

GREENHOUSE: A TROYVILLE-  
COLES CREEK PERIOD SITE  
IN AVOYELLES PARISH,  
LOUISIANA

JAMES A. FORD

VOLUME 44 : PART 1  
ANTHROPOLOGICAL PAPERS OF  
THE AMERICAN MUSEUM OF NATURAL HISTORY  
NEW YORK : 1951







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## ACKNOWLEDGMENTS

THE EXCAVATION of the Greenhouse Site, on which this paper reports, was accomplished under the auspices of the Works Projects Administration and sponsored by the School of Geology, Louisiana State University. Dr. Henry V. Howe, Director of the School of Geology, and Dr. Fred B. Kniffen, Chairman of the Department of Cultural Geography and Anthropology, under whose immediate direction the project was operated, gave all possible support while the field and laboratory work was in progress. Following the interruption of the last war, I transferred from the staff of Louisiana State University to the American Museum of Natural History. The university authorities very generously permitted me to take the data and necessary material in order to complete the unfinished reports on the field-work. I appreciate the fact that their interest has been directed towards the publication of the results of research rather than to the retention of "credit" for their own institution. I also wish to thank the American Museum of Natural History for assuming the responsibility of completing and publishing this study.

More than a hundred people have contributed to this report on the Greenhouse Site excavation. Robert S. Neitzel and Edwin B. Doran supervised the laborers who made the excavations and the clerks who recorded the field data. In New Orleans Gordon R. Willey directed the laboratory which also served as the administrative center for the state-wide project. Outstanding among the laboratory personnel were Paul Fourchey, administrative assistant;

C. H. Hopkins, who classified the ceramics; B. B. Levy, statistician; and John Anglim, artist, who prepared the illustrations of stone and bone artifacts.

In 1938 Gordon Willey and I almost completed a draft for a report on this site. This also included extensive analyses of the data then available on two adjacent areas, the northwest coast of Florida and the Caddoan region to the northwest. Since that date Willey's work in Florida and Alex D. Krieger's researches in the Caddoan region have superseded the conclusions we were able to draw at that time. In addition, it has appeared advisable to rewrite the other portions of the report. As Willey has been occupied with other projects during the past year, I have undertaken the job and must bear full responsibility for the results, without any moral support.

Here at the American Museum of Natural History I have also had considerable assistance, mostly the voluntary service of students in the field of anthropology. Miss Carol Russell drew all the vessel shapes and rim profiles. The maps and stratigraphic graphs were calculated and drawn by Miss Charlotte Fitzpatrick, Mr. Stewart Cattell, Miss Susan Cooper, Miss Constance Peck, and Mrs. Judith Rosenthal.

Miss Bella Weitzner has handled the tedious task of final revision and checking of details in her usual capable fashion, and I must express my indebtedness and appreciation.

JAMES A. FORD

May 23, 1950





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## INTRODUCTION

### ARCHAEOLOGICAL BACKGROUND

THE PREHISTORIC SITE situated in Avoyelles Parish, near Marksville, Louisiana, was first partially excavated and described by Gerard Fowke in 1926.<sup>1</sup> The full significance of this locality and of the material found there developed from Frank Setzler's recognition of the fact that Fowke's material, particularly the pottery, showed many resemblances to the "Hopewell culture" of Ohio. Consequently, in the fall of 1933, Setzler, assisted by the writer, reëxcavated portions of the site, recovering additional material. This further demonstrated the "Hopewellian" character of the ceramics and mound construction features.<sup>2</sup>

This discovery was in itself of considerable significance, but additional importance may be attached to this find because it played a small part in changing the rather episodic and provincial interests that had characterized Eastern archaeology before 1930. Following the publication of the able work of Holmes<sup>3</sup> on the pottery of the Mississippi Valley in 1903, the prevailing archaeological attitude, with a few notable exceptions, had tended towards collecting and, at best, careful description. "Cultures," where analysis had proceeded to such a point, had a tendency to be confined to one state and often to one investigator. Tentative comparisons of wider significance had been attempted but made little impression on the majority of archaeologists. This, among other discoveries that "Hopewell" or "Hopewellian" was not confined to the borders of the state of Ohio, was one of several factors that turned the attention of Eastern archaeologists to broader syntheses of their evidence.

Much work has been done in Eastern archaeology since the early 1930's, and the Marksville Site is no longer considered an isolated outpost of Ohio Valley Hopewellian or particularly exceptional in the prehistory of the Lower Mississippi Valley. Other cultural phases that show clear Hopewellian characteristics have been defined in various parts of the Southeast: the Copena culture of the Ten-

nessee River Valley,<sup>4</sup> the Santa Rosa-Swift Creek of the northwest coast of Florida,<sup>5</sup> and Hopewellian materials, notably ceramics, have also been found on sites in Arkansas, Missouri, and Oklahoma. Across the upper drainage of the Mississippi, Hopewellian-related cultural evidence has been found from western New York State to the vicinity of Kansas City in Missouri. The Hopewellian cultural stage, or, as some would have it, the Hopewellian time period, is a well-recognized phase in the development of the prehistoric cultures of the eastern United States, although there is not yet any general agreement as to the significance of the great geographical spread of certain of the peculiar cultural elements such as pottery.<sup>6</sup>

The Marksville Site near the mouth of the Red River in Louisiana is not an isolated bit of evidence of the occurrence of Hopewellian in the Lower Mississippi area. In his preliminary reports Setzler pointed out that C. B. Moore had illustrated pottery of the Marksville types from the near-by Saline Point and Laborde Place sites<sup>7</sup> and from Anderson Landing<sup>8</sup> in Sharkey County, Mississippi. Winslow Walker found similar material at the base of the large, destroyed mound at Jonesville, Louisiana,<sup>9</sup> and I described and illustrated Marksville pottery types in a stratified site near Sicily Island in Catahoula Parish, Louisiana.<sup>10</sup>

In addition, surveys that Moreau Chambers and I began in west-central Mississippi in 1927 and that I made later in Louisiana showed that the generalized Marksville ceramic complex was present in the refuse at a number of sites well scattered over the regions covered. As a result of this survey work a chronology based on ceramics was roughed out. The portion that applied to the alluvial valley in Louisiana north of the Red River was as follows<sup>11</sup>:

<sup>4</sup> Webb, W. S., 1939, 188-201.

<sup>5</sup> Willey and Woodbury, 1942; Willey, 1949.

<sup>6</sup> Setzler, 1940; Ford and Willey, 1941; Griffin, 1946.

<sup>7</sup> Moore, 1913, 15, 72-74, Pl. 2.

<sup>8</sup> Moore, 1908, 586-588, Figs. 3-5.

<sup>9</sup> Walker, 1936.

<sup>10</sup> Ford, 1935.

<sup>11</sup> Ford, 1936.

<sup>1</sup> Fowke, 1928, 410-434.

<sup>2</sup> Setzler, 1933a, 1933b.

<sup>3</sup> Holmes, 1903.

Caddoan-Natchez (historic)  
Coles Creek  
Marksville

This rather sketchy outline of the prehistory of a part of northeastern Louisiana was intended to serve as a guide for an excavation program that would reveal more complete information on the ancient cultural periods and gain more control over the temporal aspects of the history.

Little progress was made towards filling in this outline until opportunity for excavation on a rather extensive scale was offered in 1938 when Louisiana State University sponsored an archaeological project of the Works Projects Administration. I planned this program and was in charge of it. The project operated two field parties, each consisting of two trained archaeologists in charge of 50 men from the relief rolls of the localities where sites were to be excavated. The directing and coordinating unit was the laboratory which for most of the period of project operation was located in New Orleans where people on relief rolls who had the necessary technical skills were available. This laboratory was directed by Gordon R. Willey for the first two years of the project and by George I. Quimby for the last 22 months. The excavation unit which did the work that is reported on in this paper was under the direction of Robert S. Neitzel and Edwin B. Doran. The entire project operated efficiently and produced scientific information in detail and quantity to a degree that was not unusual for the similar archaeological projects scattered over the Southeast at that time, but that had previously been unknown in the East. This was due both to the skill and patience of the trained archaeologists in immediate charge and to the interest of the people on relief rolls, who, although they were not always certain as to what they were doing, or why, felt that they were engaged in something worth while.

The first excavation undertaken by this project and the first report completed was that of a conical burial mound, without any evidence of an accompanying village site, located in La Salle Parish, only 27 miles due north of the Marksville Site.<sup>1</sup> This mound proved to be somewhat comparable in both structure and content to Mound 4 of the Marksville Site

excavated by Fowke and later by Setzler. It revealed additional information on what seems to be an early part of the Marksville Period as it is defined at present. This was the work of the field unit directed by Arden King and William T. Mulloy. The Greenhouse Site excavations by Neitzel and Doran, described in this paper, were begun a few weeks after the project was initiated and were continued at this site and at others in the immediate vicinity for 18 months. The third series of excavations, undertaken later, dealt with an earlier and previously undefined cultural complex which has been named "Tchefuncte culture." Most of the sites of this early period were in the southern part of Louisiana, although there was evidence that this early cultural phase was also present in the region at the mouth of the Red River with which we are concerned at present.<sup>2</sup> The fourth step in the excavation program was the digging of several sites not far from Baton Rouge, Louisiana, which revealed a late phase of what had been referred to as the Coles Creek complex, and one site of the historic Bayougoula tribe. George I. Quimby, at present of the Chicago Natural History Museum, who was in charge of the laboratory unit when this work was done, has reported on this last phase.<sup>3</sup>

The excavation program has made possible the expected subdivision of the rough time scale that I presented in 1936.<sup>4</sup> New classificatory terms have been interposed between each of the time-period names previously set up, thus giving a more accurate measure of the chronology in verbal terms. Of considerably more importance, however, is the fact that the stratigraphic data have produced a picture of quantitative change of ceramic styles. The sequence of period names "Marksville," "Coles Creek," and "Natchez" presented in 1936 was actually the limit of our control over ceramic chronology in this region at that time. While we were aware that these were probably gross divisions of a changing cultural continuum, this could not be demonstrated and had no more validity than a reasonable assumption deduced from experience with culture history in other areas where details were better known. Some of the ignorance that makes such a neat and "air-tight" classification possible has now been

<sup>1</sup> Ford and Willey, 1940.

<sup>2</sup> Ford and Quimby, 1945.

<sup>3</sup> Quimby, 1951.

<sup>4</sup> Ford, 1936.

dispelled, and the expanded list of period names can be presented as nothing more than convenient labels for short segments of a continually changing culture history.

The old and new period names correlate as follows:

PERIODS AS NAMED IN 1936	PERIODS AS NAMED AT PRESENT
Natchez	Natchez-Bayougoula
Coles Creek	Plaquemine
	Coles Creek
Marksville	Troyville
	Marksville
	Tchefuncte

This readjustment of the named divisions for the time scale in this area seems to have puzzled a few of the archaeologists working in the Mississippi Valley, even some of those who have been best informed as to the field-work which led to this rearrangement. Complaints have been made that pottery types that were formerly classified as Coles Creek in age are

now assigned to the Troyville Period. Discussion develops the opinion that if this latest chronological arrangement is correct then the former must have been in error. The adoption of new names for all the periods in the more recent arrangement may have avoided some, but not all, of this confusion. These serious and earnest seekers after truth really believe that we have discovered these periods and that this is a more or less successful attempt to picture the natural divisions in this span of history. This is obviously an incorrect interpretation. This is an arbitrary set of culture chronology units, the limits of each of which are determined by historical accident, and which are named to facilitate reference to them. Had the Marksville Site excavated by Fowke and Setzler produced cultural evidence from the middle of the span of time we now call "Marksville" to the middle of the period named "Troyville," then it is certain that the arbitrary lines we have drawn in this history would have been differently placed.

## REVISION OF FOWKE'S SITE DESCRIPTION

In the report on his work 1 mile east of Marksville, Louisiana, Fowke published a map and a description of the earthworks that extend for more than a mile along the bluff that forms the eastern edge of the Avoyelles Prairie, a fragment of the most recent of the Mississippi River terraces. The descriptions are quite detailed, and the map is excellent in most respects.<sup>1</sup> However, for present purposes the designation of all of the mounds and earthworks in this region as one site has been too inclusive. Both Fowke's and Setzler's excavations, as well as surface collections, have shown that the occupation in several parts of this extensive group are of different ages. Accordingly, we have rearranged both the site nomenclature and certain of the mound designations in what Fowke has described as the "Marksville Site."

Fowke's Mound 1 is located almost 2000 feet to the south of the principal enclosure and the other mounds on the Marksville Site. Both the surface collections and our fairly extensive excavations at that point demonstrated that

the mound was later than the central part of the Marksville Site. For this reason we have called this the Nick Site (Av-22).<sup>2</sup>

We have retained the name of Marksville Site (Av-1) for the principal C-shaped earth embankment that Fowke designated as Enclosure "A," the circular embankment that almost touches it on the south, and the mounds that he numbered 2 to 6.

Most of Fowke's artifacts of Marksville type came from the steep conical Burial Mound 4; a reexcavation of this mound was the principal objective of Setzler's work at the site. In addition Setzler and I dug in Mound 6 and in a rather rich midden deposit to the east of Mound 2. All of the material we recovered from here was typical of that now defined as the Marksville culture. Additional excavations about Mound 2, made by the Louisiana State University project at a time when work in the lowlands was impossible owing to a spring flood, yielded further evidence for dating this enclosure in the Marksville Period. This work will

<sup>1</sup> Fowke, 1928, Pl. 64. This map was also reproduced by Setzler, 1933b, Fig. 1. As it is available in these two sources, it does not appear necessary to include it here.

<sup>2</sup> In the Louisiana survey, sites were numbered in sequence after an abbreviation of the parish (county) name. "Av" stands for Avoyelles Parish.

be reported in another paper.

At present we do not wish to assign any designation either to Fowke's Enclosure B or to the mounds scattered along the top of the bluff to the north of the Marksville Site that he listed as Nos. 7 to 12. None of these have been investigated since they were examined by Fowke, and his records do not make their affiliations clear. In the bottom land directly to the east of Mound 12, Fowke's map shows a Mound 13. This had been entirely leveled when Fowke made his survey, and he quotes a local report that it was once 4 feet high. Today only cultural refuse remains to mark its location.

The portion of Fowke's "Marksville Site" with which the present paper deals is composed of his Mounds 14 to 20. This group is arranged around a small plaza or court. The three principal structures large enough to retain something of their original shape are clearly rectangular. This arrangement, as well as the rectangular shapes, contrasts somewhat with the irregular placement of the mounds of the Marksville Site proper; in addition, surface collections from the abundant refuse here

showed that this occupation was later than the refuse and burials in the enclosure on top of the bluff. Accordingly we have called this the Greenhouse Site (Av-2), naming it after the owner of the land, Alfred Greenhouse. Also, for added convenience, we have changed the designations for the mounds, giving them letters from "A" to "G," rather than the numbers by which Fowke described them. The two descriptive systems compare as follows:

FOWKE'S MOUND No.	OUR MOUND DESIGNATION
14	A
15	B
16	C
17	D
18	E
19	F
20	G

Fowke's map<sup>1</sup> of these mounds is not quite accurate, and at several minor points his description of the surface features of the Greenhouse Site do not tally with the contour map we made in 1938 (Fig. 1).

<sup>1</sup> Fowke, 1928, Pl. 64.



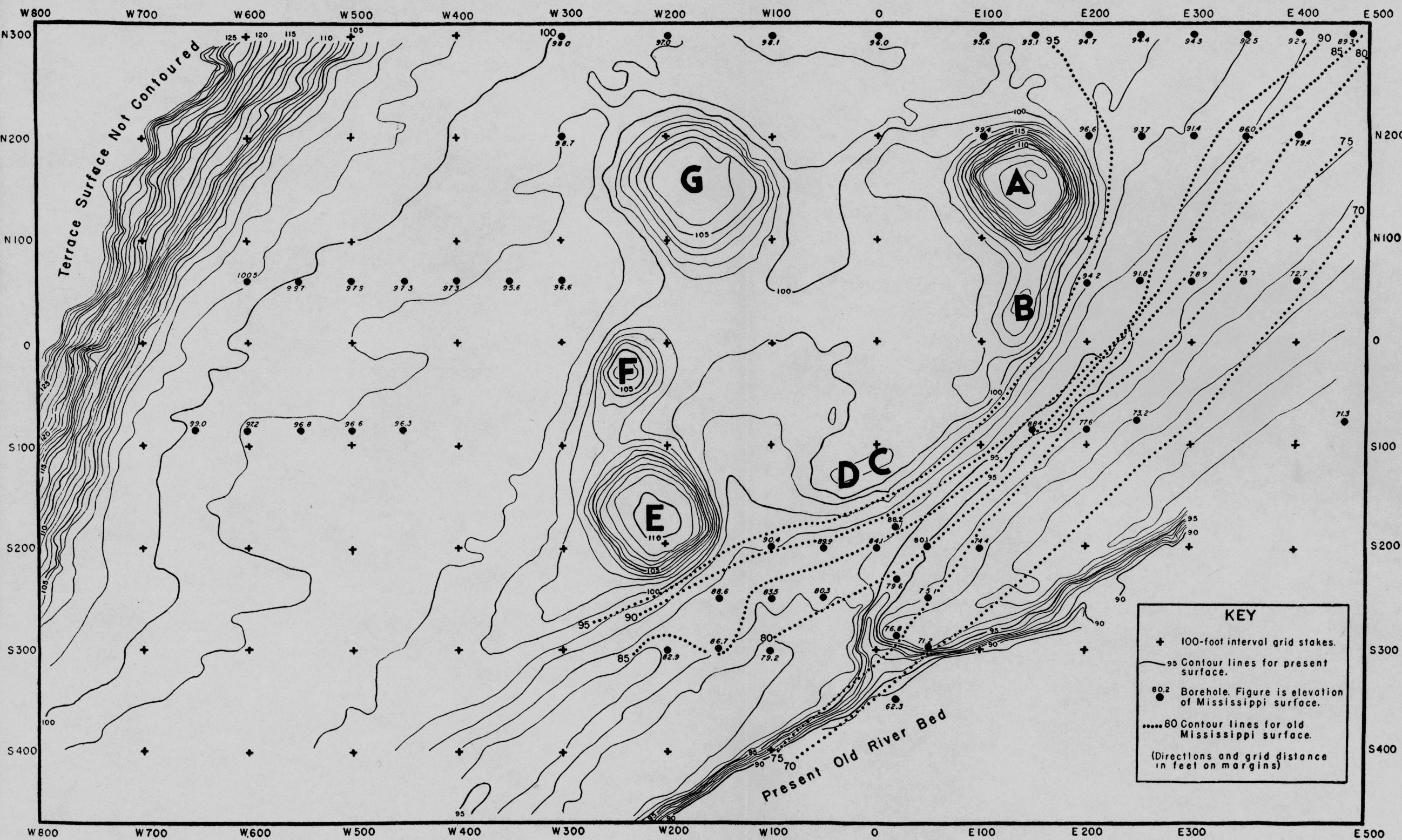


FIG. 1. Contour map of the Greenhouse Site and immediate vicinity. Crosses mark 100-foot grid stake locations; their distances and directions are indicated at the borders of the figure. Present ground surfaces are shown by solid contour lines at 1-foot intervals. Circles mark the locations of bore holes put down to discover

the elevation of the old Mississippi River deposited silts underlying the present surface soils of Red River origin. Figures above each circle give the elevation of this contact line. Heavier broken contour lines east of the site are arranged at 5-foot vertical intervals and represent the old surface as it existed when the site was occupied.



## PHYSIOGRAPHY RELATING TO THE HISTORY OF THE GREENHOUSE SITE

THE SEVEN FAIRLY SMALL MOUNDS grouped around a court that comprise the Greenhouse Site are located in bottom land 300 feet east of the steep bluff that marks the eastern edge of the Avoyelles Prairie segment of the Prairie Terrace (Fig. 1). At present the site is subject to overflow from the backwaters of the Red River, and it seems probable that an annual flooding was also the normal state of affairs in prehistoric times. A short distance to the east is Little River, an extension of Old River, a sluggish and swampy stream that holds water the year round but has no current except in times of flood. This stream extends southward in a broad curve and lies at the foot of the low bluff along which the Marksville Site (Av-1) and the Nick Site (Av-22) are arranged. It is a remnant stream occupying an old Mississippi River channel, as is described below.

Our excavations in the Greenhouse Site revealed an interesting condition that promises to assist in relating its occupation to the physiographic history of the Mississippi River and its tributary streams within very broad limits. This stems from the fact that all of the evidences of occupation occur in gray, brown, and tan silts deposited by the Mississippi River. The mounds were made of these same soils, and nowhere in the cultural deposits were there any traces of the distinctive red sand and clay that are carried and deposited by the Red River. Typical Red River soils were found overlying the cultural deposits. Except for the higher mounds, which stand above the level of flood water, the surface is covered with fine reddish clay varying in thickness from 6 inches to 1 foot (see Pl. 2a). This capping stratum is free from cultural material, except in places where it is so thin that plowing has disturbed the underlying soils.

At present the Red River flows north of the Avoyelles Prairie and at its nearest point is only 3 miles north of the Greenhouse Site. During the spring rise of the Mississippi, the Red is forced to overflow its banks, and its waters enter Old River through Bayou Rouge and Spring Bayou, two small channels that normally drain the natural levees of the Red. As the water rises even higher, all of the lowland east of the Avoyelles Prairie is covered

with backwater from the Red, and sluggish currents flow through Old River and other streams to the east as water from the Red finds its way to the Atchafalaya River. This happened in the spring of 1939, forcing Neitzel to discontinue work at the Greenhouse Site for six weeks. There is every reason to suppose that the deposition of Red River silts is continuing all through this lowland (Pl. 1).

The first trench that Neitzel made at Greenhouse ran from east to west across the site and revealed the soil condition described above. It also showed that immediately to the east of the plaza the deposits made by the Red River changed from clays to rather coarse sand stratified with clay, and the contact line between Mississippi and Red River soils dipped sharply. It was impossible to follow this more than 6 feet below the surface by trenching, so bore holes were made with a 4-inch soil auger at 50-foot intervals in several directions from the survey grid that had been staked out over the site. The locations of these holes are shown on the contour map of the site and the immediately surrounding terrain (Fig. 1). Small figures placed above each bore-hole symbol indicate the top of the Mississippi deposits in terms of the assumed bench mark for the site which was given an arbitrary elevation of 100 feet. Contours for the buried Mississippi surface are shown by heavy broken lines; the lighter contour lines indicate the present surface. It will be noted that immediately east of the plaza area the Mississippi surface slopes sharply downward, and at a distance of about 200 feet to the east, under the present Old River channel, it is about 25 feet below the present ground level.

The material comprising the fill deposited by the Red River consisted of interbedded clay and sand of the unmistakable reddish color that characterizes this stream. In about one third of the bore holes located near the eastern edge of the site, black midden soil containing potsherds and bits of charcoal were brought up by the auger from the old Mississippi surface as much as 26 feet below the present ground level.

It proved impractical to trace this contact line farther eastward and deeper than is indicated in Fig. 1, for the fill deposited by the

Red River was saturated with water, and caving made drilling by hand tools impossible for any greater depth. However, enough work was done to demonstrate that at the time the Greenhouse Site was occupied there was an open lake of Mississippi River origin immediately to the east of the site and that the Red River did not bring in the alluvium that filled this lake and spread a thin cover over the site until after midden deposition had ceased.

