 1926: 258-261).

4. See Waring and Holder 1945:18-19 for a comparative trait list.

5. All radiocarbon dates in this and following chapters were determined by subtracting the number of years B.P. from A.D. 1950. This is the practice now followed by Radiocarbon.

Explanation of Figures 107-119 (pp.206-212)

Fig. 107. MFI sherds. a-d, long bone motif; e, MFI, not SECC. Roadway excavation.

Fig. 108. MFE sherds. a-c, hand; d-e, woodpecker figures. Roadway excavation.

Fig. 109. a, MFE bottle with complex rayed sun circle (SED27);

b, MFI bottle, not SECC (WR85).

Fig. 110. a, MFE bottle, not SECC (EE188); b, MFE beaker-bowl, hand and eye motif (EE182).

Fig. 111. MFE bottle with 2 hand-and-eye motifs. Lines filled with chalk for visibility. WP.

Fig. 112. a, MFE woodpecker (NE596); b, MFE feathered serpent (SEH72); c, double woodpecker, from Moundville collection, provenience uncertain. Engraved lines filled with chalk for visibility.

Fig. 113. MFE fragmentary bottle showing feathered serpent.

RDW 878.

Fig. 114. Greenstone notched discs.

Fig. 115. Greenstone ovoid and square plaques.

Fig. 116. Greenstone notched discs. a is unfinished.

Fig. 117. Greenstone celts.

Fig. 118. a-d, sandstone discoidals; e, greenstone pipe fragment (?).

Fig. 119. a-c, sandstone discoidals; d, limestone discoidal.

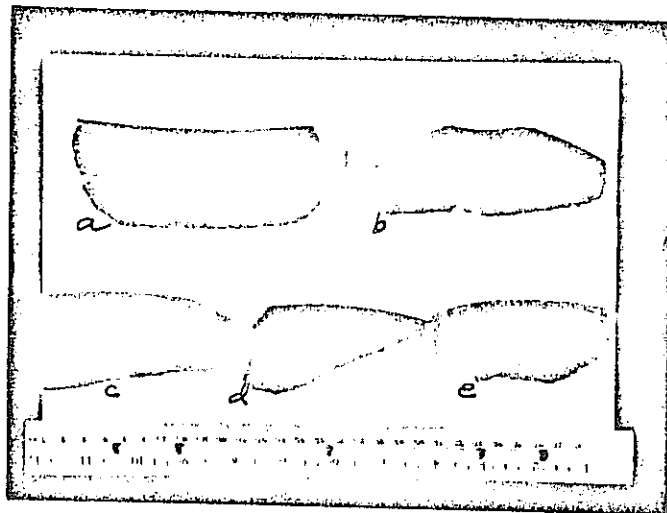


Figure 107

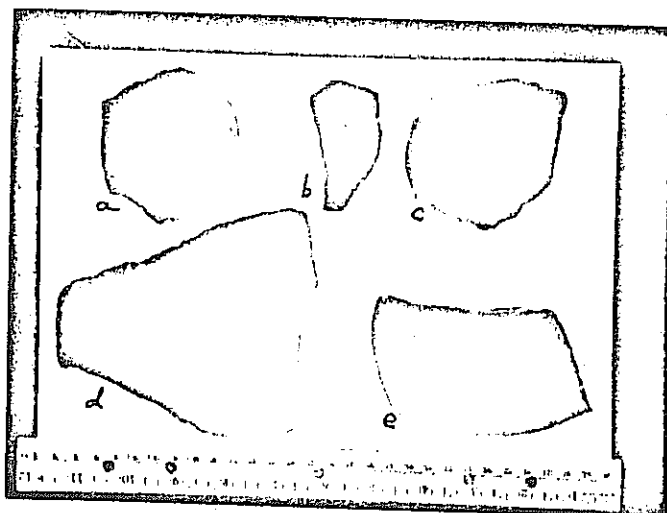


Figure 108

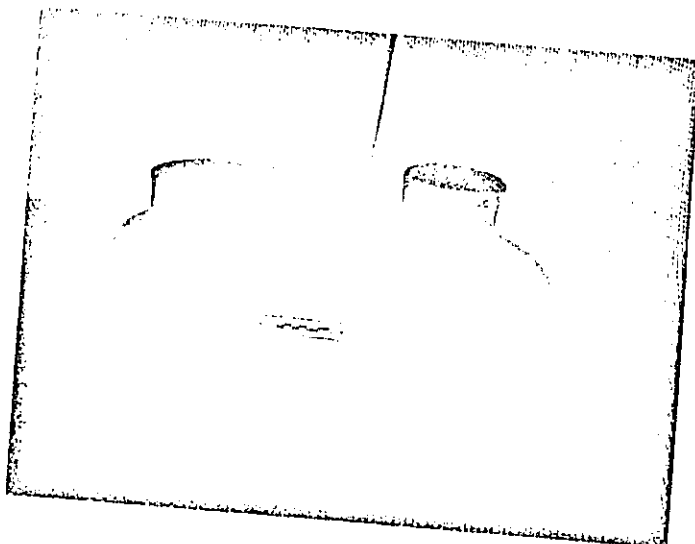


Figure 109

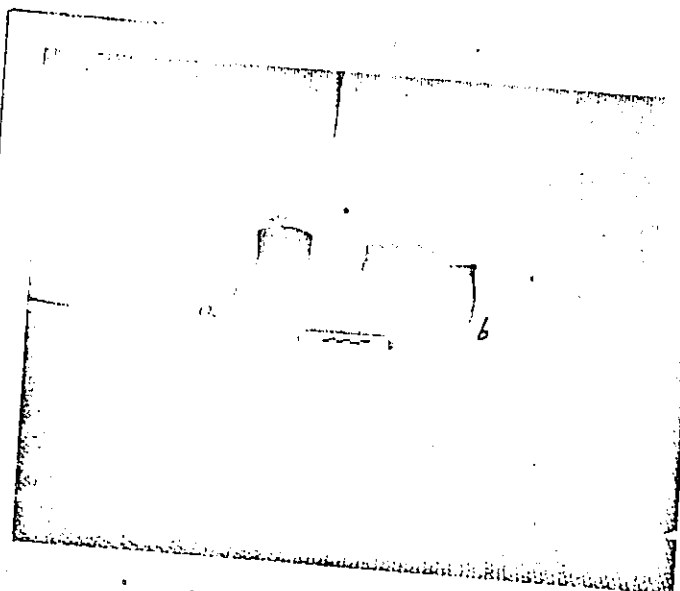


Figure 110

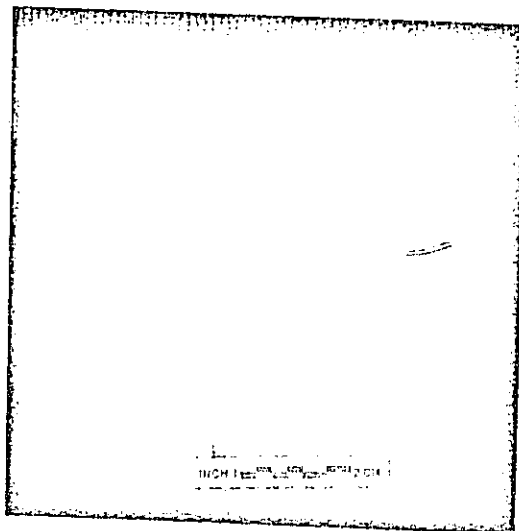


Figure 111

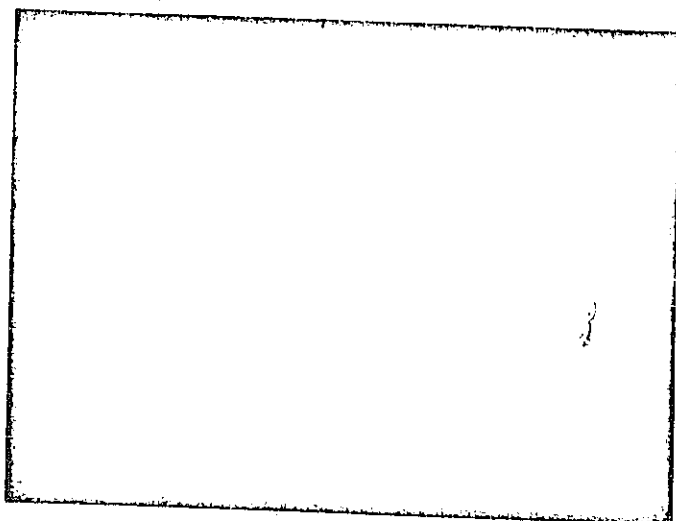


Figure 112

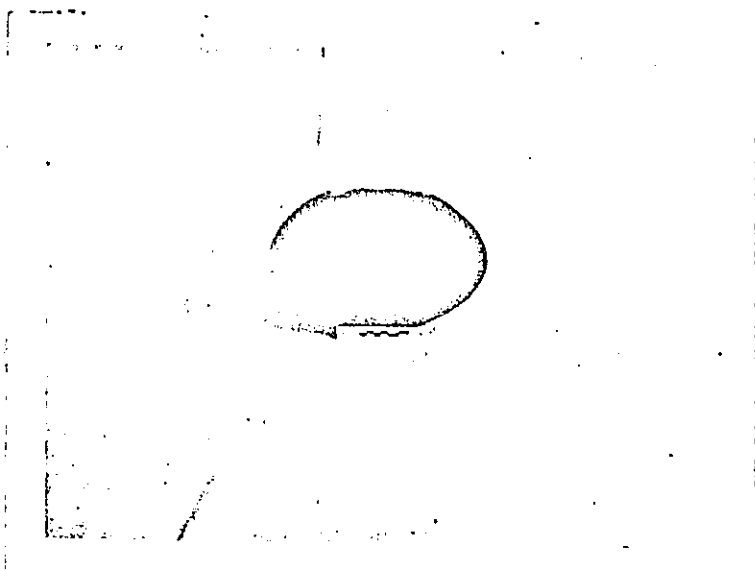


Figure 113

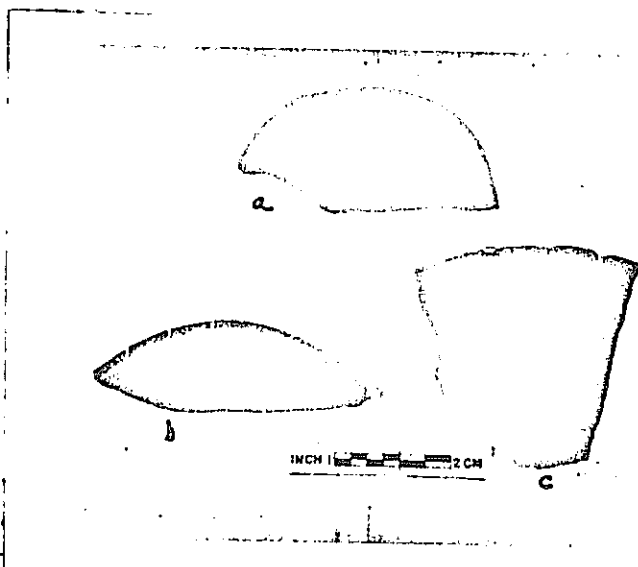


Figure 114

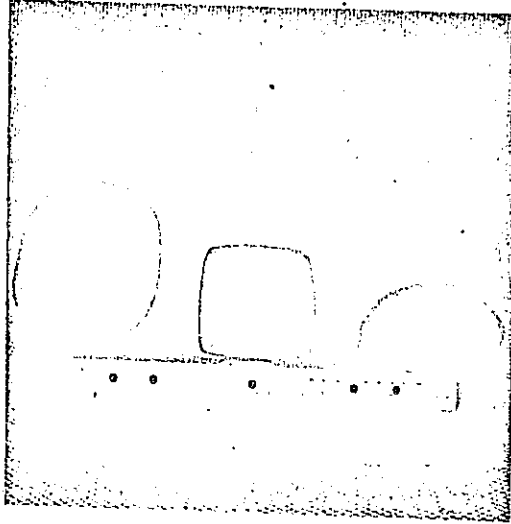


Figure 115

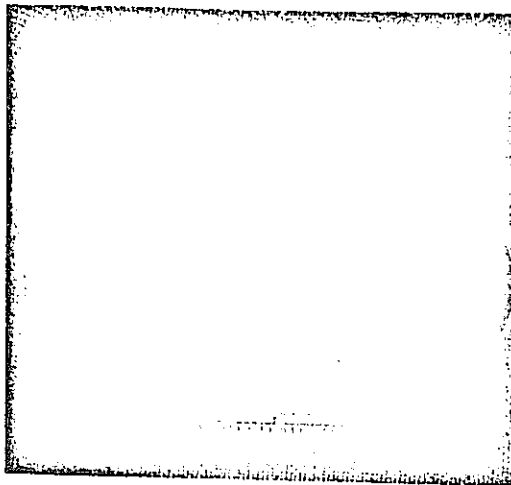


Figure 116

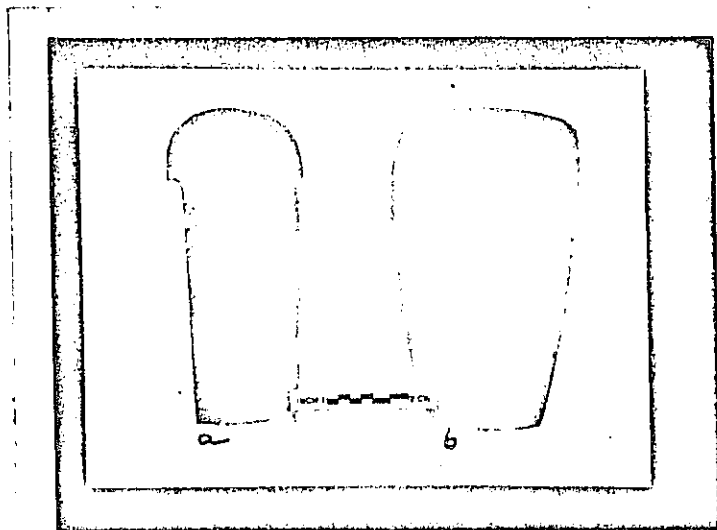


Figure 117

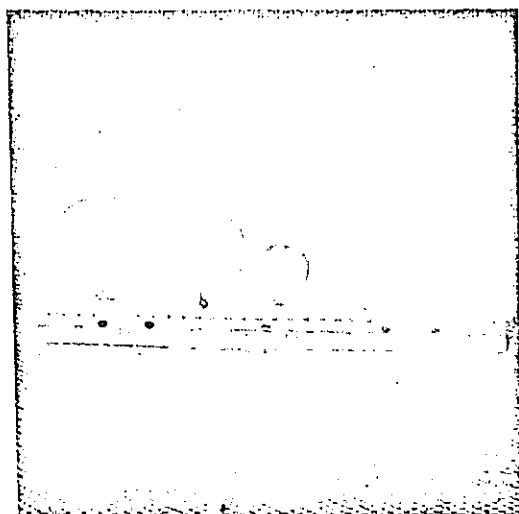


Figure 118

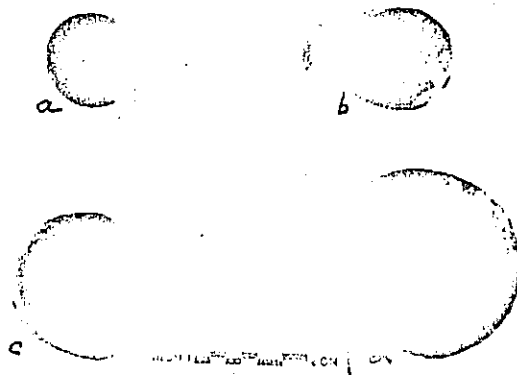


Figure 119

CHAPTER VI

ARCHITECTURE

This chapter describes the mounds and houses of the Moundville phase and presents comparative material on houses from other Mississippian phases.

Mounds (Figs. 11-16, 120-121)

Sixteen of the 18 major mounds are arranged around a roughly rectangular plaza, the long axis of which is approximately east-west (see Map, Fig. 1). On the east and west sides of the plaza the long axes of the mounds are aligned north-south and on the north and south sides of the plaza they are aligned east-west. Thus one of the longer sides of each mound faces the plaza.

Mound B, oriented east-west, was evidently built to dominate the plaza. A low platform or enclosure, 120x60 m., extends from its north side.

The position of Mound A in the center of the plaza is somewhat anomalous. It may have originally bounded the west side of the plaza, which was later expanded with the addition of Mounds L through R. It is just as reasonable to suppose it was the last mound built, when there was no more space on the perimeter of the plaza. This problem can undoubtedly be solved by stratigraphic tests.

Mounds C and D are far outside the plaza. Their orientation was

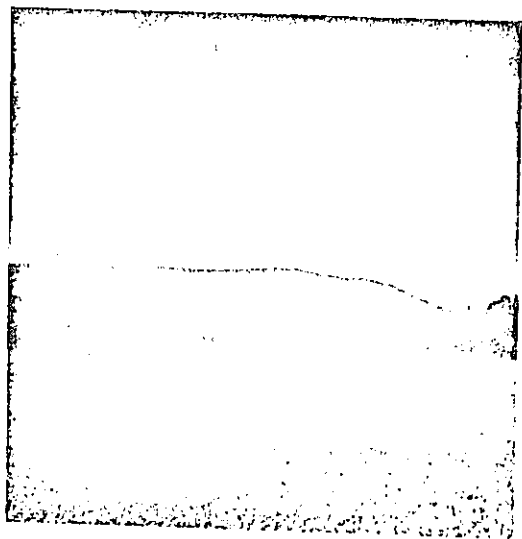


Figure 120.--Mound B. South side in foreground.



Figure 121.--Mound B. Ramp.

probably determined by the banks of the ravines near them.

Several small mounds are also located outside the plaza. A topographic map made in the 1930's shows some in the ravines and also to the south and west of the plaza. Most are now badly eroded and overgrown with brush, making it impossible to determine the size -- or, indeed, whether they are temple mounds or burial mounds from an earlier occupation.

Table 14 summarizes mound dimensions and orientations. Orientation and ramp position were checked in the field; slope of sides was calculated later.¹

All the mounds have suffered some erosion. The small mound M, for example, is now almost conical. Mound B in particular has been severely attacked by erosion in the past few years: wide gullies have been cut in the north and south sides and are expanding. Mound A has also fared poorly, largely because local residents cannot resist driving their cars up the ramp and around the platform.

Because of this erosion the mounds were probably up to a meter higher than at present. Lateral dimension and degree of slope might have changed slightly also. Table 14 and the statistics discussed in the following paragraphs should be read with this in mind.

Although ramps are supposedly characteristic of temple mounds, a field survey in February, 1963, failed to locate any on 7 mounds at Moundville. Moore (1907a:336) shows ramps that do not now exist and omits some that do. Most ramps face north or east, usually onto the plaza.

The basal area was correlated with the platform area (Fig. 122)

TABLE 14.--The major mounds at Moundville.

Mound	Orientation (long axis)	Dimension Base E/W-N/S	Dimension Platform E/W-N/S	Height	Avg. Slope	Ramps
A	NE-SW	76-107	49-82	6.4	26°	N, S?
B	E-W	116-107	52-46	16.8	28°	E
C	N-S	40-49	21-30	5.8	32°	?
D	N-S	46-49	24-33	4.9	29°	?
E	N-S	81-84	55-52	3.0	12°	SW
F	NW-SE	37-52	12-30	5.5	26°	SE
G	N-S	49-53	27-30	6.4	30°	E
H	N-S	24-27	12-15	1.8	17°	?
I	N-S	58-61	30-30	3.4	13°	?
J	E-W	61-37	33-12	4.0	17°	N
K	E-W	43-30	27-12	3.7	24°	?
L	E-W	61-49	40-27	4.0	21°	N
M	NE-SW	37-30	rounded	4.0	-	?
N	NW-SE	46-53	24-30	5.5	27°	NW
O	N-S	35-43	18-26	3.7	24°	E
P	N-S	61-76	33-46	7.7	28°	?
Q	N-S	46-49	21-17	3.7	17°	E
R	N-S	82-92	50-55	6.1	19°	S

Notes:

System of designating mounds by letters is that used by Moore (1905; 1907a).

All figures in meters.

Average slope obtained by averaging slope of each side.
Difference in degree of slope between the sides does not differ by more than 5°.

Mound M is rounded because of erosion. Height is approximate.

and an expectably high correlation coefficient of .85 was obtained. In other words, about 72% of the variation in the platform area can be associated with variation in the basal area. A coefficient of this magnitude is unusual and definitely proves (had there ever been any doubt) that a temple mound is a highly systematized and precisely engineered structure. The explanation of why a correlation of such magnitude should occur may afford some insight into how a temple mound was constructed.

Excavations in the Southeast and Middle America have provided ample evidence that a temple mound is built in several successive stages, each stage being usually -- but not always -- of similar shape. Even Moore noted that Mound C had been built in at least 2 stages (1905:151; fieldnotes). With the possible exception of the small mound H, it is virtually certain that all mounds at Moundville are composite. Moreover, the exceedingly regular trapezoidal cross-section of all mounds at Moundville indicates that additions were not subsidiary platforms adjoining the original structure but layers placed atop it.

Yet despite the multi-stage construction and greatly varying height, the platform and basal areas of the Moundville mounds are closely associated, as the high correlation illustrates. The platform area is always about one-third to one-fifth of the basal area, and the degree of slope of the mound sides is quite uniform, ranging from 13° to 34° and averaging about 25° .

I suggest that this observed uniformity and inferred systematization is the result of the interplay of 2 factors. One was a cultural ideal, the other was natural mechanical limitations.

The cultural factor was the desire to make the platform area as

large as possible in relation to the area of the base. The mound apparently served not so much as a monument as the substructure of a ceremonial building, so that a large platform area was important. But because of the tremendous labor involved in mound construction, no extra earth was added to the basal portion. Thus the slope of the mound would have become steeper and steeper as the platform was expanded. At a certain point, seemingly when the slope approached about 30° , the surface clay would begin to slide and erosion would occur (while in use the mounds were probably not grass covered). During the heavy winter rains this would have been a serious problem indeed. Here, then, was the mechanical limitation in mound construction.

The only solution was to reduce the slope by depositing more soil over the sides, a procedure which would in effect increase the basal area. When the slope was reduced sufficiently to prevent erosion, the cultural factor would again become dominant and the platform would be expanded. The high correlation is therefore the result of the necessity of preventing erosion. Although the ideal was to expand the platform without relation to the base, the maximum possible slope of the sides caused the platform and basal areas to be closely associated.

If this line of reasoning is correct, the implications are interesting. The temple mound is seen not as a religious edifice erected for the greater glory of the gods, but as the result of a prosaic series of compromises, or rather a continual compromise. The several stages were built not for any ceremonial reason, but simply to keep the mound from washing away while still maintaining a large platform area. The temple mound becomes merely another example of the dreary and never-ending human process

of economizing, of attempting to maximize satisfactions in the face of uncontrollable limitations.

Houses

During the late 1930's a road was built through the site roughly around the edge of the plaza. Twenty-two complete house patterns were excavated and mapped. There were also a number of house features which could not be associated with complete houses. Most of the house patterns seem to be concentrated at the east and west ends of the plaza, i.e., near the administration building and near the museum (map, Fig. 1). Here house patterns were superimposed on one another and fragments of wall trenches and scattered post molds were numerous. Evidently new houses were erected directly over the remains of previous ones.

Table 15 summarizes data on length and orientation of house walls. Figures 123 through 139, representing the post mold and wall trench patterns, are copied from the roadway maps now in the files of the Mound State Monument.