In order to explain the implications of this sequence of events it is necessary to review briefly a portion of the recent history of the adjacent parts of the alluvial valley of the Mississippi. This has recently been worked out in remarkable detail by Dr. Harold N. Fisk of the School of Geology, Louisiana State University, in two reports published by the Mississippi River Commission of the United States Army Corps of Engineers and the Louisiana Geological Survey.<sup>1</sup>

Dr. R. J. Russell of the School of Geology, who has made an intensive study of the lower delta of the Mississippi, has estimated that over 2,000,000 tons of sediment per day are discharged into the Gulf of Mexico by the Mississippi.<sup>2</sup> The accumulation of this load is causing a relatively rapid sinking of the delta region, and a tremendous geosyncline has been in formation for a number of geological epochs.<sup>3</sup> In compensation for this large displacement of the surface of the earth, the land inland from the relatively stable hinge lines is being forced upward at a somewhat slower rate. Marksville lies in a region that has been subjected to uplift through the latter part of geological history, at least as far back as the later stages of the Pleistocene.

The formation of the ice sheets during the Pleistocene removed water from the ocean, lowering sea level so that the gradient of the Mississippi (as well as other major streams) was increased, and the river cut a deep and wide valley in the sediments that had previously been deposited. As sea level rose again with the retreat of the ice, the sediments carried by the river filled up this valley. After sea level was stabilized, a condition was achieved in which the Mississippi wandered back and forth across its alluvial plain, adding only a small

amount of deposit to this floor, mainly in the form of natural levees. This is the situation at present.

During the five cycles of valley cutting and fill that mark the Pleistocene and Recent history of the Mississippi, the slow uplift process described above was in progress. Each time the sea returned to present level and the glacial stage valley was once more filled with sediments, the remnants of the preceding interglacial flood plain left along the sides of the valley during the cutting stage were uplifted from 40 to 100 feet and are now seen as terraces.<sup>4</sup>

Avoyelles Prairie, on which the Marksville Site (Av-1) is located, with its eastern edge forming the low bluff 300 feet to the west of the Greenhouse Site (Av-2), is a portion of the Prairie Terrace, the latest of the Pleistocene series. Its surface, 35 feet above the present flood plain, is the surface of the fill made by the Mississippi in the Peorian interglacial stage. Air photographs of this surface show scars of meanders corresponding in width and arc with those of the present Mississippi. The surface below the Greenhouse Site is the Recent valley fill that has been deposited since the retreat of the last ice sheet of the Late Wisconsin glacial stage.

Only the last 2000 years of the involved history of the channel changes of the Mississippi and its tributaries concern us here, a period well after the sea had returned to its present level and the Mississippi became a meandering stream flowing down a gently sloping valley floor. Considerably before this time the river was making its principal deposits by building natural levees as silt load was dropped by the decelerating water as it left the main channel during floods. In the Lower Valley the natural levees are usually about 20 feet high and extend a mile, more or less, from either bank. They are highest and composed of the coarser material immediately on the banks and slope away from the channel. Finer clays are deposited on the back slopes.

As long as the Mississippi stays in the same general course, the process of ballooning of meanders and a slight downstream progression of the loops tend to elevate the area by a complex superposition of natural levee deposits. In time the entire area of the meander belt is raised substantially above the valley floor on

<sup>1</sup> Particular reference is made to Fisk, 1940 and 1944.

<sup>2</sup> Russell, 1936, 159-162.

<sup>3</sup> Fisk, 1944, Table 11.

<sup>4</sup> Fisk, 1944, 67-69.



either side. When this has progressed to the point where the water of the main channel is offered a steeper gradient to the sea by the swampy areas outside the meander belt, the river abandons the meander belt at a critical point and runs through the lowlands. The new channel builds up a new meander belt which will in turn be abandoned when it becomes mature. By this process segments of the Mississippi have swung back and forth across the alluvial valley since present sea level was restored.

Fisk has traced the sequence of Mississippi River courses on the surface of the present flood plain from aerial photographs. Basing his estimates on meander progression recorded on maps dating from 1765 to the present, he believes he has identified the location of the main stream and its principal tributaries at 100-year intervals for the past 2000 years.<sup>1</sup> From Stages 1 to 3 the meander belt came down the center of the alluvial valley immediately north of the area in which we are interested, following in a general way what is now Walnut Bayou, Tensas River, and Black River. It passed not far to the east of the Avoyelles Prairie, and emptied into the Gulf of Mexico through Bayou Teche, at present a small stream which lies to the west of the modern Mississippi. The Arkansas River flowed down the western side of the alluvial valley and joined the Mississippi immediately above the Avoyelles Prairie, while the Red flowed to the west of this segment of the Prairie formation and joined the Mississippi some miles to the south.<sup>2</sup> This and the following described details of river history are shown in Fig. 2.

In Stage 3 a meander of this Mississippi course swung against the eastern side of the Avoyelles Prairie, cut the arcuate bluff, along the top of which the Marksville (Av-1) and the Nick (Av-22) sites are located, and deposited the soil at the foot of the bluff on which the Greenhouse Site was built. The lunate scars left as this meander ballooned outward towards the bluff show clearly on the aerial photographs of the region as well as on the Marksville, Louisiana, quadrangle map. In Stage 4 the Mississippi abandoned the portion of its meander belt immediately east of Marksville and swung over to the eastern side of its flood

plain near the present course. This left the Arkansas River with its then tributary, the Ouachita, flowing in the old channel. As is usual, this smaller stream tended to follow the outside of the meander loops and ran close to the bluff of the Avoyelles Prairie which had been carved by the parent stream. However, according to Fisk, "The Arkansas was not able to maintain this channel and soon shifted out of it in favor of a more direct junction than the Mississippi."<sup>3</sup> The exact details and the position of the Arkansas River mouth have been obscured by later stream movements.

It appears, then, that what is now called Old River and Little River at the foot of the bluffs and immediately to the east of the Marksville and Greenhouse Sites was the channel of the Mississippi in Stage 3; was the channel of the combined Arkansas and Ouachita in Stage 4; and when abandoned by the Arkansas soon after Stage 4 it remained an open lake. There is no evidence bearing on the point, but it is probable that during the short time the Arkansas occupied the channel after the Mississippi moved eastward, it filled in the inner part of this meander curve, leaving a lake the width of this smaller stream, somewhat narrower than the lakes resulting from unchanged Mississippi meanders. Neither the Marksville Site (Av-1) on the bluff nor the Greenhouse Site (Av-2) in the flood plain could have been settled before the development of the Stage-3 conditions. The bluff on the edge of which the Marksville Site is situated was carved by the Mississippi at this time, and the flood-plain soils below the bluff where the Greenhouse Site is located were laid down by the Stage-3 Mississippi channel. After this time the locality must have been ideal for Indian settlement. Even after the Arkansas-Ouachita abandoned this old Mississippi course soon after Stage 4, the channel was left as an open lake adjacent to high ground, which would provide refuge from floods, and it was not until later, when the Red River threw fill into this lake, turning Old River into the sluggish, swampy lake that it is today, that the vicinity would have become less desirable.

When the Mississippi meander belt swung to the eastern side of the alluvial valley at the close of Stage 3, the Red River flowed well to the west of the Avoyelles Prairie and on down

<sup>1</sup> Fisk, 1944, Pl. 22.

<sup>2</sup> Fisk, 1944, Figs. 48-50.

<sup>3</sup> Fisk, 1944, 45; also 1940, Fig. 4.

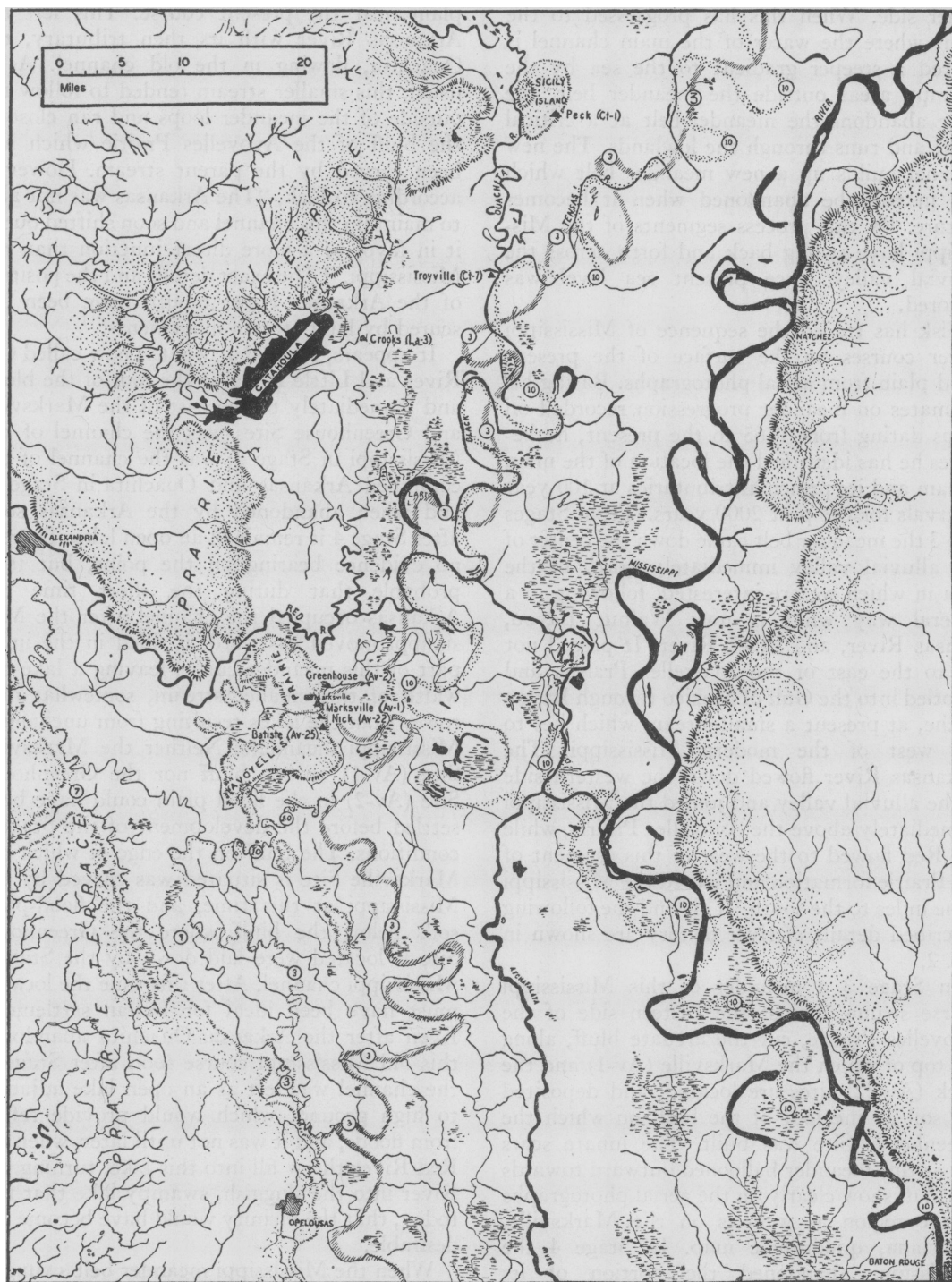


FIG. 2. Some recent channel positions of the Mississippi and Red rivers. Modern streams shown in black. Selected prehistoric channel positions are shaded, and small numbers in circles identify stages according to Fisk's chronological estimates. Selected archaeological sites also shown. Redrawn from Fisk, 1944, Pl. 15, Sheets 3-4.

the portion of the old course, now called Bayou Teche, to the Gulf. In Stage 8 the Red abandoned the old Teche course and started running through the gap in the Prairie Terrace that forms the southern bounds of Avoyelles Prairie. From this time until Stage 15 it followed the course marked by the present Bayou Des Glaise along the outside of the natural levee formed by the Old River meander of the Mississippi in Stage 3. It made a junction with the Stage-8 Mississippi near Bordelonville, Louisiana, only 10 miles to the east of Marksville. Inevitably the Greenhouse Site must have been covered with water from the Red during floods while the rivers were in this position. However, this was probably backwater. There is no evidence that a portion of the stream was diverted through the Old River course in front of the site, a situation that would have made possible the deposition of any quantity of sediment, or particularly of coarse-grained sediments such as compose the fill penetrated by the bore holes to the east of the site. Evidently the gradient was sufficiently steep to permit the Red to remain very close in the Bayou Des Glaise course.

The next major event in the history of the Red was its diversion from all of the course that lay to the south of Alexandria, Louisiana, to one that ran through the narrow gap that had been formed at an earlier date in the Prairie Terrace just north of Avoyelles Prairie. This diversion occurred in Stage 15.<sup>1</sup> After it adopted this course the Red passed not more than 3 or 4 miles to the north of the Greenhouse

Site and the old lake on which it is located. Probably the Red immediately began to throw a part of its current through Old River in time of flood. There is no suggestion that the main stream ever passed through here. A portion of the current during flood time through the diversionary channels that still operate, Spring Bayou and Bayou Rouge, would have been enough to effect the filling that has been described.

The physiographic implications then are that the earlier Marksville Site could not have been settled before Fisk's Stage 3, at which time the bluff on which it is located was carved, and that the later Greenhouse Site was abandoned before Stage 15.

Fisk has attempted to locate channel positions at 100-year intervals, estimating back from historic activity of the Mississippi.<sup>2</sup> The accuracy of these intervals (minutely small in geological terms) is of minor importance to Fisk, since he is primarily concerned with the sequence of events. Archaeological chronology, however, deals with small intervals of time, and it becomes an important question whether or not the intervals are really 100 years long. At the moment, we can only accept Fisk's estimates since they offer the best basis for dating in the Mississippi alluvial valley. If, therefore, we tentatively accept Fisk's dating, then the Marksville Site was occupied some time after 300 A.D. and the Greenhouse Site was abandoned before 1500 A.D. This is a long time interval that leaves plenty of leeway for guessing the actual period of occupation.

<sup>1</sup> Fisk, 1944, 45.

<sup>2</sup> Fisk, 1944, 45.

## DESCRIPTION OF THE GREENHOUSE SITE

WHEN NEITZEL BEGAN WORK at the Greenhouse Site in September, 1938, the area had not been in cultivation for several years and was overgrown with tall weeds. Mound A was covered with bushes and apparently had never been plowed, except on the flat top, but all the other mounds were furrowed. The court about which the mounds were arranged measured roughly 350 feet southwest to northeast and 200 feet at right angles to this. The western edge of the site is 300 feet to the east of the foot of the Avoyelles Prairie bluff, and the land between is slightly lower than the level of the court between the mounds (Fig. 1). The present surface consists of Red River deposits. As shown by tests with bore holes, the Mississippi silts that formed the surface at the time of occupation are at the deepest 3 to 4 feet. The site was separated from the bluff at the time it was occupied by a broad swale, 4 to 5 feet beneath the level of the plaza, a depression that may be partly artificial. This area may have been used as a source of material for constructing the mounds. However, it is also apparent that the site occupies the summit of a fragment of narrow natural levee related to the old buried channel, and the downward incline of the ground towards the bluff is, in part, the levee back slope. The narrowness of this levee fragment seems to identify it with the Arkansas-Ouachita rather than the Mississippi River. The shallow swale must have held water at certain periods of the year and possibly gave some military protection, but the excavations revealed nothing that resembled an intentional moat.

Immediately to the east of the plaza another shallow depression runs northeast-southwest paralleling Old River. Bore holes have shown that the side of this depression nearest the site is the bank of the buried channel of Mississippi origin. The rise of the ground towards the banks of Little River is the back slope of the narrow natural levee of this small tributary of Red River. At the time the site was constructed a lake of considerable width lay adjacent to this edge of the site, as is described above.

The arrangement of the mounds that form the Greenhouse group are shown on the map (Fig. 3; see also Pl. 1). The few discrepancies

between Fowke's map and ours can be explained by the small scale at which Fowke worked and by the fact that he was more concerned with the mounds on the bluff.

Fowke's Mound 13 is shown on his map as 1000 feet north of the other mounds of the Greenhouse Site. There is no evidence of a mound there now, and it had already been destroyed when Fowke worked at Marksville. It was reported to have been about 4 feet high.<sup>1</sup> An area of an acre or so in this vicinity is strewn with potsherds, and from a surface collection it is evident that this structure was related to the Greenhouse Site rather than to the earlier Marksville Period sites on the bluff. Neitzel did not excavate in this vicinity.

Mounds A and E, at the northeastern and southwestern ends of the plaza, respectively, are the largest. Measuring about 120 feet square at the base, Mound A rises 12 feet above the plaza level. Its flat top is about 80 feet square. Mound E is very nearly the same in all dimensions, but is only 10 feet high and the top is not quite so flat. It has been damaged more by cultivation than Mound A.

Mound G, on the northwestern side of the plaza, is the only other one of the group that retains evidence of pyramidal shape. It has been altered by cultivation and at present is about 160 feet on a side at the base and 6 feet high.

These three prominent mounds, A, E, and G, form a rough right-angled triangle, the hypotenuse of which lies along the bank of the buried lake. In between are smaller rises, to which Fowke gave numbers and we have assigned letters. One of these, Mound F, was certainly originally rectangular in shape; that the others were so is less certain.

Mound B is a small rise about 1 foot high, a short distance south of Mound A, with which it is connected by a low ridge 3 feet high and 40 feet wide. Fowke described this mound as 5½ feet high. A 12-foot wide trench which he ran into it undoubtedly is the cause for its having become such an inconspicuous feature at the time Neitzel began work.<sup>2</sup> In the course of his excavations Fowke found midden debris and

<sup>1</sup> Fowke, 1928, 429.

<sup>2</sup> Fowke, 1928, 430-431.

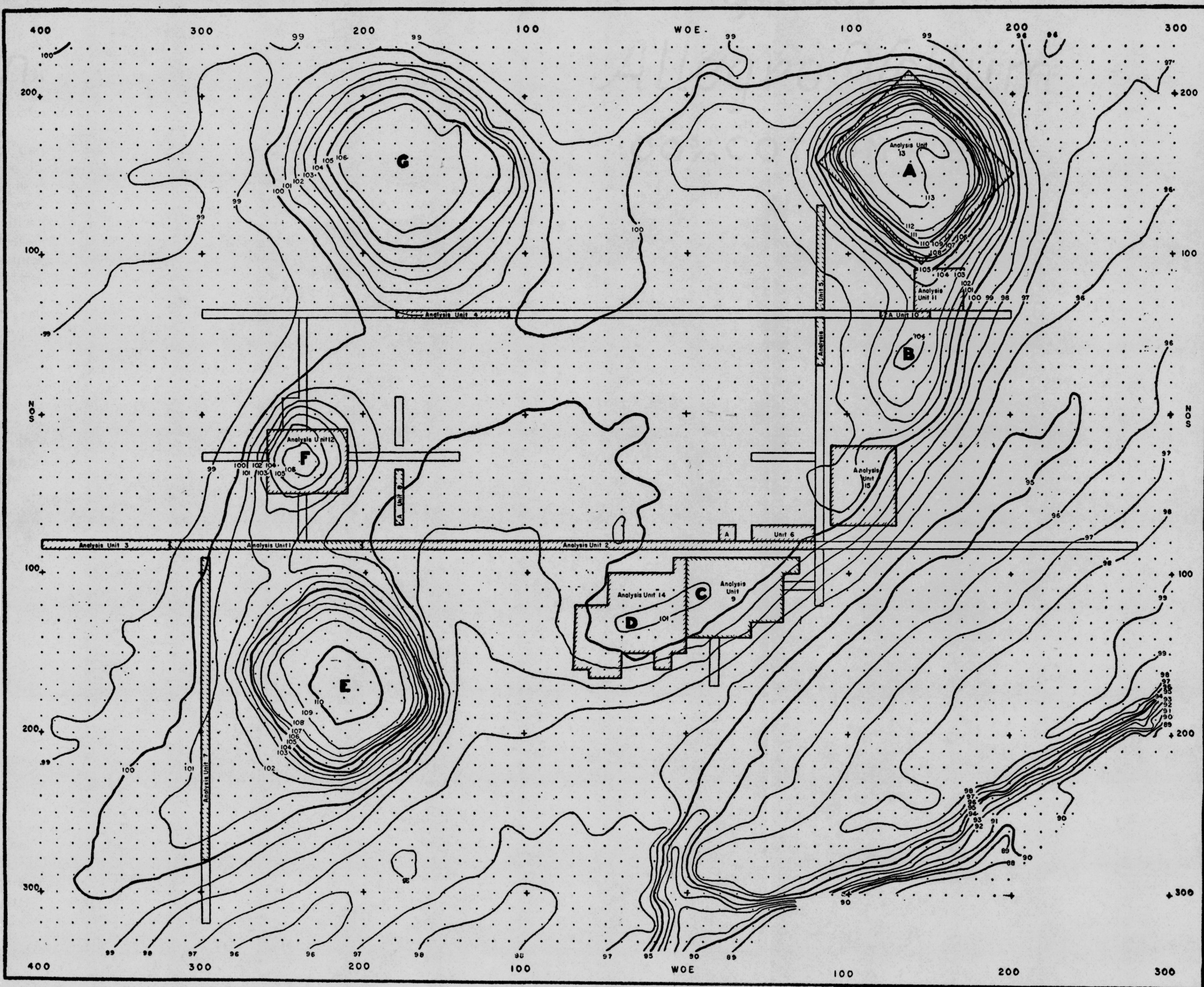


FIG. 3. Map of the Greenhouse Site showing the control grid, areas excavated, and locations of the Analysis Units. The site bench mark is in the center of the plaza area (o-o stake). Dots represent stakes placed at 10-foot intervals, and 100-foot interval stakes are shown as crosses. Distances are indicated about the margins of the map.





one of the curious pits with deeply fired walls that is described below.

Mounds C and D rise only 1 foot high on a low ridge that runs parallel to the old lake bank. They were excavated by Neitzel with results that are detailed below.

Mound F, located between Mounds E and G, is at present about 5 feet high and 60 feet in diameter, but it shows every sign of having been cultivated extensively. There is little doubt but that the original shape was rectangular.

## EXCAVATION AND RESULTS

### SURVEY GRID FOR EXCAVATION CONTROL

NEITZEL FIRST CLEARED the Greenhouse Site of bushes and tall weeds—no small task. Then a point in the plaza, midway between the mounds, was selected to serve as a bench mark for the survey grid to be set up to control excavation and record the locations of discoveries. As the simple system we used in Louisiana differs slightly from the method generally applied in the Southeast, it seems worth while to describe it.

A bench mark was permanently fixed to indicate both position and level and was assigned an arbitrary elevation of 100 feet. All the work done at the site was referred to this arbitrary elevation.<sup>1</sup> From the Greenhouse bench mark lines were run north-south and east-west true, on which stakes were set at 100-foot intervals. Its distance from the bench mark was marked on each stake with red crayon: N100, N200, E400, etc. Next, stakes were set by transit in a 100-foot grid, not only covering the site but all the adjacent area in which it was expected that it would be necessary to dig. These stakes were marked with their directions and distances from the north-south and east-west base lines: N200-E400, S300-W100, etc. This formed a primary coordinate grid for the site; from this

stakes were set at 10-foot intervals by tape as they were needed. On the sides of the mounds and along the steeper slopes stakes were placed at 5-foot intervals. Each stake carried a designation something like this: S320, W170. Levels were taken for the stakes of the 100-foot interval grid and as necessary were secured on the stakes of the 10-foot interval grid. These were marked on the stakes in blue crayon; in addition, a copy of the level data was always at hand during field-work. The contour maps that are illustrated for the site were made from the elevations of the grid stakes.

This system for control of archaeological excavation seems to have several advantages. First, it can be extended in any direction without complication or risk of confusing the records. Second, the system is so simple that it hardly requires explanation and is easily understood by workmen in the field as well as assistants in the laboratory. All finds can be readily referred to the site bench mark by measurements from the nearest stakes and are simply designated as, for example, West 322.6, North 239.2, Elevation 97.1. Sections of trench can be outlined by their boundaries in this fashion: South 80–85, West 230–240.

### PHYSICAL STRATA AND CULTURAL CONTINUITY

In the course of his work at Greenhouse, Neitzel kept careful records of all changes and demarcation lines that could be traced on the walls of the trenches. Generally these drawings are at 5-foot intervals, and the accumulation of drawings on long rolls of graph paper and verbal descriptions in notebooks is truly impressive. These records have been of great assistance in the analysis of the data from the

site, as is mentioned frequently in the following pages. However, excavation profiles are reproduced in this paper only where this sort of evidence seems to have been significant in interpreting the history of the site. The physiographic situation is one instance, and illustrations of sections of the intentionally constructed mounds are another.

### EXPLORATORY TRENCHES AT SOUTH 80–85 AND NORTH 60–65

Neitzel and Doran began excavation late in October, 1938, after the preliminary work of

<sup>1</sup> Neitzel later obtained the sea-level elevation of this point by running levels to the Primary Bench Mark "Avoyelles" located in the town of Marksville. However, these data have been mislaid. The area in which the Site BM is located lies between the 45- and 50-contour lines on the Mississippi River Commission quadrangle "Marksville."

clearing and setting survey stakes had been completed. Their crew varied between 30 and 50 men for the 12 months in which they worked at the Greenhouse Site. It was well organized, with competent foremen and a small clerical staff who were assigned the various phases of the work of recording data and maintaining the necessary engineering controls.

The first task was to dig two east-west exploratory trenches completely across the site. These were so located that they touched the bases of the principal mounds, but it was not intended that they should cut through any of the mound structures. The purpose of these trenches was to secure samples of the refuse that derived from the buildings that had been erected at various stages of mound construction, without damaging the structures themselves. After these data were analyzed we expected to know the relative dates of the mounds and thus be able to select for excavation those from which we would obtain information covering the longest time range. Other reasons for the location of these trenches were to test the depth and nature of refuse in the plaza area between the mounds and to examine the relation of the Red River and Mississippi River deposits across the site and to the east and west.

The initial exploratory trenches were 5 feet wide (see map, Fig. 3). The first was dug between lines South 80 and 85 feet from West 400 to East 280, a length of 680 feet. It traversed the low ridge connecting Mounds E and F, through the southern part of the plaza, across the shallow depression marking the eastern side of the site, and part way up the back slope of the small natural levee that borders the present channel of Old River. The second trench was placed between lines North 60 and 65. It touched the flank of Mound G, extended across the plaza, and cut through the small ridge that connects Mounds A and B. Both trenches were excavated in 3-inch levels, and the material recovered from each level was saved separately in sections of the trench 10 feet long. While these trenches were being dug there was considerable rain, and the ground water was within 4 feet of the surface. Consequently, the walls of several short sections of the trenches slumped before the strata could be recorded.

Profiles of the north walls of both of these exploratory trenches are shown in the diagram (Fig. 4). It will be noted that the vertical dimensions of these profiles have been exaggerated 10 times and that in the drawing the site has been broken along the North 60 line and the portion to the north moved back about 80 feet to allow the lower part of the North 65 profile to show. The part of the site south of the South 85 line in which Mounds C, D, and E are located is not shown.

Most prominent in these excavations is the overlying stratum deposited by the Red River. In the South 80-85 trench this deposit is about  $2\frac{1}{2}$  feet thick in the western end of the trench, west of the site proper. It can be seen that the faint depression that is traceable along this side of the site is not misleading and that a wide ditch with a bottom some 4 feet below the level of the plaza had extended along the west side of the site before the Red River materials were laid down. A fairly fine clay and a little sand of a distinctive dark red color form the top stratum through this section. Several strata lines can be traced, showing that deposition did not take place simultaneously, but there are no developed normal soil profiles that indicate any great lapse of time at any of these levels.

Red River clays, with very few and apparently only accidental cultural inclusions, in a layer about 1 foot thick, form a cap over the ridge that connects Mounds E and F and over the plaza. In the plaza the red clay is somewhat finer and, when dry, cracks into columnar forms. This seems to indicate that the Red River flood water over the plaza area was slack, and, in contrast, some current moved through the depression west of the site and laid down the slightly coarser materials.

Off the eastern side of the plaza, east of line East 100, the Mississippi surface, with its overlying cultural deposit, dips sharply and the Red River deposits thicken proportionately. This is the bank of the lake of Mississippi and Arkansas River origin on which the site was settled. It was not possible to follow the bottom of the Red River deposits by trenching, but bore holes found the contact some 20 feet below the surface, a short distance to the east of the site, as the diagram shows. In several holes black midden soil and potsherds were brought up from the top of the Mississippi surface by the auger. In this area the trench, as well as soil from the borings, shows that the Red River materials were deposited by moving water. They consist of interbedded red sand of a rather large grain size and sandy clay.

Similar deposits of Red River materials were revealed by the North 60-65 trench. Unfortunately, the details of the profiles of the west end of this trench were lost, because the trench caved before they could be recorded. The deposits across the toe of Mound G and

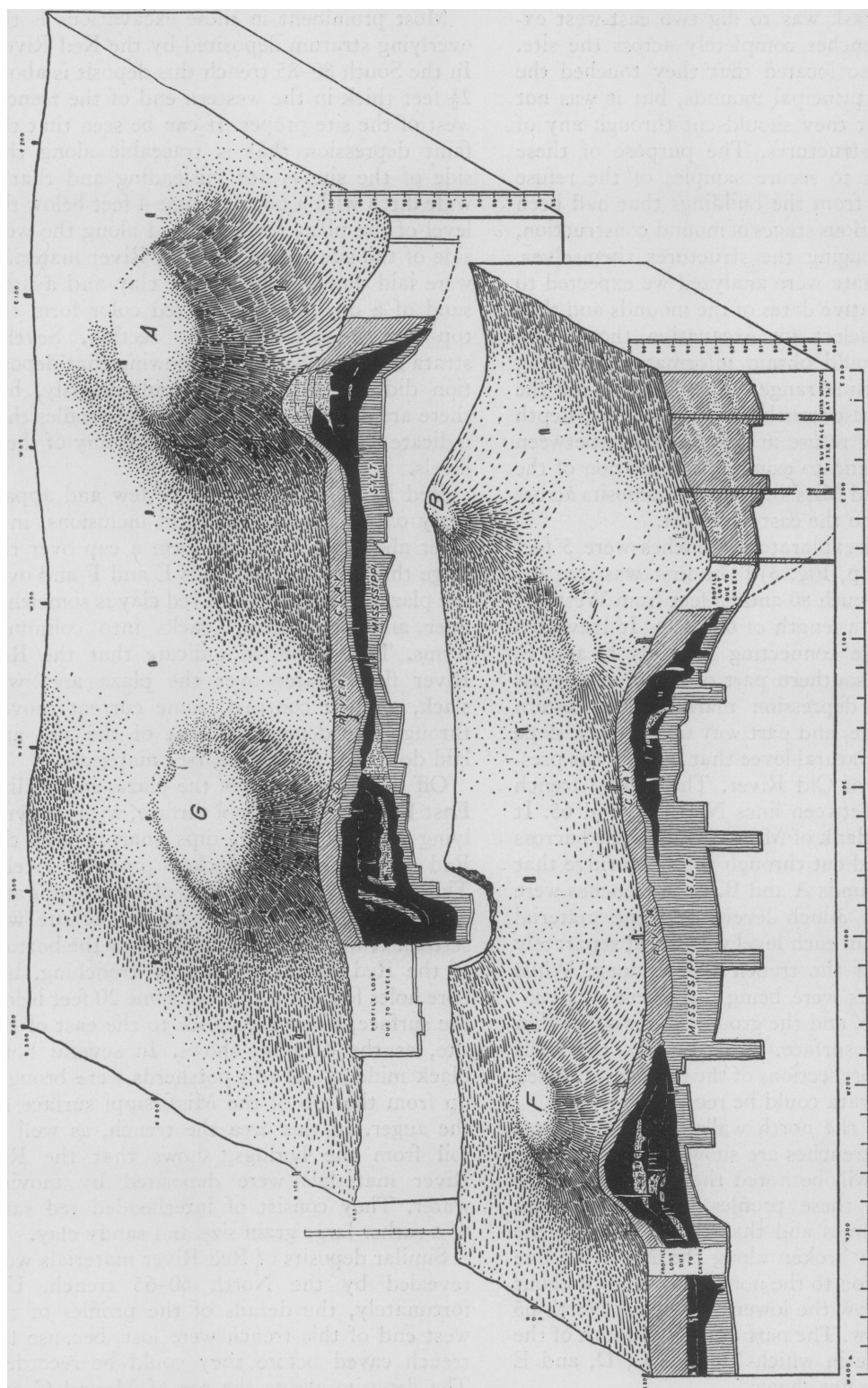


Fig. 4. Diagram of site showing north profiles of two initial exploratory trenches; South 80-85, in the foreground, and North 60-65. Mississippi and Red River deposited soils shown by contrasting hatching. Black represents accumulated refuse deposits; intentionally constructed strata are marked with conventional symbol to indicate lensing. Survey grid stakes shown at 100-foot intervals. Vertical scale exaggerated 10 times. Compare with Fig. 3.

through the plaza are the fine-grained clay found in the South 80-85 trench. Immediately to the east of Mound A the Red River materials change to bedded sand and clay and thicken to about 20 feet. The bank of the Mississippi lake lies close to the foot of Mound A.

The greasy black soil so characteristic of human-dwelling site refuse lay beneath the Red River clay. In the North 60-65 trench the two strata were divided by a band of gray soil about 6 inches thick. This was relatively free of cultural refuse and contained considerable manganese and pinkish stain, which apparently leached down from the overlying Red River soil. This soil is fairly fine and resembles river deposits by water-carrying sediments of Mississippi Valley type. There are two possibilities: Perhaps it was laid down as levee deposit by the Mississippi or the Arkansas before the Old River course was abandoned, soon after Fisk's Stage 4. This seems improbable, for if either of these major streams had run through the Old River channel after the village was abandoned the levee deposits would have been much thicker and coarser and would have extended over the entire site. It is more probable that this was material deposited by a local current in the backwater and was picked up somewhere in the vicinity, possibly even from the adjacent mounds.

All the midden soil that shows in the profiles of these two trenches seems to be related to the mounds, or rather to the structures that stood on the mounds at different levels of construction. Dark-stained soil shows in the walls of trench North 60-65 where it runs through the plaza, and some refuse was scattered here at the time the site was occupied—by no means so much, however, as there is in the black midden soil closer to the mounds. In the South 80-85 trench the stained surface soils are missing in the plaza between lines West 50 and West 170. This may be explained by erosion of the surface prior to the Red River deposits. At present, drainage from the plaza runs between Mounds D and E (Fig. 1). The shallow depression on the present surface is a reflection of a slightly deeper channel in the surface of the Mississippi River soils, and the contours reconstructed from borings given in Fig. 1 suggest that this drainage-way ran down the banks of the buried lake shore.

The midden soils were blackest, contained the most refuse, and developed the most complex structural lines where the exploration trenches approached the edges of the mounds. The section of the South 80-85 trench between Mounds E and F shows slightly over 5 feet of alternate intentional mound fill and levels on which refuse accumulated. If the top and bottom of the deposit are omitted, there are three levels at which the surface was stabilized for a period of time long enough for appreciable thicknesses of refuse to accumulate: ashes, soil, burned clay, bones, and potsherds. At the conclusion of each of these periods clean soil, as well as some containing cultural refuse, was brought in, and a new, more elevated surface was made. These levels belong to building periods in Mound F rather than in Mound E, for the old ground surfaces show a decided slope away from the former mound.

In the eastern part of the plaza the South 80-85 trench cut through layers of midden and fill that are related to the two small rises to the south marked as Mounds C and D. Most of the building activity, as shown by scattered post holes, seems to have been on a surface that is observable about the middle of the 2-foot accumulation of black soil revealed in this sector. This surface was built up and leveled by some loading of both clean gray and midden soil brought from elsewhere, but most of this deposit seems to have accumulated normally. A similar division of the deposits was later found in the near-by Mound C when it was excavated.

Off the south edge of Mound G the North 60-65 trench revealed midden deposit underneath the Red River and the grayish, probably local deposits that have been described. Here the total depth of the cultural deposits was about 5 feet and showed at least three zones of alternate mound-building activity and normal midden accumulation. Post holes and pits extending downward from each of the buried surfaces help to define them. The layers just described lie to the east of line West 185 and are undoubtedly associated with early building levels of Mound G. To the west of that line the underlying Mississippi surface slants sharply downward, as though a borrow pit had been dug here during the early stages of mound construction. Two additional building levels, related to the later stages of Mound G, follow



the slope of this old surface and provide the fill that brings the ground to its present level. Unfortunately, beyond line West 220 the profile of this trench was lost owing to cave-ins caused by the rains and ground water.

East of Mound G, through the plaza, the refuse layer is about 6 inches thick, forms only one layer, and is neither so dark in color nor so rich in pottery, charcoal, and broken bone as it is adjacent to the mound. In the eastern part of the plaza the deposit thickens gradually; here the refuse has plainly been thrown down from late phases of Mound A. Past line East 100 the trench runs into the construction materials of the low causeway connecting Mounds A and B. The cultural strata are 7 feet thick at the deepest point and reveal three stages of construction. The surfaces of the two buried

levels are defined by packed areas, burned clay, rich refuse deposits, and post holes. Between these levels at least part of the soil has been intentionally deposited. The post holes of a small circular house were discovered on the second surface from the base of the deposit. The trench was widened 35 feet to the north to uncover the outlines of this structure, which is described in a later section (p. 29). To the east of the causeway the underlying Mississippi River deposit sloped sharply downward over the bank of the old lake, and the rapidly thinning refuse deposit followed. It was impossible to trace this for any distance because the water table was very close to the surface. Bore holes were put down (Fig. 1), and these traced the filled-in lake to the east.

#### STRATIGRAPHY IN THE TWO INITIAL EXPLORATION TRENCHES, SOUTH 80-85 AND NORTH 60-65

Almost as rapidly as the material was removed from the ground it was sent to the laboratory unit of the archaeological project operating in New Orleans under the direction of Gordon R. Willey. Here the field records were typed and filed, the engineering data were translated into drawings, and the cultural material was cleaned, catalogued, classified, and analyzed.

Large-scale drawings were made of the strata exposed in the walls of the exploration trenches. The draftsman also prepared tracing-paper overlays on the same scale, which could be superimposed on the profile drawings, and showed the limits of the 3-inch levels and 10-foot sections that had guided the removal of earth from the trenches and the recovery of cultural material. After the pottery was classified and the percentages of each type in each collection were calculated, these data were placed on the tracing-paper overlays in the proper 10-foot section and level. Then, by superimposing the tracing-paper over the drawing of the trench profile, it was possible to study the relation of the several classes of ceramics to the soil strata.

The collections from most of the 3-inch layers from the 5 by 10-foot sections of trench contained too few sherds for the type percentages to be considered very significant. They averaged about 40 sherds, and at least

100 are needed for some degree of percentage reliability; the higher the total the better. Consequently, it was decided that the most practical course would be to merge corresponding levels for longer sections of the trenches where the procedure seemed to be valid. In selecting the trench sections to be merged we gave consideration, first, to comparable depth of refuse-bearing soil; second, to similar distribution of pottery types; and, third, to level stratification. The last was considered particularly important, and where the profiles showed that the strata sloped so that the same layers were cut by a number of the arbitrary levels, the data were not used in stratigraphic analysis. The sections of the excavations combined in this way are referred to as "analysis units." The locations of the analysis units are shown on the map (Fig. 3), and the stratigraphic results obtained are illustrated by graphs.

All of the ceramic graphs follow the same plan. Figure 35 serves as an example. The levels of each analysis unit are indicated by a staff on the left-hand side of the figure. Each unit is differentiated from other units in the same graph by hatching. The total number of sherds from the level is given on the right-hand side in position corresponding to the appropriate level. Type percentages were figured from this total; in a general way it indicates their reliability.

The type names are listed across the top of the graph figure. Type percentages are shown by the lengths of the horizontal bars centered beneath the type names and aligned horizontally with the appropriate excavation level as indicated on the staffs. The shading in these bars corresponds to that of the staff to which they belong. Percentages can be measured by means of the percentage scale given. It should be noted that in all the graphs the percentage of both the plain types Coles Creek Polished Plain and Coles Creek Plain have been reduced 10 per cent, and only one-half of the Coles Creek Plain bars are shown.

#### ANALYSIS UNIT ONE

Three analysis units were made in trench South 80-85. Unit One includes the part of the trench that cut through the low ridge that connects Mounds E and F from West 320 to West 200. The cultural accumulation here averages about 60 inches: black, refuse-bearing soil interrupted by two zones of loaded earth which later investigation proved to connect with building stages in Mound F. Not many sherds were found in the intentionally deposited layers, and in spite of the ever-present possibility that earlier pottery has been placed over later refuse in such building operations, the graphs give no suggestion that this occurred here. The analysis shows consistent trends in either increase or decrease of type frequencies through these layers of intentional mound construction.

A graph of the classified pottery from Analysis Unit One is given in Fig. 35. Unit One yielded 14,149 sherds, and the totals for all the levels, with the exception of the two lowest, are large enough for the type percentages to be considered reliable. Frequency trends, from the bottom to the top of the deposit, are apparent for nearly every type, and these can be considered as a reflection of the ceramic style changes that were occurring while the deposit accumulated. In Fig. 35 the graph of Analysis Unit One is matched with Units Three and Seven. As reference to the map (Fig. 3) will show, these are two other nearby analysis areas in which the refuse is also probably derived from Mounds E and F.

This group of analysis units (One, Three, and Seven) appears to give the clearest picture of quantitative change in type frequencies of any

of the analysis sections formed later. For this reason the smoothed curves derived from this graph, shown in all the graphs as dotted lines, are used as a comparative device. Exactly these same curves in the same pattern and vertical relation to the arbitrary time scale appear on the graphs that follow, so that the closeness of agreement between the chronological information given by the various parts of the site can be compared.

#### ANALYSIS UNIT TWO

The second part of the South 80-85 trench in which the levels were combined to form an analysis unit lies between West 200 and East 80, a distance of 280 feet. This is a rather long trench section to handle as a single unit, but preliminary graphs made for four short segments showed identical stratigraphic results, and when these segments were totaled the historical picture was unchanged. Thus the present procedure appears to be justified, in spite of the fact that the profiles show considerable variation in the nature of the deposits (Fig. 4).

Analysis Unit Two sampled deposits from the plaza area at its western end and from the northern flanks of the small rises, Mounds C and D, through its central and eastern parts. The graph recording the results obtained (Fig. 38) is based on a total of 14,603 sherds. It seems to be a rather sensitive record of style change and shows the latter half of the period during which the Greenhouse Site was occupied, the Coles Creek Period.

#### ANALYSIS UNIT THREE

The third Analysis Unit consisted of a short section of the South 80-85 trench lying to the west of, and completely off, the plaza area from line West 320 to 400 (Fig. 3). This is in the shallow swale that lies along the west side of the plaza. Refuse-bearing soil in this part of the trench was about 30 inches thick and was overlain by as deep a capping of sterile Red River clay, a fact that accounts for the few sherds found above Level 33 inches. Most of the pottery was in black soil which was sampled by Levels 39 to 48 inches, and below that the level totals progressively decrease as the cuts passed deeper into the undisturbed Mississippi surface. The total of 1798 sherds recovered forms the basis for the

graph given in Fig. 35. This shows only slight reflection of time change, but it is an interesting fact that it represents the latter half of the time span covered by the site as a whole.

The cultural strata that showed in the walls of this part of the South 80-85 trench were level and apparently uninterrupted by any soil loading or building activity. Probably this material was scattered from structures that stood on the near-by Mounds E and F. It seems probable that, as the mounds continued to be occupied and were built higher and higher, the refuse originating on the tops of the mounds became more widely scattered over the neighboring ground surface. Possibly that is the explanation for the lateness of Unit-Three deposits, and we have here a kind of local horizontal stratigraphy.

#### ANALYSIS UNIT FOUR

Analysis Unit Four was formed of the part of the North 60-65 trench nearest the corner of Mound G between lines West 110 and 180, a length of 70 feet (Fig. 3). The midden soil had accumulated here to a depth of about 50 inches, and where the trench passes tangent to Mound G there can be seen at least one loaded zone and two later occupation levels that relate to early stages of construction (see profile in Fig. 4). There is no doubt but that Unit Four fairly measures the cultural history of this mound.

The total number of sherds recovered from this unit was 3045. Of these 2837 came from the upper 33 inches, and only 208 were found in the lower levels, 48 to 66 inches. This accounts for the erratic percentages in the lower levels, and percentages have been graphed only down to 51 inches (Fig. 40). Comparison shows that the lower part of this deposit seems to have been made fairly early in the history of the site. A few of the late types occur in the upper levels, but these do not date the bulk of the deposit. This suggests that the construction of Mound G was begun early in the history of the site and

can be referred mainly to the Troyville Period.

#### ANALYSIS UNIT TEN

Only three 10-foot sections of the North 60-65 trench were included in Analysis Unit Ten. These span the low saddle between Mounds A and B and lie between lines East 120 and 150 (Fig. 3). To the west this trench cuts through the plaza; the cultural layer is very thin and sherds are scarce. East of Unit Ten an examination of the profile and tracing-paper shell reveals not only no consistent stratification of material but the reason for its absence. Here the refuse layers slope steeply over the bank of the old buried lake (profile, Fig. 4).

The part of the trench included in Unit Ten contained 52 inches of sherd-bearing soil from 18 to 60 inches below the surface. Top levels in the overlying Red River deposit were almost barren. At the bottom the stained occupation soil graded into the underlying gray Mississippi River deposits. The intervening cultural levels consisted mainly of black soil, with refuse in the lower part, and of three loaded strata in the upper part which are the flanks of construction stages in Mound A. In at least one level in the lower midden, accumulation paused during the time in which a structure rested on the surface, but the outlines of this building could not be determined.

Analysis Unit Ten provided 2972 sherds. The results of classification are shown in graphic form in Fig. 36. On the whole, the analysis of Unit Ten suggests that the deposits were made in the middle third of the history of the site. Unfortunately, this unit lies between Mounds A and B, in a situation analogous to that of Unit One between Mounds E and F, and when this work first was done there could be no certainty as to which of the two mounds was dated by the several parts of the deposit. Later work showed clearly that the loaded zones, above arbitrary Level 45 inches, were related to the later construction stages of Mound A.

#### EXCAVATION OF AREA NEAR MOUND C, SOUTH 70-80, EAST 20-30, 40-80

When the South 80-85 exploration trench was dug, a pit was exposed in the north wall near Mound C. In order to uncover this and to get a more thorough sample of the refuse found in this part of the site, cuts were made as

shown on the map (Fig. 3). These two northward extensions of the South 80 trench were taken down in 3-inch levels, and the material recovered is presented as Analysis Unit Six (Fig. 39). The stratification here was simple

and comparable to that later found to be the situation in Mound C. Underneath the sterile cap of Red River soil, which varied from a few inches to 1 foot in thickness, were two refuse layers, each about 1 foot thick, which east of the East 50 line were clearly separated by a thin, loaded zone of gray soil.