Description of Individual Houses

House 1 (Fig. 123)

Location: north of mound S.

Length and orientation of walls:²

wall facing	NW:	3.23 m.	
"	SE:	4.19 m.	{approx.}
"	NE:	5.92 m.	{approx.}
"	SW:	4.96 m.	

Wall construction: wall trenches with gaps at corners.

Interior features: (a) circular, clay-lined fire basin near center, approx. 45 cm. diameter, no data on depth; (b) scat-

TABLE 15.--Dimensions and orientations of houses.

Orientation:	Single Walls				Mean: Wall Pairs	
	Northwest-Southeast		Northeast-Southeast		NW-SE	NE-SW
Wall Facing:	SW	NE	NW	SE	SW/NE	NW/SE
House No.:						
1	4.96	5.92	3.23	4.19	5.44	3.71
2	4.90	4.90	5.74	5.33	4.90	5.53
3	-	3.41	2.40	2.40	-	2.40
4	3.43	2.86	3.43	2.48	3.15	2.91
5	5.14	5.14	4.76	4.76	5.14	4.76
5a	4.20	3.80	3.14	3.52	4.00	3.33
6	3.52	3.80	3.14	3.52	3.66	3.33
7	3.33	3.33	3.33	3.24	3.33	3.28
8	7.24	7.62	4.95	4.57	7.43	4.76
9	10.50	11.08	3.80	3.43	10.79	3.62
10	7.24	6.45	8.00	6.84	6.84	7.42
11	5.14	5.04	6.86	7.24	5.09	7.05
12	3.43	-	3.24	3.24	-	3.24
13	2.48	2.48	2.48	2.86	2.48	2.67
14	2.52	3.04	-	-	-	-
15	2.66	3.04	2.95	3.24	2.85	3.10
16	7.74	8.90	5.34	5.61	8.32	5.48
17	5.71	5.71	7.63	7.63	5.71	7.63
18	4.10	4.57	5.90	5.90	4.33	5.90
19	4.20	4.00	4.57	5.34	4.10	4.95
20	3.71	3.14	3.43	3.24	3.42	3.33
21	4.20	4.57	3.24	4.10	4.39	3.67
Mean	4.84	4.89	4.37	4.43	5.02	4.39
Median	4.20	4.57	3.43	4.10	4.39	3.67

Notes:

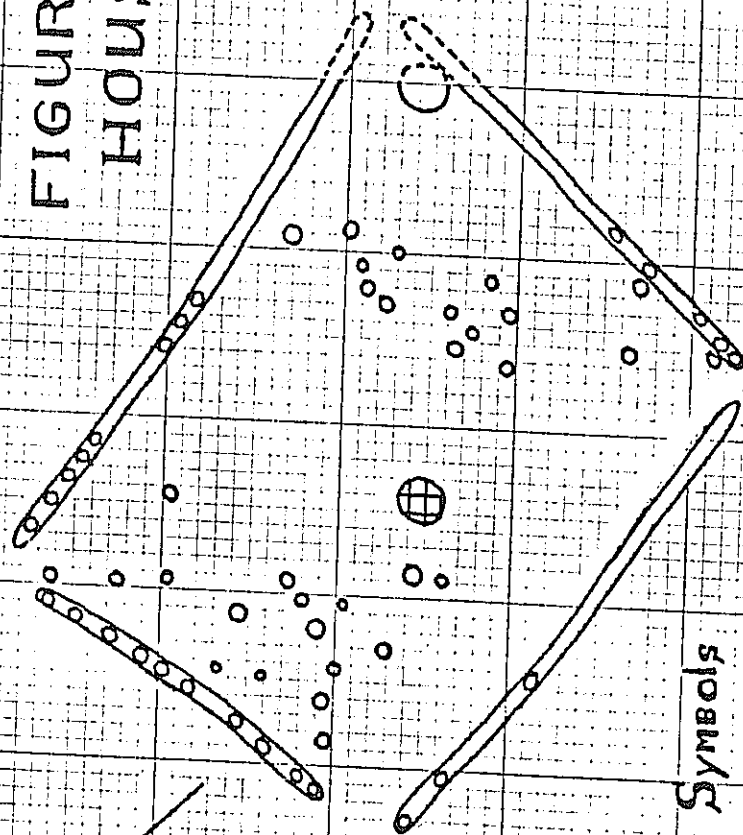
All dimensions in meters.

Dash indicates no measurement because of disturbance.

The long axis of House 17 is oriented east-west; the long axis of House 18 is oriented north-south.

FIGURE 123:
HOUSE 1

222



Explanation of Symbols

○ = post mold

— = wall trench

○ = fire basin

- - - = reconstructed

0 1 2 3 meters

scale:

0 1 2 3 meters

tered post holes; those in eastern third possibly represent a partition.

House 2 (Fig. 124)

Location: east of mound I.

Length and orientation of walls:

wall facing	NW:	5.74 m.
"	SE:	5.33 m.
"	NE:	4.90 m.
"	SW:	4.90 m.

Wall construction: wall trenches. There are 2 additional walls on the southwest side, both apparently belonging to this house. The earliest was probably on the outside. These may have been built to supplement or replace the original wall, perhaps because of structural failure. The southwest corner was originally closed but left open when the additional walls were constructed. Other corners are open.

Interior features: (a) 3 circular, clay-lined fire basins adjacent near center; 2 approximately 50 cm. diameter, one 35 cm., no data on depth; (b) scattered post molds.

House 3 (Fig. 125)

Location: west of mound N.

Length and orientation of walls:

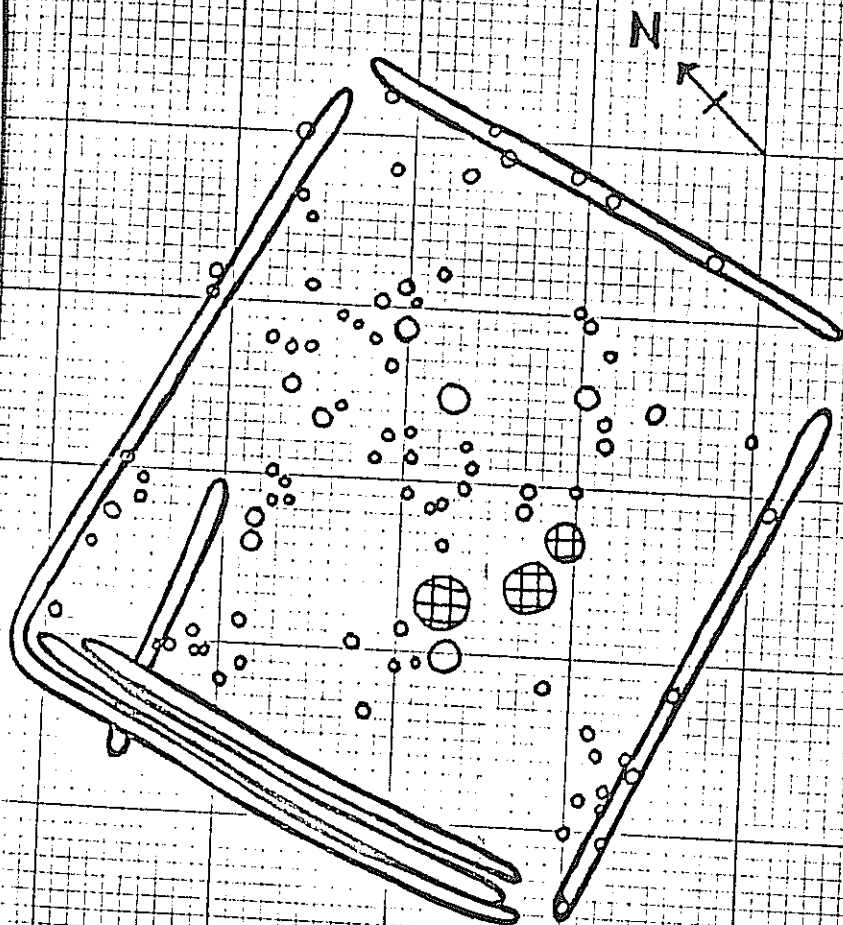
wall facing	NW:	2.40 m.
"	SE:	2.40 m.
"	NE:	3.41 m.
"	SW:	indeterminate

Wall construction: single poles. The apparent lack of a southwest wall may indicate that this was a ramada-like structure. Possibly the post molds were obliterated or were not noticed by the excavator.

Interior features: (a) 2 small circular, clay-lined firebasins adjacent on southwest side, 45 and 20 cm. in diameter. The unusual off-center position supports the observation that this house was open on the southwest side. The fire basins would then have been at the open side, so that the smoke could escape into the air; (b) scattered post molds.

This house underlies house 2.

FIGURE 124:
HOUSE 2

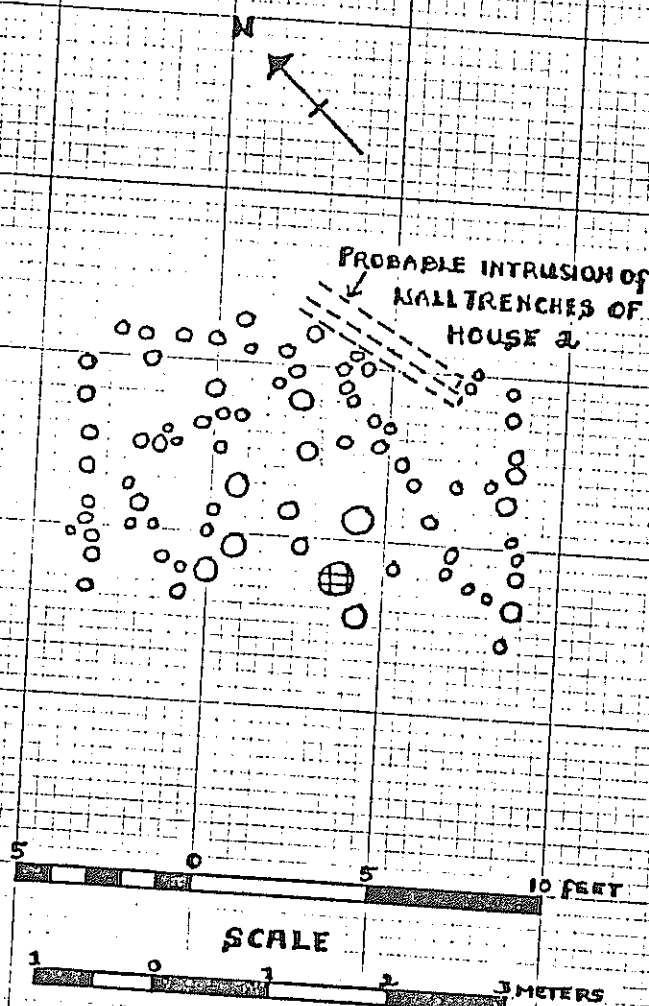


5 0 5 10 FEET

SCALE

1 0 1 2 3 METERS

FIGURE 125: HOUSE 3



House 4 (Fig. 126)

Location: north of mound Q.

Length and orientation of walls:

wall facing	NW:	3.43 m.	(approx.)
" "	SE:	2.48 m.	
" "	NE:	2.86 m.	
" "	SW:	3.43 m.	

Wall construction: wall trenches. The northwest wall was either unfinished, built by both wall-trench and single-pole techniques, or incorrectly recorded by the excavator. Double walls occur on the northwest and northeast sides. Corners are open, the southwest corner being blocked by a single post mold.

Interior features: circular, clay-lined fire basin near center, 50 cm. diameter, 26 cm. depth.

Houses 5 and 5a (Fig. 127)

Location: north of mound Q.

Length and orientation of walls:

		<u>5</u>	<u>5a</u>
wall facing	NW:	4.76 m.	3.14 m.
" "	SE:	4.76 m.	3.52 m.
" "	NE:	5.14 m.	3.80 m.
" "	SW:	5.14 m.	4.20 m.

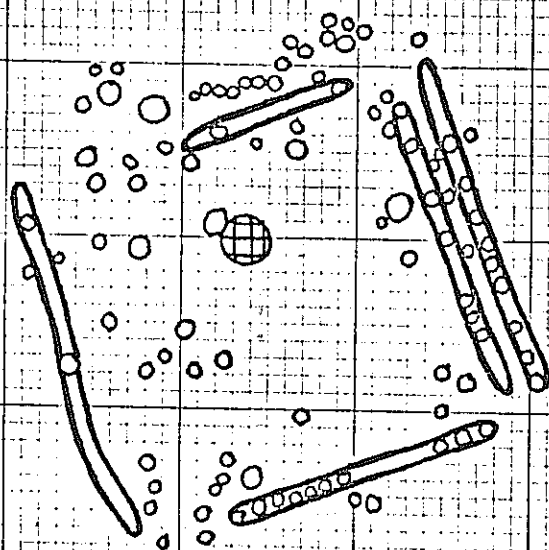
Wall construction: wall trenches with open corners.

Interior features: (a) circular, clay-lined fire basin near center, 65 cm. diameter, 15 cm. depth; (b) "midden" area near center, not explained in field notes; (c) short segment of wall trench near southwest wall; (d) scattered post molds.

This structure is interpreted as 2 houses. The larger and exterior one, house 5, was built first. The smaller, interior house, 5a, was constructed later utilizing the southwest and southeast walls of house 5. It is improbable that house 5a was in fact an inner room of the larger house 5. If this had been the case, the outer room would have been an excessively narrow, right-angled corridor.

Imaginative readers may see one or more single post structures within these 2 houses.

FIGURE 126: HOUSE 4

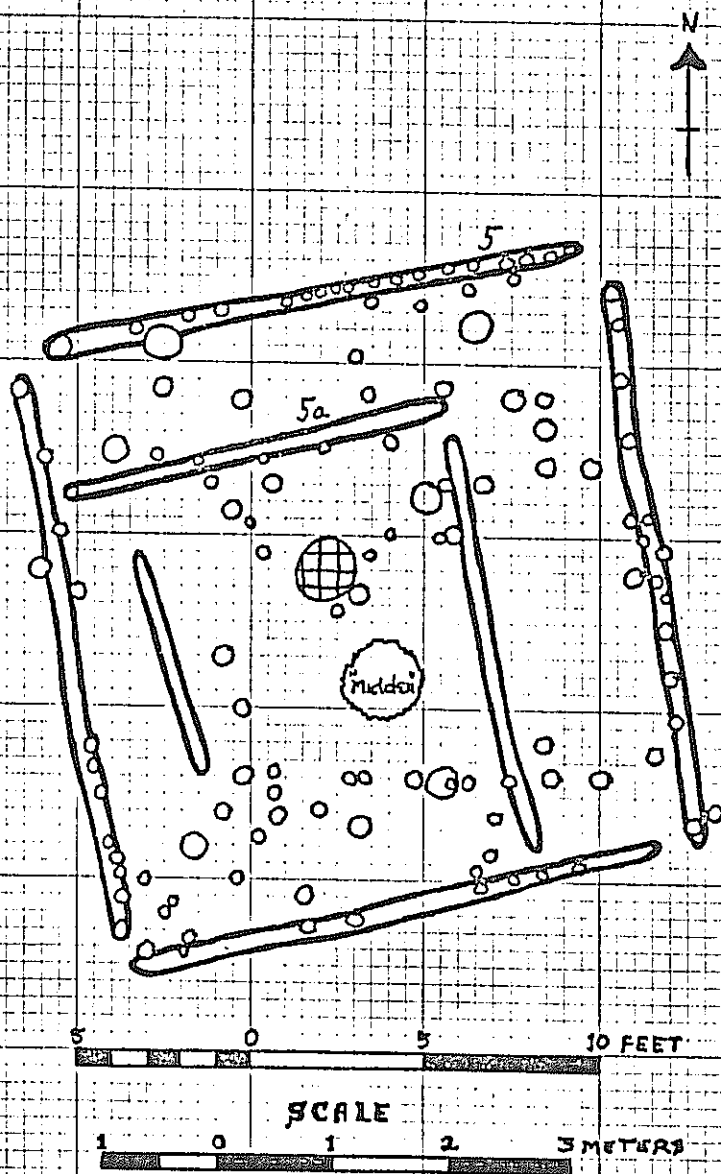


0 5 10 FEET

SCALE

1 0 1 2 3 METERS

FIGURE 127:
HOUSE 5 AND 5a



House 6 (Fig. 128)

Location: north of mound Q.

Length and orientation of walls:

wall facing	NW:	3.14 m.
"	SE:	3.52 m.
"	NE:	3.80 m.
"	SW:	3.52 m.

Wall construction: wall trenches with open corners. The gap bounded by post holes in the southeast wall seems to be a true door. This is a novelty in Mississippian architecture.

Interior features: (a) 2 superimposed circular, clay-lined fire basins at center, the earlier 30 cm. diameter, the latter 45 cm. diameter, 19 cm. depth; (b) "pit" near fire basins 45 cm. deep, not otherwise described in field notes; (c) scattered post molds in interior.

House 7 (Fig. 129)

Location: north of mound Q.

Length and orientation of walls:

wall facing	NW:	3.33 m.
"	SE:	3.24 m.
"	NE:	3.33 m.
"	SW:	3.33 m.

Wall construction: wall trenches with open corners; single posts in northeast and southeast corner gaps; supplementary wall trench along part of southeast wall.

Interior features: (a) "midden area" in center, not described in field notes; (b) scattered post molds in interior, several of which are larger in diameter than those in the wall trenches. These do not appear to be supports, since there is no consistent pattern; no fire basin is visible in this structure.

House 8 (Fig. 130)

Location: south of mound E.

Length and orientation of walls:

wall facing	NW:	4.95 m.
"	SE:	4.57 m.
"	NE:	7.62 m.
"	SW:	7.24 m.

FIGURE 128: HOUSE 6

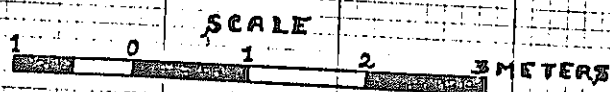
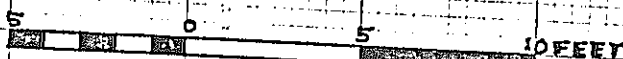
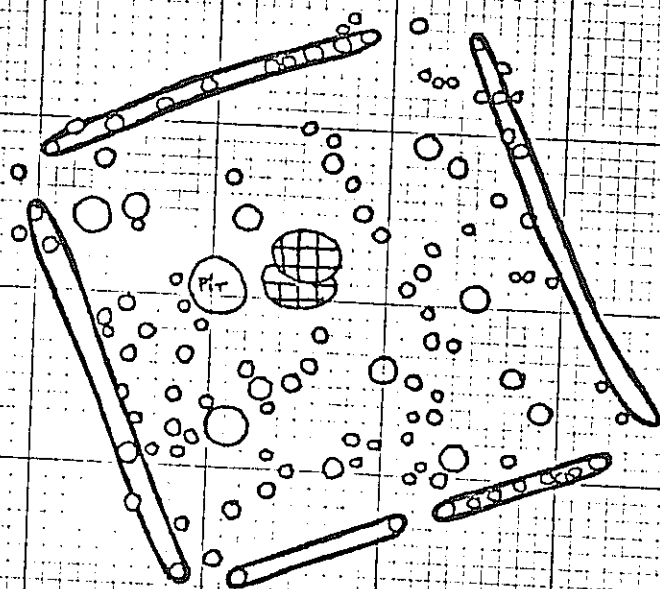
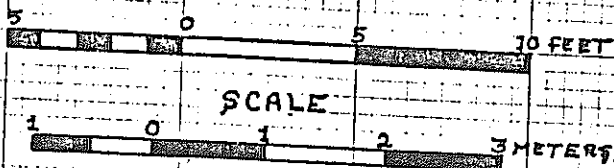
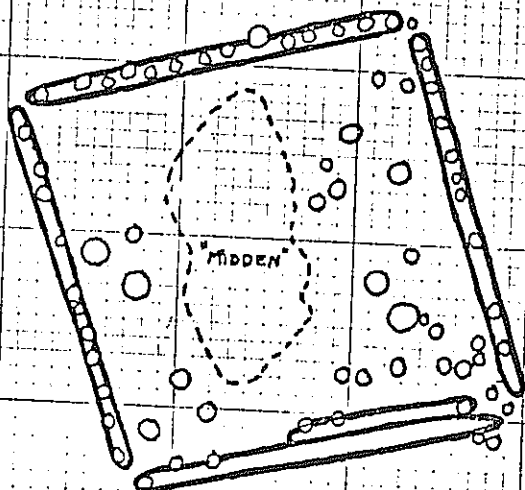
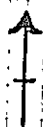


FIGURE 129: HOUSE 7



Wall construction: walls facing northeast and southwest by wall-trench technique, the other wall pair by single-pole technique. The irregular alignment of these post molds suggests that they had never been placed in a wall trench. If the alignment were regular, one would suspect that the excavator failed to notice the wall trench.

Interior features: scattered post molds, some of which may belong to the 3 superimposed houses. No fire basin is visible.

Since the walls of this house did not disrupt those of the 3 other houses, it appears to have been the earliest of the four: 8, 9, 10, 11. However there is no indication that the excavator took note of the superposition, for he left no description.

House 9 (Fig. 130)

Location: south of mound E.

Length and orientation of walls:

wall facing	NW:	3.80 m.
"	SE:	3.43 m.
"	NE:	11.08 m.
"	SW:	10.50 m.

Wall construction: wall trenches with open corners.

Interior features: scattered post molds; fire basin absent.

The long rectangular shape of this structure is unique at Moundville. It differs so greatly from the usual almost square pattern that it may have been ceremonial rather than domiciliary.

The building of house 10 obliterated portion of the northeast wall of house 9, showing that it preceded house 10. Its relation to houses 8 and 11 is not entirely clear, but I have assumed that it was built after house 8 and before house 11.