A total of three peculiar, bathtub-shaped pits was found in this excavation area. All originated in the lowest midden strata and extended down into the subsoil. The first of these (Feature 198), discovered in the South 80 profile, was 12 feet long, 6 feet wide at the top, and lay northwest and southeast. The total depth of the pit was 4 feet. The side walls sloped outward for the upper 1 foot, so that the width at the bottom was narrowed to 4 feet, but the walls of the lower 3 feet were vertical. The lower part of the feature was shaped like a bathtub. The side walls of this pit were thoroughly fired, and it was filled with alternate layers of ash and midden soil. The fill contained a normal amount of cultural refuse, but nothing unusual was recovered.

The second pit (Feature 411), immediately beside the first, was similar in shape, but

smaller. It measured 5 feet long,  $2\frac{1}{2}$  feet wide, and 3 feet deep. However, it showed no signs of firing. The walls were not baked, and the fill was composed of ordinary black midden soil.

The third pit (Feature 417) was only partially explored owing to high water and the consequent caving of the excavation walls. It intruded into the northwestern end of the second pit and therefore must be slightly later, although it originated in the same lower midden strata. It appeared to have been about 4 feet wide and was oriented in the same direction as the other two. The side walls showed signs of intense heat, and the fill was composed of ashes and soil.

#### ANALYSIS UNIT SIX

The strata in this excavation have been analyzed as Unit Six (Fig. 39). This represents 2327 sherds. Apparently the material presents the full range of the Coles Creek Period and gives a comparatively sensitive picture of percentage change for this time. The three pits described above originate in the lower midden strata and were about on the Levels 33 to 39 inches, indicating that they date early in the period.

#### AREA BETWEEN MOUNDS A AND B, NORTH 65-90, EAST 140-170

Evidence of a house floor was found about a foot beneath the surface in the course of cutting the section of the North 60-65 trench that runs through the causeway between Mounds A and B. This consisted of irregular patches of burned clay and a short segment of a curving house wall indicated by a row of post holes. In order to expose the structure, an area 25 by 30 feet square between lines North 65-90 and East 140-170 was excavated (map, Fig. 3). The loaded soil forming the corner of the last stage of construction of Mound A was removed, exposing the floor of the structure.

The floor was marked by irregular patches of clay burned to a depth of 1 to 2 inches and was outlined by a circle of post moulds about 22 feet in diameter (Pl. 4a). On the south and east side there was one wall location marked by post holes 4 to 10 inches in diameter spaced from 6 inches to 1 foot apart. On the west and north three concentric wall segments were indicated by smaller posts set in trenches 1 foot wide and about 2 feet deep. Two large post holes spaced in the floor on a northwest-

southeast alignment may have been for interior supports. In addition, two basin-shaped fire pits in the floor of this structure are 2 feet in diameter and 1 foot deep. These contribute to the impression that the house was rebuilt several times in almost the same spot, or at least underwent extensive repairs. Location of the door is problematical; possibly it is indicated by the gap in the wall posts on the north side of the structure, the side nearest the reader in the photograph (Pl. 4a).

Below the floor refuse extended downward about 57 inches. This is interrupted in its upper part by an arched loaded zone which later proved to be the corner of Mound A at its Building Level 6. The bottom of this was at arbitrary Level 36 inches; below that black midden soil continued to the old original ground surface, with minor strata lines that lay fairly level, and while there is the usual number of scattered post holes, there are no large disturbances.

Three skeletons were exposed in this excavation, embedded in the midden beneath the

corner of the Stage 6 Mound A. These were Burials 995, 996, and 997, described later. If these burials were placed in pits, they were very shallow and their outlines could not be detected.

Two of the elongated, bathtub-shaped fire pits of the type already described in other parts of the site were found in the lowermost midden zone in this area. One of these (Feature 617) was 7.2 feet long, 2.5 feet wide, and averaged 1 foot deep. It had been scooped out of the black midden soil and had a clay lining which was fired. Four to 5 inches of fine ash mixed with bits of charcoal lay in the bottom of the pit, and the upper part was filled with midden soil (Pl. 6a).

The second pit (Feature 1000) was 10 feet from the first and about 1 foot deeper in the lowest stratum. It was also an irregular oblong, rounded at the ends, and measured 8 feet long and 3 feet wide. This pit was 20 inches deep. It was filled with packed ash to within 5 inches of the top, where a second or false bottom had been made by lining the depression with clay. The side walls and both the pit bottoms were deeply fired.

#### ANALYSIS UNIT ELEVEN

The material from the 3-inch levels in this cut has been treated as Analysis Unit Eleven. The graph resulting from the sherd classification (Fig. 36) represents 12,119 sherds. As can be seen, the graph gives an excellent picture of the quantitative changes of types through the middle two thirds of the time the entire site was occupied. Unit Eleven has sampled material from the southern corner of Mound A, and the lack of comparative early strata at this point suggested to us that Mound A was not built and used from the time of the earliest occupation of the site. Excavation of Mound A seems to have demonstrated that this was correct, as can be observed from the analysis of the mound contents given in Fig. 36 (Unit 13).

The two bathtub-shaped fire pits, described above, originated on about the level of arbitrary Levels 51 to 60 inches, dating them as having been built late in the Troyville Period. The circular house patterns which led to the excavation of this cut were approximately at Level 15 inches. If the placement of the graph of this unit in Fig. 36 is correct, the circular house patterns date from the middle of the Coles Creek Period.

#### THE EAST 80-85 TRENCH

The results obtained from the first two exploratory trenches showed the desirability of continuing this method of sampling. Accordingly, a 5-foot trench was dug between lines East 80 and 85, which extended from the base of Mound A at line North 130, along the eastern side of the plaza touching the base of Mound B, to South 120 in the vicinity of Mound C (map, Fig. 3). At the southern end this trench followed the dipping, old Mississippi lake shore down to a depth of 6 feet, the highest walls that would stand in these water-soaked soils.

Red River deposits overlay all of the midden exposed in the walls of trench East 80-85. The refuse layer was relatively thin, except in the vicinity of the mounds, and was thickest and most involved at the northern end, where the trench touched the base of Mound A. Here the strata sloped sharply upward towards the mound and are clearly related to it. Under the capping of red clay a zone of sterile grayish clay overlay the midden soil as described in the trench North 60-65. As suggested this may

indicate an interval of deposition by Mississippi Valley water before the last change in the channel of the Red. The black midden was 1 foot thick, and a division about midway in this deposit could be traced southward to the zero east-west base line. South of this line the trench cut through a rise that bordered the eastern edge of the plaza, and the refuse layers again increased in thickness and complexity. Through the edge of the low rise shown on the map (Fig. 3), between Mounds B and C, at least five strata showed beneath the overlying Red River deposits. Two of these were intentionally loaded zones, and below, between, and above were deposits of gradually accumulated midden. A few post holes and pits came down from each midden level, but the outlines of house structures could not be discovered. The cultural deposit here totaled about 2 feet in thickness. This small rise should possibly also have been considered one of the mounds arranged around the plaza and have been given a letter designation. It cer-

tainly was an area that was intentionally built up at several different times.

The trench passed through the South 80-85 trench between stakes East 80 and 85. In this region it shows a right-angled section of the same deposits related to Mound C that were revealed by the east-west trench: about 1 foot of relatively simple midden deposit. Off the edge of the plaza, south of line South 85, the midden became progressively thinner and dipped sharply downward over the bank of the buried lake. The overlying Red River materials increased in thickness and changed from clay to interbedded sand and clay.

#### ANALYSIS UNIT FIVE

Only the northern end of the East 80-85 trench proved to be suitable for analysis. After

the pottery had been classified and the results listed on a tracing-paper shell and compared with the profile drawings, the section of the trench between lines North 30 and 120 was selected to form Unit Five. It contained a total of 1487 sherds. This is graphed in Fig. 36, where it is compared with the other stratigraphic units related to Mound A. The figure demonstrates that this trench section has sampled refuse that represents the middle two thirds of the history of the site. The location of Unit Five (map, Fig. 3) suggests that most of the refuse came from building stages in Mound A and a smaller amount was derived from Mound B and the house structure which the North 60-65 trench revealed in between. This Analysis Unit and Unit Eleven on the southern flank of Mound A are in agreement.

#### EXPLORATION TRENCH WEST 295-300

We are not entirely satisfied with the information obtained from the first exploration trench, South 80-85, about the relative age of Mound E. The ceramic analysis picture for the portion of the cut that passed close to Mound E was clear enough, but as the trench ran midway between Mounds E and F it was not possible to determine with any certainty from which mound the refuse at the various levels had been derived. For this reason a trench was cut tangent to the western side of Mound E to sample refuse that came primarily from structures that had stood on that mound. This was between lines West 295-300 and ran from South 90 to South 320 (Fig. 3). Once again, Neitzel experienced considerable difficulty in digging owing to rain and the high water table. Here he had to use coffer dams and pumps to reach the lower levels.

The capping deposit of Red River clay was found about 1 foot deep all along this trench. South of the South 300 line this clay changed to sand, and the stratum thickened as the underlying midden zone dipped over the bank of the old lake shore.

Through the portion of the trench nearest to the foot of Mound E a thin layer of outwash silt from the mound overlay the refuse layers. Here the midden was about 3.5 feet thick and showed three layers of deposit, thicker on the east side of the trench towards the mound and traceable lengthwise of the trench from South

90 to 190. These layers seem to represent three stages of refuse-depositing activity on Mound E.

South of line South 190 there was only one layer of midden soil, averaging about 2 feet thick. Post holes and pits originating at different levels in this layer suggest that there may have been some occupation, but no structure could be worked out. At South 210 a large, basin-shaped fire pit filled with ashes was found in the upper part of the deposit, but associated post moulds were not discovered. At the South 280 line the thinning refuse layer began to slope downward, and the overlying sterile Red River deposits thickened, indicating the bank of the buried lake.

#### ANALYSIS UNIT SEVEN

In the New Orleans laboratory the trench profiles were drawn, the recovered material was classified, and the results were listed on a tracing-paper shell that fitted over the profile, as has been described. Examination showed that the stratigraphy was consistent for the greater part of the trench, so the levels between South 90 and 280 feet were merged to form Analysis Unit Seven. The graphed results for this unit (Fig. 35) represent a total of 6497 sherds.

The chronological results obtained from Unit Seven are fairly clear, despite some percentage irregularities in Levels 6, 42, and 51 inches. The last level contained only 19 sherds



and should be disregarded in studying the graph. Unit Seven represents the later two thirds of the time during which the Greenhouse

Site was occupied. This is slightly later than the beginning date for Analysis Unit One, between Mounds E and F.

### EXPLORATION TRENCH SOUTH 25-30

This trench was planned to run from the East 80 line, where it intersected the north-to-south East 80-85 trench, through the center of the plaza area to the foot of Mound F (Fig. 3). However, it was not completed throughout its length because there was neither material nor features in the center of the plaza; only the eastern and western ends were excavated. The eastern end was dug to the westward only as far as line East 40. This showed the relation

of Red and Mississippi River deposits found elsewhere on the site. The midden layer was sandwiched between, decreasing from a 2-foot thickness at East 80 to less than 6 inches of slightly stained soil, with virtually no artifacts, at East 40. The western end of this excavation served as one of the approach trenches for the excavation of Mound F and is discussed under that heading.

### EXCAVATION OF MOUND A

The six trenches that have just been described were the initial steps in the exploration of the Greenhouse Site. All of them were excavated in 3-inch arbitrary layers, and the material recovered was saved separately from the levels made in 10-foot sections of each trench. The specimens were sent to the New Orleans laboratory at the end of each week, and a completed analysis of the ceramic stratigraphy in each trench was available only a week or so after the excavation had been finished. By the time the preliminary exploration trenches were completed we had concluded that the construction of Mounds A, C, and G had probably been begun before the other mounds and that the area around Mound F yielded the latest material on the site. We were mistaken about the age of Mound C, as is described below.

On the basis of this information it was decided that the excavation of Mounds A, F, and C would probably give a fair sampling of mound construction and of the buildings that we expected to find on the several building levels.

The rectangular mounds on the Greenhouse Site are oriented with their straight sides at approximately 45 degrees to the cardinal directions and to the north-south, east-west survey grid. Consequently, it was decided that in order to control the trenching and peeling operations planned in Mound A, it would be more practical, for this mound, to survey a

special grid that would be roughly oriented with its sides. Accordingly, a base line was laid down parallel to the mound base on the southwestern side and tied into the site survey. From this base, lines were run around the mound to form a 130-foot square, and stakes were set in this area at 5-foot intervals. These stakes provided both the horizontal and vertical control for the peeling operations.

In the Mississippi Valley, rectangular mounds are typically built in stages, with evidences of structures on the mound tops at each level where mound construction paused. We expected that Mound A would follow the pattern and consequently planned to "peel" the mound, removing one construction layer at a time, to reveal the mound and house structures underneath. We were only partially successful, for it was possible to trace the outlines of the entire mound surface only at Building Level 6, as is described below. Only the flat summits of the mounds were completely exposed on the other old surfaces, but this was sufficient to make possible a careful search for evidences of structures.

The initial step in the excavation of Mound A was to run trenches, each 5 feet wide, into the four sides of the mound to find the preceding mound surface so that, as layers were stripped from the top, the men would not be so likely to cut through house floors before they were discovered. In view of the possibility that stairways may have existed up the center of the

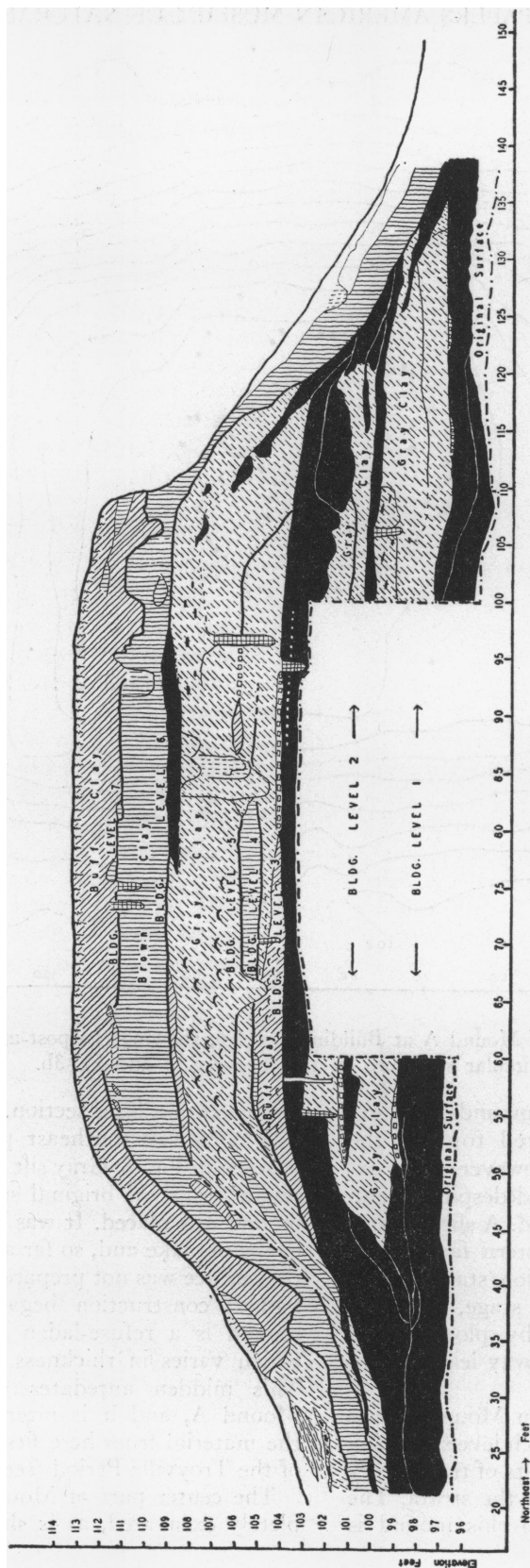


FIG. 5. Northwest-southeast profile of Mound A through the center of the mound. The dotted line at the base of the structure shows the limits of excavation. Building levels are numbered. The several different soils used in mound construction are differentiated by hatching and are labeled. Black indicates the rich, black, refuse-laden soil accumulated unintentionally. The pottery from the constructional stages and building levels is analyzed as Unit Thirteen. See Fig. 36.

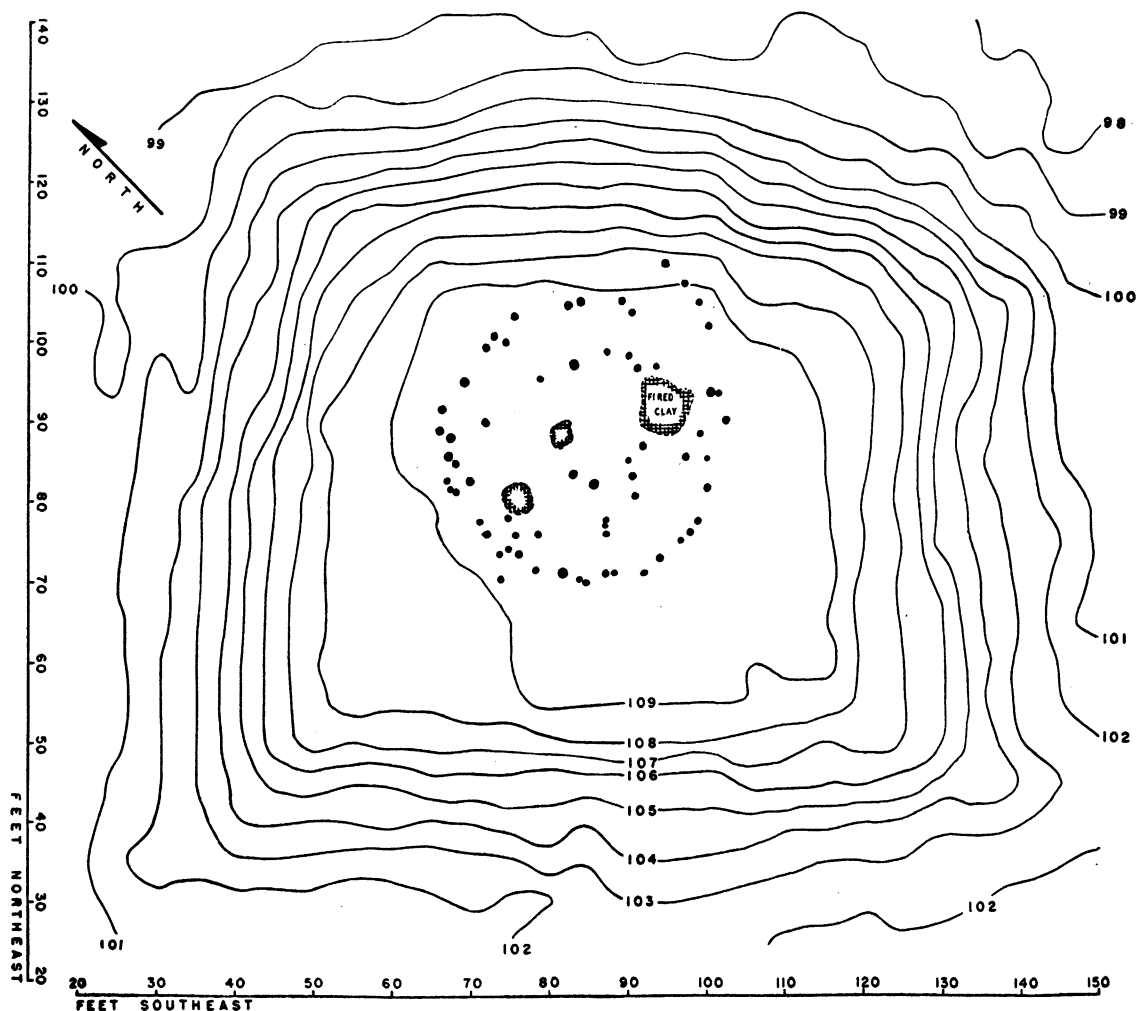


FIG. 6. Contour map of Mound A at Building Level 6, showing the post-mould pattern of the circular structure on top. See Fig. 5 and Pl. 3b.

sides of some of the earlier mounds, the exploration trenches were located towards the corners of the structure. However, this expectation was not realized, and despite careful search no stairways were found. A slight bulge in the center of the southwestern face of the mound, noted before excavation started, suggested that the last building stage, which of course had been destroyed by plowing and erosion, may have had a stairway leading into the plaza.

The material recovered from Mound A was saved by 5-foot squares in 6-inch levels, making it possible to correlate the results of the pottery classification with diagrams of the strata. The analysis of the material from this mound is

discussed in a later section.

A northwest-southeast profile of Mound A is given in Fig. 5. Gray silt of Mississippi River origin forms the original surface on which the mound was placed. It was located on the bank of the old lake and, so far as can be discovered, the surface was not prepared in any way before mound construction began. Underneath the mound is a refuse-laden layer of black soil, which varies in thickness from 2 to 2.5 feet. This midden antedates all construction at Mound A, and it is interesting to note that the material from here fits into the early part of the Troyville Period (see Fig. 36).

The center part of Mound A was not completely excavated, as is shown in Fig. 5, and

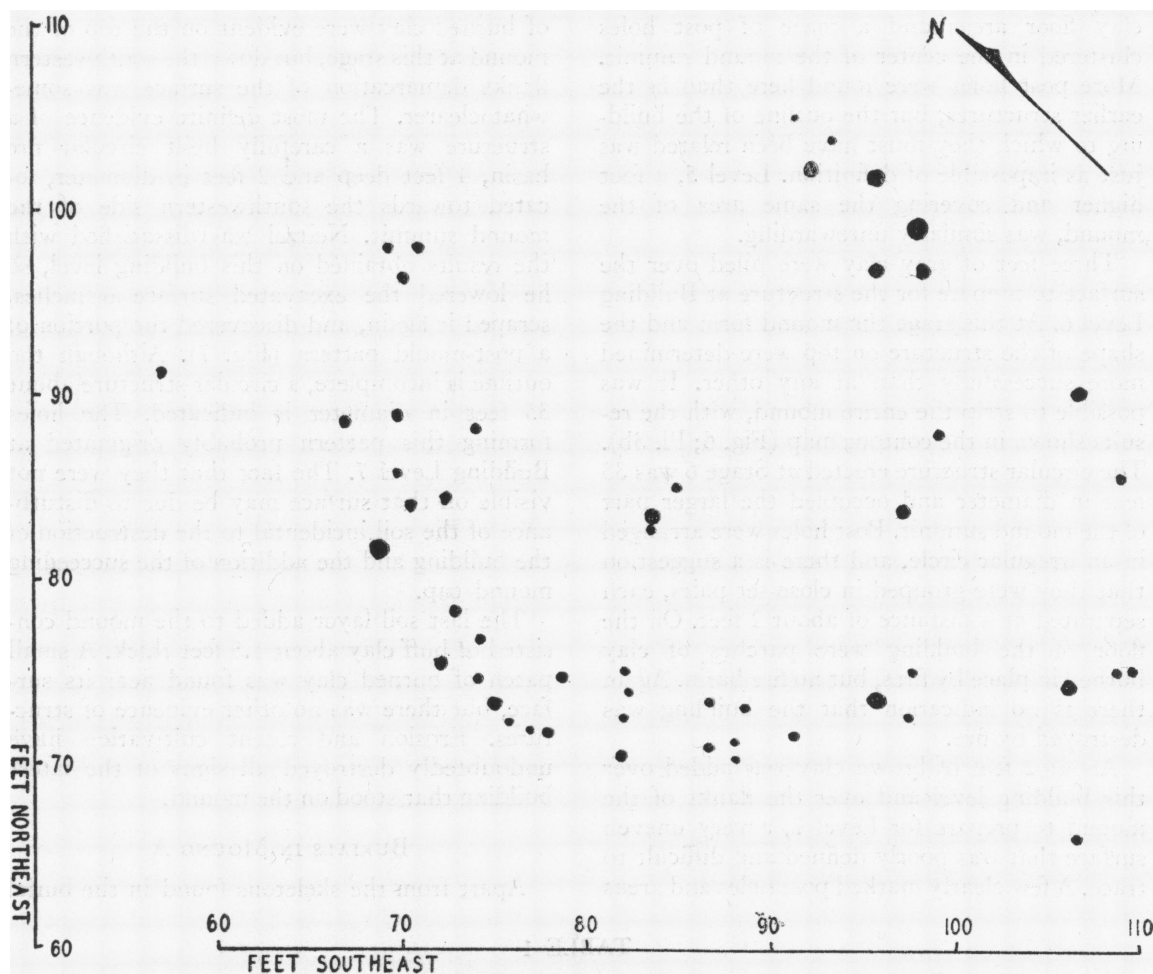


FIG. 7. Post-mould pattern immediately under Building Level 7 in Mound A. See Fig. 5.

the two earliest building levels are almost completely enclosed by the unexcavated block. While the old surfaces are traceable on either side by means of the refuse, ashes, and fired-clay fragments, we do not know what evidence there may be of buildings. The third building level was the first to be adequately examined. By this time the mound structure was 8 feet high and had attained its greatest width at the base. This stage was capped by a layer of rich black midden probably related to earlier structures which we did not find. The top of the mound was cleared at Building Level 3, and several fairly large patches of burned clay floor, as well as a number of post holes, were discovered, but no patterning in their arrangement was observable. Obviously there had been a structure at this level, but nothing was

learned as to its shape.

Only a foot of buff-colored soil was added to provide a base for the building of the next stage, Level 4. This surface was examined, but the results were similar to those described for Building Level 3; there had been a structure here, but its shape was not determinable. These buildings were probably intentionally wrecked, thus accounting for the scarcity of clear-cut post moulds. There is no evidence, however, that they were burned, as was common practice in similar mounds of the Middle Mississippi culture.

Another foot of soil, this time of brown clay, was added to Building Level 3 to prepare for a structure on Level 4. Examination of this surface was little more rewarding than had been the two mound surfaces underneath; burned

clay floor areas and a maze of post holes clustered in the center of the mound summit. More post holes were found here than in the earlier structures, but the outline of the building to which they must have been related was just as impossible of definition. Level 5, a foot higher and covering the same area of the mound, was similarly unrewarding.

Three feet of gray clay were piled over the surface to prepare for the structure at Building Level 6. At this stage the mound form and the shape of the structure on top were determined more successfully than at any other. It was possible to strip the entire mound, with the results shown in the contour map (Fig. 6; Pl. 3b). The circular structure erected at Stage 6 was 35 feet in diameter and occupied the larger part of the mound summit. Post holes were arranged in an irregular circle, and there is a suggestion that they were grouped in close-set pairs, each separated at a distance of about 2 feet. On the floor of the building were patches of clay burned in place by fires, but no fire basin. Again there is no indication that the building was destroyed by fire.

About 2 feet of brown clay was added over this building level and over the flanks of the mound to prepare for Level 7, a very uneven surface that was poorly defined and difficult to trace. A few clearly marked post holes and areas

of burned clay were evident on the top of the mound at this stage, but down the southwestern flanks demarcation of the surface was somewhat clearer. The most definite evidence of a structure was a carefully built circular fire basin, 4 feet deep and 2 feet in diameter, located towards the southwestern side of the mound summit. Neitzel was dissatisfied with the results obtained on this building level, so he lowered the excavated surface 6 inches, scraped it again, and discovered the portion of a post-mould pattern (Fig. 7). Although the outline is incomplete, a circular structure about 35 feet in diameter is indicated. The holes forming this pattern probably originated at Building Level 7. The fact that they were not visible on that surface may be due to disturbance of the soil incidental to the destruction of the building and the addition of the succeeding mound cap.

The last soil layer added to the mound consisted of buff clay about 1.5 feet thick. A small patch of burned clay was found near its surface, but there was no other evidence of structures. Erosion and recent cultivation have undoubtedly destroyed all signs of the latest building that stood on the mound.

#### BURIALS IN MOUND A

Apart from the skeletons found in the burial

TABLE 1  
BURIALS IN MOUND A

Burial No.	Description	Location in Mound
641	Juvenile. On back with legs flexed, arms at side. Head towards east-northeast	Northeast flank of Building Level 5
642	Infant. Skull fragments only	Northeast flank of Building Level 5
643	Infant. On left side, legs slightly flexed, arms at sides	Northeast flank of Building Level 5
650	Infant. On back, arms and legs fully flexed	Southwest flank of Building Level 5
657	Mature female. On back, extended with arms flexed. Head to south	Northwest flank of Building Level 5
670	Infant. On back, arms and legs fully flexed. Head to north-northwest	Northwest flank of Building Level 5
995	Mature male. On right side, arms and lower legs disarticulated, but present. Skull, hands, and feet missing	South flank of Building Level 5
996	Juvenile male. Extended face down, head to northwest. Dog skeleton (No. 997) lies between legs	On flank of Building Level 5 at south corner
997	Skeleton of dog lying between legs of Burial 996. All bones present, but legs and phalanges disarranged	On flank of Building Level 5 at south corner

area in Mound C and two in Mound F, the only other burials at the Greenhouse Site were apparently incidental inclusions in Mound A. Of the nine such burials eight were humans and one was a dog. All of them had been placed in strata of normally deposited refuse with no indication of pits, grave goods, or other special care. Pertinent information is summarized in Table 1.

It is interesting that all of these burials were discovered in the refuse layer that overlay Building Level 5. All seem to have been deposited at very nearly the same time, and if this level is correctly placed in the analysis graph of Unit Thirteen (Fig. 36), then this occurred at the beginning of the Coles Creek Period.

#### ANALYSIS UNIT THIRTEEN

Refuse was rather scanty in the several intentionally added strata of Mound A, but it was very abundant in the black midden soil that underlay the mound and accumulated on each construction stage. Midden zones are shown in black on the profile of the mound (Fig. 5). The analysis results of the pottery from these levels are shown in Fig. 36, a diagram that is in general agreement with the other

stratigraphy from the site. It indicates that Mound A was built during the later three quarters of the time the site was occupied. From level to level there is, however, slightly more than the usual amount of variation in type frequencies. This may result from the fact that the deposit consists of alternate intentionally placed soils and normally accumulated midden. Indeed, in consideration of this situation, it is somewhat surprising that the frequency trends are so consistent.

The preliminary trenching of the site described in the foregoing pages was analyzed in the vicinity of Mound A as Analysis Units Five, Ten, and Eleven (see map, Fig. 3). In Fig. 36 these are compared with Unit Thirteen, the material derived from the excavation of the mound. It is of some interest to note that the agreement in time span is fairly close, except that Units Five and Eleven do not yield as late pottery in their upper layers as does either the mound or Unit Ten. Our initial assumption that trenching close to the base of these mounds would secure data for estimating the periods of constructional stages seems to receive some support in this instance.

#### EXCAVATION OF MOUND F

The small Mound F on the western side of the plaza, the second structure excavated at the Greenhouse Site, proved to be essentially similar to Mound A. The excavation method was analogous. Four 5-foot trenches were started into the mound to find the several building levels, and as each level was discovered the mound surface was stripped and searched for evidences of buildings. Four construction stages topped by buildings were found; there may have been others, but on none of the surfaces was it possible to determine building features as clearly as would have been desirable.

An east-to-west profile across Mound F, as revealed by the wall of the coordinate trench, along line South 20, is illustrated in Fig. 8. This shows that the entire mound rested on a layer of black midden soil between 2 and 3 feet thick. A dividing line, indicating a level where the surface was stabilized for a period, could be traced through the middle of this, and between West 200 and 250 there was a lens of intentionally deposited gray clay. Although

there were the usual number of scattered post holes, no structures were found in these layers.

The results of the analysis of the ceramics recovered from Mound F have been graphed as Analysis Unit Twelve and are shown in Fig. 37. Neitzel saved material from the mound proper according to floors and the fill between them, as can be seen by comparing this graph with the sectional diagram of the mound (Fig. 8). Below the construction 3-inch levels were cut, and as usual these are indicated by figures giving depth below the surface. Figure 37 demonstrates that Mound F was a very late structure on the Greenhouse Site. All of the Troyville Period and most of the Coles Creek are represented in the black midden dirt under the mound. Undoubtedly, the lateness of the building activity accounts for the amount of refuse under the mound, and this spot on the edge of the small rise occupied by the site had received the plaza sweepings for many years before construction was begun.

The first construction at Mound F was a



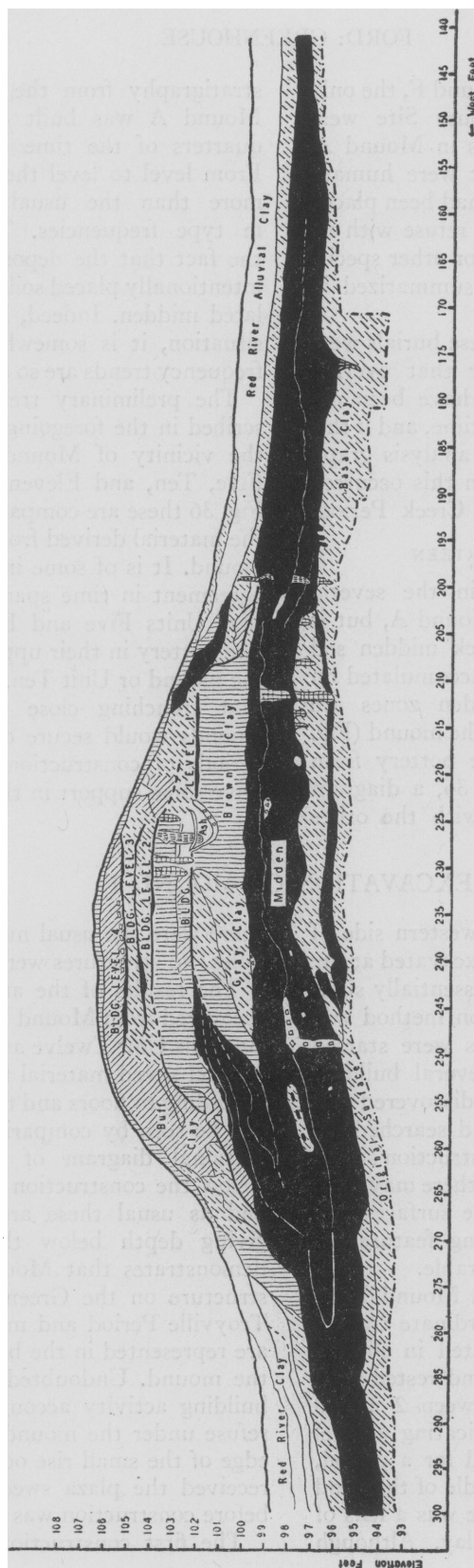


FIG. 8. East-west profile of Mound F through the center of the mound. Building levels are identified by numbers. Soils used in construction are hachured, and the solid black indicates midden deposit. The very small squares are symbols for fired clay. Analysis of pottery from this mound, listed as Unit Twelve, is given in Fig. 37.

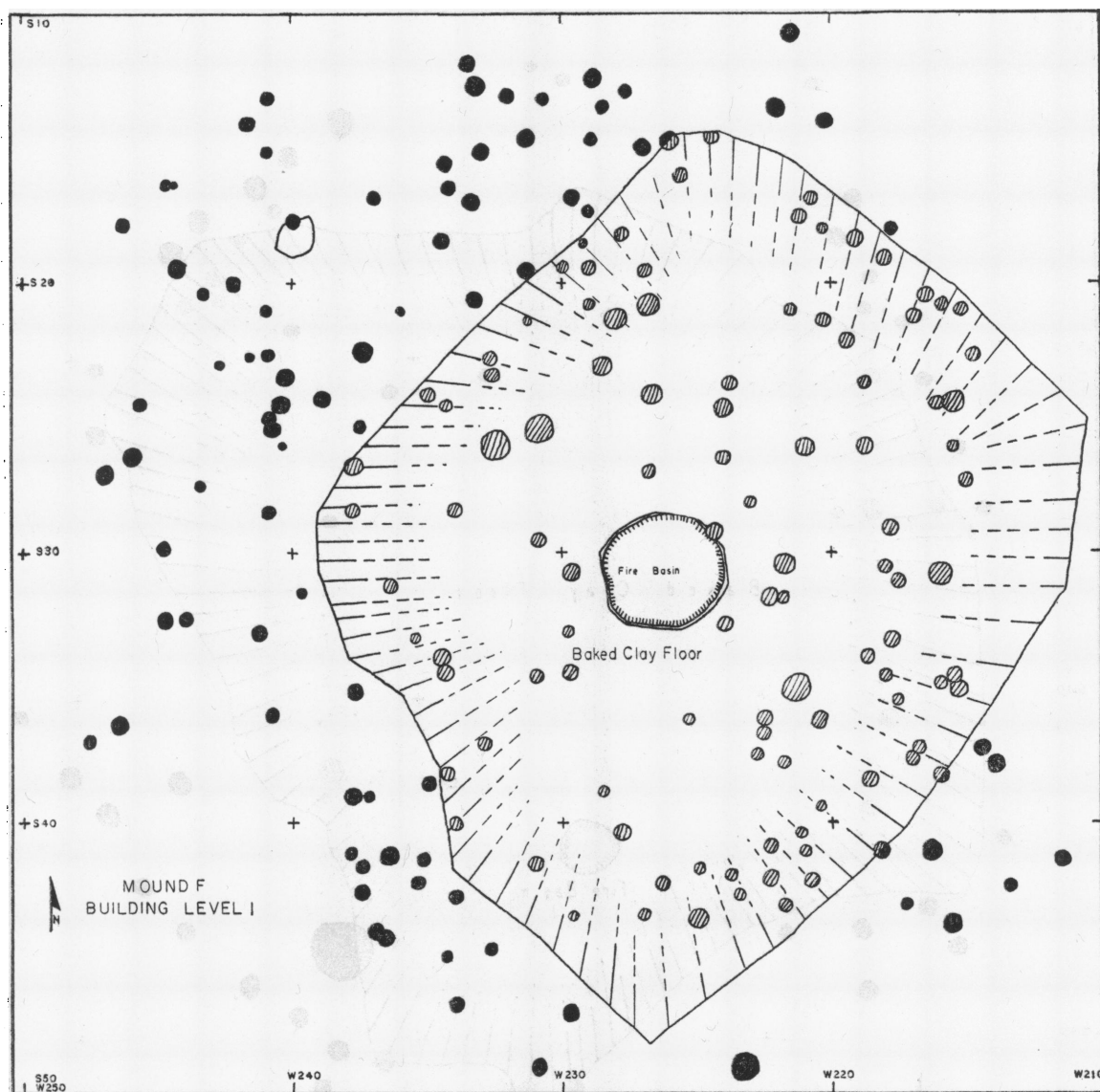


FIG. 9. Building Level 1 in Mound F. Shaded post holes originate beneath the clay floor.

small rectangular earth mound about 50 feet wide at the base and 2.5 feet high. The flat summit platform, measuring 35 feet in each direction, was oriented at almost 45 degrees to the cardinal directions. The first building was on the surface of this low mound and was marked by compacted and burned clay floor covered by a thin layer of refuse. Near the center of the floor, which was also the approximate center of the mound, was a large, basin-shaped fire pit 4.5 feet in diameter and 10 inches deep. The pit was lined with burned

clay. Its edges projected about 5 inches above the floor, suggesting that it had been made for use on a surface slightly higher than the clay floor. Further investigation confirmed the accuracy of this surmise, for immediately below the first pit was an earlier fire basin of the same size and shape, cut down from the floor. Evidently the higher basin was made after a considerable quantity of ashes and refuse had accumulated.

The roughly rectangular floor area was squared with the sides of the mound and meas-

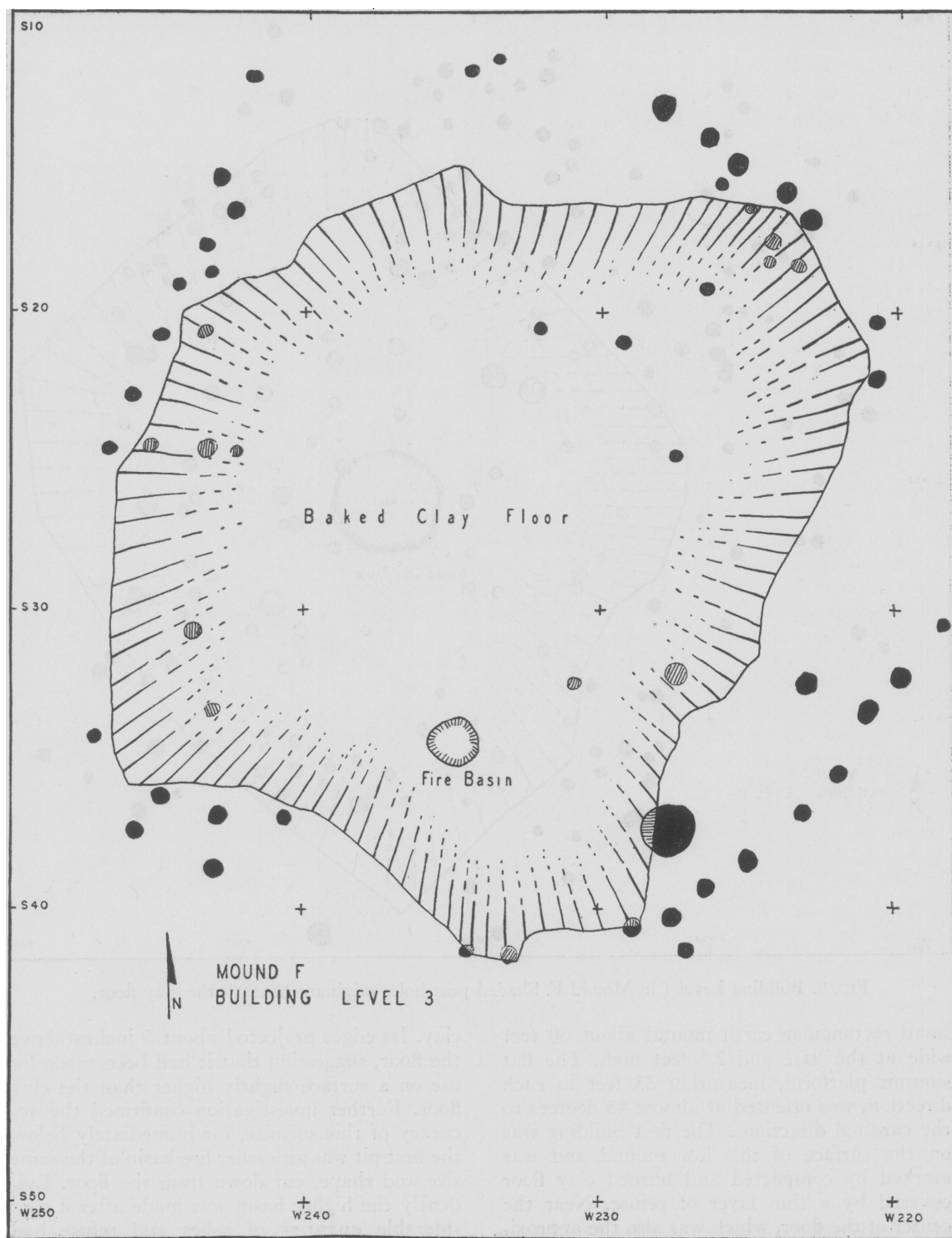


FIG. 10. Building Level 3 in Mound F. See Fig. 8 and Pl. 2b.  
Shaded post holes originate beneath the clay floor.

ured approximately 25 feet northwest-southeast and 28 feet in the opposite direction (Fig. 9). Towards the edges the packed and burned clay became less distinct, and the floor could not be outlined exactly. Numerous post holes were scattered about the edges of the floor, and with the assistance of some imagination a rectangular building about 30 feet square can be traced. The holes vary from 4 to 8 inches in diameter and are from 1 to 3 feet deep.

The second building level in Mound F is 2 feet higher than the first, and the summit platform of the small mound built at this stage is somewhat farther to the west. The second mantle is partially built over refuse accumulated on the flanks of the first mound on the western side, that is, the side away from the plaza. Though the shape of the second mound was not clearly outlined, it seems to have been rectangular. The packed and baked floor on its surface was also rectangular, about 17 feet east to west and 26 feet north to south. Scattered about the edge of the floor area were post holes so irregularly arranged that the plan of the building cannot be reconstructed. Only the shape of the ill-defined floor gives a clue, and this suggests a rectangular structure. A few feet to the northeast of the center of the floor was a shallow circular fire pit about 3 feet in diameter and 4 inches deep.

Only 1 foot of fill was added to Mound F to provide a new surface for the building that was placed on Level 3 (Fig. 10). The floor of the structure at this level, as were the floors of the earlier buildings, was formed by compacted clay partially fired, becoming much less distinct towards the edges. It was roughly rectangular, 24 feet northeast to southwest and 26 feet at right angles. Six feet to the south of the center of this floor area was a shallow fire basin, in rather battered condition, about 2 feet in diameter. Very few post holes showed at the level of the floor. However, when the surface was shaved down 3 to 4 inches, post holes averaging 6 inches in diameter were discovered. These outlined the sides of the irregular rectangular walls of a building about 25 feet square. Curiously enough, only the post holes of the central portion of each wall were present; the corner posts were missing. This structure was oriented at 45 degrees to the cardinal direction to conform to the alignment of the plaza, as has been suggested for the earlier buildings in this mound.

Building Level 4, a similar floor only 6 to 8 inches above Level 3, was the latest structure found in Mound F. At the center it was only 1 foot below the present plowed surface. Owing to cultivation the floor had been destroyed at its boundaries. Only two post holes were associated with it. The shape of the structure was not determined. A shallow fire basin in a poor state of preservation, similar to those found at a greater depth, occupied the approximate center of the remains of the floor. It had been circular, about 2 feet in diameter.

The number of construction stages that followed the four described above cannot be determined. Certainly there was one, and plowing may have destroyed several others.

#### BURIALS IN MOUND F

Two burials were discovered, in the process of excavating Mound F. They were located 20 feet apart underneath the main mass of the mound, on about the same level in the stratum of the midden accumulation that preceded mound construction. One of these (No. 625) was a human bundle burial with some of the bones articulated. Although most of the bones were in fairly good condition, some of the long bones were broken, apparently before they were deposited. The second burial (No. 626) contained the articulated skeleton of a dog lying closely flexed on its side.

No pits were discovered for either of these interments. Both were in the black midden soil where they had apparently been placed without any particular care. These two burials lay at about the horizon of Level 78 inches, as shown in the analysis graph of Mound F ceramics (Fig. 37), suggesting that the burials date from the transition from the Troyville to the Coles Creek periods.

#### ANALYSIS UNIT TWELVE

The material recovered from within and beneath the central portion of Mound F has been analyzed as Unit Twelve. The results are presented in Fig. 37. From this it can be observed that the deposits beneath the mound run through the Troyville Period and into the early part of Coles Creek. The first stage of mound construction may be dated as early Coles Creek. The material from the later construction stages, above Level 2, is so late that it appears to have crossed the upper limits that have been fixed for the Coles

Creek Period and dates in the later Plaquemine Period.