House 10 (Fig. 130)

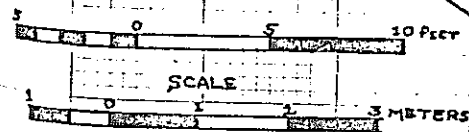
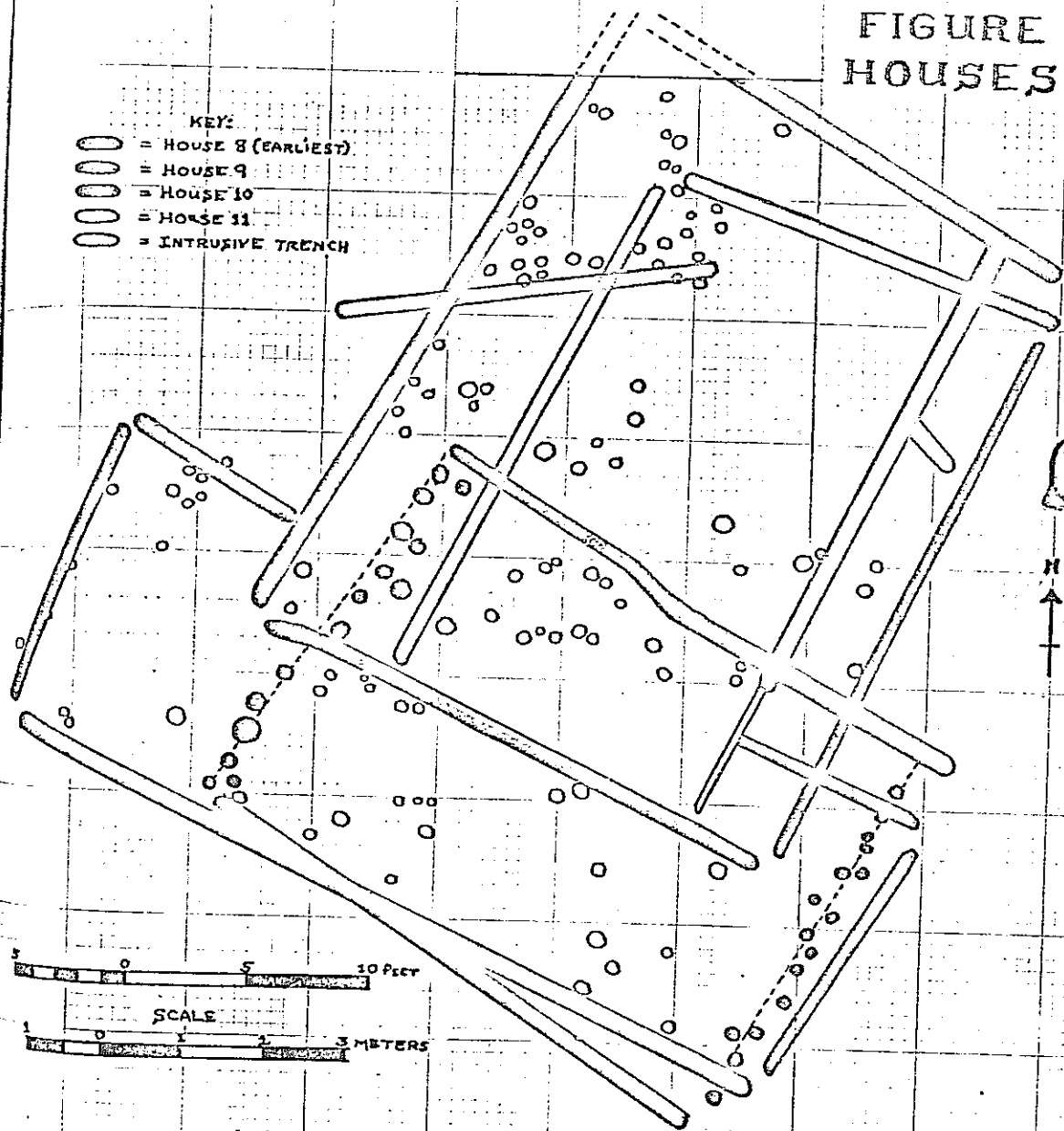
Location: south of mound E.

Length and orientation of walls:

wall facing	NW:	8.00 m.
"	SE:	6.84 m.
"	NE:	6.45 m.
"	SW:	7.24 m.

FIGURE 130:
HOUSES 8-11

- KEY:
-  = HOUSE 8 (EARLIEST)
 -  = HOUSE 9
 -  = HOUSE 10
 -  = HOUSE 11
 -  = INTRUSIVE TRENCH



Wall construction: wall trenches with open corners. A short segment of wall trench crosses the northwest wall of this house, and a longer segment is parallel to the southeast wall. The latter may have been a supplementary wall.

Interior features: scattered post molds; fire basin absent.

This house is assumed to be later than houses 8 and 9 and earlier than house 11.

House 11 (Fig. 130)

Location: south of mound E.

Length and orientation of walls:

wall facing	NW:	6.86 m.
" "	SE:	7.24 m.
" "	NE:	5.04 m.
" "	SW:	5.14 m.

Wall construction: wall trenches with open corners. Apparently the southeast and southwest walls of house 11 are also those of house 10. A similar situation occurs in houses 5 and 5a.

Interior features: scattered post molds; fire basin absent.

The fact that house 11 seems to have made use of the walls of house 10 suggests that it is later.

House 12 (Fig. 131)

Location: west of mound P.

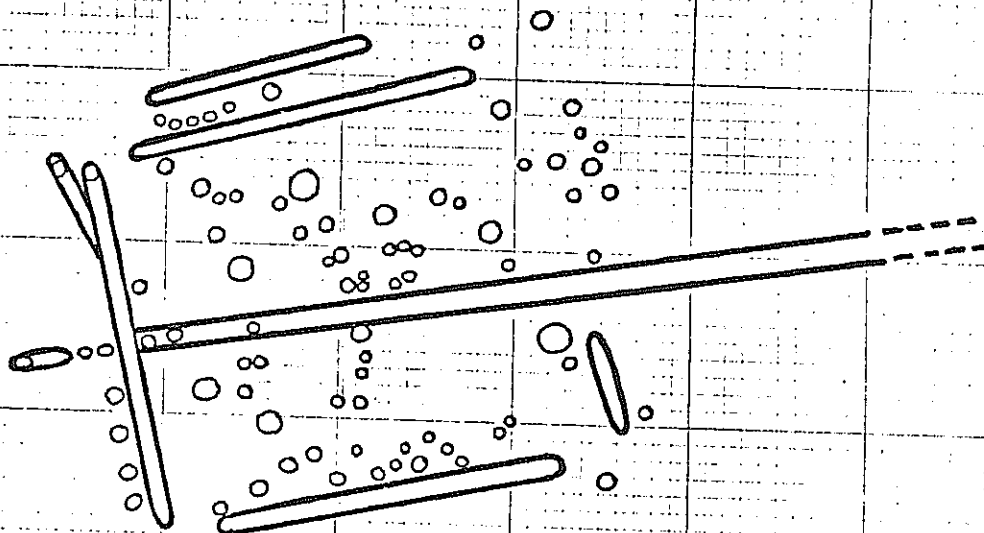
Length and orientation of walls:

wall facing	NW:	3.24 m.
" "	SE:	3.24 m.
" "	NE:	indeterminate
" "	SW:	3.43 m.

Wall construction: wall trenches with open corners.

Interior features: scattered post molds; fire basin absent.

This house seems to have been disturbed by later construction, especially by the large wall trench segment crossing the center. The northeast wall was probably obliterated by this disturbance.

FIGURE 131:
HOUSE 12

5 0 5 10 FEET

SCALE

1 0 1 2 3 METERS

House 13 (Fig. 132)

Location: west of mound P.

Length and orientation of walls:

wall facing	NW:	2.48 m.
" "	SE:	2.86 m.
" "	NE:	2.48 m.
" "	SW:	2.48 m.

Wall construction: wall trenches with open corners.

Interior features: the circle of single post molds in the north-east corner is probably the remains of an incompletely excavated structure.

This house is unusually small.

House 14 (Fig. 133)

Location: west of mound P.

Length and orientation of walls:

wall facing	NW:	indeterminate
" "	SE:	indeterminate
" "	NE:	3.04 m. (approx.)
" "	SW:	2.52 m. (approx.)

Wall construction: both wall trenches and rows of single posts are shown. The regularity of the pole alignments implies that they were actually placed in wall trenches which were not shown by the excavator.

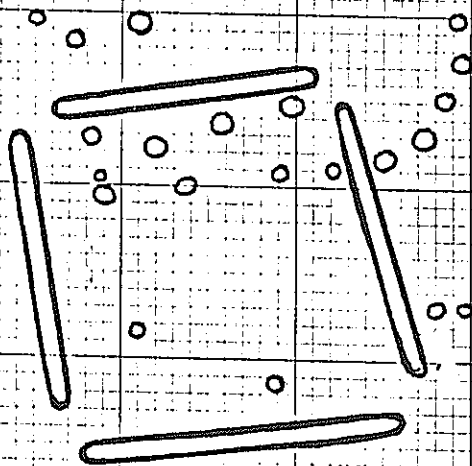
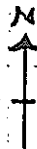
Interior features: (a) irregular deposit of ash near southwest corner; (b) several scattered post molds; (c) fire basin absent.

This incompletely excavated house may have been composed of 2 rooms or the structure could have been 2 contiguous houses. Either case is unusual, but the aboriginal disturbance and incomplete excavation do not allow firm conclusions.

House 15 (Fig. 134)

Location: south of mound N.

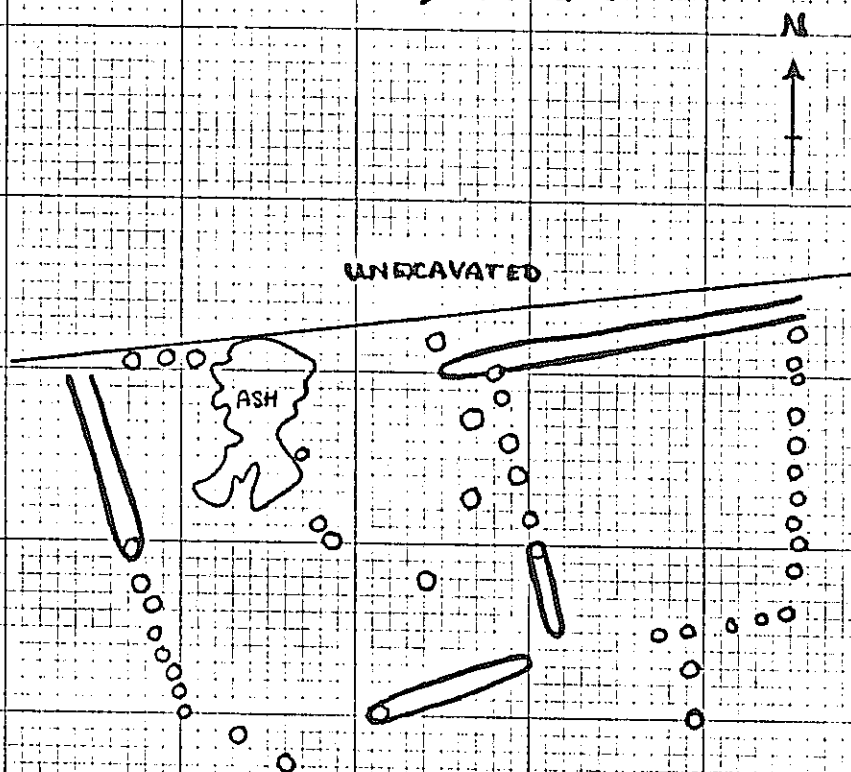
FIGURE 132: HOUSE 13



5 0 5 10 FEET

SCALE
1 0 1 2 3 METERS

FIGURE 133: HOUSE 14



5 0 5 10 FEET

SCALE
1 0 1 2 3 METERS

Length and orientation of walls:

wall facing	NW:	2.95 m.	{approx.}
"	"	SE:	3.24 m. {approx.}
"	"	NE:	3.04 m. {approx.}
"	"	SW:	2.66 m. {approx.}

Wall construction: relatively large posts set singly. The size of the posts indicates that a wall trench was not used. Poles are closely spaced so that the only possible entrance (in the portion excavated) seems to be in the northwest wall.

Interior features: scattered post molds, including several very small, closely spaced posts in northeast corner. No fire basin in excavated portion.

This house was uncovered by 2 parallel 5-foot trenches spaced 5 ft. apart. Inexplicably, the intervening area was not excavated. The data available indicate: that this house was a true "large log" structure, although it is unusually small.

House 16 (Fig. 135)

Location: south of mound N.

Length and orientation of walls:

wall facing	NW:	5.34 m.	
"	"	SE:	5.61 m. {approx.}
"	"	NE:	8.90 m. {approx.}
"	"	SW:	7.74 m.

Wall construction: wall trenches; northwest corner is open; northeast and southwest corners are closed.

Interior features: 25 intrusive burials (not shown) destroyed all interior features of this house.

House 17 (Fig. 136)

Location: north of mound K.

Length and orientation of walls:

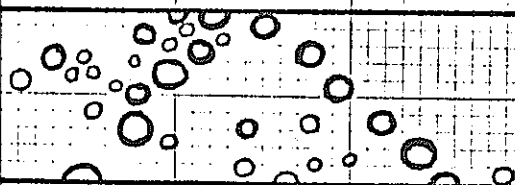
wall facing	N:	5.71 m.	{long axis oriented several degrees
"	"	S:	5.71 m. east of north.}
"	"	E:	7.63 m.
"	"	W:	7.63 m.

Wall construction: wall trenches. These are not shown in the field

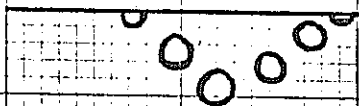
FIGURE 134: HOUSE 15



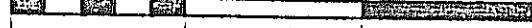
UNEXCAVATED



UNEXCAVATED



5 0 5 10 FEET



SCALE

1 0 1 2 3 METERS

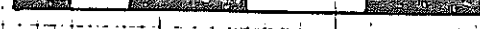
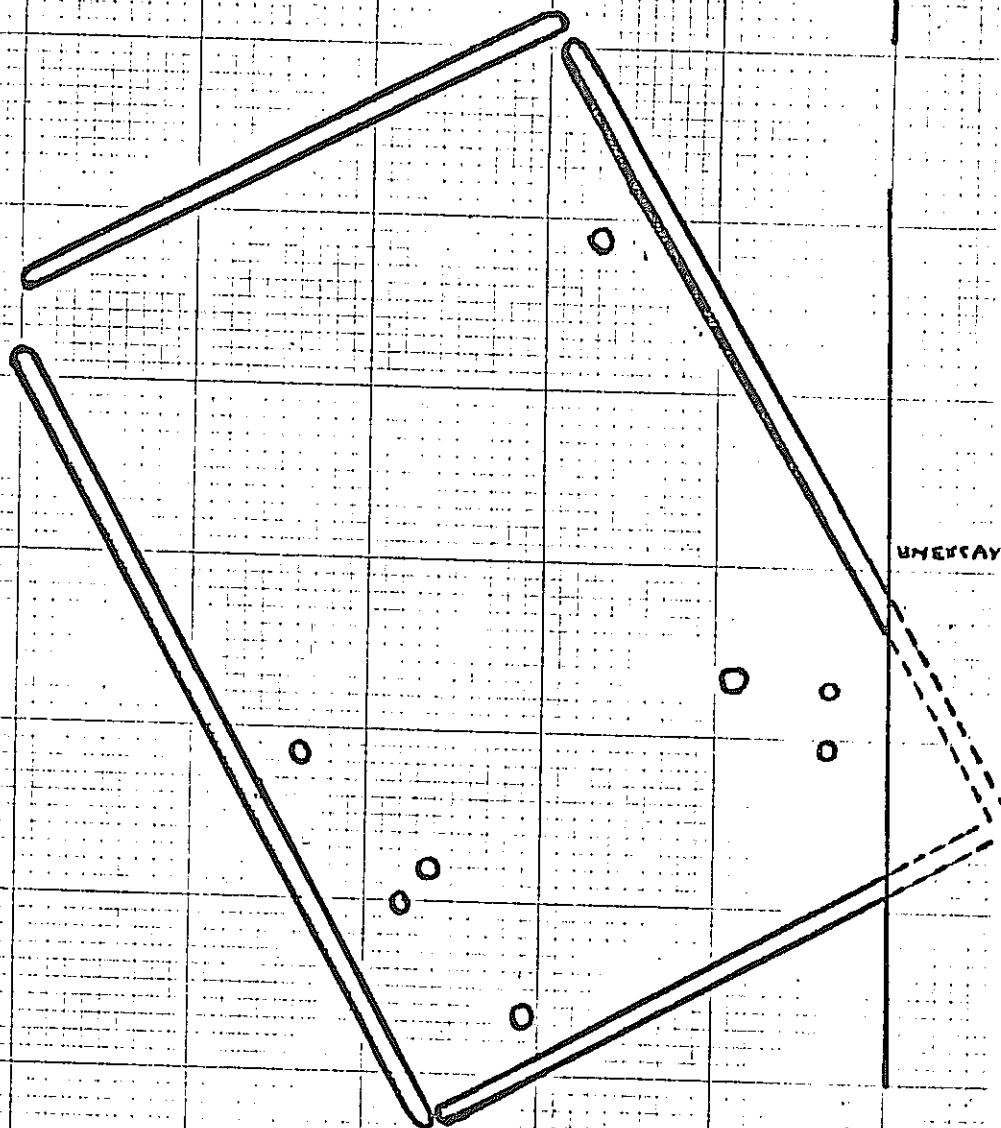


FIGURE 135: HOUSE 16

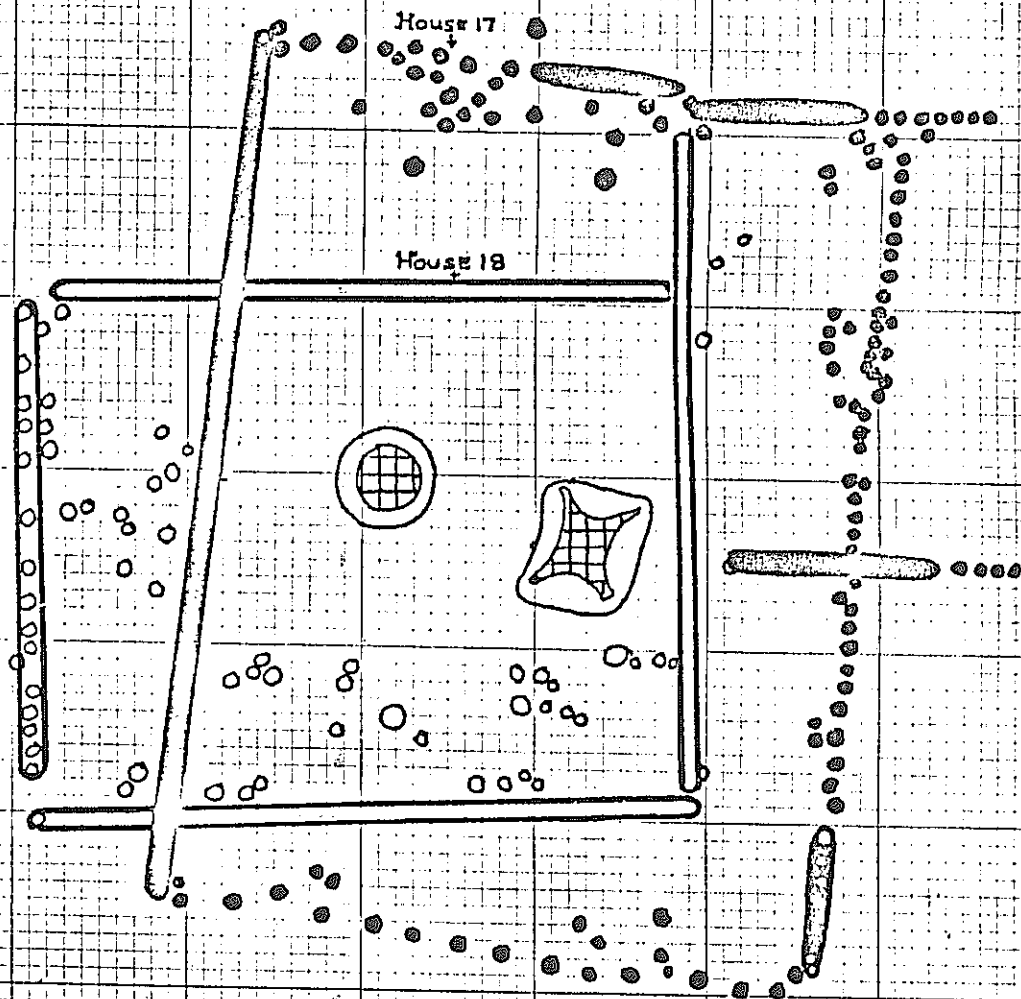
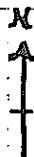


5 0 5 10 FEET

SCALE

1 0 1 2 3 METERS

FIGURE 136:
HOUSES 17 AND 18



5 0 5 10 FEET

SCALE

1 0 1 2 3 METERS

diagram for parts of the north, south, and east walls, but the regular alignment of the post molds implies that the wall trenches either had been obliterated or were not noticed by the excavator. The north wall extends about 80 cm. beyond the junction with the east wall, and a one-meter section of wall trench crosses the east wall at right angles at its midpoint. Only the northeast corner is open, and this gap is partly blocked by single poles.

Interior features: (a) rectangular, clay-lined fire basin in center, 90x75 cm., 45 cm. deep; (b) circular fire basin, described under house 18 (see below).

This house overlies or underlies house 18, but the field maps give no indication as to which was earlier.

House 18 (Fig. 136)

Location: north of mound K.

Length and orientation of walls:

wall facing	N:	5.90 m.
" "	S:	5.90 m.
" "	E:	4.10 m.
" "	W:	4.57 m.

Wall construction: wall trenches, all corners except northeast open. The east wall extends slightly beyond the junction with the north wall.

Interior features: (a) circular, clay-lined fire basin 80 cm. in diameter, 43 cm. in depth; (b) rectangular fire basin, described under house 17 (see above); (c) scattered post molds. It is impossible to assign either of the fire basins or the post molds to either house 17 or 18 with certainty. Presumably the rectangular basin belonged to one house, the circular basin to the other.

This house overlies or underlies house 17, but the field maps give no indication as to which was earlier.

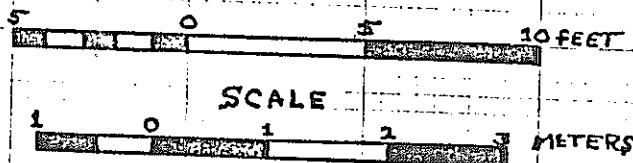
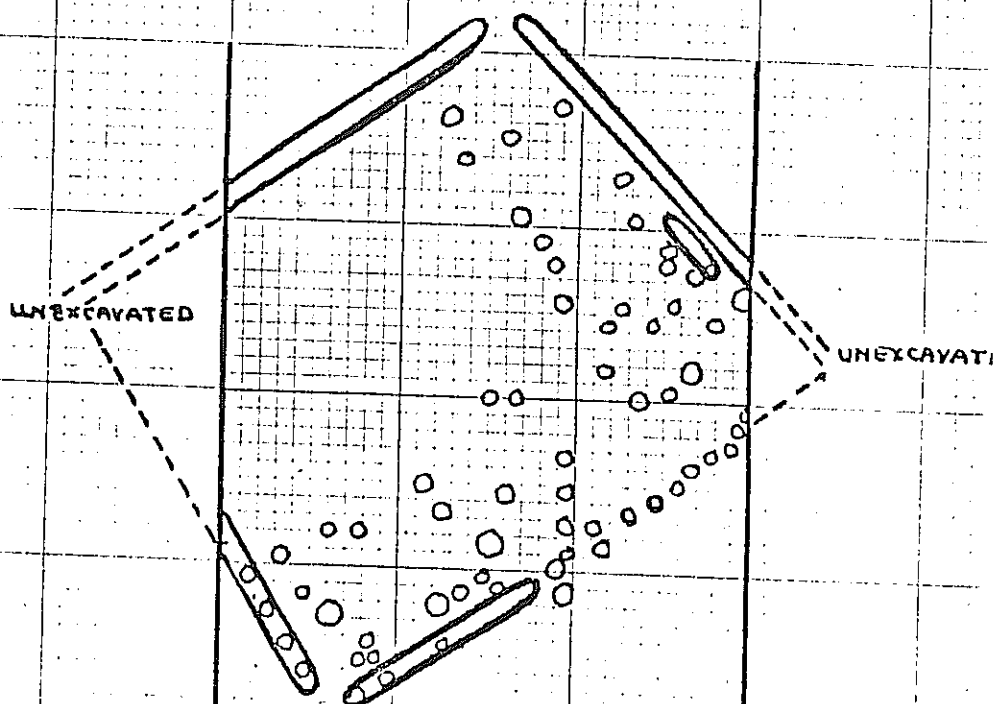
House 19 (Fig. 137)

Location: south of mound I.