#### SHORT TRENCHES EAST OF MOUND F AND RESULTANT ANALYSIS UNIT EIGHT

As a further test for deposits in the plaza area in the vicinity of Mound F, two short, north-south trenches were made east of Mound F between lines West 175-180 (Fig. 3). No structures or other noteworthy features were found. The northernmost trench yielded so

little material that analysis was not possible, but the 35-foot long section to the south cut through about 2 feet of refuse-bearing soil and contained enough pottery to produce results. Material from this trench is graphed as Analysis Unit Eight (Fig. 37). This refuse dates in the Troyville Period and appears to be part of the accumulation that extends under Mound F. Apparently there were no substantial additions here of material originating on the building levels of the near-by mound.

### MOUND C AND INCLUDED BURIALS

Mound C and its almost indistinguishable companion, Mound D, were the two low, connected rises on the southeastern side of the plaza beside the bank of the buried lake (Fig. 3). The South 80-85 trench touched the northern edge of these low mounds. The chronological results obtained from the area of its closest approach to these mounds have already been discussed as Analysis Unit Two. The widening of this trench to the northward, adjacent to Mound C, has also been described as Unit Six. Both of these analysis units revealed a fairly clear and very similar picture of type frequencies from the middle of the Troyville Period to the end of the Coles Creek (Figs. 38-39).

In the trenches adjacent to these mounds between 2 and 3 feet of black soil, rich in sherds and broken bones, was exposed. Several levels were traceable through this midden and, while no building shapes were determinable, numerous post holes indicated construction activity. It seemed probable that some of the material handled in Analysis Units Two and Six derived from construction stages in Mounds C and D and that a test of one of them would provide another sequence of house structures, the earliest of which would be slightly older than the oldest structure in Mound F. Accordingly, we decided to excavate Mound C by the usual stripping technique. The logic that led to this decision is probably not open to question, but nothing can be gained by discussing it further; it was all wrong. We did not find any construction stages in Mound C, and much to our surprise the upper levels were full of burials.

The full extent of the excavations in Mound C is shown on the map (Fig. 3). After some preliminary trenching in a search for the building floors, which were not found, all of the area

was taken down in 3-inch levels. Profile drawings were made at 10-foot intervals, and small pillars of soil were left at each stake to assist in this.

Sterile Red River clay covered Mound C to a maximum depth of 1 foot. Underneath this a loaded stratum of gray Mississippi soil from 2 inches to 1 foot thick blanketed the low rise. This contained some cultural material and a considerable number of post holes which could not be aligned into any sort of structure. No burials were in this stratum.

Beneath the loaded soil the typical black midden, rich in cultural refuse, extended down to the original ground. This gradually accumulated layer had a depth of between 2 and 2½ feet and was divided by two surfaces, at which accumulation had paused for a time. These surfaces roughly divided the midden into thirds and were marked by patches of fired clay, small amounts of intentional soil loading, and numerous but apparently random post holes.

A total of 93 burials was found, nearly all in a small 25 by 30-foot square area in the top of Mound C: 84 human and nine dog skeletons (Fig. 11). Most of these burials were in the upper parts of the midden accumulation, but a few occurred in shallow pits or depressions in the lower levels directly on the old Mississippi surface. Neitzel expended considerable effort in an attempt at tracing the outlines of pits in which these burials might have been made, but in none was he able to define any that looked as though they had been dug intentionally. In several instances skeletons were huddled in shallow, basin-shaped depressions a few inches deep, but these may very well have been normal irregularities of the ground surface. Apparently the skeletons were dumped on the surface more or less carelessly, raked into any

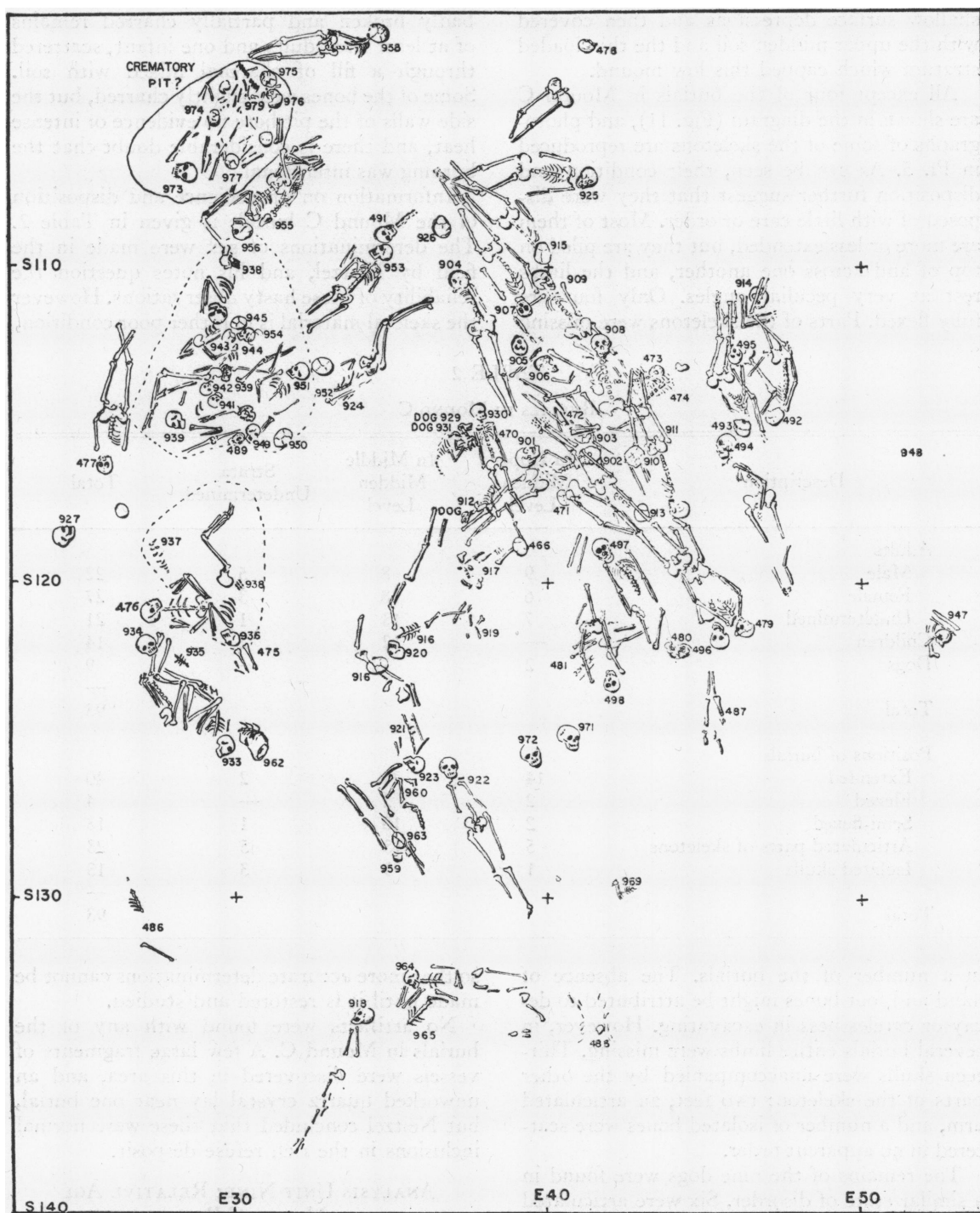


FIG. 11. Burials in Mound C. Some of these burials are shown in Pl. 5a-b. Burials are identified by numbers. Small crosses represent stakes of the site survey grid.

shallow surface depressions and then covered with the upper midden soil and the thin loaded stratum which capped this low mound.

All except four of the burials in Mound C are shown in the diagram (Fig. 11), and photographs of some of the skeletons are reproduced in Pl. 5. As can be seen, their condition and disposition further suggest that they were disposed of with little care or order. Most of them are more or less extended, but they are piled on top of and across one another, and the limbs rest at very peculiar angles. Only four are fully flexed. Parts of the skeletons were missing

badly broken and partially charred remains of at least five adults and one infant, scattered through a fill of charcoal mixed with soil. Some of the bones were slightly charred, but the side walls of the pit bore no evidence of intense heat, and there is considerable doubt that the burning was intentional.

Information on provenience and disposition of the Mound C burials is given in Table 2. The determinations of sex were made in the field by Neitzel, and his notes question the reliability of these hasty observations. However the skeletal material is in rather poor condition,

TABLE 2  
BURIALS IN MOUND C

Description	In Upper Midden Level	In Middle Midden Level	Strata Undetermined	Total
Adults				
Male	9	8	5	22
Female	6	18	3	27
Undetermined	7	13	1	21
Children	—	12	2	14
Dogs	2	7	—	9
Total				93
Positions of burials				
Extended	14	24	2	40
Flexed	2	2	—	4
Semi-flexed	2	10	1	13
Articulated parts of skeletons	5	13	5	23
Isolated skulls	1	9	3	13
Total				93

in a number of the burials. The absence of hand and foot bones might be attributed to decay or carelessness in excavating. However, in several burials entire limbs were missing. Thirteen skulls were unaccompanied by the other parts of the skeleton; two feet, an articulated arm, and a number of isolated bones were scattered in no apparent order.

The remains of the nine dogs were found in a similar state of disorder. Six were articulated and were scattered among the human skeletons. The other three were represented only by skulls.

The "crematory pit" shown in the upper left corner of Fig. 11 was an unusual feature. It was oval in shape,  $5\frac{1}{2}$  feet long and  $3\frac{1}{2}$  feet wide and about 2 feet deep. It contained the

so that more accurate determinations cannot be made until it is restored and studied.

No artifacts were found with any of the burials in Mound C. A few large fragments of vessels were discovered in this area, and an unworked quartz crystal lay near one burial, but Neitzel concluded that these were normal inclusions in the rich refuse desposit.

#### ANALYSIS UNIT NINE: RELATIVE AGE OF MOUND C BURIALS

The refuse in Mound C was excavated by 3-inch levels as consistently as the numerous burials allowed and was separated by 10-foot squares. The material from the entire excavated area shown on the map (Fig. 3) seemed to be



consistent in vertical distribution, so the excavation is presented as Analysis Unit Nine (Fig. 39). This unit fits fairly well into the early half of the time during which the site was occupied, the Troyville and early Coles Creek periods. If the burials were not placed in excavated pits but were laid on the somewhat irregular ground surface and covered, they should date from approximately the same time as the surrounding midden deposit.

The skeletons were found in levels that ranged from near the top of the refuse to the bottom, as has been described, but it was determined that the lowest burials were in shallow depressions. By far the majority were approximately in the center of the deposit, more or less on the horizon of our arbitrary Level 24 inches (see Fig. 39). The relative time position of this part of the deposit falls in about the middle of the Troyville Period.

### EXCAVATION OF MOUND D

Mound D, the small rise about 20 feet west of Mound C, was almost identical with it in appearance. Both mounds seemed to be parts of the same continuous deposit, and our assignment of separate designations to these insignificant 1-foot rises was purely arbitrary. However, examination showed that their resemblance was superficial.

An area about 70 feet east to west and 50 feet north to south (see map, Fig. 3) was excavated in Mound D, because we expected to discover burials similar to those in the neighboring mound. However, none were found, as the small rise owed its origin to an accumulation of midden, part of which probably originated in the small circular house structure that is described below.

A preliminary trench along the east side of the mound, between C and D, showed that three major strata could be expected in D. For this reason it was decided to remove the soil from the almost flat mound in four arbitrary levels, each 1 foot thick, which would roughly conform to the natural stratification, and sample the original surface beneath the deposit. Where the strata were most regular and undisturbed they can be described as follows: A cap of Red River deposited clay, averaging about 12 inches deep, rested over the whole mound. As usual, this was almost sterile of cultural material and is a natural accretion with no relation to the story of the cultural deposits.

The lowest refuse stratum immediately on the original Mississippi surface averaged about 1 foot thick. It was composed of black soil, with a considerable quantity of intermixed ashes. No intentionally deposited soil was apparent except for a few basket loads of gray clay on the east side of the area near Mound C. A circular house structure exposed on top of this stratum

was quite similar to the one already described as lying in the North 65-90, East 140-170 area between Mounds A and B. The pattern of this building was somewhat difficult to work out, owing to the lack of contrast in the soils, but the essential features are clear enough (Fig. 12, Pl. 4b). Apparently there were at least two, possibly three, stages of construction. On the western side of the circular buildings were two concentric wall trenches 1 foot wide and from .3 to 1 foot deep. Which was the earlier could not be discovered. There were a few post holes in the bottoms of these trenches; in addition there was an arc of spaced post holes to the inside of the trenches that may be a third building. Scattered post holes about .6 foot in diameter and spaced 1 to 2 feet apart outline the eastern side of the several sequential structures. These remains indicate buildings about 25 feet in diameter. Neither a clear floor level nor a fire basin was found for these structures.

On the south side, the walls of this house structure passed over one of the bathtub-shaped fire pits of the type already described. In Pl. 4b the outlines of the top of the pit can be seen to the left. Its origin was a few inches below the level on which the houses were defined, so it must be slightly earlier. The pit was  $8\frac{1}{2}$  feet long, 3 feet wide, and 3 feet deep. The ends were rounded, and the vertical clay walls were well baked to a depth of over an inch. Six inches of ashes had accumulated in the bottom of this pit; above this was a fill of mixed ash, charcoal, and midden soil. After the original pit had been half filled, it was shortened 1 foot at the northeastern end by a new puddled and fired clay lining. A second bottom, another ash layer, showed the depth of the modified pit.

The middle stratum in Mound D, the top cultural layer, also averaged about 1 foot thick. It was composed of rich, black, midden soil

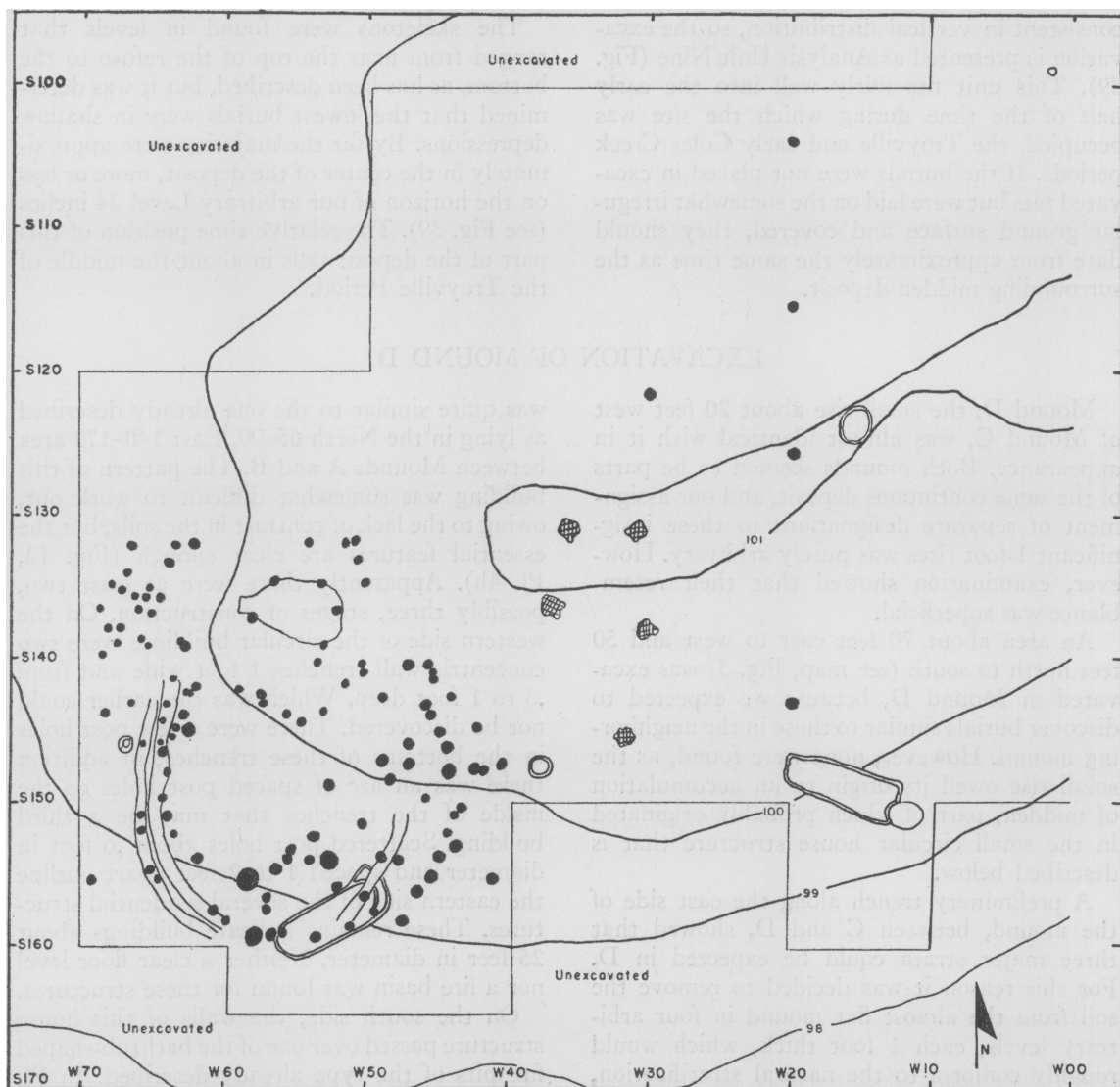


FIG. 12. House structure and related features in Mound D. See Pl. 4b.

that yielded quantities of sherds, broken bones, and other refuse. Two basin-shaped fire pits, both about 2.5 feet in diameter and .6 foot deep, were discovered near the top of this layer. These had possibly once served as fireplaces for house structures, but, if so, we were not successful in determining their outlines. As is usual in refuse accumulations there were numerous post holes, but no recognizable pattern was discernible.

The most interesting feature at this level was another bathtub-shaped pit with heavily fired, puddled clay walls. Its top was almost at the contact lines between the lower and upper

midden strata. It was approximately 8 feet long, 3 feet wide at one end, 2 feet at the other and 2.3 feet deep. The ends were rounded. Only ashes, burned clay, and mixed midden soil were found in this pit.

#### ANALYSIS UNIT FOURTEEN: RELATIVE AGE OF MOUND D DEPOSITS

The four arbitrary levels by which the soil composing Mound D was excavated did not conform exactly to the natural stratigraphy. Owing to the unevenness of the old surfaces, the top arbitrary level includes some cultural

material from the upper cultural layer beneath it. This is almost unavoidable when such thick levels are cut in slow-growing deposits. The lack of greater clarity in the graph of the ceramics from Mound D possibly can in part be attributed to this factor.

The graph of the material from this mound represents a total of 22,563 sherds. Classification of these is given as Analysis Unit Fourteen in Fig. 38. Despite the small percentage change there is essential agreement with the chronological pattern revealed by the other analysis units. This deposit contained a 3 to 4 per cent greater proportion of plain sherds than usual, tending to minimize slightly the always small percentages of decorated types.

#### EXCAVATED AREA AT SOUTH 20-70, EAST 90-130

A small rise 1 foot high on the bank of the buried Mississippi lake, about halfway between Mounds B and C, shows on the contour map (Fig. 3), but was not designated as a mound. In the hope of finding more skeletal material to add to that taken from Mound C, we excavated an area measuring 40 by 50 feet in arbitrary 1-foot levels. As in Mound D the expectation of burials was not realized, and the principal results of this excavation were three more of the curious bathtub-shaped fire pits.

The deposits here consisted of two midden layers beneath an 8-inch capping of sterile Red River clay. Although the contact line between the midden deposits was very irregular, the two were of about equal thickness, and together they totaled 3 feet of refuse (the usual greasy black soil, ashes, scattered fragments of charcoal, broken animal bones, and potsherds). Scattered post holes were found, but Neitzel was not successful in finding any alignments.

At the top of the lower midden zone were discovered two superimposed bathtub-shaped fire pits similar to those already mentioned. The smaller and earlier pit was oval in outline, 6 feet long, 3 feet wide, and 2 feet deep. It was oriented north to south. The vertical walls and the slightly rounded bottom were dressed with puddled clay which was deeply fired. The fill was composed of hard-packed ash and burned earth. The larger pit had been dug after the

All the material from Mound D seems to date from a short span of time early in the Coles Creek Period. The second arbitrary level which contains over half the sherds recovered (12,722) includes most of the refuse above the level on which the small circular houses were found. This refuse was probably deposited while the structure was occupied and may be presumed to date the building as early Coles Creek. The two bathtub-shaped fire pits described are earlier than the house structure, but again, judging from the associated ceramics, they are not much earlier. They too date from near the arbitrary line that we have drawn between the Coles Creek and Troyville periods.

smaller was completely filled. It was started from the same level as the smaller and its long axis lay northeast-southwest, with one end cutting halfway through the northern end of the smaller pit. The large pit was rectangular, with rounded corners, 9 feet long, 4.8 feet wide, and 2.2 feet deep. The walls were deeply burned, and the fill was similar to that of the earlier pit.

Ten feet northeast of these two pits and on the same stratigraphic level a third was discovered. Rectangular in shape, with rounded corners, this pit was 6.4 feet long, 2.2 feet wide, and 3.4 feet deep. It was oriented northeast-southwest. The vertical side walls were fired as in the other two pits, and the fill consisted of a similar mixture of ashes and burned clay.

#### ANALYSIS UNIT FIFTEEN

The pottery from the four arbitrary levels that were made in this excavation is represented in the graph shown in Fig. 41. It can be seen that this deposit agrees almost exactly with that from Mound D and represents a short portion of the early part of the Coles Creek Period. The three curious fire pits described above originated in what is shown as arbitrary Level 9 inches and thus seem to date from very near the dividing line between the Troyville and Coles Creek periods.

## CERAMIC CLASSIFICATION

WITHIN THE PAST DECADE or so there has been a tendency among the other students of cultural phenomena, happily occupied with such fascinating devices as Rorschach tests, native autobiographies, and statistical analyses of living cultures, to decry the archaeologist's obsession with potsherds and to accuse the humble sherd shuffler of trying to stick his head in the philosophical sands and deal with immutable facts. This bitter denunciation must be admitted in some instances, but I hope not in all. Patience and tolerance are indicated for the weary ditch diggers with their feet in the mud and their noses among the potsherds, for these abundant and sensitive registers of cultural influence offer the best opportunities for viewing culture change through appreciable spans of time. They also serve as the best measuring devices for the relative dating of accompanying phenomena.

In this, as in most recent archaeological studies, pottery types are regarded and used as segments artificially and arbitrarily selected out of the continuums of the prehistoric ceramic traditions to measure time change and relationships to parallel developments in near-by geographical areas.

The classification system that has been applied to the pottery from the Greenhouse Site is essentially that adopted at Birmingham, Alabama, by an informal meeting of archaeologists working in the Southeast in 1939. This system is based on that which has been in use in the Southwestern archaeological area for a number of years and has been described by several writers.<sup>1</sup> The classificatory groupings are defined by delimiting a range of all the ceramic features observable in the material, but decoration and surface finish are relied upon to give the most minute typological separation. The subdivision of highly similar groups of material on the basis of any feature is considered desirable if it can be done consistently

and if additional chronological or areal information results. The merging of similar groupings that do not produce such information is also considered good practice.

A note of correction, or rather of change, should be interjected here regarding the type descriptions under the same names which Gordon Willey and I published in the mimeographed News Letter of the Southeastern Archaeological Conference in 1939.<sup>2</sup> Since that date the Plaquemine Period has been defined, as the result of a better knowledge of the later phases of prehistory in this region. Some of the characteristics included in the older definition of Coles Creek Period types are now considered to be attributes of newly defined types that date in the Plaquemine Period. For that reason it is intended that the following type descriptions shall supersede the earlier ones.

For the analysis of ceramic trends only the sherds were used that were recovered in the areas included in analysis units as shown in the map (Fig. 3). These included the major part, but not all, of the site collection. In the preparation of the type descriptions given in the following pages all the sherds recovered from the site were reviewed. This was a large number of sherds, but unfortunately the majority were broken into such small fragments that it was only rarely that vessel forms could be deduced. This, the complete absence of entire vessels from the site, and the circumstance that only type collections are here in New York account for the relatively meager information I have been able to present on this subject. The drawings of vessel shapes which follow were not made from reconstructed vessels. The upper vessel walls are correctly reproduced, and I know that the bases shown are appropriate for each of the types and general shape group, but in very few instances is it possible to say that a drawing is entirely based on a specific reconstructable vessel.

### TROYVILLE PERIOD TYPES

For the sake of convenience the pottery types applied to the classification of the Greenhouse Site ceramics are grouped according to three periods: Troyville, Coles Creek, and Plaque-

mine. This listing does not mean that these types are confined to these periods, for they are generally also found in small quantities in both the preceding and following divisions of

<sup>1</sup> Haag, 1939; Krieger, 1944.

<sup>2</sup> Haag, 1939.

time. Types are listed according to the temporal position of maximum frequency.

Types that are described as belonging to the Troyville Period are as follows:

Troyville Stamped  
Yokena Incised  
Churupa Punctated  
Mulberry Creek Cord Marked  
Mazique Incised  
Larto Red Filmed  
Woodville Red Filmed  
French Fork Incised<sup>1</sup>  
Troyville Plain  
Coles Creek Polished Plain

### TROYVILLE STAMPED

Plate 7, Figure 13

#### PASTE

METHOD OF MANUFACTURE: Coiled.

TEMPERING: Large particles of clay. Small fragments of carbonized vegetable matter are less common than in such later types as Coles Creek Incised.

TEXTURE: As seen in cross-section the paste is lumpy and contorted owing to the inclusion of clay particles and poor wedging.

COLOR: Shades of gray in both paste and surface. Fairly well-controlled firing in a reducing atmosphere is indicated, with only a few localized pinkish blotches resulting from oxidation. Interior smudging is fairly common.

#### SURFACE FINISH

Surfaces are crudely smoothed and the finer material floated, but are uneven and bumpy. Tooling marks show faintly.

#### DECORATION

Troyville Stamped is decorated with line-bordered bands of rocker stamping separated by bands of smoothed and unroughened vessel surface. The incised lines were cut with a tubular instrument so that they tend to be round bottomed and were somewhat carelessly drawn. Hemi-conical punctations are occasionally placed at ends of lines. The rocker stamping was done by rocking a tool back and forth as it was moved sidewise. This tool was usually unnotched, the zigzags are rather wide apart, and the decorations are, on the whole, rather sloppily executed. This contrasts with the neat execution of Marksville

Stamped, the earlier type from which this one clearly derives.<sup>2</sup>

The decorative motifs are meanders and similar repetitive designs—usually curvilinear. Bird motifs, so common in Marksville Stamped, are not found. The question as to whether the majority of the design motifs were effected by the smoothed bands ("negative treatment"), or the roughened areas formed the designs, with the smoothed surfaces serving as background, cannot be settled in the case of most of the sherds. Both were noted on the rare large fragments of Troyville. The negative treatment characterized Marksville Stamped.

The decoration of Troyville Stamped is usually confined to a band that occupies the upper half or two thirds of the exterior vessel walls. Incised lines border the decoration area both above and below. When the vessels of this type have thickened rims the decoration begins beneath the rim; when the rims are direct there frequently is an undecorated area 1 to 3 cm. wide between lip and decoration. In contrast, decoration on Marksville Stamped covers all the vessel side walls.

#### FORM

The number of body shapes that could be determined from the sherds was too small to permit statistical analysis. Variations on the jar, with vague shoulders and short necks, were most common (Fig. 13a). Flat bases seem to be usual for this form, and a proportion of these are square. Barrel-shaped vessels (Fig. 13d) are probably next in popularity. Small, flaring-sided bowls with flat bottoms are the third shape indicated (Fig. 13b-c).

Only 25 rims are included in the small type collection available for study in New York. Five of these are direct rims with rounded or square lips. The balance are thickened and have a wide variety of profiles of the general group which is also shared by the types Yokena Incised and Churupa Punctated (see Figs. 13e, i-j; 14i-r). Two sherds have incised lines in the lip, and nine, an unusually large number for so small a collection, have notches on the exterior of the lip.

Vessel wall thickness averages 7 mm.; range, 4 to 9 mm. The vessel bases are thicker than the side walls. The sizes of vessels could not be determined often enough for very specific measurements, but most of them seem not to have been over 20 to 25 cm. in diameter.

#### USUAL RANGE OF TYPE

Troyville Stamped has been found in the Mississippi Valley flood plain region of Louisiana. At about the latitude of the Arkansas-Louisiana boundary it becomes impossible to distinguish consistently

<sup>1</sup> The time position of the maximum of French Fork well illustrates the artificiality of the time periods and, consequently, of the division of the types. The French Fork maximum falls exactly on the line that has been drawn between Troyville and Coles Creek. It might have been listed just as logically with the types of the later period.

<sup>2</sup> Ford and Willey, 1940, 65-74.

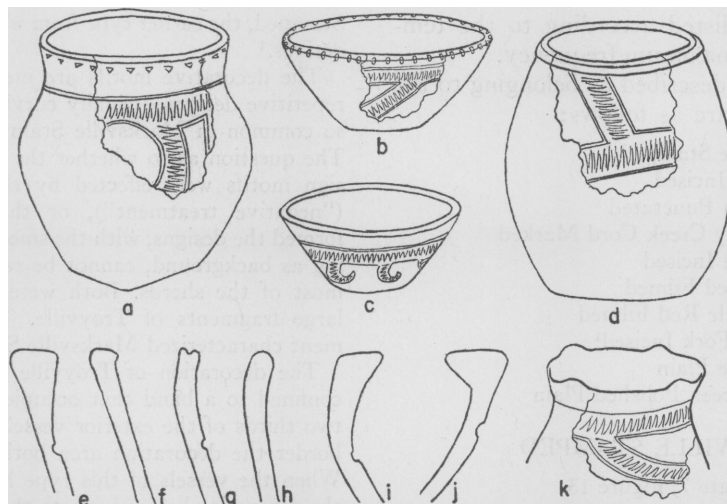


FIG. 13. Shapes and rim profiles of Troyville Stamped. These shapes are deduced from sherds, for no whole vessels were found. See Pl. 7a-l.

between this type and its ancestral form, Marksville Stamped.<sup>1</sup> How far the distinction can be maintained to the north and east of the mouth of the Red River is not clear. Apparently it is impossible on the northwest coast of Florida where Willey has set up the comparable type Alligator Bayou Stamped.

#### CHRONOLOGICAL POSITION OF TYPE

Troyville Period.

#### PROBABLE RELATIONSHIPS OF TYPE

Troyville Stamped has obviously developed directly from Marksville Stamped. The parallel type on the northwest coast of Florida is Alligator Bayou Stamped of the Santa Rosa-Swift Creek Period.<sup>2</sup>

#### BIBLIOGRAPHY

- Ford, 1936, 222-223. Troyville is not differentiated from Marksville Stamped in description and illustrations.  
 1935, 12 (Type 14a), Pls. 1, 2.  
 Ford and Willey, *in* Haag, 1939.  
 Walker, 1936, Pls. 10a-d, f, 12.

#### YOKENA INCISED

Plate 8, Figure 14

#### PASTE

**METHOD OF MANUFACTURE:** Coiled or built with annular rings. Coil line breaks are common.

**TEMPERING:** Small lumps of clay, small fragments of carbonized vegetable matter, and, frequently,

<sup>1</sup> Phillips, Ford, and Griffin, 1951, 91-94.

<sup>2</sup> Willey, 1949, 372-374.

lumps of white stone that are probably volcanic tufa.

**TEXTURE:** The paste is somewhat lumpier, more contorted, and laminated than is material of the type Coles Creek Incised.

**HARDNESS:** Slightly softer than Coles Creek Incised. Average about 2.

**COLOR:** Almost entirely light to dark gray. Firing was in a reducing atmosphere, and there is very little oxidation of portions of the vessel surfaces. The paste is dark brown in a few sherds.

#### SURFACE FINISH

The vessels were smoothed, but not scraped, producing a smoothed "bumpy" surface on which tool marks are visible. The surfaces of the sherds are slightly soft and have a "chalky" appearance and feel, in contrast to the better-fired Coles Creek Period types.

#### DECORATION

Yokena Incised designs were always incised with a tubular instrument, probably a reed, held at an angle so that it formed broad lines, semicircular in section, varying from 2 to 4 mm. in width. The incising was done after the vessel surface had become leather hard, so that the excised clay was removed cleanly and did not plow up on the adjacent surfaces. Made with the same tubular instrument, hemi-conical punctations frequently occur, either detached or at the terminations of lines, in these decorations (Pl. 8p-v). Sometimes the instrument was deeply impressed into the vessel surface before it was lifted at the ends of lines, producing the same effect.

The decorations are predominantly curvilinear. Meander motifs formed by a number of closely

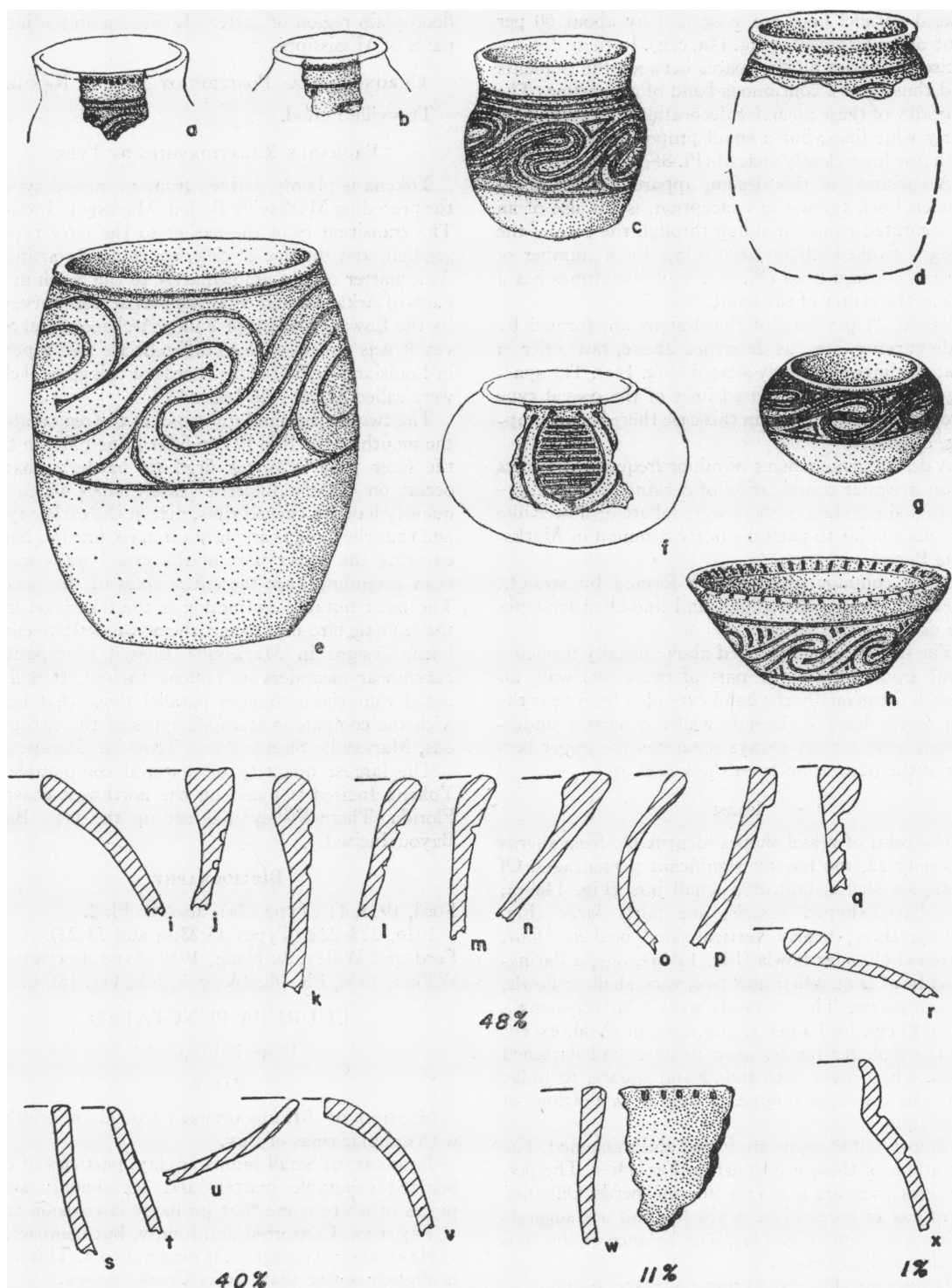


FIG. 14. Shapes and rim profiles of Yokena Incised. Vessel shapes are reconstructed from sherds. i-r. Folded rims. s-v. Direct rims. w. Notched or punched rims. x. Cambered rims. See Pl. 8.



placed parallel lines are suggested by about 60 per cent of the fragments (Fig. 14a, c, g). In these designs incised triangles fill the spaces between the elements and thus form a continuous band of decoration. The majority of these meander decorations are formed by fairly wide lines, but a small proportion are incised with fine lines closely spaced (Pl. 8f-k).

A variation of this design, apparently related to French Fork Incised in conception, is the use of an undecorated band extending through the core of the design, flanked above and below by a number of parallel, incised lines (Pl. 8e). This sometimes has a line in the center of the band.

About 20 per cent of the designs are formed by wide curving lines, as described above, but differ in that the lines are widely spaced (Fig. 14e). The spacing is similar to the incised lines of the coeval type Troyville Stamped, but in this case there is no stamping, of course.

A design arrangement of minor frequency consists of an irregular combination of curving lines (Pl. 8q-s). In some instances these were lobate or flower-like designs similar to patterns fairly common in Marksville Period ceramics.

Least common are patterns formed by straight lines (Pl. 8w-x). Rectangles and line-filled triangles are usual for this group.

The decorations described above usually formed a band around the upper part of the vessel wall, although occasionally the band extended from near the rim to the base of the side walls. A narrow undecorated band almost always separates the upper border of the decoration from the vessel lip.

#### FORM

The total of vessel shapes identifiable from sherds was only 22, too few for significant percentages. Of these, six sherds indicated small jars (Fig. 14a-c); five, barrel-shaped vessels, one fairly large (Fig. 14d-e); three, nearly vertical-sided beakers; four, flattened globular bowls (Fig. 14f-g); one, a flaring-sided bowl (Fig. 14h); and two, very shallow bowls, almost plates. These vessels were relatively small, 15 to 30 cm. in diameter, and most of them, except for the globular bowls, seem to have had flattened bases. These were both round and square, to judge from the few base fragments that show portions of decoration.

Almost half the rims are folded and thickened. The variations of these are shown in Fig. 14i-r. The percentages given are based on 106 rim sherds. Only one sherd has an incised line in the lip, and one suggests a cambered rim (Fig. 14x). The balance of the rims are direct (Fig. 14s-v).

THICKNESS: Five to 10 mm.; average, 6 mm.

#### USUAL RANGE OF TYPE

Yokena Incised is found in the Mississippi Valley

flood plain region of eastern Louisiana and adjacent parts of Mississippi.

#### CHRONOLOGICAL POSITION OF TYPE IN RANGE

Troyville Period.

#### PROBABLE RELATIONSHIPS OF TYPE

Yokena is plainly derived from an incised type of the preceding Marksville Period, Marksville Incised.<sup>1</sup> The transition from the earlier to the later type is gradual, and the line of cleavage is clearly artificial. As a matter of fact, immediately to the north in the parts of Arkansas and Mississippi that were surveyed by the Lower Mississippi Valley Archaeological Survey it was not possible to differentiate two types as in Louisiana, and all of the sherds of this general class were called Marksville Incised.<sup>2</sup>

The two earlier and later types in the region about the mouth of the Red River differ principally in that the later type is better fired (is harder); that it occurs on slightly different vessel shapes which frequently have thickened rims, rare in the earlier type; and that the designs are most often confined to bands covering the upper part of the vessel walls rather than extending over the entire sides of the vessels. The most notable distinction is the transition from the realistic bird motifs and the non-repetitive curvilinear designs in Marksville Incised to repetitive curvilinear meanders in Yokena Incised. It will be noted that these changes parallel those that occur with the companion stamped types of the two periods, Marksville Stamped and Troyville Stamped.

The largest quantity of material comparable to Yokena Incised is found on the northwest coast of Florida. There Willey<sup>3</sup> has set up the type Basin Bayou Incised.

#### BIBLIOGRAPHY

Ford, 1935, 11 (Type 12a); also see Pl. 2.  
1936, 223-224 (Types 45;23;6, and 51;23).  
Ford and Willey, *in* Haag, 1939 (type description).  
Walker, 1936, Pls. 9b; 10e, g-h, j-k; 11j; 15f, h.

#### CHURUPA PUNCTATED

Plate 7, Figure 15

#### PASTE

METHOD OF MANUFACTURE: Coiled or built up with annular rings of clay.

TEMPERING: Small lumps of clay, particles of carbonized vegetable matter, and occasionally small pieces of white stone that probably is volcanic tufa.

TEXTURE: Contorted and lumpy, but compact.

HARDNESS: Average, 2.5; range, 2 to 3. This ware is slightly softer than Coles Creek Incised.

<sup>1</sup> For type description, see Ford and Willey, 1940, 78.

<sup>2</sup> Phillips, Ford, and Griffin, 1951, 94-95.

<sup>3</sup> Willey, 1949, 575-576.

**COLOR:** Predominantly gray, indicating firing in a reducing atmosphere. The interior paste of some sherds is black, showing that low firing temperatures were used. Smudging of vessel interiors is rare.

#### SURFACE FINISH

Surfaces have been smoothed, but because they were not scraped are somewhat irregular and bumpy.

#### DECORATION

Curvilinear bands of hemi-conical punctations bordered by wide, round-bottomed, incised lines. Lines and punctations were made with the same small tubular instrument. The punctated bands alternate with plain areas of the vessel surface in a

#### USUAL RANGE OF TYPE

Churupa Punctated seems to have a more limited range than the more popular companion types of the Troyville Period. Very few sherds have been found farther up the Mississippi Valley than the mouth of the Yazoo River.

#### CHRONOLOGICAL POSITION OF TYPE

Troyville Period.

#### PROBABLE RELATIONSHIPS OF TYPE

Churupa Punctated may have been derived from some of the early zone-punctated decorations of the Tchefuncte time horizon such as Orleans Punctated.<sup>1</sup> However, it seems very doubtful that any transition

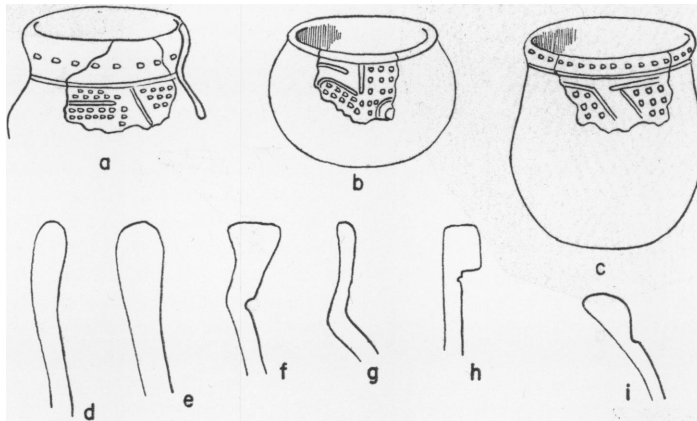


FIG. 15. Shapes and rim profiles of Churupa Punctated. Shapes are reconstructed from sherds. See Pl. 7m-t.

fashion directly comparable to the companion type Troyville Stamped. The sherds are too fragmentary for many of the motifs to be determined, but scroll or meander patterns seem to be usual.

Several sherds suggest that this decoration is usually confined to a band that covers the upper half or two thirds of the vessel walls. A narrow undecorated zone is left around the vessel rim which may or may not be occupied by a folded rim strap.

#### FORM

Sherds of Churupa Punctated were not large enough for the vessel shapes to be defined very clearly. Several small jars and one deep bowl are the only forms indicated (Fig. 15a-c). The bases shown for these vessels are nothing more than guesses. It seems probable that flattened bases, round and square, are as common for this type as for the coeval and closely related decorations such as Troyville Stamped.

Decorated rim sherds are also too scanty for percentages of rim forms to be significant. Variations of thickened rims similar to those of Troyville Stamped and Yokena Incised are common (Fig. 15d-i).

of this decoration idea occurred in the local area through the Marksville time period.<sup>2</sup> The very similar type Santa Rosa Punctated<sup>3</sup> of the Florida Gulf Coast may be the connecting link missing in Louisiana.

#### BIBLIOGRAPHY

- Ford, 1935, 12 (Type 14d); also see Pl. 2.  
1936, 220-222; also see various figures.  
Ford and Willey, *in* Haag, 1939 (type description).  
Phillips, Ford, and Griffin, 1951, 95-96.  
Walker, 1936, Pl. 14a-c, g, k.

#### MULBERRY CREEK CORD MARKED<sup>4</sup>

Plate 9, Figure 16

#### PASTE

**METHOD OF MANUFACTURE:** Coiled. Coil line breaks are common.

<sup>1</sup> Ford and Quimby, 1945, 62-63.

<sup>2</sup> Rare related examples are shown by Ford and Willey, 1940, Fig. 37g-j, but are so scarce in Marksville Period deposits that it has not been necessary to set up a type.

<sup>3</sup> Willey, 1949, 378.

<sup>4</sup> Original description, Haag, 1939.

**TEMPER:** Small lumps of clay, carbonized particles of vegetable matter. Some of the sherds have fragments of white stone, probably volcanic tufa.

**TEXTURE:** The paste is lumpy and contorted owing to the large size of the particles of tempering material.

**HARDNESS:** Average, 2.5; range, 2 to 3.

**COLOR:** The paste is predominantly gray, indicating that the ware was well fired in a reducing at-

region the paddled finish may in some instances have been utilized as a decoration rather than in its original function as a means of shaping the vessels.

The cord impressions vary in size from fine to large, and while usually they are wrapped closely together around the paddle they may be separated by as much as a centimeter. There is no apparent design to the cord impressions that form this surface finish. The paddle was applied in a random fashion.