Length and orientation of walls:

wall facing	NW:	4.57 m. (approx.)
" "	SE:	5.34 m. (approx.)
" "	NE:	4.00 m. (approx.)
" "	SW:	4.20 m. (approx.)

FIGURE 137: HOUSE 19



Wall construction: wall trenches with open corners.

Interior features: scattered post molds; fire basin absent.

House 20 (Fig. 138)

Location: east of mound I.

Length and orientation of walls:

wall facing	NW:	3.43 m.
" "	SE:	3.24 m.
" "	NE:	3.14 m.
" "	SW:	3.71 m.

Wall construction: wall trenches with open corners. The unusually large gap in the southeast corner may simply indicate that the trench was not visible to the excavator in that region.

Interior features: scattered post molds; fire basin absent.

House 21 (Fig. 139)

Location: west of mound P.

Length and orientation of walls:

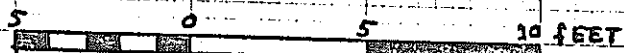
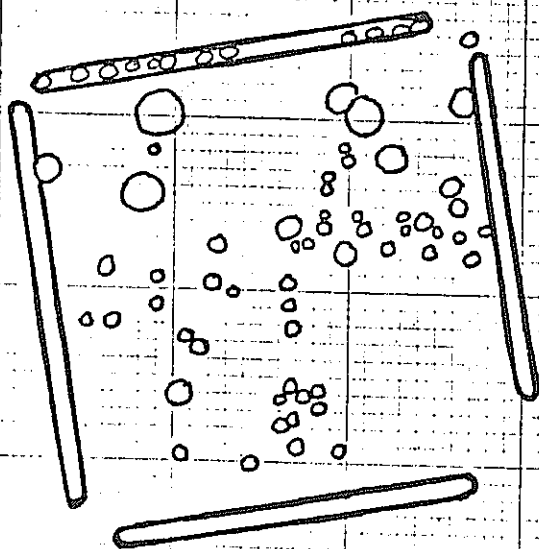
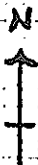
wall facing	NW:	3.24 m. (approx.)
" "	SE:	4.10 m.
" "	NE:	4.57 m.
" "	SW:	4.20 m.

Wall construction: although the diagram shows predominantly single-pole construction, it is probable that the poles on the northeast, southeast, and northwest sides were enclosed in wall trenches whose traces have disappeared.

Interior features: (a) 2 superimposed circular, clay-lined fire basins, the upper one 30 cm. deep, the lower, 45 cm. deep; (b) segment of wall trench in southern portion; (c) scattered post molds, those along southeast wall possibly representing a supplementary wall.

The relation of this house to the partial structure adjoining it to the southwest is not clear.

FIGURE 138: HOUSE 20



SCALE

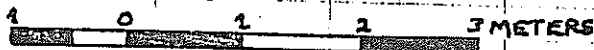
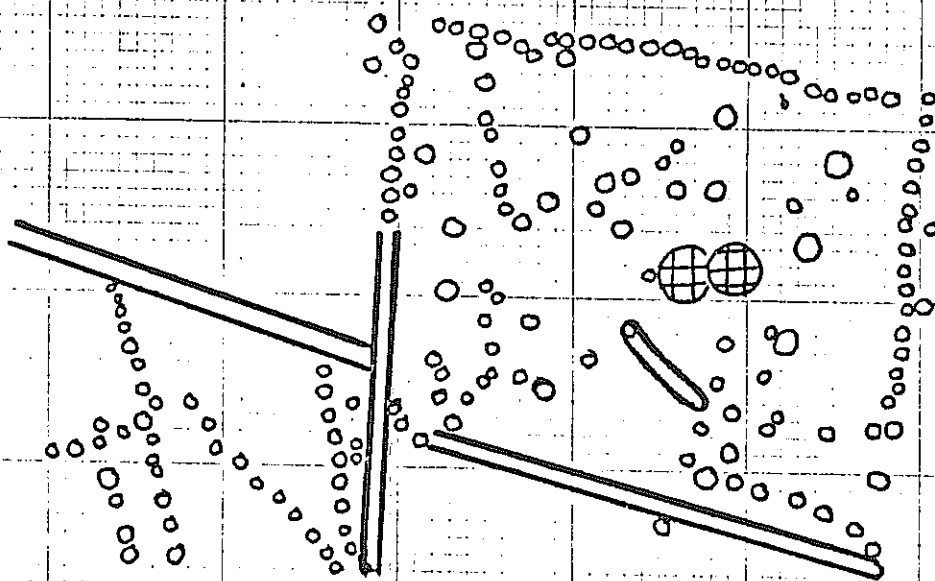


FIGURE 139: HOUSE 21



5 0 5 10 FEET

SCALE

1 0 1 2 3 METERS

Features Unassociated with Complete Houses

A number of features were not associated with a complete house pattern. They probably belonged to houses that were incompletely excavated, destroyed by later construction, or never finished.

Double row of posts.--A partially covered excavated house west of mound P (grid location 5+65-5+85, L1-L4) had 2 walls formed by a double row of single posts (probably originally set in a wall trench). The walls were spaced about 20 cm. apart.

Clay areas on floor.--There were at least 2 examples of irregular clay areas on house floors.

Double fire basins.--These are tangent, clay-lined basins of the usual type. They are definitely double and not superimposed. Two examples occur in incomplete houses near mounds P and Q.

Summary: The Moundville House

Despite considerable variation in detail, the 22 houses just described are basically uniform. Yet to speak of a house "type" is as misleading as to speak of pottery types. Thus the extended summary presented in the following pages seems preferable to a brief trait list.

Orientation.--The long axis of the house is oriented northwest-southeast in 12 cases, northeast-southwest in 6 cases, north-south in one case, and east-west in one case. Orientation of 2 houses could not be determined because of disturbance. Houses 7, 13, 15, and 20 are virtually square. Depending on the axis of reference, these are either oriented northwest-southeast or northeast-southwest. I have used the long axis to determine orientation even if it is only a few centimeters

longer. . . .

The actual angle of divergence from a north-south line varies from 5 to over 50 degrees. Thus the terms "northwest", etc., should be considered approximate. This variation is to be expected from a people whose only compass was the sun.

Why these northwest-southeast and northeast-southwest orientations were chosen is not clear. They vary from plaza and mound orientation, which is approximately west-east. Since the entrances were at the corner gaps, they would face the cardinal points in a northwest-southeast or northeast-southwest oriented house; the significance, if any, of this fact is not apparent.

Dimensions.--Table 15 shows the mean and median dimensions of each house. Wall length is not normally distributed but is positively skewed; that is, most houses are smaller than the mean dimensions. There is considerable variability; wall length ranges from 2.48 to 11.08 m. By our standards of measurement, opposite walls are rarely the same length. Nevertheless, lengths of the members of wall pairs are reasonably close.

A correlation of the means of the wall pairs (opposite walls, see Table 15), omitting houses 3, 12, and 14 because of inadequate data, discloses the following: $r_{xy}=0.40$, $Y=3.14+0.30X$, $X=2.60+0.53Y$, $S_{y.x}=0.92$, $S_{x.y}=1.59$, where X =NW-SE oriented wall pair and Y =NE-SW oriented pair. At 17 degrees of freedom the correlation coefficient is not significant at the 5% significance level, missing it by .056. Apparently the adjacent walls were built independently, so that the length of one wall did not influence the length of the adjacent one.

As noted above, the lengths of the adjacent walls are not greatly different. On the average, the northwest-southeast oriented pair is about 50-60 cm. longer than the northeast-southwest oriented pair. Marked differences occur only in houses 8, 9, and 16. For purposes of determining orientation houses have been considered rectangular. It may be more accurate to speak of them as almost square.

Wall construction.--Twenty-one houses were constructed by the wall-trench technique. This involved the digging of a narrow trench, nearly V-shaped in cross-section, to the required length (the field notes at Moundville provide no data on depth). The width varied from 15 to 25 cm. Into this trench the poles -- or perhaps canes -- were set upright. Most tended to be slightly smaller in diameter than the width of the trench. The ends of the poles often extended below the bottom of the trench. There is no evidence at Moundville that a pole was laid horizontally in the trench as a wedge.

The small house 15 was constructed entirely by a single-pole technique, and house 8 seems to have had one wall pair composed of single poles. Those used to build house 15 are 30 to 50 cm. in diameter, considerably larger than normal.

As noted in the descriptions of individual houses, several house patterns are composed both of wall trenches and, according to the diagrams, of single post molds without trenches. Sometimes both trenches and singly-placed poles occur in the same wall, as in house 14 (Fig. 133). I have considered these to be misinterpretations on the part of the excavator.³ In such cases the post molds would have been visible in the soil after the slight discoloration indicating the wall trench

had disappeared. The regular alignment of the post molds, however, implies that they were originally set in wall trenches. With the exception of house 15 and possibly house 8, Moundville phase houses were built by the wall-trench technique.

Most houses had one or more open corners, occasionally with single posts placed in the apertures. Walls were unbroken with the exception of the possible door in house 6 (Fig. 128). The presence of this lone door is puzzling, since this is definitely not a Mississippian trait. Normally the inhabitants entered through the gaps at the corners (Lewis and Kneberg 1946:64). This "door" could of course be simply an obliterated section of the wall.

Several houses had supplementary walls, as if the original wall had been replaced or strengthened. One partial house pattern showed a double row of posts.

Wattle-and-daub was used as the wall covering, and fragments are abundant in the Moundville collections. The clay is about 10 to 60 mm. thick, impressed with reed or split cane in a simple plaited pattern. No impressions of posts are visible.

All fragments of wattle-and-daub had been burned, the clay fired to a bright pink hue. This does not necessarily mean that all Moundville houses were destroyed by fire, for the wall surfacing on those which did not burn would have been preserved.

Interior features.---House floors are dotted with scattered post molds. These are usually distributed in a random fashion, but occasionally alignments, suggesting partitions, can be observed. Interior roof supports are absent. Undoubtedly the Mississippian house was cluttered

with benches, racks, screens, etc., which are now represented by the post molds. Some of the post molds may have been intrusive, but there is no way of determining this from the field notes. Also, isolated short sections of wall trench are sometimes found in house interiors.

Nine houses have fireplaces, usually placed in the center. These are circular, basin-shaped, and clay-lined, averaging about 50 cm. in diameter and 20 cm. in depth. Double or superimposed fireplaces are not uncommon. One fire basin is rectangular (in house 17 or 18, Fig. 136).

Other interior house features are pits, ash deposits, refuse areas, and clay floors. The occurrence of the latter in only 2 houses suggests that floors usually were not clay-covered.

Use of houses.--At some Mississippian sites such as Hiwassee Island and Bessemer a clear distinction can be made between ceremonial and domiciliary structures. The former are often characterized by their large size and the presence of clay seats or altars. Structures on temple mounds are, of course, ceremonial by definition.

At Moundville none of the houses excavated definitely had ceremonial uses, and no excavation was undertaken on the temple mounds. I suggested previously that the unusual long-rectangular shape of house 9 may indicate that it was a ceremonial building. In fact, the four houses 8, 9, 10, and 11, forming a superimposed series, are larger and more rectangular than the average. All may have been "temples". It seems unlikely that any of the remaining houses had a ritual use; ritual structures at Moundville must have been placed only on the mounds.

We may then conclude that with the possible exception of houses 8-11,

the excavated houses were all dwellings. It is also reasonable to conclude that they all housed conjugal families. Half the houses have an area (exterior measurement) of 16 m.^2 or less; allowing 3 m.^2 of sleeping room for each person, it would hardly be possible to squeeze more than 5 or 6 persons into a house without crowding things unduly. 2 parents, 2 or 3 children, and a dependent older relative would fit quite nicely into a typical Moundville dwelling.

If these houses were all dwellings, we would expect all of them to contain fire basins. Yet of the 18 supposed dwelling houses, only 9 have fire basins. As pointed out in Chapter I, western Alabama's climate is far from tropical. Fires would be continuously necessary on many winter days -- and especially at night when the house was always occupied. Even if we assume that house 15, which was incompletely excavated, and house 16, which was badly disturbed, originally contained fire basins, still 7, or 39% of the 18 houses lacked them.

Assuming that the excavator noticed and correctly diagrammed all the fire basins he found, there are 3 plausible explanations for this situation: (1) houses were used seasonally, those without fire basins being for summer occupancy; (2) houses without fire basins were used for storage only; (3) fires were built on the unprepared floor or, conceivably, coals were kept in a pottery vessel.

Since there are no structural differences between those houses with fire basins and those without, I am inclined to disregard the second explanation. There seems to be little to choose between the other two. Modern excavators should be particularly careful to watch

for traces of fire near the centers of Mississippian houses; consistent evidences of fire would support the third explanation.

With this lengthy summary the description of houses of the Moundville phase is complete. The following section provides comparative data from a number of other Mississippian phases.

Mississippian Houses: Comparative Data

Data on Mississippian house types are not plentiful. Following are summaries, for comparative purposes, of houses at sites where information is relatively detailed. This is not the place for an exhaustive summary; however, the 10 sites described below should provide a representative sample.

Bessemer Site (DeJarnette and Wimberly 1941)

Nineteen structures were oriented with the long axis north-south or northwest-southeast. Dimensions average 8.5 by 6.6 m., with a range from 4.2 to 18.5 m. The larger houses were probably ceremonial structures rather than dwellings. Only one single pole structure was excavated; wall trenches were used for the remainder. There were 2 circular houses. Fire basins were present but uncommon. In one house, under the ceremonial mound, a raised clay seat was located.

Pickwick Basin (Webb and DeJarnette 1942)

At site Lu21, Seven Mile Island, 2 circular and 7 square and rectangular houses were excavated. The latter, all of wall trench construction, were oriented to the cardinal points. The north-south wall

pair was slightly longer than the adjacent pair in the rectangular houses. Average dimensions were 6.1 by 5.5 m., with a range of from 4.6 to 7.6 m. Other features included a fire basin, 2 fired clay areas, and one possible side door.

Menard Site (Ford 1961)

At this site on the lower Arkansas River, identified as Quapaw, one house was excavated. It was a single-pole structure, with the poles irregularly spaced and aligned, 9.2 m. east-west and 6.1 m. north-south. There were 2 superimposed floors and 3 burned clay areas (not true fire basins) in the interior.

Hiwassee Island (Lewis and Kneberg 1946)

Dwelling houses of the Hiwassee Island focus were predominantly square, 4.9 to 7.9 m. on each side, and oriented northwest-southeast. Wall-trench construction was employed. Poles were rather small, about 15 cm. diameter, and were supported by a double wedge of small horizontal poles in the trench. Corners were open with one or more poles in the gaps. Fireplaces were circular or rectangular, some with raised clay rims.

Dallas focus houses were constructed of single poles up to 20 cm. in diameter and spaced 30 to 90 cm. apart. Four of these houses, all oriented northwest-southeast, had dimensions of 4.3 m. square, and, in 2 cases, 3.7x4.9 m.

Norris Basin (Webb 1938)

The structures excavated in this region are not strictly comparable to those at Moundville, since only ceremonial buildings were excavated. Furthermore, single-pole structures (large-log houses) are more common, presumably because sites here may be later than Moundville. Otherwise there are a number of similarities: rectangularity, clay areas on floor, open corners, and circular fire basins.

Jonathan Creek Village (Webb 1952)

Fifty-two houses were built by the wall-trench technique. They were rectangular, with long axis oriented mainly north and south. Dimensions ranged from 4.0x4.9 m. to 7.6x9.8 m. Corners were usually open (especially on the southeast corner); there were no post molds in the openings. Side doors "sometimes" occurred. Remnants of clay floors were found.

Eight houses of this group of 52 had 2 to 3 large post molds along the median line in the interior.

The floors of 6 wall-trench houses were slightly excavated. Side doors apparently occurred in all of them.

Thirty-one houses were constructed by the single-pole technique, the poles being slightly smaller in diameter than the poles used in wall trenches. These houses were 4.4 to 6.9 m. square and oriented to the cardinal points. Two houses in this category had a single center post mold, and 3 had both the center post mold and a small partition in one corner.

Angel Site (Black 1944)

Houses were 5.5 to 12.8 m. square, oriented north-south and north-west-southeast. The wall-trench technique was apparently used exclusively. Corners were frequently open. A circular fire basin was a common interior feature. Pits also occurred in the houses.

Kincaid (Bennet 1940; Cole and others 1951)

At Kincaid the University of Chicago developed the annoying technique of trenching houses without fully excavating them. Thus information on house types is not as complete as it might have been. Most of the data are derived from mound Mx4, which seems to have been largely an accretional structure formed from superimposed houses rather than a true temple mound. However, some of the structures on it might have been ceremonial in nature.

Early Kincaid houses were of wall trench construction, apparently oriented roughly northwest-southeast. Average dimensions were 3.0x4.6 m. Corners were open and double walls common. Central pillars occurred. There were no fire basins.

Middle Kincaid houses were also of rectangular shape and built by the wall-trench technique. Corners were usually open. As for size, "Small, medium and large houses are in about equal numbers [sic]. " (Cole and others 1951:73-74). Single and double fireplaces were found, and central pillars were an interior feature in about half the houses.

Late Kincaid houses are square, "medium to large" in size, of wall trench construction with closed corners.

Single-pole houses occur in apparently all levels but are rare.

Circular houses are extremely uncommon.

Central Illinois Mississippian (Spoon River Aspect) (Cole and Deuel 1937:112-116; Wray 1952)

Houses were slightly excavated, rectangular, and built by wall trenches. Double walls were frequent. Typical houses were slightly rectangular with long axis oriented northeast-southwest. Dimensions ranged from 4.3 to 6.1 m.

Aztalan (Barrett 1933)

Barrett states that "many house sites were unearthed (1933:88) and that "many rectangles and squares have been found (1933:175). If so these were neither described nor mapped. There are 2 brief descriptions of a rectangular, wall trench structure with floor slightly excavated containing a central pit and four fireplaces (Barrett 1933:163-164) and a circular, single-pole structure (Barrett 1933:175). The latter is definitely out of place in an early Mississippian context.

Non-Mississippian Houses

House types of Southeastern cultures outside of the Mississippian tradition have only general similarities to Moundville. The differences are more significant than the similarities. Mouse Creek (Yuchi) and Cherokee houses were rectangular, of single pole construction, and built in shallow pits. They had long entrance passages (Kneberg 1952: 198, Figs. 110, 111). Lamar houses seem to have some similarities to Moundville, including wall trench construction and rectangularity. At

the Lamar site they were built on low earth platforms (Fairbanks 1952:295). In view of Moundville-Lamar ceramic relationships, similarity of house-building traits should not be surprising (see Chap. VIII for Moundville-Lamar relationships).

Natchezan houses are rectangular, wall-trench structures, but they have middle partitions and sometimes 2 or more rooms. No fireplaces are mentioned (Quimby 1957:107-110). Houses of earlier periods in the Lower Valley seem to have been predominantly circular. (Jennings 1952:265).

Houses of the Caddoan area are quite unlike those of the Moundville phase. Belcher focus houses are single-pole circular or rectangular structures built by the wall-trench technique. Both have entrance passages (C. Webb 1959:27-65). Houses at Spiro were circular or rectangular and of single-pole construction. Rectangular houses had entrance passages and 2 to 4 roof supports. This general type of house persists through the Fulton aspect (Orr 1952:248-252, Figs. 133, 135, 137). With its entrance passages and roof supports, it is much more reminiscent of the Southwest than the Southeast.

The Mississippian House-Building Tradition

The Mississippian phases reviewed in the preceding pages span a period of at least 500 years and are distributed throughout the Southeast. Nevertheless, certain elements of dwelling-house construction are common to each phase, as a glance at Table 16 will show. These are standard construction methods, approximately similar dimensions (though with considerable variation), and the north-south or northwest-

TABLE 16.--Mississippian house features.

Phase or Site	Rectangular or square houses	Circular houses	Orientation of long axis	Approximate mean dimensions	Wall trench construction	Single pole construction	Excavated floor	Open corners	Lost holes in corners	Side door	Interior roof supports	Circular fire basin	Rectangular fire basin	Clay floor
Koundville	C	-	NW-SE NE-SW $\frac{1}{2}$ x $\frac{3}{4}$	$\frac{1}{2}$ x $\frac{3}{4}$	C	R	-	C	C	X	-	C	R	?
Bessemer	C	X	NW-SE $\frac{1}{2}$ x $\frac{3}{4}$ N-S $\frac{1}{2}$ x $\frac{3}{4}$	$\frac{1}{2}$ x $\frac{3}{4}$	C	R	-	C	C	-	-	X	-	-
Pickwick Basin	C	-	N-S $\frac{1}{2}$ x $\frac{3}{4}$	$\frac{1}{2}$ x $\frac{3}{4}$	C	R	-	C	C	X	-	X	-	X
Hewitt Island [*]	C	-	NW-SE $\frac{1}{2}$ x $\frac{3}{4}$	$\frac{1}{2}$ x $\frac{3}{4}$	C	-	-	C	C	-	-	X	X	-
Dallas	C	-	NW-SE $\frac{1}{2}$ x $\frac{3}{4}$	$\frac{1}{2}$ x $\frac{3}{4}$	X	C	-	NA	NA	-	-	X	-	-
Norris Basin ^{**}	X	-	?	?	X	X	-	X	X	-	-	X	-	X
Jonathan Creek ^{**}	C	R	N-S $\frac{1}{2}$ x $\frac{3}{4}$ NW-SE $\frac{1}{2}$ x $\frac{3}{4}$	$\frac{1}{2}$ x $\frac{3}{4}$	C	C	X	C	C	X	X	X	-	X
Early Kincaid [*]	C	R	NW-SE $\frac{1}{2}$ x $\frac{3}{4}$	$\frac{1}{2}$ x $\frac{3}{4}$	C	R	-	X	X	-	X	?	-	?
Mid-Late Kincaid	C	R	NW-SE $\frac{1}{2}$ x $\frac{3}{4}$	$\frac{1}{2}$ x $\frac{3}{4}$	C	R	-	X	X	-	X	X	-	-
Angel	C	-	N-S $\frac{1}{2}$ x $\frac{3}{4}$ NW-SE $\frac{1}{2}$ x $\frac{3}{4}$	$\frac{1}{2}$ x $\frac{3}{4}$	C	-	-	C	X	-	-	X	-	-
Spoon River	C	-	N-S $\frac{1}{2}$ x $\frac{3}{4}$ NE-SW $\frac{1}{2}$ x $\frac{3}{4}$	$\frac{1}{2}$ x $\frac{3}{4}$	C	-	-	?	?	-	-	?	?	?
Astalan [*]	X	R	?	?	X	X	X	?	?	-	-	X	?	-

Notes:

^{*}Early Mississippian, pre-dating Koundville.^{**}Probably both early and late components.

C -- common

R -- rare

P -- present

NA -- not applicable

? -- insufficient information

southeast orientation. These are basic, and with them are more specialized traits characteristic of regions and time periods.

This combination of a basic uniformity through a rather long time span can be considered a tradition, as the term is usually defined in North American archeology: "a (primarily) temporal continuity represented by persistent configurations in single technologies or other systems or related forms" (Willey and Phillips 1958:37).

Haury and his colleagues (1956:42-45) attempted to define kinds of traditions. They postulated a "direct tradition" in which elements are not altered, added or subtracted. The "elaborating tradition" and "reducing tradition" are characterized by a trend to greater complexity by addition of elements or a continual simplification due to loss of elements. The "converging tradition" refers to a single tradition formed from separate traditions and the "diverging tradition" to separate traditions formed from a single one.

The Mississippian house-building tradition does not exactly fit any of these types. As Table 16 illustrates, no single element is unique to any phase and no single element (other than those used to define a tradition) is common to every phase.

The process, then, is not one of unchanging continuity, as in the direct tradition, nor one of addition and subtraction of elements as in the elaborating or reducing traditions. The converging and diverging traditions are not applicable, since in this case only one tradition is involved.

The house-building tradition seems to be characterized by selection and recombination of a limited number of common elements. Each phase

developed a pattern of house features peculiar to itself. Perhaps this should be called a "recombining tradition". If we wish to retain Haury's terminology, we might consider it a special case of the direct tradition.

To sum up, an over-all view of Mississippian house construction shows that it is remarkably uniform despite differences in detail. It is thus useful both to characterize individual phases and to define the culture as a whole.

Notes

1. Slope of sides refers to percentage of grade: a 10% grade is the slope which increases 10 units vertically for every 100 units horizontally. If the cross-section of a temple mound is considered a parallelogram, percentage of grade can be determined trigonometrically when dimensions are known.

2. "Wall facing..." refers to the direction a person looking out of a window in the wall would be facing. The orientation of a wall facing northwest would be at right angles, i.e., northeast-southwest.

3. Suggested by Dr. Stephen Williams. The excavator was one Maurice Goldsmith.

CHAPTER VII

BURIALS

Introduction

Burials at Mississippian sites have always been the prime target of relic hunters, who in the past century destroyed thousands in order to obtain the artifacts often associated. For some regions the publications of Moore and Putnam are the sole reliable sources. And although the reports of these individuals and some of their contemporaries are conscientious and relatively complete, they omit data which would be considered essential by modern standards. As a result of these factors knowledge of Mississippian burial customs is notably deficient.

Fortunately, from Moundville there is a sample of 403 burials, derived from 3 excavations:

- (1) Moore's excavations 1904-1906. 163 burials were selected for analysis (Moore 1905; 1907a; field notes).
- (2) Excavations during the early 1930's in the initial program to establish the state monument. 95 burials (field notes, Mound State Monument).
- (3) Roadway excavation by CCC and National Park Service in late 1930's. 245 burials (field notes, Mound State Monument).

Moore's excavations were predominantly in the area around Mounds D, and M and in mounds C and D. His descriptions usually omit data on age, sex and position. However, he frequently provides excellent information on the kind and location of burial artifacts.

The excavations in the early 1930's were largely in the area north

of the plaza, but also around mounds G, H, M, and P. Since information on burials was obtained from artifact catalogue cards (which describe the burial as well as the associated artifacts), all of these 95 burials have artifacts associated. The sample is therefore not typical. Data on age and sex are scanty, on form and position fairly complete, and on associations quite detailed.

The 245 burials from the roadway make up the most representative and best excavated sample. Identification of age and sex was made in the field and is incomplete, but data on form and position are detailed.

Description of Burials at Moundville

Location on the Site

When Moundville was abandoned all the area of the site outside the plaza contained burials. Significant concentrations seem to be to the west of the plaza and to the north, especially south and west of mound D. The present museum, west of mounds M-P, was built over such a concentration, and about 50 burials are on permanent display there. These areas are probably not true cemeteries, for they do not appear to have been reserved exclusively for burials. Houses and scattered post molds are found throughout them. Perhaps burials were made in temporarily unoccupied parts of the site, but as population increase dwelling and burial areas must eventually have coincided. The living and the dead were never far apart at Moundville.

It is significant that accretional burial mounds are apparently lacking. A survey of the site revealed no surface irregularities that were not clearly of natural origin. A few low mounds to the north

south of the main portion of the site were either eroded temple mounds or Woodland burial mounds.

As is customary at Mississippian sites, intrusive burials were found in the temple mounds. Moore assiduously test-pitted the platforms of all of them and found burials in mound C (approximately 40) and mound D (approximately 30). With a few scattered exceptions, the others are devoid of burials, at least in the upper portion. Those in mounds C and D were rather superficial and, in mound C, located near the edges of the platform (Moore 1905:143-166, 172-178).

Interments, whether in the mounds or in level ground, were made in shallow, oblong pits. Depth ranges from about 15 to 125 cm. with a mean of about 65 cm. Later pits often intruded into earlier ones, unceremoniously truncating skeletons and scattering bones about.

Form and Position of Burials

"Burial" is used here to refer to the grave containing one or more skeletons, not to the individual skeletons in the grave. "Form" refers to the distinction between primary and secondary burial. "Position" refers to the degree of extension or flexion of primary burials.

Of the sample of 403 burials only 16 were multiple. One grave contained 8 individuals, one contained 5, four graves contained 3 individuals, and ten contained 2. Skeletons were ordinarily laid side-by-side, skulls close together, although in a few double burials the skull of each skeleton was opposite the feet of the other. The interments were commonly all primary or all secondary in any one grave. All of the burials in the grave containing 8 individuals were secondary. Some of the multiple burials consisted of adults buried with children--

-- possibly family groups.

Information on form was incomplete, with the result that it could be determined for only 282 burials. Of these 224 (79.7%) were primary and 58 were secondary."

Full extension on back with arms placed close to the sides was the preferred position. In a multiple burial, usually all individuals were extended or all were flexed.¹ Of the 224 burials for which information was available, 190 (84.8%) were placed in the fully extended position. Thirty-four were flexed in varying degrees, from a slight bend at the knees to full flexion with legs drawn up to the chest. Full flexion occurred in only a few cases, however, and the usual position can be called partial flexion. Flexed burials were placed on the side.

Of the 38 secondary burials for which information was available, 24 were composed of a neat pile of bones -- usually the long bones of the arms and legs but also occasionally ribs and clavicle -- and the skull, which was placed atop or alongside the bones. This type of burial is generally called "bundle burial", although at Moundville there is no evidence that the bones were ever wrapped or tied in a bundle. The skull-and-longbone motif on SECC vessels depicts this form of burial.

The skull was buried alone in 14 instances. Some of these might have been the result of disturbance or decay of the remainder of the bones, but it is reasonably certain that skull burial was in fact a distinct kind of secondary (or even possibly primary) burial.

In addition, one flexed burial was in a sitting position, and on an acromegalic dwarf, was placed extended face down.² Moore found at least one apparent cremation and one infant buried in a jar.

TABLE 17.---Position, orientation, and location on site of 224 single burials from the roadway excavation.

Position (extended flexed)		Orientation								Total
		N-S	S-N	NW-SE	SE-NW	W-E	E-W	SW-NE	NE-SW	
W*	Ext	5	5	23	2	8	4	11	3	61
	Flx	3	0	2	0	4	2	0	0	11
S	Ext	7	4	8	1	6	6	0	0	39
	Flx	2	0	1	0	1	1	1	1	7
E	Ext	2	4	0	7	0	3	0	2	18
	Flx	2	2	0	0	0	0	1	2	7
N	Ext	5	11	4	14	6	16	9	7	72
	Flx	1	2	0	3	1	2	0	0	9
Total		27	28	38	27	26	34	22	22	224

Note:

*Location (north, east, south, west) relative to plaza.

Orientation

Orientation refers to the arrangement of an extended or flexed burial in terms of points of the compass. The position of the skull as well as the long axis of the body determines the orientation; an extended burial with the head to the west is oriented west-east, but one with the skull to the east is oriented east-west.

A tabulation of the orientation of 224 single burials from the roadway excavation was made, using the 8 major points of the compass.³ Results are shown in Table 17.

Table 17 presents 3 categories of information: the orientation, in the columns; the position on the site, in the rows; and the position -- extended or flexed -- of the skeleton, also in the rows. The table was set up in this fashion in order to ascertain if any single factor influenced orientation. The only factor that could easily be tested was position on the site. Since there was no a priori reason for dividing the site into subareas, it was hypothesized that burials were oriented in relation to the axis of the plaza. Thus a simple division into four areas, north, south, east and west of the plaza was most logical in order to test the hypothesis, and Table 17 is arranged according to this division.

A glance at the column totals shows that orientation approaches randomness. Assuming that the expected frequency for each orientation is 28 (224 divided by 8, the number of possible orientations), chi-square equals 7.67 and $P=.50$, indicating that the number of burials oriented in each direction probably does not differ significantly from chance expectations.

To test the relationship between position on the site and orientation, frequencies for opposite orientations were combined to meet the requirements of the chi-square test (e.g., the N+S and S-N totals were combined). Otherwise cell frequencies would have been too small. The resulting chi-square of 11.71 and P of .30 shows that no relationship probably exists between burial orientation and position on the site.

The conclusion is that orientation of burials at Moundville is essentially random -- or at least dictated by unknown requirements that, in the long run, produced a random pattern.

Age and Sex

Reporting of age and sex was inconsistent and incomplete; consequently, detailed enumeration is omitted here. About two-thirds of the approximately 400 individuals were adults. The remaining third was composed of infants, children, and adolescents, the latter relatively infrequent.

There are virtually no data whatsoever on sex. Snow (1941) analyzed 15 burials from the museum burial "pits". Seven were male, eight were female. The mean age of the males was 32.6, range 23-50; mean age of the females was only 23.0, range 21-26. Because of the small size of the sample, these figures may well be more misleading than the informative.

Artifact Associations

The best information on artifacts associated comes from Moore (1905, 1907a) who pictures many of them. The system of cataloguing at the Mound State Monument did not allow identification of specific artifacts associated with specific burials. For this reason a general class name for artifacts had to be used in the following discussion.

Of the 245 burials from the roadway 65 (26.5%) had artifacts associated. This percentage differs markedly from the sample of 163 burials dug by Moore, 102 (62.6%) of which had artifacts associated. Moore, however, was frequently vague in reporting burials without artifacts, so that it is quite possible that there were more than 163 burials in the mound C-mound D area. Probably artifacts were placed with not more

than one-third of Moundville burials.

The sample used in this analysis consists of 214 burials from excavations by Moore and the National Park Service. Actually 262 burials had artifacts associated, but 48 had to be omitted because the information was unclear or incomplete.

The most common burial artifact was pottery. Vessels were placed as offerings with 181 (84.6%), and in 107 instances pottery was the sole class of artifact. The total number of vessels with the 181 burial was 284, an average of 1.57 per burial. The range was from one to 5, but 5 vessels were found with only two burials. The mode was one: a single vessel (with or without other kinds of artifacts) accompanied the burial in 96 of the 181 cases (33.1%).

Types were predominantly MBF, MFE, MEI, and MFI. The percentages are shown in Fig. 10. All the SECC vessels in the collections were originally associated with burials.

Other ceramic artifacts⁴ associated with burials were as follows: 10 pottery discs with nine burials, 4 pipes with four burials, 2 effigy heads (probably accidentally detached from vessels) with two burials.

The next most common class of burial artifact was shell, mainly beads and gorgets, which were probably worn as ornaments rather than placed separately in the grave. For this reason they might be called burial ornaments, as distinct from burial offerings. However, since it was impossible to ascertain in some cases whether the artifact was wearing apparel or an offering, the entire class has been grouped together.

Fifty burials (23.4%) were accompanied by shell artifacts. These were most commonly beads, which occurred with 28 burials, ranging in

number from one to "a pint". Shell gorgets were found with 6 burials, pearls with 2, a shell disc with one, and piles of unworked shell with 3.

Forty-one burials, or 19.2%, had one or more stone artifacts in association. The favored artifact was the discoidal, 14 of which were found with thirteen burials. Twelve burials had a single discoidal, one had 2. Projectile points were found with 8 burials, usually a single specimen, but 6 together with one burial and 4 with another. Some of these might not have been offerings but in fact the cause of death; however, excavation techniques were not precise enough to determine this.

Seven burials were accompanied by stone celts, 3 with one burial, a single specimen with each of the others. A single notched disc was found with each of 3 burials.

In addition, a great number of stone artifacts were placed singly with burials. These were as follows: drill of jasper (1 burial), ear-plug (1), effigy pipe (1), miniature fluorite human head (1 -- see Moore 1905:Fig. 46), galena cube (1), hematite fragments (2), mica fragments (2), "net sinker" (1), pebble hammer (2), deposit of small pebbles (2), red pigment (2), sandstone shaft polisher (1), stone vessel (1), "worked stone slab" (1).

It would appear that almost any kind of stone artifact was an acceptable burial offering.

Twenty-five (11.7%) of the 214 burials were accompanied by copper artifacts. The most common of these was the gorget, 16 of which were found with 10 burials (including 5 in a single burial). There were copper covered wooden beads with one. Also found were one celt, one "blade"

the neck, arms, wrists, and ankles. Several occurrences of single shell beads adjacent to the skull were reported. These were very likely hair ornaments: on figures of the dancing warrior they are sometimes represented by circles on the temporals and parietals.

Stone artifacts, while found near the skull and upper arms, seem to have been concentrated in the region of the pelvis and femur. Significantly, the hands of extended skeletons also lie along the femur. Some artifacts were in fact held in the hand; one skeleton was grasping a stone celt which lay under the femora. Most of the discoidals were located in or near the hands, as if they had intentionally been placed there so that the deceased could while away eternity by playing chunky.

Artifacts were rare below the knees, with the exception of shell beads around the ankles.

Summary

There was evidently a quite definite pattern of burial at Moundville, which may be summarized as follows:

(1) There was no use of cemeteries, although certain portions of the site may have been preferred for burial.

(2) Most burials were single and placed in shallow oval pits.

Extension on back was the most common position, but partial flexion also occurs. A minority of burials were secondary bundle or single skull burials. Cremation might have occurred, but it was certainly uncommon.

(3) Orientation of the body was random.

(4) Artifacts were placed with about one-quarter of the burials.

The most popular offering was pottery, usually one or two vessels. Utilitarian and ceremonial artifacts were also placed in the grave or worn.

ny of the skeletons had shell beads around the neck, arms and ankles, and copper or shell gorgets on the chest. Celts, discoidals, and projectile points may have been personal property placed with the body. Burials were especially elaborate.

Comparative Data

In order to put Moundville's burial customs into broader perspective, a brief survey of burials of representative Mississippian sites, phases and regions is presented here. These are the following: Bessemer Site, Chickwick Basin, Macon Plateau, Dallas, Tennessee-Cumberland, Lower Mississippi Valley, Jonathan Creek, Kincaid, Spoon River, and Steed Kisker. They are arranged roughly in order of their distance from Moundville. Discussion of early as compared to late period burials is deferred until after the descriptions.

Bessemer Site (DeJarnette and Wimberly 1941:60-62)

Fourteen burials were found in a "burial mound", a truncated pyramidal structure built in at least 2 stages and surrounded by a double-walled stockade. This does not appear to have been a true accretional mound, but rather a temple mound which for some reason contained a large number of intrusive burials. Seven of the burials were primary, extended or partially flexed, and 7 were bundle burials. Three multiple burials occurred. A total of 12 vessels, one discoidal, one copper plate, and shell beads accompanied the burials.

Chickwick Basin (Webb and DeJarnette 1942: 82-88; 212-234).

Some 75 burials at the Perry site (Lu25, unit 2) and Koger's Island

Lu92) provide the sample for the Mississippian occupation of the Pickwick Basin. Fully extended and partly flexed positions were about equally represented, and secondary bundle and skull burials were present in small numbers. At Koger's Island a west-east or southwest-northeast orientation was most common (Webb and DeJarnette 1942:Fig. 79). Nine of the 16 burials at Lu25 were multiple, 9 out of approximately 57 at Lu92. From 2 to 6 individuals were placed in the same pit.

Burial artifacts were common; 258 are stated to have been in association with 50 burials (Webb and DeJarnette 1942:215-216), but what percentage of these burials contained artifacts is not mentioned. Pottery was the most popular grave offering, and stone, copper, and shell artifacts were also found. Most were placed around the head or upper body.

Macon Plateau Phase (Fairbanks 1956:esp. 47, 89-90).

The early Mississippian occupation of the Macon Plateau region was characterized by highly developed ceremonialism. The variety of burial types is probably a reflection of this. Burials were found in all levels of the funeral mound in intrusive pits and in submound log tombs. They were sporadic in the village area. Of the approximately 90 prehistoric burials, extension of back without specific orientation was most common. These burials were secondary; the body had been dismembered and the bones replaced in correct anatomical order. Bundle burials and a few cremations also occurred. Multiple burials were uncommon. Several individuals were placed together in the more elaborate log tombs; in other tombs the pattern was one extended and one bundle burial.

Except in the tombs, artifacts were rare and were mostly plain pottery vessels or shell artifacts.

Dallas Focus (Lewis and Kneberg 1946:143-149)

There were 188 individuals buried on Hiwassee Island during the Dallas occupation. Nineteen graves contained more than one skeleton. Interments were made in shallow pits in the village area with no particular orientation. All apparently were primary, and partial flexion was preferred over extension.

Artifacts were present with about half the burials, mostly small jars and shell ornaments, but also a few projectile points, celts, and bone awls. Pottery was usually placed near the skull.

Tennessee-Cumberland (Putnam 1880:305-360; Thruston 1890; Moore 1915)

This is the region of stone box graves, which attracted so much attention in the last century. Skeletons placed in these stone coffins were primary or secondary, extended or partly flexed. Burials were single or multiple. The size of the box seems to have determined in part how many skeletons would be placed in it and whether or not the skeleton would be fully extended.

Putnam, excavating a mound a few miles from Nashville, found that there was no specific orientation (1880:312).

Artifacts were distinctly uncommon. Moore (1915:174) quotes a letter from Putnam stating that "not more than one grave in twenty or more had any artifacts and not as many as that had pottery".

Lower Mississippi Valley (Moore 1910; 1911; Griffin 1952a:229-238)

The Mississippian cultures of the Mississippi River flood plain and its tributaries, from eastern Mississippi to southeastern Missouri, possessed surprisingly uniform burial practices. Cemeteries or accretional burial mounds are typical of Southeast Missouri (New Madrid Focus), but in general burial in or near the village characterizes the area. Moore, in his extensive excavations, found that most burials were extended on back, although partially flexed and secondary bundle burials also occurred. The latter were most common in the Walls phase and in the Menard phase on the lower Arkansas. At the Pecan Point site orientation was random.

Artifacts, mostly pottery, were placed with the majority of burials. Pecan Point and the Rose Mound were veritable gold mines for Moore, not to mention hundreds of anonymous pot-hunters. Moore found about 2 to 4 vessels per burial at the latter site (587 vessels with 207 burials; Moore 1910:278), usually placed near the skull and arms. Shell, bone, copper and stone ornaments accompany many Lower Valley burials, but neither copper nor stone is commonly found.

Jonathan Creek (Webb 1952:75-76)

This western Kentucky site is closely related to the Tennessee-Cumberland culture. The 18 burials were apparently in stone box graves, buried in small groups in the village or in low earth mounds. They were so shallow that the stone was later removed by farmers living in the vicinity. Three of the burials were multiple (2 skeletons in each grave). Sixteen were primary extended, 5 bundle, and one a skull burial. Arti-

acts were associated with 8 burials, mostly pottery vessels, of which there were 9 in 6 graves.

Kincaid (Cole and others 1951:103-113)

Information on Kincaid burials comes from the excavation of mound 2, which contained 155 burials. The earliest were 4 individuals in log tomb, later covered by earth and bark. Some burials in the later mound stages were also wrapped in bark.⁶

Twenty-two burials were in stone box graves, all evidently rather early in the construction of the mound. They were oriented roughly east-west (or west-east, no data on placement of skull). Some of the stone box burials were multiple, and both primary extended and secondary bundle interments were found. A minority were accompanied by artifacts, usually pottery. Grave artifacts seem to have been more common with later burials.

Extended burials in pits and many of indeterminate form occurred at all mound levels. Orientation was usually west-east or southwest-northeast.

Moons River (Cole and Deuel 1937:75-88; 120-122).

In this central Illinois outpost of Mississippian culture, about 100 burials were recovered at the Morton site (F14) and the Dickson cemetery (F34). Burials were made in a limited area, so that a low mound was formed. Full extension on back was the rule, with the orientation east-west or west-east (position of skull not stated). Multiple burials were not common.

Artifacts accompanied many but seemingly not the majority of burials. They were usually pottery, but also stone, bone, and shell, placed near the skull or around the upper body.

Steed-Kisker (Wedel 1943:87-95)

This site, on the western border of Missouri north of Kansas City, is one of the westernmost Mississippian manifestations.

Form and position could be determined for 76 burials, all single. Fifty-one were primary extended, 5 primary flexed or partially flexed, 6 secondary bundle, and 14 single skull interments. All skeletons were in a hill-top cemetery, lying across the slope of the hill, so that they were arranged in a circle around the summit. Wedel believes that this may have been in part a ritual formation. Graves were shallow pits about 2 feet deep, sometimes with stone slabs in them.

Only 8 burials had artifacts associated: 3 vessels, shell fragments, and projectile points, but no ornaments. They were placed near the skull and arms.

Conclusions

Although some of the foregoing descriptions are rather unsatisfactory for our purposes, a general picture of Mississippian burial customs emerges.

There appears to be a definite difference between early Mississippian (e.g., before ca. 1100-1200) and Late Mississippian (after ca. 1200). In this sample, Macon Plateau is well established as early, early Kincaid and Steed Kisker are probably also; the first component at Jonathan Creek and some of the Tennessee-Cumberland sites may be early Mississippian.

In comparison with later phases these seem to be characterized by prepared graves, cemetery burial, and lack of burial artifacts. The prepared graves are either log tombs or stone box graves.⁷

The later Mississippian manifestations described here are Bessemer, Pickwick Basin, Dallas, the Lower Mississippi Valley, and the Spoon River Aspect. Moundville also comes within this late period. All of these tend to lack cemeteries and prepared graves and to have more burials with artifacts associated.

Some features are found through both the Early and Late Mississippian and therefore are regional rather than temporal variants. These are: interment in shallow pits, preference for primary extended burials (but with an appreciable minority of partially flexed skeletons), few secondary bundle or skull burials, cremation very rare, lack of specific orientation, and placement of artifacts around upper body.

In the various parts of the Southeast differing emphasis was laid on these features. For example, in the Dallas focus partial flexion was preferred, while at Moundville, a contemporary of Dallas, full extension predominated. Likewise, specific orientation, mainly west-east or east-west, may have been an Illinois development, and the unique arrangement at Steed-Kisker cemetery a local invention.

But despite these differences, uniformity prevailed. The only definite trend progressing from early to late is toward less elaboration of the actual grave and more elaboration of burial offerings. The regional variants probably reflect only minor differences in ceremonial concepts.

To conclude this thanatopsis, I suggest that Moundville's burial

customs most closely resemble those of the Lower Mississippi Valley. In particular, preference for extended position over partial flexion and a notable generosity with burial offerings, especially pottery, link the two. The relationship is perhaps closest to the Memphis and St. Francis subareas.

Notes

1. However, if infants or children were placed with adults, the former were often flexed while the latter were extended as usual. Children seem to have been more commonly buried partly flexed than adults.

2. This was a female found near mound G in 1934. In 1939 a flexed male dwarf was found, also near mound G. Neither had artifacts associated. The physical characteristics have been described by Snow (1943).

3. The assumption here is that the categorization of direction in Moundville culture was similar to our own. Because most of the mounds are consistently oriented to the cardinal points, this assumption seems reasonable. To my knowledge the cardinal points are recognized in some fashion in all cultures.

4.4. Ceremonial artifacts are described in Chap. V and utilitarian artifacts in Chap. IV.

5. The copper axes found by Moore (1905:Fig. 28) were probably associated with a disintegrated burial. It is likely that all valuable copper ornaments would have been placed with burials.

6. The log tombs contained a modeled clay mound and 4 extended

eletons, one covered with bark and wearing a fan-shaped copper head-
ess. These traits are very reminiscent of the Hopewellian tradi-
on. Although this structure is considered by Cole to be early Kin-
id, it is not in my opinion separable from a Lewis Focus occupation
derlying the Kincaid component.

7. Dating of stone box graves is uncertain. The "first" good"
one grave date (Tinsley Hill site, Lyon County, Kentucky) is A.D.
80±150 (M1150; Crane and Griffin 1963:237). This suggests that the
ait be considered a regional characteristic rather than an early
riod marker.

CHAPTER VIII

SUMMARY AND CONCLUSION

In the opening chapter I stated that this thesis had three objectives. These are: (1) to describe the Moundville phase; (2) to define its position in Southeastern prehistory; (3) to present an hypothesis explaining the rise and fall of Mississippian culture. In the succeeding chapters diverse data relevant to these objectives were introduced. Now, finally, the time has come to bring all these lines of evidence together. The first section of this chapter will be a description of the Moundville phase. The second and third sections will be a discussion and summary of its cultural relationships, date, and origin. The final section will be a general survey of Mississippian cultural development.

I. Description of the Moundville Phase

This section is essentially a summary of the descriptive material which appeared in the previous chapters. It is organized according to chapter headings with an additional heading, "Ecology", which was treated in Chapter I.

The following list should not be considered a trait list to be manipulated statistically. There are no "determinants" which absolutely define the Moundville phase. In place of exact frequencies of traits and artifacts, which are in most cases difficult to ascertain and also

give a spurious impression of accuracy, the following designations are used:

- C -- unusually common and distinctive trait ("Characteristic").
- I -- common or significant trait ("Important")
- R -- rare or unimportant trait ("Rare")
- P -- probable or inferred trait ("Probable")

Traits of the Moundville Phase

A. Ecology

1. Location: centered at Moundville in west-central Alabama, but extending northward to the Tennessee River and east to the Appalachians.
2. Geographical setting: low, forested hills with many streams. Black Warrior River and flood plain major geographic feature.
3. Climate: temperate winters with occasional cold spells; warm spring, hot and humid summer, moderate autumn. Heavy midsummer and winter rainfall, relatively dry autumn.
4. Intensive river-bottom maize agriculture. (P, I)
5. Beans and squash as secondary crops. (P)
6. Hunting, especially of deer. (I)
7. Dense population allowed by agricultural practices. (P)

B. Ceramics

1. Plain, shell tempered utility pottery, mainly small jars and bowls.
2. Black filmed and elaborately engraved and indented ceremonial pottery, mostly bottles and bowls. (C)
3. Rim effigy heads on ceremonial pottery: animals, birds, humans. (I)

4. Effigy vessels: animals, humans.
5. Specialized vessel forms: seed jar, composite-silhouette bowl, composite vessels, lobed bottle, tripod bottle, square bottle, conical vessel. (R)
5. Lack of painted decoration with possible exception of red filming. Negative painted, R and W, R/Bf, white filmed. pottery presumably received through trade. (I)
7. Ceramic "trowels", discs, figurines, elbow pipes. (R)

Non-Ceremonial Artifacts

1. Chipped stone rare: (C)
 - a. small, triangular flint arrowheads
 - b. knives, scrapers, drills
2. Ground stone celts extremely numerous. Greenstone most common raw material. (C)
3. Other ground stone artifacts: hammers, grinding stones, polishing stones. (R)
4. Bone and antler artifacts: awls, pins, fishhooks, flakers, projectile points, perforated animal teeth, beads.
5. Shell beads frequently worn: spherical, cylindrical, and disc. (I)
6. Copper covered wooden earspools worn in everyday use. (P, I)
7. Copper beads. (R)
8. Copper fishhooks. (R)

D. Southeastern Ceremonial Complex

1. Artifacts:
 - a. circular shell gorgets
 - b. circular copper gorgets

- c. oblong copper gorgets
 - d. copper hair emblems (R)
 - e. hafted copper and greenstone celts (C)
 - f. pierced stone celts (R)
 - g. monolithic stone axe (R)
 - h. human, feline, eagle effigy pipes (I)
 - i. notched stone discs (C)
 - j. "chunkey" stone discoidals (C)
 - k. conch shell containers (R)
 - l. ceremonial flints (R)
2. Motifs:
- a. cross-sun circle (I)
 - b. bilobed arrow (R)
 - c. forked eye
 - d. ogee arch (I)
 - e. hand and eye
 - f. death motifs (rare but characteristic design)
 - g. woodpecker (C)
 - h. feathered serpent (C)
 - i. feline (I)
 - j. human figures rare (C)
3. In general, intensive ceremonialism (C)

E. Architecture

- 1. Truncated pyramidal temple mounds: (I)
 - a. 2-17 m. high
 - b. rectangular, oriented nearly to the cardinal points
 - c. one or more ramps, facing onto the plaza
 - d. multiple construction stages
- 2. Rectangular plaza, oriented east-west, surrounded by mounds:
 - a. plaza not used as dwelling area
- 3. Dwelling houses:
 - a. clustered around plaza, probably mostly to the north and west
 - b. rectangular outline, 4.4x5.0 m., long axis usually oriented northwest-southeast (I)
 - c. some houses virtually square
 - d. wall trench construction (I)
 - e. single pole construction (R)
 - f. corner apertures
 - g. wattle-and-daub wall materials
 - h. scattered interior post molds
 - i. no interior roof supports
 - j. clay seats, altars, exterior "porches", etc. absent
 - k. centrally located, circular, clay-lined fire basin

- l. double fire basins (rare but characteristic)
- m. houses lacking fire basins
- n. houses occupied by conjugal family- (P)

4. Lack of definite ceremonial structures

Burial Customs

- 1. Tendency to concentration of burials, especially north and west of plaza.
- 2. Lack of true cemeteries and accretional burial mounds. (C)
- 3. Burials in oval pits in village area.
- 4. Burials intrusive in temple mounds.
- 5. Single, primary, fully extended burials on back. (C)
- 6. Flexed and partially flexed primary burials. (R)
- 7. Secondary bundle and single skull burials. (R)
- 8. Multiple burials. (R)
- 9. About one-third of the burials supplied with artifacts.
- 10. Black filmed engraved and indented pottery with burials. (C)
- 11. Copper, stone, and shell artifacts with burials. (I)
- 12. Artifacts placed near skull, arms, or hands. (I)

II. The Position of the Moundville Phase In Southeastern Prehistory: The Evidence

Cultural Relationships: Introduction

The cultural relationships of the Moundville phase have already been discussed to some extent in Chapter II (Ceramics), Chapter V (SECC), Chapter VI (Architecture), and Chapter VII (Burials). Now it is necessary to summarize and expand these discussions and to consider the

nature of the relationships.

Contact between different peoples can take place through migration, direct trade, or more general diffusion (e.g., when a vessel form or design is copied from an original received in trade). This much is obvious. Yet it is often by no means clear from archeological evidence which of these processes occurred. Moreover, it is frequently difficult to decide whether two related cultural manifestations were connected directly as donor and receiver or were indirectly related as mutual receivers from a third source. Finally, it is impossible to judge except by ethnographic analogy whether the simple transference of artifacts represents the transference of broad cultural patterns, which are the ultimate interests of archeologists.

Let us then stand at Moundville--on top of mound B, as it were--and look to the north, east, south, and west, noting the evidence for cultural relationships.

Pickwick, Wheeler, and Gunter'sville Basins (Northern Alabama and Southwestern Tennessee)

These regions in the Tennessee River valley show the same pattern of contact with Moundville. Typically, there are short-term Mississippian occupations on Archaic shell middens. A few larger sites, usually on islands, contain small temple mounds and concentrations of burials.

As might be expected, the Pickwick Basin sites, being the shortest distance from Moundville, are the most closely related. Koger's Island (Lu92), the Perry site (Lu25), Seven-Mile Island (Lu21), and the McKelvey Mound (Hn1) yielded MFE and MFI sherds and whole vessels with

SECC decoration. One Moundville Indented bottle and two double bowls like a specimen at Moundville itself occur at Seven-Mile Island (Webb and DeJarnette 1942:53, Pl. 61, No. 2). Also found were discoidals, plaques, and copper and shell SECC pendants. House and burial types conformed quite closely to those at Moundville. At the smaller sites sherds resembling MFI and MI were found (Webb and DeJarnette 1942:9-25, 13-92, 212-234; 1948). The Pickwick Basin can be included within the territory of the Moundville phase.

In the Wheeler Basin, slightly upstream from the Pickwick Basin, evidences of Moundville influence are mostly confined to Hobbs Island, near Guntersville, where a few MFE and MFI sherds were found (Griffin 1939:163). Burials are in low mounds, a practice reminiscent of Bessemer but absent at Moundville.

In the Guntersville Basin in northeastern Alabama MI- and MBF-like sherds occurred at sites scattered through the basin--rarely more than 20 at a site. The MBF sherds were determined to be of local manufacture (Heimlich 1952:24, 29-32).

To summarize, in this 150-mile stretch of the Tennessee the influence of Moundville seems to be limited to the Pickwick Basin, where it is most pronounced, to the eastern end of the Wheeler Basin, and to the Guntersville Basin, where it is attenuated. As the Pickwick Basin is the shortest air line distance from Moundville and as the Guntersville Basin is nearest the headwaters of the Black Warrior, the distribution might be explained in terms of the distance or difficulties of travel involved. In other words, most contact was by a direct, overland route to the north and, less significantly, by an ascent of the Black

Warrior to the vicinity of the Tennessee. To intermediate points, however, there was little contact.

Since the Pickwick Basin sites are defined as members of the Moundville phase, we must conclude that more than trade was involved between them and Moundville. They may represent "colonies" sent out from Moundville or stopping places of a migrating people on the route to Moundville.

Tennessee and northward

North of the Alabama border no artifacts or sites can definitely be ascribed to the Moundville phase. The well-known Hiwassee Island and Dallas foci (Lewis and Kneberg 1946) have no specific similarities and reveal significant differences in ceramics and burials (see Chaps. II and VII).¹ The same situation occurs in the Norris Basin north of Knoxville (Webb 1938).

The cultures of central Tennessee (Cumberland-Duck River region) are among the most divergent from Moundville of all Mississippian manifestations. Significant differences are the carafe bottle form, predominance of negative painting, and lack of incising and engraving. Elaborate ceremonial flints, stone images, and stone graves are all absent from the Moundville phase. On the other hand, the hemispherical bowl with notched rim strip and rim effigies is much like the typical form at Moundville. The use of black paint in negative painting may have inspired Moundville's black filming technique, and the few salt pan sherds at Moundville could conceivably have been derived from here

or from farther north.² The negative painted "coon" effigy bottle at Seven-Mile Island (Webb and DeJarnette 1942:53, Pl. 63, No. 1) was certainly traded from Tennessee. Finally, monolithic axes and notched stone discs, the latter characteristic of Moundville, are found sporadically in central and northern Tennessee (Webb and DeJarnette 1942: 287-294). These, however, are probably more indicative of influence of the SECC than of the Moundville phase.

In sum, Moundville exerted no discernible influence on any of the diverse Mississippian phases of Tennessee. Influence coming from this area was of a general and intermittent nature.

Farther north, sites such as Jonathan Creek, Tolu, Kincaid, and Angel are most closely related to the Tennessee-Cumberland region and have no specific resemblances to Moundville. Spoon River, Cahokia, Aztalan, and Steed-Kisker were certainly culturally and geographically remote from Moundville. The latter three were probably earlier than the Moundville phase, although the Trappist phase at Cahokia may have been a contemporary. Williams (n.d.:6) has made the interesting suggestion that the carved fluorite head found by Moore in mound C (Moore 1905: 164-166) was traded from southern Illinois. If so, there is no evidence that this trade was intensive or even direct.

Northeastern Alabama and Georgia

Having failed to find any definite cultural relationships beyond the northern border of Alabama, we may now look to the east. The first large Mississippian site beyond Moundville is Bessemer. (DeJarnette and Wimberly 1941). Its close ceramic and artifactual similarities and

considerable similarity in architecture and burial customs are sufficient to place it in the Moundville phase, perhaps as a subsidiary settlement dependent on Moundville.

Trans-Appalachian Georgia was the stronghold of the Southern Appalachian tradition, influenced after ca. A.D. 500 by the Gulf tradition in the south (Caldwell 1958:34-59). The early Mississippian Macon Plateau phase was apparently short-lived, and has been characterized as a site-unit intrusion leading to "fusion with dominance of the resident culture" (Willey and others 1956:11-12).

In north Georgia Etowah period sites contain Mississippian pottery, including the Etowah site itself (Fairbanks 1952:293-294). The Wilbanks site (Sears 1958) is here used as an example because the types are described in detail.

Approximately 100 sherds of Mississippian derivation were found in Phases A and B (Etowah period). Types represented were Etowah Incised, Etowah Burnished Plain, Etowah Polished Black, and Etowah Red Filmed, all sand tempered, and three shell tempered Hiwassee Island types. These comprised less than 1% of the total sherds (Sears 1958: 150-154, 158-159). In addition one black slipped sherd engraved in a three-line chevron motif was found (Sears 1958:159). Vessel forms were bottles with both wide and narrow necks, bowls with notched rim strip, plates, and jars. Strap handles and human rim effigy heads were also found. The two types specifically related to Moundville types are Etowah Incised, which seems to be a derivative of Moundville Incised, and Etowah Polished Black, which is obviously a close relative of Moundville

Black Filmed. The design of the engraved sherd is similar to that on MFE bowls.

The sand tempering shows that these types were manufactured locally; shell tempered types were traded from Hiwassee Island or Dallas. Moundville, therefore, seems to have exerted some kind of indirect artistic or technological influence. Perhaps the two cultures came in contact during the transference of SECC material. Another bit of evidence showing contact is the "coffee bean" pipe at Moundville which is similar to Etowah specimens (see Chap. IV).

It is hard to believe, as Sears does, that the Etowah phase was "Middle Mississippi" with specialized Southern Appalachian ceramics (1958:171-172). Fairbanks (1952:293-294) is willing to admit mixture with Mississippian, but Caldwell (1950:13; 1958:49) specifically denies that Etowah is Mississippian. Without entering into the controversy, we may conclude that Etowah and Moundville show minor relationships, probably as a result of the contact that would naturally occur between two dominant, contemporary tribal states.

Florida and the Gulf Coast

Rather specific relationships exist between the Moundville phase and the Fort Walton Period of northwestern Florida. Fort Walton is obviously a Mississippian intrusion into territory occupied by the Gulf Tradition (Willey 1949:458, 538).³ Its origin is obscure; Griffin derives the Mississippian traits from near Montgomery and believes that they comprise a diluted Moundville influence together with some traces

of Natchezan" (1946:77).

Presence of MFE in Fort Walton sites (Willey 1949:466) is evidence of direct trade, and the interlocked meander motif links Pensacola Incised and MFI. In the reverse direction the composite silhouette bowl may have been transmitted to Moundville.

Although the two cultural patterns are similar and there are some close artifactual similarities (e.g., discoidals, rectanguloid celts, lack of chipped stone), contact more intensive than sporadic trade is doubtful. Especially noteworthy is the paucity of SECC manifestations. A direct migration would be expected to maintain some SECC ceremonialism, but in Fort Walton there is not much material evidence that Mississippian ceremonialism was practiced. Fort Walton may also be partially later than Moundville: because of ceramic resemblances to Lamar and the occurrence of a few European artifacts, Willey is inclined to place Fort Walton after 1500 (1949:469). J. B. Griffin (1952:Fig. 105) and J. W. Griffin (1952:325) concur in this dating.⁴

In central and southern Alabama many scattered sites have produced Moundville pottery, usually MBF and MI (Moore 1905b; DeJarnette 1952:282-284; Wimberly 1960:184-185). On and near Mobile Bay several sites reported by Trickey (1958) contain a few MBF, MFE, and MI sherds. Two such sites lie in the Tombigbee flood plain near the confluence with the Alabama, and one on an island at the mouth of the bay. They are dated rather late--slightly after time B in Ford's Red River chronology (Trickey:1958: 389-390, 383-394).

The widespread distribution of these sherds would indicate that

Moundville's influence through southern Alabama was extensive. However, the small number of sherds indicates trait-unit intrusion rather than migration. It is nevertheless possible that a large Moundville phase site similar to Bessemer or Koger's Island will someday be discovered in this region.

A somewhat different situation is found in the Mississippi River delta below New Orleans. Of 150 sites surveyed by McIntire (1958:esp. Pl.9b, 13), "Moundville Filmed" and "Moundville Type" sherds occurred in no less than 44 of them. The percentages were usually from 5% to 20%, but in 17 sites over 50% of the sherds were Moundville types (total sherd counts are not shown). The most frequent associations were Fatherland Incised, Maddox Incised, and "Fort Walton Type."

The sites with the greatest frequency of Moundville types are located predominantly on the peninsula formed by Lake Borgne, Chandeleur Sound, and Breton Sound. One is even on the Chandeleur Islands, 25 miles off the coast. A second concentration is west of the river in Plaquemine and Terrebonne parishes as far west as Houma. All sites are on the coast, along bayous, or on beach ridges.

The high percentages of Moundville types and the clustering of sites may imply that factors other than trade relationships were involved. If intermittent trade relationships were maintained with Plaquemine villages in the delta, the distribution of Moundville pottery would either be random or else concentrated at one or two of the largest and most important sites. However, the clustering in two limited areas may indicate that Moundville peoples migrated there,

possibly on an annual basis, and established a number of temporary camps in favored localities. Perhaps these were hunting, shell-collecting, or military expeditions. The route from the mouth of the Alabama to the delta via Mississippi Sound would have been easily traversable in good weather--hardly more than an extension of the Black Warrior-Tombigbee--although it would have been more difficult to cross the Mississippi to the Houma region. Indeed, perhaps it was here in the delta that the Moundvillians learned of the Leland Incised and Fatherland Incised motifs that they later attempted to copy (see Chap. II and also following sections).

To trace and evaluate Moundville's influence in the Louisiana delta more complete excavation of new sites is necessary. Until then, the presence of such dense concentrations of Moundville pottery there must remain an unsolved problem.

Southwest Mississippi

In Chapter II some resemblances between MFE and MFI and the Leland-Fatherland-Natchez continuum were noted. In addition, one unfilmed vessel (Fig. 91a) appears so similar in form and design to Natchez types that it was interpreted as direct trade (compare Fig. 91a with Brown 1926:Fig. 340 and Cotter 1951:Fig. 22). Interestingly enough, Moundville-like sherds and vessels have been found in several sites in a line across Mississippi from Columbus to Vicksburg, as follows:

Lyons Bluff (20 mi. west of Columbus): a few MFE sherds, one with the SECC hand motif (Ford 1936:154).

Taylor Place (middle Big Black River): MI? rim sherd (Ford 1936: Fig. 30h).

Pocahontas site (lower Big Black): MEI? bowl, rectangular stepped vessel (Ford 1936: Figs. 23i, 23h; for the latter compare Moore 1907a: Fig. 22).

Haynes Bluff (lower Yazoo River): MI? jar fragment (Ford 1936: Fig. 20i).

Two shell tempered, incised sherds dubiously of Moundville origin are also pictured by Ford from the Angola site, Louisiana, on the Mississippi River at the Louisiana-Mississippi border. (Ford 1936: Fig. 26c, d).

The Mississippi sites, by coincidence or not, roughly follow the Natchez Trace. All contain sherds considered to be of "Tunica" or "Natchez" complexes by Ford, excepting the Taylor place which belongs to the "Deasonville" complex. These sites may represent the route along which ideas about vessel form and decoration reached Moundville. Desultory trade might have occurred between Moundville and Plaquemine culture, with the latter more influential. There are, in fact, several L'Eau Noire Engraved (?) sherds at Moundville (Fig. 22h-i). However, the definite presence of Moundville sherds in sites near Natchez and south has not been demonstrated, and the above identifications of sherds from Mississippi sites is tentative. More definite identification of Moundville pottery at more sites is necessary before the nature of the Moundville-Plaquemine contact can be understood.

Caddoan Area

In Chapter II no specific ceramic relationships between the

Moundville phase and the Gibson or Fulton Aspect were noted, and in Chap. VI house construction was found to be quite different. At the present time it appears that engraving was introduced into the Mississippian tradition from the Caddoan area, but that contact did not extend beyond the Lower Mississippi Valley. Moundville-Caddoan relationships cannot be proven and very likely are absent.

Lower Mississippi Alluvial Valley

Phillips, Ford, and Griffin (1951) have used this title to designate the area of the Mississippi flood plain and tributaries from 33° to 35°45' N. Latitude. Since their work is the only extensive report on the Lower Valley, this area will be considered here as a cultural unit divided into five subareas, Lower Yazoo, Upper Sunflower, Lower Arkansas, Memphis, and St. Francis (Phillips, Ford, and Griffin 1951:Fig. 16).

In Chapter II the following typological relationships between Lower Valley and Moundville pottery were suggested:

MBF	--	Bell Plain
MFE	--	{ Walls Engraved
MEI	--	{ Hull Engraved
		{ Ranch Incised
		{ Mound Place Incised ⁵
MFI	--	{ Barton Incised

Of these MFE and Walls Engraved are extremely close, and MBF can be hypothetically derived from Bell Plain. The other similarities seem reasonably close.

Taken singly, any one of these typological resemblances is considerably more convincing than those discussed so far in this

pter. Taken together, they indicate quite clearly that Moundville's frequent contacts and possibly its place of origin were located in a area. It is therefore worthwhile briefly to review each subarea.

Lower Yazoo (Phillips, Ford, and Griffin 1951:Fig. 17).--Bell Plain is relatively uncommon and reaches a peak well after time B (ca. 10). Barton Incised is present in moderate quantities from time C onward. Leland Incised (discussed previously) is also present.

Upper Sunflower (Phillips, Ford, and Griffin 1951:Fig. 19).--Bell Plain is common only after time B. Barton Incised reaches its peak in the Lower Valley from time C onward. Wall and Hull Engraved and Ranch Incised are present in negligible amounts.

Lower Arkansas (Phillips, Ford, and Griffin 1951:Fig. 18).--Bell Plain and other types related to Moundville types are virtually nonexistent. Neeley's Ferry Plain predominates.

Memphis (Phillips, Ford, and Griffin 1951:Fig. 20).--Bell Plain is the most common type from time C onward, steadily increasing in popularity. Barton Incised is present in slightly smaller amounts than further south and dates from time C. Walls Engraved, Hull Engraved, and Ranch Incised are not very common in absolute numbers, but are more common than in adjacent subareas.

St. Francis (Phillips, Ford, and Griffin 1951:Fig. 21).--Bell Plain is rare and late. Barton Incised is present in about the same numbers as in the Memphis subarea but is somewhat later. Walls Engraved, Hull Engraved, and Ranch Incised are extremely rare.

On the basis of typological resemblances and type frequencies Moundville can be closely related to the Memphis subarea, which was

occupied by the Walls phase (northwestern Mississippi) and the Nodena phase (northeast Arkansas), at the time these types were most common (thus defined by Williams [n.d.:]); this is a finer division of Griffin's Walls-Pecan Point focus [1952a:233-236]).⁶ Barton Incised appears from the evidence of type frequencies to have originated in the Upper Sunflower subarea. Because it is such a widespread and common type, however, it perhaps should not be assigned to any particular subarea.

There is other evidence supporting the Walls and Nodena--Moundville affiliations. First, vessel forms, notably the bottle, and effigy types are virtually identical. Secondly, MEI occurs, with rare exceptions, only at Moundville and in the Memphis subarea (Phillips, Ford, and Griffin 1951:159). Thirdly, red-and-white and white filmed sherds and whole vessels (Nodena Red and White, Hollywood White Filmed) occur in small amounts at Moundville. As they were not made locally, they were probably traded from the Nodena phase, where they seem to be indigenous. Finally, several specific SECC traits occur both at Moundville and in Nodena: the ogee, the hand and long bone, the notched stone disc, and the perforated celt (spud axe) (Williams n.d.:2-3).

In summary, the Walls and Nodena phases of the Memphis subarea are the only Mississippian manifestations so far surveyed whose links to the Moundville phase are both numerous and specific.

With this reassuring information, let us turn to the last area to be reviewed.

Southeast Missouri

Since Southeast Missouri is related to both the Tennessee-Cumberland and Memphis areas, its direct influence on Moundville is difficult to assess. For example, the negative painted carafe bottle pictured by Moore (1907a:Fig. 20) might have come either from Southeast Missouri or central Tennessee. On the whole there is considerable evidence that relationships between Southeast Missouri and Moundville were marginal, if they existed at all. The presence of earthworks surrounding the villages, houses, with slightly excavated floors, burials in cemeteries, rarity of copper artifacts, the carafe bottle, and negative painting sharply distinguishes Southeast Missouri Mississippian from the Moundville phase (Griffin 1952a:229-231). Possible evidence of brief trade contacts are the few carafe bottles and negative painted bottles found at Moundville (Moore 1905:Fig. 128; 1907a: Figs. 20, 72), although, as stated above, these may be Tennessee specimens. In any case, appreciable inter-influence was absent.

Cultural Relationships: Summary

In summary, we have made a complete circuit of the Southeast. The more important and better known regions were briefly reviewed in order to ascertain if they at any time were in contact with the Moundville phase. To the north, Moundville's influence ceased north of the Tennessee river. Only vague resemblances were found to cultures of Tennessee and northward. To the east some contact took place between Moundville and Etowah, bringing Mississippian ceramics and possibly

other traits into Georgia. Southward, Moundville certainly contributed to the formation of Fort Walton, although there is no evidence to prove that the latter was a migration from Moundville. In southern Alabama Moundville's influence was extensive but not intensive. In the Mississippi River delta a surprising amount of Moundville pottery was found, but the significance of this is obscure. Southwestward through Mississippi to the Natchez region a few Moundville-like sherds occurred. This evidence and the similarity of some Moundville vessel forms and designs to Plaquemine-Natchez types indicate that some contact of unknown nature took place. In the Lower Mississippi Valley close cultural relationships to the Walls and Nodena phases are definite. Adjacent areas in the Lower Valley might have contributed some influences. Contact with Southeast Missouri is not proven.

From this discussion of relationships we may now proceed to the problems of dating and thereafter to a discussion of origins.

Dating: Introduction

There are no radiocarbon dates from Moundville, and information on the internal stratigraphy is lacking. Since this paper was intended to be a study of previously excavated material, no stratigraphic tests were made. However, in 1951, during the construction of a picnic building just northwest of mound R, 2500 sherds were excavated in 6 and 12 inch levels to a depth of 36 inches. These were classified in March, 1963, and the results are shown in Table 18. This area was disturbed (a nail was found in the 12-24 inch level) so that the totals should be viewed with caution.

TABLE 18.--Classification of sherds from "Picnic Building for Colored" excavation, northwest of mound R.

Level	Plain		MI		MBF		MFE		MFI		Other	
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
0-6"	521	76.6	5	0.7	127	18.7	2	0.3	22	3.2	4	0.5
6-12"	390	76.3	2	0.3	164	28.3	2	0.3	13	2.2	9	1.6
12-24"	590	75.9	9	1.2	154	19.8	0	-	18	2.3	6	0.8
24-36"	362	76.6	8	1.7	83	17.5	6	1.3	6	1.3	8	1.7
Total	1863	74.4	24	1.0	528	20.9	10	0.4	59	2.3	27	1.0

Notes: Total sherds, 2511. "Other" sherds: MEI, red filmed, white filmed, R/Bf, red and white.

The only distributions which may indicate trends are the increase and decrease of MBF, which reaches a peak in the 6-12 inch level, and the increase of MFI from bottom to top. The rarity of MFE and absence of MEI again shows that they were exclusively ceremonial types, probably guarded against breakage.

Another bit of evidence for ceramic development is the resemblance of MI to the late prehistoric type McKee Island Incised. This resemblance has been discussed in Chapter II. It may well be that MI is the latest type, perhaps a rather degenerate derivative of MFI.

To say more would be rash. New excavations are necessary to clarify the question of internal development. But several other lines of evidence permit approximate initial and final dates to be determined. These means of dating are: (1) the Late Mississippian period; (2) the SECC; (3) association with dated Walls or Nodena phase sites; (4) association of Moundville types with Leland and Fatherland Incised; (5) chronology of shell gorget motifs; (6) the DeSoto expedition.

Dating by the Late Mississippian Horizon

The division of the Mississippian tradition into early and late periods is generally accepted (instead of "late" I prefer the term "developed"). It is apparent that the Moundville phase had little in common with early phases like Obion, Hiwassee Island, and Macon Plateau, but close resemblances to late phases such as Nodena. This general temporal placement indicates that the Moundville phase did not begin prior to ca. 1200.⁷

Dating by the SECC

C-14 dates for Spiro and Etowah give a moderately clear picture of the dates for the SECC tradition (see Chap. V). But because of the long time span, SECC material cannot date a site exactly. Its importance is that it serves as a terminus ante quem, marking the earliest possible date of any site containing SECC artifacts. Since the earliest activity at the Craig Mound dates apparently in the twelfth century, the tentative assumption is that SECC material does not appear prior to this time. Broadly speaking, Moundville could not have been established before about A.D. 1100.

Dating by Walls and Nodena Associations

Ceramic seriation supported by stratigraphy dates the distinctive types of the Walls and Nodena phases, Walls Engraved and Bell Plain, around time B in the Memphis subarea (Phillips, Ford, and Griffin 1951:Fig. 20). This point of time was dated 1300-1400 without

the assistance of C-14 (Phillips, Ford, and Griffin 1951:304). A similar date would apply to Moundville.

More recently three C-14 dates have been published dating the "Walls-Pecan Point" occupation of the Chucalissa State Park site, Shelby County, Tennessee. These dates are as follows: (Crane and Griffin 1959:186-187):

- M584. Charred log: A.D. 1440 ± 200
- M787. Charred material exposed to atmosphere for one year before collection: 1600 ± 150
- M788. Charred wood: 1590 ± 150 .

Two other dates for the earlier occupation at the same site are:

M585: 1020 ± 200 ; M789: 1440 ± 200 .

The three relevant dates do not differ significantly, although M789, supposedly dating a lower level, overlaps appreciably. The mean of the three dates is 1543 ± 170 . This is somewhat earlier than Phillips, Ford, and Griffin's estimate and the 1200-1300 estimate of Griffin (1952:Fig. 205).

Dating by Association of Moundville Types with Leland-Fatherland Incised

If the proposed similarity between Leland Incised, Fatherland Incised, Natchez Incised, and MFI is accepted, the date of the Natchezan types is applicable to at least part of the Moundville phase. Another piece of evidence supporting this typological association is the presence of Fatherland Incised and Moundville types together in Louisiana delta sites (McIntire 1958; see previous discussion). Leland and Fatherland Incised can be dated directly by C-14 determinations at the Anna and Emerald sites near Natchez. Both types, particu-

larly the latter, are common in later construction stages of the mounds (Cotter 1951:18-32).

The two dates are as follows (Crane 1956:665):

M27. Animal bone from stage E (top level), Emerald mound:
A.D. 1480 ± 250 .

M47. Charcoal from late occupancy of Mound 5 at Anna: A.D.
 1310 ± 250 .

The difference is not significant, although it is consistent with the expected conclusion from pottery seriation that Emerald is somewhat later than Anna. The average date is 1395 ± 250 .

Dating by Shell Gorget Chronology

Kneberg (1959) has reviewed the SECC shell gorgets of 19 sites on the upper Tennessee and tributaries. By plotting their associations she has set up a relative chronology of gorget motifs (1959:35-39). The first and earliest group comprises the square cross (perhaps the earliest), circular cross (i.e., circumscribed, equal-arm cross), eagle dancer, spider, and turkey cocks. These motifs are associated with the most elaborate SECC sites and are dated 1000-1400.

The second group is composed of the circular cross in cruder form, the conventionalized dancer, and the scalloped triskele. It is dated ca. 1350-1500.

The third and latest group is made up of the mask gorget and rattlesnake, with a time range of ca. 1450-1700.

Shell gorgets are not common at Moundville (see Chap. V). Those present are the circular cross, eagle dancer (head only), human with feline attributes (a variant of the eagle dancer?), stylized serpent(?),

d woodpecker or turkey cocks (?). There is also a circular cross of
pper.

All these belong to Kneberg's earliest group with the exception
the human with feline attributes and the stylized serpent, which are
t classified. If this chronology for Tennessee is applicable to
undville, a date after ca. 1000 but before ca. 1400 is indicated.

ting by the DeSoto Expedition (Swanton and others 1939:210-213; 217-
219; Garcilaso 1951:393-397)

In June, 1539, DeSoto's fleet dropped anchor in Tampa Bay, and
September, 1543, the remnants of the army arrived in Mexico. In
ose four years the Southeast entered briefly into history. The
cheologist thus has a unique opportunity to date to the very month
e position of the tribes DeSoto encountered—provided, of course,
at the route of the army and cultural affiliations of the tribes can
ascertained.

The portion of DeSoto's travels that interests us extends from
e region of Mabila to the crossing point of the Black Warrior
ovember 27 to December 13, 1540).⁸ After recuperating from the
sastrous battle of Mabila (Clarke County, Alabama), DeSoto left
bila on November 27. He marched northward for three days through
at Garcilaso calls a "peaceful though unpopulated country," and on
cember 1 reached the east bank of the Black Warrior. According to
rcilaso the region formed the eastern boundary of the province of
icaça; according to the other chroniclers, the province of Pafalaya
pafalaya). There were several towns along the river, the names of

Ich Swanton identifies as Choctaw.

The actual crossing, at the town of "Zabusta", did not take place until December 14, after a pause of twelve days to construct a boat. The crossing was opposed: Garcilaso describes a battle with 8000 Indians, but the other chroniclers omit this and Swanton calls the affair "insignificant".

Having arrived on the west bank the army proceeded westward to the Tombigbee and thence into Mississippi.

The exact place of the battle of Mabila is unknown, but it must have been about 10 miles north or northwest of Monroeville, Alabama. From here the route is fairly clear. DeSoto travelled northward roughly along U.S. Highway 43, approaching the Black Warrior near Moundville. This was the "unpopulated" region of Garcilaso. The crossing was made a few miles below Eutaw, probably almost directly west of Moundville. From this point the army headed northwestward and never returned to Alabama (Swanton and others 1939:217-219).

In other words, DeSoto crossed the Black Warrior less than 30 miles below Moundville. Why did he not visit it? Indeed, what evidence is there that he even heard of it?

To judge from the chronicles of the expedition, Moundville might never have existed. Elvas is careful to name the towns along the Black Warrior, but makes no mention of any larger town or province to the north. Garcilaso, who might be counted on to pass along any rumors, notes only that the region south of the crossing was unpopulated (it still is, in fact) and that the town, Zabusta, where the army crossed, was not the principal one but another under the same jurisdiction [i.e.,

of Chicaça⁷." He might have confused Chicaça with Pafalaya, but it appears certain that this region was subject to a tribe not to the north but to the west.

It is inconceivable that DeSoto would have neglected to investigate a town as large as Moundville had he learned of it. Its influence during its peak extended from the Tennessee River to the Gulf, and it would have been well known by Indians only 30 miles distant. DeSoto presumably took captives from the Black Warrior towns; these unfortunates, out of fear or cunning, would certainly have reported the existence of Moundville.

The only explanation is that in 1540 Moundville was unimportant or even totally abandoned. The balance of power had shifted to Mabila or Chicaça. Moundville might even have been forgotten when DeSoto arrived, having been abandoned for many years.

The year 1540 can therefore serve as a terminus post quem for the Moundville phase. In round numbers, let us say that by 1500 Moundville had ceased to exist or was no longer of significant size and power.

Dating: Summary and Conclusions

To summarize the important points:

(1) The Developed Mississippian period and the SECC associations of the Moundville phase provide a broadly defined terminus ante quem of A.D. 1200-1300.

(2) Cultural relationships with the Nodena and Walls phases indicate a 1300-1500 date.

(3) Ceramic relationships with Leland-Fatherland Incised suggest

date of ca. 1400.

(4) Dating by the shell gorget chronology indicates a time span somewhere between 1000 and 1400.

(5) The failure of DeSoto's chroniclers to mention Moundville allows an estimate of ca. 1500 (at the latest) as a final date.

These various lines of evidence generally support one another. The most divergent are the three Chucalissa dates, which are about 100 years too late, and it takes some judicious juggling of standard deviations to bring them into line. The shell gorget chronology suggests a terminal date of ca. 1400, but it is by nature imprecise. Also, the beginning date is really too vague to be satisfactory.

In conclusion, I believe that the Moundville phase existed at the maximum from about 1250 to about 1500.

The Origins of the Moundville Phase: Introduction

The Moundville phase could have resulted from Mississippian influence on the indigenous, non-Mississippian cultures of Alabama. It could have originated from a gradual infiltration of Mississippian peoples into Alabama. Or it could have originated as a direct, rapid migration of a single, relatively large body of people from the northwest. These three possibilities are mutually exclusive. By eliminating two of them, that remaining is ideally the only true hypothesis.

Moundville Derived from Indigenous Culture

The transitional Woodland of northern Alabama is represented by the McKelvey pottery series: predominantly plain, clay-grit tempered

were with a minority of check-stamping, cord marking, and incising (DeJarnette and Wimberly 1941:91-93; DeJarnette 1952:279-280). We might visualize the makers of this pottery as semi-nomadic marginal agriculturalists, still largely dependent on hunting. McKelvey peoples occupied both the Moundville and Bessemer sites; 1000 clay-grit tempered sherds were excavated from the Moundville roadway (Wimberly 1956:19), and 1200 (48% of total sherds) were found at Bessemer (DeJarnette and Wimberly 1941:81).

Paired, noded strap handles occasionally occur on McKelvey vessels, and a common vessel form is a small jar with a straight rim (DeJarnette and Wimberly 1941:91-95). Evidently, there was some temporal overlap between the McKelvey series and the Moundville phase (DeJarnette and Wimberly 1941:108). However, it is unreasonable to suppose that the Moundville phase was derived from or even much influenced by the indigenous Woodland culture. Pottery at the Moundville site is so overwhelmingly shell tempered and typically Mississippian in form (98.70% of the sherds are shell tempered; Wimberly 1956:19) that a slow development out of a Woodland base is entirely unlikely. Ceremonialism shows no trace of pre-Mississippian influence as at Kincaid or Macon Plateau. Probably the Mississippians of Moundville donated some ideas about pottery-making to the Woodland peoples, but influence in the other direction is not supported by the archeological evidence. Derivation of Moundville from the indigenous, non-Mississippian cultures of Alabama is clearly implausible.

Moundville as the Result of A Gradual Population Movement

This hypothesis would bring several migrating groups from the Memphis area. Routes of travel would be either through northern Mississippi and western Alabama or through southern Tennessee, up the Tennessee River to the Pickwick Basin, and southward. One of these hypothetical groups settled at Koger's Island, another at Bessemer, perhaps another at Moundville itself. After a century or more all these groups combined at Moundville, for reasons unknown, and the florescence of the Moundville phase resulted. Thus the site of Moundville would have had a relatively short period of florescence, probably about 100 years.

There is no evidence to prove or disprove this hypothesis. Most of the prehistoric population movements in North America must have occurred in a similar, partly random fashion. But aside from this fact, there is no specific supporting data and several questionable points. The apparent dense population at Moundville, indicated by the widespread occupation areas, is not in accord with any hypothesis of gradual development. Nor does it seem likely that the 18 mounds could have been built in only a century. The inconclusiveness of the hypothesis of population infiltration forces us to consider the hypothesis of a direct migration.

Moundville as a Direct Migration

Rouse (1958:64-66) proposed five criteria for determining

prehistoric migrations:

1. Identify the migrating people as an intrusive unit in the region it has penetrated.
2. Trace this unit back to its homeland.
3. Determine that all occurrences of the unit are contemporaneous.
4. Establish the conditions of favorable conditions for migration.
5. Demonstrate that some other hypothesis, such as independent invention or diffusion of traits, does not better fit the facts of the situation.

Can these criteria be met in the case of Moundville? Let us look at each one separately.

(1) Identification of the migrating people as intrusive. This has been accomplished: no evidence has been uncovered to suggest a development from local cultures.

(2) Tracing the migrating unit back to its homeland. There is strong evidence pointing to an origin of the Moundville phase in the Memphis subarea of the Lower Mississippi Valley. Moundville engraved and black filmed sherds are found in the Pickwick Basin, 90 miles west of Memphis. A movement overland to the Tennessee River and thence southward is therefore suggested but not definitely proven.

(3) Determination of the contemporaneity of all occurrences of the unit. The great similarity of pottery types from Moundville, Bessemer, Koger's Island, the Perry site, the Nodena phase, and the Walls phase indicates contemporaneity. Also, Moundville and Nodena and Walls have been dated by independent sources to approximately the same period.

(4) Establishment of the existence of favorable conditions for migration. The topography and travel routes were surveyed in Chapter I.

The conclusion was that travel by land or water presented no problems. The extraordinarily attractive location of Moundville was also emphasized. The site allows protection from floods and access to fertile river bottoms. It has an abundant water supply, adequate flat land for plaza, mound, and house construction, and a favorable location on a large river. The route of migrations can never exactly be predicted on account of the many fortuitous elements, but a group arriving in the Moundville region might well have been drawn to the site because of these advantages.

It is also possible that overpopulation in the limited areas available for settlement in the Mississippi Valley forced out some tribes at about the time the Moundville phase began. This hypothesis will be discussed fully in the final section of this chapter.

We may say, in sum, that conditions for migration were at least not unfavorable, although specifically favorable conditions cannot be proven.

(5) Demonstration that the migration hypothesis best fits the facts. Independent invention is patently out of the question, and similarities between the Moundville, Nodena, and Walls phases are too numerous and specific to be explained by trait diffusion alone. The same objection applies to an hypothesis of trade contact only, although trade was doubtless important. The hypothesis of a gradual population movement, rather than a rapid, direct migration, cannot be disproved; but, as stated above, it is neither a particularly efficient nor complete explanation.

Origins: Conclusion

There is no doubt that the Moundville phase is a Mississippian intrusion into northern Alabama. There is very strong--if not actually conclusive--evidence that it originated in the Memphis subarea, although other parts of the Lower Valley might have contributed to its formation.

The theoretical implications in this discussion of origins are perhaps most interesting: can a rapid and direct site-unit intrusion (Willey and others 1956:12-19) be distinguished archeologically from a gradual infiltration of a foreign population? Both are technically site-unit intrusions, but in this case it is not clear which occurred.

I personally feel that a direct migration is more probable.⁹ Rouse's test has been passed with a reasonably high grade, and the direct migration hypothesis is neater--more esthetically appealing--than that of a gradual movement. Probably the matter could be definitely decided by the excavation of more sites in southwestern Tennessee and northern Alabama.

The Legacy of Moundville

We have seen that Moundville declined rather suddenly after a florescence in the fourteenth and fifteenth centuries. This decline was not catastrophic, for there is no reason to suppose that the culture or population disappeared without a trace. In fact, there is good reason to believe that aspects of the culture and the remainder of the population spread widely through the Southeast after 1500. The

decline of Moundville was not an extinction but rather a dissolution of the cultural configuration with replacement or recombination of traits (see Kroeber 1948:382-383).

Physically, a series of 15 Moundville crania and the larger Koger's Island series are closely related to the Walcolid variety as defined by Neumann (Snow 1941; Newman and Snow 1942:433-457; Neumann 1952:21-23). Since the Walcolids were both Middle Mississippian and historic Muskogean, a population continuity between Moundville and historic Southeastern tribes is evident.

The non-material heritage of Moundville--and of Mississippian culture in general--is difficult to evaluate and must be left to speculation. Certainly the elaborate ceremonialism disintegrated almost completely and socio-political organization must have been greatly modified.¹⁰ The best evidence for cultural continuity is therefore ceramic.

This evidence rests mainly on the similarity of MI to McKee Island Incised (Heimlich 1952:28) and to the burial urns of central and southern Alabama. The latter, when decorated, are crude versions of MI (Brannon 1938; DeJarnette 1952:284). Two other types with similarities to MI are Lamar Bold Incised and its derivative, Ocmulgee Fields Incised (Haag 1939). All these types possess in common the carinated bowl shape, single-line loops, arcs, or meanders bordered by short perpendicular lines or punctations and occasional bands of three or four parallel lines encircling the vessel. On geographical grounds McKee Island and other Alabama types might be directly derived from MI,

while Lamar Bold Incised might be a development from a Fort Walton type such as Pensacola Incised.¹¹

I am personally content to leave the matter at this point, admitting general relationships without specific similarities. After considering the early ending date of the Moundville phase and the present vague conception of transition to the historic period in the Southeast, I cannot see that a direct historical approach would be fruitful or even possible. The following discussion of historic tribes in Alabama is therefore offered for what speculative value it may have.

The only tribe known to have been in the immediate vicinity of Moundville is the Napochi, who lived on the Black Warrior River. This tribe, which, to judge by the name, was probably of Choctaw linguistic affiliations, enters into history exactly once. In 1560 a party from the DeLuna expedition assisted the Muskogee of Coosa in a war against the Napochi. The latter were supposedly subjugated and afterwards may have combined with the Chickasaw, Acolapissa, or Quinapissa. Swanton feels that the Napochi might have been "identical" with the Acolapissa (1922:231-240; 1952:168-169). Regrettably, nothing more is known about the Napochi.

The Alabama, a Muskogean-speaking tribe later a member of the Creek confederacy, occupied southern Alabama. Its traditional place of origin was at the junction of the Tombigbee and Alabama Rivers, and until 1814 at least seven towns were located along the upper Alabama.¹² This tribe seems to have had a population of only a few thousand and never to have been influential (Swanton 1952:153-156).

The Muskogee occupied the eastern third of Alabama south of the mountains at least from the early seventeenth century. Of large population and considerable power, its towns were located mainly along the Coosa, Tallapoosa, and Chattahoochee Rivers. The Muskogee, like all Muskogean tribes, claimed an origin to the northwest (Swanton 1952:160-168).

In the seventeenth and eighteenth centuries the Choctaw were centered in southeastern Mississippian and only occasionally entered Alabama (Swanton 1952:156). However, the towns along the Black Warrior that DeSoto passed had Choctaw names, according to Swanton (Swanton and others 1939:218), possibly indicating that the tribe held a larger territory in the sixteenth century.

The Chickasaw occupied northern Mississippi and entered Alabama on hunting and military expeditions. One of their traditions places them along the Tennessee River in northern Alabama at some undetermined time in the past (Swanton 1922:167-168; 201-202, Pl. 1; 1952:178-180).

The Kosati, a Muskogean tribe speaking a dialect akin to Alabama, may have lived "from about 1500 until well along in the seventeenth century, perhaps to the very close, upon Tennessee River" (Swanton 1952:157-159). This tribe was historically affiliated with the Upper Creeks. However, Swanton's suggestion of a location on the Tennessee is based upon linguistic evidence from the DeSoto chronicles. Near Guntersville DeSoto met a tribe named "Coste", "Acoste", or "Costehe" (=Kosati). A related Muskogean tribe, the Chiaha (so called by DeSoto's chroniclers) lived slightly upstream from the Kosati (Swanton 1952:105-107).

Of these seven tribes the Napochi (whoever they were) and the Alabama are the most logical claimants for Moundville's legacy. The spread of MI down the Tombigbee and Alabama is especially suggestive of links to the Alabama.

The Muskogee can be ruled out, I think, because of the geographical distance and lack of Moundville sherds in central and south Georgia and southeastern Alabama. Moreover, Lamar is identifiable with the Creek (Fairbanks 1953), of which the Muskogee was one of the most important tribes. A Muskogee-Lamar equation seems most suitable.

The Choctaw were geographically adjacent to Moundville but lack specific ceramic similarities. Their pottery type, Chickachae Combed, is grit tempered with a design of six closely spaced lines forming curvilinear bands on the upper body of hemispherical bowls (Collins 1932:39; Ford 1936:42-49; Haag 1953:25-28). This type was apparently derived from Bayougoula Incised, a late Natchezan type (Quimby 1942: 261-262). Also, the Choctaw practice of secondary burial contrasts with the Moundville custom of primary interment. These differences, plus the tradition of tribal origin from the Nanih Waiya mound northwest of Meridian, Mississippi, suggest a rather long development in central Mississippi for the Choctaw.

Like the Muskogee, the Chickasaw are disqualified as Moundville's descendents because of geographical position (unless the legend of Tennessee River residence is accepted). If the Chickasaw whom DeSoto met in northern Mississippi were indeed the Chickasaw, this tribe must have been established here since the early 1500's. In addition, Chickasaw pottery was smoothed or brushed, never fluted or incised. Houses

were mostly rectangular or circular single pole structures, and flexed burials were made under the floors (Jennings 1944). None of these features can be associated with Moundville. The Chickasaw were probably contemporaries and not descendants of the Moundville phase.

The alleged location of the Koasati and Chiaha in the Gunterville Basin at least as early as 1540 poses an interesting problem. Moundville pottery, some of local manufacture, is found in this region. The location is also the closest to Moundville of all the tribal territories so far discussed. Could the Koasati and Chiaha have transmitted MI designs to Lamar Bold Incised in their movement southward from the Tennessee? Were these tribes directly descended from the population of the Moundville phase? Was Moundville therefore immediately ancestral to no less than three tribes of the Creek confederacy: not only the Alabama, but also the Koasati and Chiaha?

Such an hypothesis would be supported by the traditional origin of the Creek tribes to the northwest of their historic location and by some elements of their social and religious organization (see note 10, above). On the other hand, placement of the Chiaha and Koasati on the middle Tennessee rests upon identification of the names "Chiaha" and "Costehe" in the DeSoto chronicles with these tribes. Another problem is the identification of the river DeSoto's expedition descended after crossing the Appalachians. The DeSoto Commission called it the Tennessee (Swanton and others 1939:187-209), but several earlier historians considered it to be the Coosa, along which the Koasati lived in historic times. Finally, if, as Swanton estimated, these tribes arrived in Georgia and eastern Alabama about 1700, they were much too

late to participate in the formation of Lamar. Nevertheless, the idea of a relationship is intriguing.

To sum up, positive identification of the Moundville phase with any historic tribes is not possible. The most likely candidates are the mysterious Napochi, the Alabama, the Koasati, and the Chiaha—all of them or in any combination.

III. The Position of the Moundville Phase in Southeastern Prehistory: Summary and Conclusions

The results of this survey of Moundville's cultural relationships, date, origins, and heritage can now be summarized. Not all the problems have been solved, and some new questions have been raised.

We can be reasonably certain that the following conclusions are correct:

- (1) The Moundville Phase was a site-unit intrusion into northern Alabama from the Memphis subarea of the Lower Mississippi Valley.
- (2) The Moundville phase was derived from either the Walls phase or the Nodena phase or both. It also had some similarities to late Mississippi phases of the Lower Valley south to the Yazoo Basin.
- (3) The Moundville phase existed between A.D. 1250 and 1500. It reached its peak from about 1300 to about 1450.
- (4) Virtually no mutual influence between the Moundville phase and the Tennessee-Cumberland or Southeast Missouri areas or any areas farther to the north is ascertainable.
- (5) The Etowah Period to the east and the Plaquemine Period to the west were contemporary with Moundville and these cultures had

trading relationships to the Moundville phase. Possibly broader cultural patterns were transferred also.

(6) The Moundville phase exerted appreciable influence on the formation of the Fort Walton Period culture of the northwest Florida coast.

(7) The Moundville phase was limited to northern Alabama north to the Tennessee River. South through Alabama its influence was extensive but seems to have been mainly ceramic. Peoples of the Moundville phase may have reached the Mississippi River delta.

(8) Following a rather rapid decline and dissolution of the culture pattern of the Moundville phase, the remaining population dispersed throughout Alabama. The Napochi, Alabama, and possibly the Koasati and Chiaha were directly related to the Moundville population of the late fifteenth century. Cultural influences on protohistoric and historic tribes are most evident in pottery. Some subsistence practices, elements of political organization, and various ceremonial customs were undoubtedly transmitted in less complex form.

Unanswered or partially answered questions are these:

- (1) What was the exact nature of the site-unit intrusion: a rapid or a gradual migration?
- (2) Can cultural relationships be established more firmly, using more than pottery typology? Can ceramic development be used as a model for cultural development?
- (3) Can more exact dates for the phase be determined?
- (4) Why did the influence of Moundville stop at the Tennessee River, although extending widely to the south and east?

(5) Can the Moundville phase be related more definitely to historic tribes?

In conclusion, I conceive of Moundville as the capital of a true state (Sears 1961) with authority over a territory approximating that of the modern state of Alabama. By virtue of a theocratic government (inferred), it was also a ceremonial center. But it was always a town also, with a permanent population of possibly several thousand.

In the central Southeast, from Florida and Georgia to the Mississippi River, Moundville was influential. It was the center for the manufacture of engraved pottery, surpassing even its home region (see Phillips, Ford, and Griffin 1951:129). It exported its ceramics and also religious and social concepts, as far away as the Mississippi delta and central Georgia. At its apex it was undoubtedly much more impressive than any of the tribes described by the early Spanish and French explorers.

Moundville disappeared but its influence remained. Much of its culture was reintegrated into that of the historic Southeastern tribes, which, with stimulus from European contact, reached a secondary climax in the eighteenth century. However, when these tribes finally collapsed under increasing European pressure, Moundville culture can be said to have been extinguished. Its fate passed entirely into the hands of the archeologist. At that point it became a suitable topic for this paper.

IV. The Rise and Fall of Mississippian Culture

So far in this chapter attention has been directed to two of the three objectives of this thesis: (1) a description of the Moundville

phase; (2) a definition of its position in the Southeast. The third objective, an inquiry into the causes of Mississippian development, florescence, and decline, will now be discussed in order to complete this paper.

I have previously referred to Mississippian culture as a tradition, following Caldwell (1958:1-5, 64-70). The terms "culture" and "pattern" (in the broad sense of a cultural pattern) are not incorrect, but they are vague. It is desirable, I think, to emphasize the temporal continuity of Mississippian culture: it existed for perhaps 700 years and retained a close coherence throughout its life span. In fact, it is the most definite tradition of the five proposed by Caldwell (1958:19-59). Moreover, in discussing its development a specifically temporal frame of reference is necessary.

I do not intend to define the Mississippian tradition. All archeologists would no doubt list pottery, architecture, mode of burial, settlement pattern and, inferentially, political and religious structure as distinctive (for descriptions see Griffin 1952a:361-364; Willey and Phillips 1958:163-166).

The Mississippian tradition was a direct or slightly elaborating tradition, although it underwent great reduction during its decline. Major cultural complexes remained remarkably stable throughout. For example, ceremonialism seems to have been well established by the early Macon Plateau phase (Fairbanks 1956). As shown in Chapter VI, elements of house construction technique were recombined by the various phases from a limited group of common elements. There were few consistent temporal trends. Mortuary customs, divided into several regional

variants, showed no important change through time.

The Mississippian pottery tradition, however, was definitely elaborating. By any standards of judgement the plain ware of the early period was simpler than the incised, engraved, and appliqued types of the developed period. Yet continuity still existed: shell tempering, of course, jar and bottle forms, red filming, and negative painting. The latter was present at some of the earliest sites such as Obion and Hiwassee Island (Kneberg 1952:195; Lewis and Kneberg 1946:90-94). Monks Mound Red was an Old Village type (Griffin 1946:77), and effigy vessels and rim effigies were also present from the first (Griffin 1946:77).

The extreme variability in ceramics may indicate that pottery-making was a minor cultural focus (see Herskovits 1949:542-544). If so, its pattern of development would not be a completely valid model for non-focal cultural development. Perhaps the theory of pottery variation, which pictures types as having clearly defined frequency peaks or climaxes, has led archeologists to conceptualize culture process too much in terms of climax rather than continuity.¹³

However, this may be, the Mississippian tradition remained relatively constant and largely impervious to external influences.OUNDVILLE, for example, accepted a few ceramic techniques from laquemine but seemingly nothing of importance from Etowah or non-Mississippian Florida. If the SECC marks the infusion of ceremonial traits from Mexico, this was an exception; and these traits were soon integrated into the Mississippian religion.

This continuity does not mean that the Mississippian tradition lacked internal dynamic processes. In fact, it complicates the problem

of the sudden decline, beginning about 1450 and ending with the formation of the historic Muskogean tribes. This decline affected every aspect of culture, particularly political, artistic, and religious institutions. We must now consider this problem.

There are certain parallels between the Mississippian case and the two best-known examples of disintegration of a cultural tradition in the Western Hemisphere: the Anasazi in the twelfth and thirteenth centuries and the Classic Mayan civilization ca. 800-900 (for a review of the Anasazi see Danson 1957:110-120 and Jett 1964; for the Maya see Thompson 1954:84-97 and Morley 1956:68-73). In all three cases disintegration cannot be equated with extinction; the modern Pueblos, the Yucatecan Maya, and the Southeastern Muskogean are direct descendents of these traditions. Also, the respective declines were sudden but not catastrophic. The Mayan and Mississippian declines lasted at least a century; the Anasazi gradually abandoned the Four Corners region over a period of 200 years.

Nevertheless, there are marked differences in the histories of the Maya and Anasazi on the one hand and the Mississippians on the other. The collapse of the first two can be explained by a combination of environmental, cultural, and social factors: a worsening climate, soil depletion, internal strife, and hostile intrusion. No such explanations are valid for the Mississippian tradition. The climate of the Southeast is far more favorable than that of either the Southwest or Yucatan. The hypothesis of invasions by nomads is not tenable since none existed in the Southeast—and in any case the area occupied

by the Mississippians was too diffuse to be overrun. If there were any invasions, the Mississippians themselves did the invading. Internal warfare certainly must have been continual, but it was hardly anything new, having probably been endemic in the eastern United States since the Archaic.¹⁴ Population-destroying diseases were introduced by Europeans after the tradition had disappeared.

We must therefore hypothesize that processes inherent in Mississippian culture caused its decline.

This is not the place to discuss the specific origins of the tradition. Phillips, Ford, and Griffin (1951:451-454) suggested continuity from earlier cultures, influence from the Southwest, influence from Middle America (see also Phillips 1940), and the "X-factor" in which they include such developments as population increase and improved agricultural techniques. Caldwell has proposed that the Mississippian tradition was a reformulation (in part) of the Gulf tradition (1958:59).

The Mississippian tradition had no single center of development, but rather many centers in a large region of the Mississippi Valley probably extending from southern Missouri to southern Mississippi. (Griffin 1946:75; Willey and Phillips 1958:164-165). In this situation new influences would constantly be interchanged and recombined, leading to a "comparatively rapid crystallization" of the tradition (Phillips, Ford, and Griffin 1951:454).

Thus we may conceive of proto-Mississippian culture about A.D. 800 as composed of a number of small, related tribes in the Mississippi Valley undergoing sudden and drastic cultural change. From this base

let us construct a model of Mississippian culture history.

1. Let our first assumption be that a new trait, just introduced from Mexico, was a technique of intensive maize agriculture (see Phillips, Ford, and Griffin 1951:453). Since maize rapidly depletes soil minerals, a river bottom habitat, where annual inundation replenishes the soil, was required (Caldwell 1958:64-65).

2. The necessity of river bottom location for agriculture forced placement of villages on the limited amount of high ground, mostly natural levees, in the flood plain. Of course, bottom land location of villages was impossible, for they would be under water several months of the year (Williams 1956:54-55).

3. A second direct result of intensive maize agriculture was an increase in population. A smaller amount of land could now support a greater number of people. This is inferred from the larger size of ceremonial centers, numerous burials, and the depth of refuse (Griffin 1952a:362). Density of population in the small area of useable land must have risen rapidly.¹⁵

4. A cloud has already formed on the horizon. Density of population plus limited land area equals population pressure. Since scarcity increases value, land became a valued commodity for the first time. Tribal territory had to be defended against attack. Wars of conquest, previously unknown in North America, were waged.

5. As a result, the tribes had to organize for defense. At this point a complex of traits also derived from Mexico became a significant factor (see Phillips, Ford, and Griffin 1951:454). This was the concept of the theocratic state with centralized and absolute authority

supported by religious sanctions and a class system.

6. Here was the means of defensive organization, and we may assume that it was seized upon by some of the more innovative Mississippian leaders. As always, the rank-and-file came out second-best; but it was a matter of self-defense. By now Mississippian culture was equal to far more than the individual ideas that had gone into its formation.

7. Thus before A.D. 1000 the theocratic state had arisen as a response to ecological and demographic factors. It provided some degree of stabilization.

8. But now let us assume that population continued to increase. Combined with the increasing rigidity of tribal boundaries, this brought about an explosion, or rather, an expulsion.

9. Eventually some of the weaker tribal states were forced out and left their Mississippi Valley homeland. This occurred around 1000 and represents the Early Mississippian radiation--phases such as Aztalan and Hiwassee Island.

10. A temporary equilibrium was then attained. But population was still growing, and state boundaries were becoming more and more rigid until competition became unendurable.

11. In the thirteenth century more of the weaker states were expelled from Eden. These, migrating to the south and east, represent the Developed Mississippian radiation of which Moundville is an example.

12. Finally a population maximum had been reached in the Lower Mississippi Valley. Agricultural techniques could not support a higher

birth rate, and the mortality rate was high, as in all American Indian societies. Of the tribes which had been forced out of the area some, like Aztalan, had radically changed (see Griffin 1960); others, like Moundville, had continued the state organization and had become powerful and important.

13. By 1350 Mississippian states were established throughout the Southeast. These flourished for a century or more, but they were already obsolete. As soon as demographic pressure lessened, they lost their function of protecting against aggression. Internecine struggles for territory gave way to the petty, interstate quarrels that DeSoto witnessed. Religion, no longer necessary for social control, declined and with it artistic and technological skills. Political rigidity actually became detrimental, blocking normal culture change. The populace no longer needed a state to defend it, and we may visualize clans or similar groups gradually breaking off from the disintegrating state.

14. By the sixteenth century the inevitable had occurred. A general cultural devolution was in progress, leading to the dissolution of the Mississippian tradition and the dispersion of its peoples.

To recapitulate, ecological limitations led to demographic imbalance. From this resulted the development of a rigid, centralized state and the migration of those tribes with weaker state structure. When a demographic balance had been attained, the state became superfluous. The Mississippian tradition then eroded like a temple mound in a winter storm, and no one bothered to repair it.

Conclusion

This simplified model is unproven and probably unprovable. If it has any validity, it illustrates that the Mississippian tradition could never have become a civilization. From its inception its course of development was set, and its existence was as much a process of dying as of living. In global perspective the Mississippian tradition may be viewed as an elaborate Formative stage culture (see Willey and Phillips 1958:144-147). Like prehistoric Europe, sub-Saharan Africa, and north Asia, North America was unable to produce a civilization (see Caldwell 1962).

Can we in closing find a moral in this? Perhaps the most striking aspect is the total ineluctability of the process of cultural development, florescence, and decline. No mystic fatalism or teleology is implied; only an entirely natural, impersonal determinism. Cause and effect follow one another in unbroken ranks, so that events are never wholly new or unique but inevitably dependent on the past. This is rather encouraging in times when all things seem random and uncertainty reigns.

NOTES

1. A few red-on-buff sherds were found in the roadway excavation (Wimberly 1956:19). I was unable to determine if these were Hiwassee Island R/Bf.
2. Salt pan sherds are also found in Alabama as far south as Clarke County (DeJarnette 1952:283).
3. But J. W. Griffin (1952:325) considers Fort Walton to be "a development out of Weeden Island."
4. All these estimates are pre-radiocarbon, and perhaps they would be revised downward today.
5. Mound Place Incised was set up as a tentative type by Phillips, Ford, and Griffin (1951:147-148). Since it has a wide distribution in the Southeast (e.g., in the Tennessee-Cumberland area), it does not necessarily indicate Moundville-Lower Valley relationships.
6. See Brown 1926:Chap. 8 for pictures of vessels from the Walls site itself.
7. A puzzling artifact is the wood and copper "mask" discussed in Chap. IV. Although fragmentary, it has some resemblance to the Long Nosed God mask (Williams and Goggin 1956). Williams and Goggin place this artifact on an early level in the Southeast--about the time of Old Village (1956:58-59). However, they point out that it may have some association with the Southeastern Ceremonial Complex, especially in those areas marginally affected by it. The significance of this

artifact at Moundville is uncertain.

8. Dates are those of the Gregorian calendar. To determine the old style date, subtract 13 days.

9. This is also the opinion of James A. Ford (conversation, May, 1963).

10. Some political and ceremonial customs of historic tribes were undoubtedly derived from the Mississippian tradition. Among these might be the Creek square ground (a kind of plaza?), the low platform mounds of the Natchez, the game of chunky, the Creek Tuckabachee plates, the busk ceremony, organized priesthoods, and the caste system of the Natchez and Chitimacha.

11. However, Fairbanks (1950), in reviewing Lamar and Etowah, makes no mention of Lamar--Moundville relationships.

12. In the DeSoto chronicles "Alibamo" is the name of a fortified village in north-central Mississippi. Swanton thinks that the Alabama Indians might have been located here in 1541 (Swanton and others 1939:227, 233).

13. This is not to deny the validity of the concept of climax. Viewed in relation to the general trend of eastern United States prehistory, a Mississippian climax can be said to have occurred (Phillips, Ford, and Griffin 1951:456).

14. At Indian Knoll and the Annis Mound Webb (1946; 1950) found a number of skeletons with projectile points embedded in the bones.

15. Kroeber's estimates of aboriginal population density are misleading (1939:131-146). The Chitimacha, Choctaw, and Natchez are said to have had densities per 100 km.² of 31.90, 21.90, and 19.10,

respectively; yet the marginally agricultural Massachusetts had a density of 105.40 per 100 km.² In measuring tribal territory Kroeber forgot that most of the Lower Mississippi Valley is uninhabitable by anything other than fish and alligators. In the restricted area available for settlement, density of population must have approximated that of rural Java, Japan, or parts of modern New England.

The reader familiar with Kroeber's tour de force, Cultural and Natural Areas of Native North America, will recognize that this hypothesis is diametrically opposite to Kroeber's beliefs about the Eastern Indians (1939:148-150). He thought that population was low, agriculture ineffective, and that there was no idea of a state.

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 AmAnt American Antiquity.
 BAE Bureau of American Ethnology, Washington, D.C.

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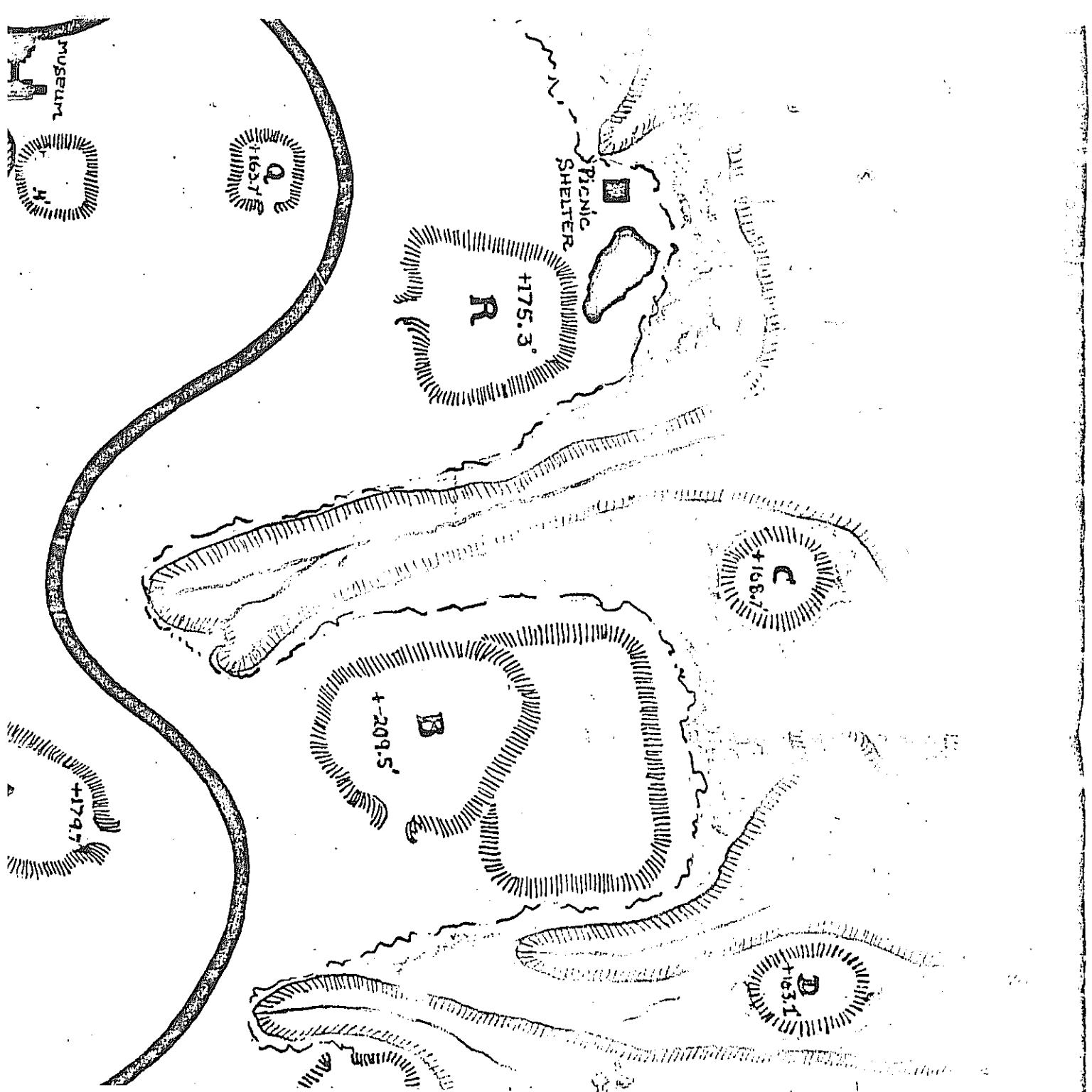
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