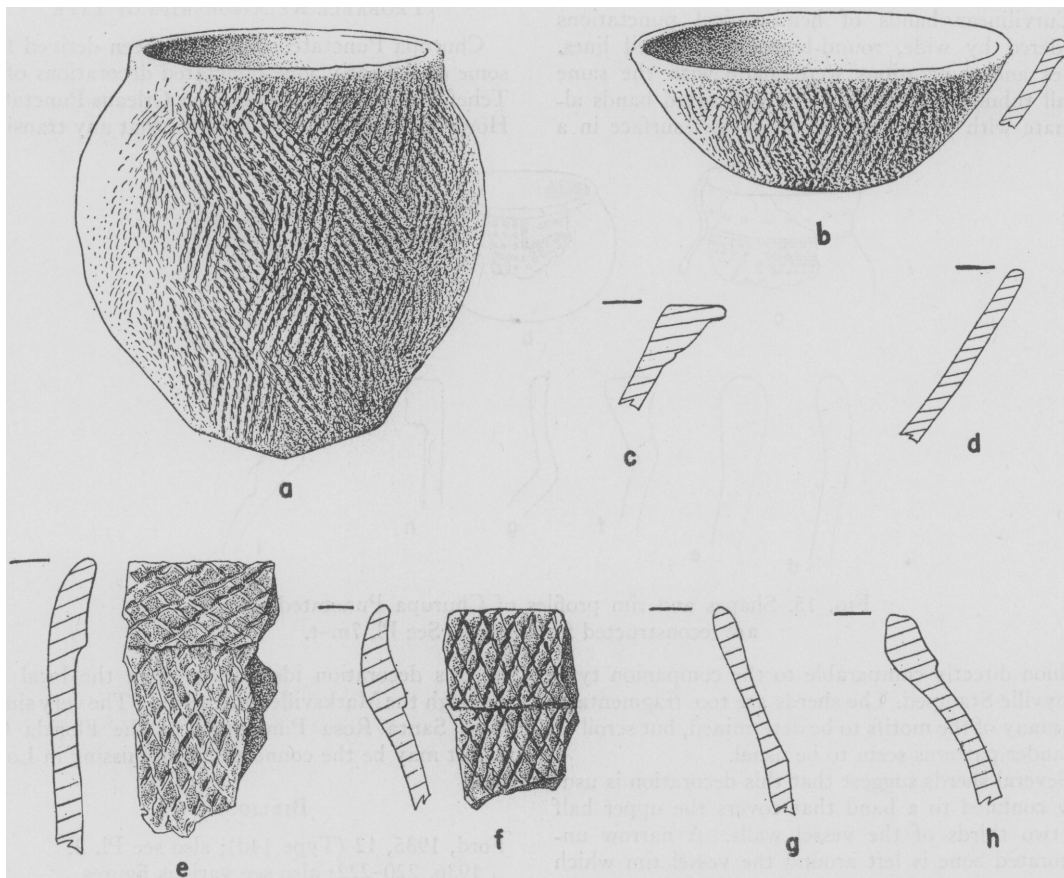


FIG. 16. Shapes and rim profiles of Mulberry Creek Cord Marked. Shapes are based on evidence from sherds. See Pl. 9.

mosphere. The surfaces are also usually gray, a slightly darker shade than the paste. Intentional smudging of the vessel interior was noted on some sherds.

#### SURFACE DECORATION AND FINISH

The interior surfaces of the sherds have been carelessly smoothed, leaving the surfaces uneven and bumpy. On some of the pieces with widely spaced cord impressions, the exterior surface was also roughly smoothed before the cord-wrapped paddle impressions were applied, suggesting that in this

However, the vessel and the paddle seem to have been held so that most of the impressions are at an angle to the plane of the vessel mouth. A second paddling of the vessel to produce a criss-cross arrangement of the cord impressions is usual. Occasionally parts of the impressed surface are smoothed over.

This paddled finish generally extends from the lip to the base of the vessel. All of the identifiable bases are flat, and these are not cord marked on the bottom.

Included in the Mulberry Creek category at

Greenhouse are several sherds which show that cord marking has been placed on the lower parts of vessels, with a Coles Creek Incised type of decoration about the rim (Pl. 9k). In these examples the cords tend to be smaller and the impressions are more neatly applied than is customary. Perhaps this interesting merging of the two decorations should have been classified as a separate type, but the scarcity of examples hardly seems to warrant this.<sup>1</sup> However, this delicate marking is not a feature of the type as originally described.

#### FORM

The forms of only 10 vessels could be determined from the rim sherds available. Two of these were large cauldrons with vague shoulders (Fig. 16a), five were large barrel-shaped vessels, and three were large, medium deep, simple bowls (Fig. 16b). The average diameter of the jar forms seems to have been about 30 to 35 cm., and they were undoubtedly slightly higher than wide. The side walls of the vessels average about 7 mm., ranging from 5 to 10 mm. The bases are thicker than the side walls.

The four identifiable bases are from jar forms; all are flat, square, and are not cord marked on the bottom.

The rims of Mulberry Creek Cord Marked are uneven and carelessly finished. Of the 29 in the type collection from Greenhouse 12 are direct, with flattened, rounded, or out-curved and pointed lips. The balance of the rims have wide straps of clay folded outside and crudely welded to the vessel wall. In at least one rim the wall was paddled before the rim strap was folded. Additional paddling has been applied to the surface of the rim strap. Five of the folded rims have crude notching on the lip.

#### USUAL RANGE OF TYPE

Mulberry Creek is one variety of the widespread cord-marked ware found throughout the Eastern United States. This clay-tempered variety is found from Pickwick, Wilson, and Wheeler Basins on the Tennessee River, where it was originally described,<sup>2</sup> through the alluvial valley region of western Mississippi and eastern Arkansas.<sup>3</sup> It is relatively abundant in the Yazoo Valley in Mississippi, but decreases markedly in quantity towards the south. The region about the mouth of the Red River is about the limit of its southward extent in the Mississippi Valley.

#### CHRONOLOGICAL POSITION OF TYPE

Near the mouth of the Red River the type maximum dates in the Troyville Period. It first appears

<sup>1</sup> For additional examples, see Ford, 1936, Fig. 35m.

<sup>2</sup> Haag, 1939, description of type Mulberry Creek Cord Marked.

<sup>3</sup> Phillips, Ford, and Griffin, 1951, 82-87.

in small percentages in the upper levels of the Marks-ville Site and reaches its maximum of about 2 per cent in the lower levels of the Greenhouse Site. During the latter half of the period of occupation of the Greenhouse Site it disappeared.

#### BIBLIOGRAPHY

Ford, 1935, 12 (Type 9a), also Pl. 5.

1936, 145-146 (Type 11;81;14).

Ford and Willey, *in* Haag, 1939. Type described as Deasonville Cord Marked.

Phillips, Ford, and Griffin, 1951, 82-87, Fig. 79.

Walker, 1936, Pl. 13.

#### REMARKS ON TYPOLOGY OF MULBERRY CREEK CORD MARKED

The cord-marked, clay-tempered pottery found in Louisiana and the Yazoo Valley region of Mississippi was first distinguished as a type and named "Deasonville Cord Marked." The name was derived from a description of this material from Yazoo County, Mississippi, published by Collins in 1932.<sup>4</sup> In the mimeographed News Letter of the Southeastern Archaeological Conference, a definition of the type based principally on material from Louisiana was published under the name "Deasonville" in May, 1939,<sup>5</sup> shortly after the group of archaeologists working in northern Alabama had published a description of similar material under the name "Mulberry Creek."<sup>6</sup>

When Phillips, Griffin, and I began a survey of the alluvial valley of the Mississippi River we started the work of classification in the northern part of the region close to Tennessee Valley basins where Mulberry Creek Cord Marked had been defined, and since the cord-marked sherds could not be separated from Mulberry Creek it appeared best to apply that name to the type.<sup>7</sup> As the work progressed southward the cord-marked wares changed very slightly in the direction of what was then called "Deasonville Cord Marked," until it became apparent that consistent sorting of the two types would be impossible. For that reason it was deemed advisable to drop the name "Deasonville" and group all of the lower valley cord-marked pottery under the name Mulberry Creek. While a certain proportion of the material can be separated at the extremes of the geographical range of the type, consistency is impossible.

The differences in this type from the northern to the southern parts of its range represent a gradual modification of the features that characterize the classic Woodland cord-marked ware in the north. Globular, coconut, and amphora forms found in the Tennessee Valley tend to be replaced in Louisiana by

<sup>4</sup> Collins, 1932.

<sup>5</sup> Haag, 1939.

<sup>6</sup> *Ibid.*

<sup>7</sup> Phillips, Ford, and Griffin, 1951, 82-87.

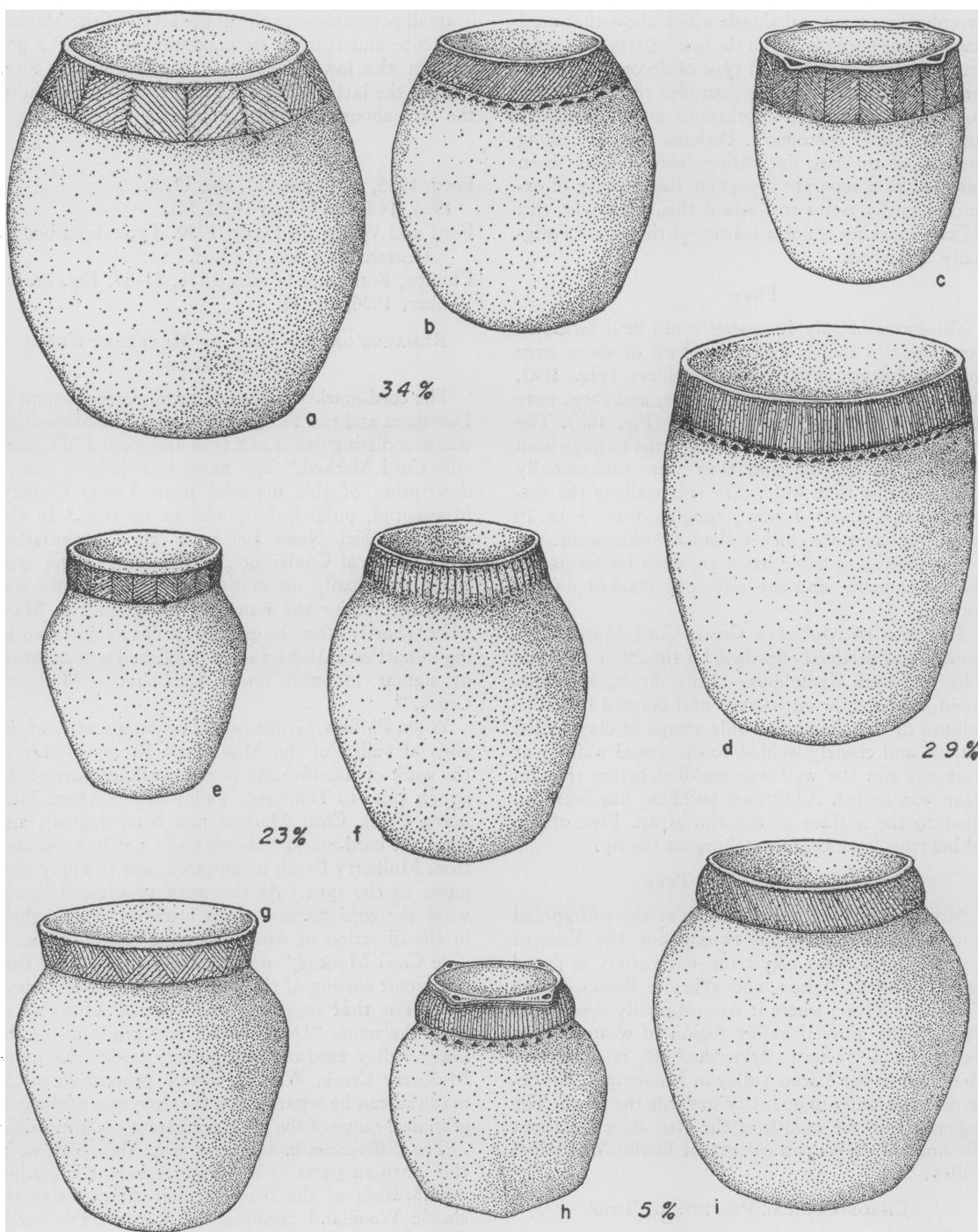


FIG. 17. Shapes of Mazique Incised. These reconstructions are based on evidence derived from sherds. a-b. Barrel form. c-d. Wide-mouthed pot. e-g. Shouldered pot. h-i. Pot with cambered rim. See Pl. 10.

jar forms such as are found in the accompanying Troyville Period types. Flattened bases that are often square replace rounded and conoidal bases. Bowl forms become more numerous.

### MAZIQUE INCISED

Plate 10, Figures 17-18

#### PASTE

**METHOD OF MANUFACTURE:** Coiled or built up with annular rings.

**TEMPERING:** Similar to that of Coles Creek Plain. Small lumps of clay, bits of carbonized vegetable matter, and fragments of white stone, probably volcanic tufa.

**TEXTURE:** Contorted and lumpy, but compact.

**HARDNESS:** Average, 2.5; range, 2 to 3.

**COLOR:** Shades of gray predominate in both sherd interiors and surfaces, indicating that the material was fired in a reducing atmosphere. Pinkish surface blotches are fairly common, showing that the firing was not well controlled. Inner surfaces are occasionally smudged.

#### SURFACE FINISH

The vessels were not scraped and were smoothed both on the interior and exterior, with the result that they are somewhat bumpy.

#### DECORATION

The decorations that characterize Mazique Incised consist of several arrangements of straight, parallel lines, incised when the vessels were leather hard so that the excised clay was removed cleanly. The lines usually "overhang" like the incised lines of Coles Creek Incised. Lines made with a pointed instrument are next in frequency, and least common are wide, round-bottomed lines that usually terminate in punctations.

A study of 660 sherds large enough to determine their decoration plan gave the following results:

	PER CENT
Alternate triangular areas filled with parallel lines at opposing angles (Figs. 17g, 18a-b, Pl. 10a-d)	36
Parallel lines slanting to the right (Fig. 17b, Pl. 10k-m)	29
Parallel lines slanting to the left (Fig. 17i, Pl. 10h-j)	12
Herringbone arrangement placed vertically (Fig. 17a, c, e, Pl. 10n-o)	11
Vertical parallel lines (Fig. 17d, h, Pl. 10f-g)	8
Herringbone arrangement placed horizontally (Pl. 10p-q)	4

This decoration is always in the form of a band about the neck or upper walls of the vessel. Where

the rim is not thickened the decoration begins at the lip; otherwise, just below the rim treatment. As will be noted, cambered vessel necks are slightly more common for this type than for others of the same time. On these the decoration covers the cambered or swelled portion of the vessel neck (Fig. 17h-i). On a number of other examples the vessel wall has been cut away just below the decorated band so that this area appears to project slightly above the undecorated surface below it.

On about one third of the sherds, representing all the design variations listed above, except the horizontal herringbone arrangement, there is a single row of triangular-shaped punctations immediately below the decorated band (Pl. 10c-d, f, h, n).

#### FORM

Common vessel shapes and the frequencies of each are shown in Fig. 17. These are the barrel shape (Fig. 17a-b, 34 per cent), vertical-sided cauldrons (Fig. 17c-d, 29 per cent), straight neck jars (Fig. 17e-g, 23 per cent), and cambered neck jars (Fig. 17h-i, 5 per cent). Cambered rims are also found with fair frequency on the barrel-shaped forms listed above, but these have not been counted separately. Some infrequent shapes are shown in Fig. 18a-c. Nearly all of the bases on these vessels are flat. Round flat bases are most common, but some of the larger sherds suggest square bases. Convex bases are very rare.

The rim profiles of this type vary considerably. Folded rims occur more frequently than in the other types of the period. Typical profiles and their popularities are shown in Fig. 18.

The side walls of vessels average about 6 to 7 mm. The range is 5 to 9 mm. Bases are always thicker than the walls. In size these vessels were somewhat larger than most of the other types. Thirty cm. may be considered an average diameter, but the range is considerable: from 12 to 60 cm.

#### RANGE AND RELATIONSHIP

The foregoing description defines Mazique as it is found in the flood plain region of Louisiana and the adjacent parts of Mississippi. It is considered that the type has a range to the northward up the Mississippi Valley, at least to the latitude of Memphis, Tennessee, on about the same time level. Here it has been described as an element of the Baytown ceramic complex.<sup>1</sup> In its northward extension the time level of the type appears to be partly the same as at Greenhouse, but, as is to be expected when a type is allowed to extend over so much territory, there is some areal differentiation of features. In the Arkansas-Mississippi region the designs do not tend to be so neatly executed, the incised lines

<sup>1</sup> Phillips, Ford, and Griffin, 1951, 98-100.

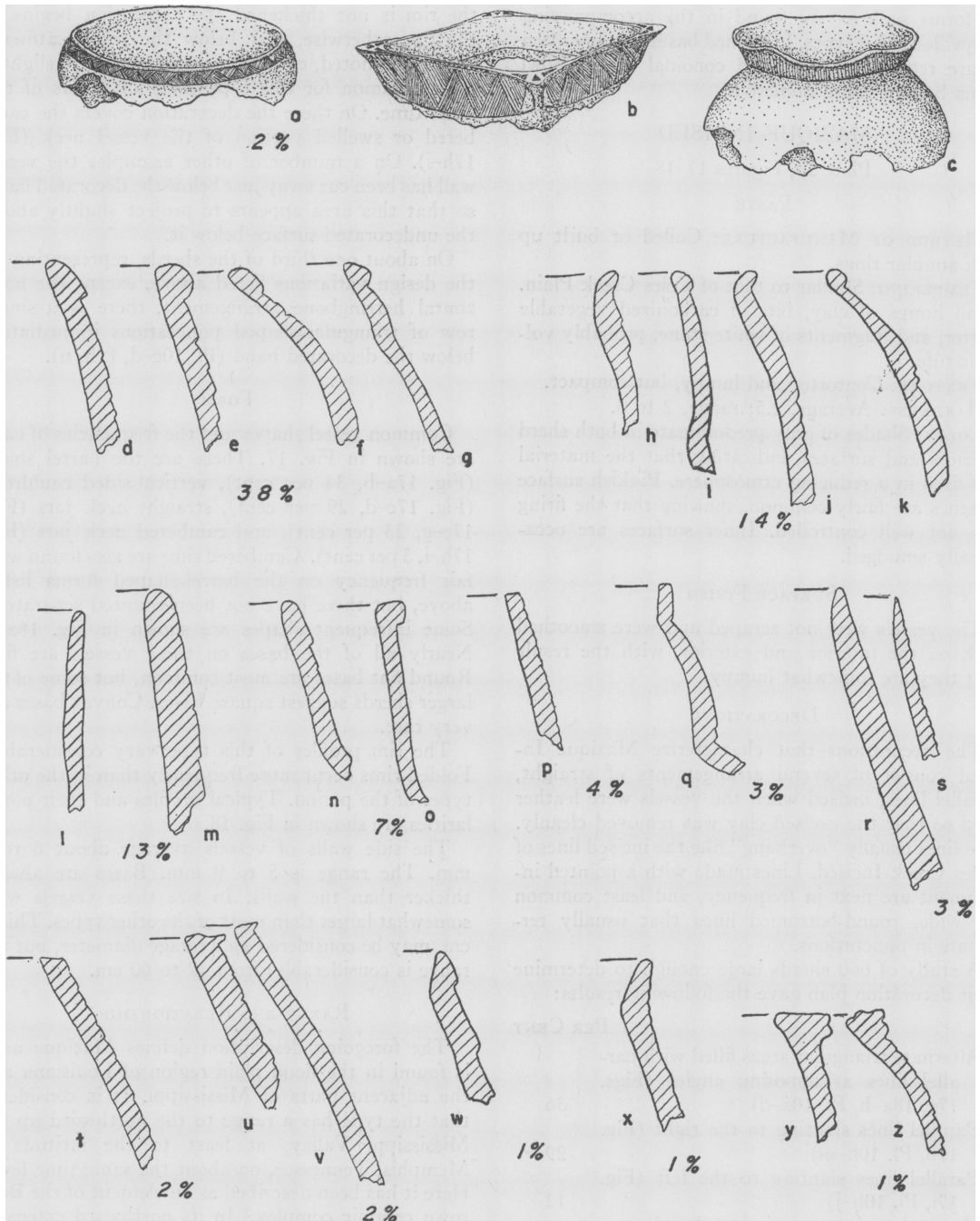


FIG. 18. Shapes and rim profiles of Mazique Incised. a-c. Unusual forms of vessels. d-g. Rims with large rounded straps. h-k. Rims with small rounded straps. l-m. Direct rims with rounded lips. n-o. Rims with straps angular in section. p. Direct rims with squared lip. q. Cambered rims. r-s. Direct rims with thin lips. t. Direct rims beveled in the plane of the vessel mouth. u-v. Rims beveled in the plane of vessel mouth with a projection to the outside at the lip. w. Straight folded rims with pointed lip. x. Slightly flaring rims with lips beveled on the interior. y-z. Folded rims with lines in lip or exterior ledge.



rarely "overhang," the single row of triangular punctations below the decorated band is almost entirely missing, folded rims are not so common or complex, and the decorated area sometimes covers the vessel wall instead of being confined to a band. There are also certain differences in vessel shapes, although these are hard to measure from study of potsherds. For one thing the cambered rim is very rare.

As is always true of cultural features, the problem of fixing the origins of the design motifs that make up the type Mazique Incised is not simple. It appears probable that this small group of design variations, consisting of simple arrangements of straight incised lines, can be traced back to similar incised pottery that was made in the Southeast soon after the first appearance of ceramics. Tchefuncte Incised, Lake Borgne Incised, and Alexander Incised are types that belong to this generalized group.

Despite the fact that the type was defined in Louisiana, Mazique Incised appears in its greatest relative frequency in the Yazoo River basin in western Mississippi. In this region it lacks a number of the distinctive features described for the Greenhouse material and, in addition, there is a suggestion that it may range farther back in time than seems to be the case in Louisiana. This offers the possibility that the principal center for the evolution of the type from the earlier incised group (most probably Alexander Incised) lies in western Mississippi.

The parallel development of Mazique Incised at the mouth of the Red River, while very probably stimulated by coeval events a short distance to the northward, is worth examining closely, for in this area there are clear indications that the majority of the traits in the type have been transmitted to it from the incised rim that characterized a proportion of the decorated ceramics of the preceding Marksville Period. Some of the variations of the delicate incising on these rims are illustrated by Ford and Willey from the Crooks Site to the north of the Red River.<sup>1</sup> This site, however, appears to date early in the Marksville Period and has neither the frequency nor the complexity of development of this rim that are found at later sites within the period—notably the village in the enclosure at the Marksville Site, 1 mile south of Greenhouse.

The peculiar characteristics of the Marksville Incised rim retained by Mazique Incised become obvious upon comparing illustrations and need little elaboration. Briefly, they consist in confining the decoration to a narrow band immediately below the lip; the frequent retention of the cambered rim; the use of a single row of punctations below the decorated band (changed from hemi-conical to triangular); and the arrangements of the incised lines, vertical parallel, vertical slanting, and nested triangles filled with lines. Strangely enough, the cross-hatched pattern

so popular for the earlier rim does not carry over into Mazique. It does appear at a slightly later date, in the Coles Creek horizon, in somewhat altered form, and has been set up as a separate type called Beldeau Incised.

There also seems to be a carry-over in vessel form. Jars are the common form of vessel carrying Marksville Rim Incised in the earlier time period. Mazique decoration is found on jar and barrel forms almost to the exclusion of bowls. The later vessels are considerably larger than the earlier, but the same profiles of flat-based, high-shouldered jars with short necks, straight-sided jars, and barrel forms are found in both. Square flat bases are another common feature.

The related type on the Florida Gulf Coast is Carrabelle Incised,<sup>2</sup> of the Weeden Island I and II periods. It has decorations similar to those of Mazique, also confined to a band about the upper part of the vessel, but the specialized traits which seem to relate Mazique to the Marksville rim decoration are missing.

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1936, 185-186.  
Ford and Willey, *in* Haag, 1939 (type description).  
Phillips, Ford, and Griffin, 1951, 98-100, Fig. 82f-p.  
Walker, 1936, Pl. 15i.

#### LARTO RED FILMED

Plate 11h-o, Figure 19

#### PASTE

**METHOD OF MANUFACTURE:** Coiled. Coil-line breaks common. Flattened coils are from 2 to 4 cm. wide.

**TEMPERING:** Small lumps of clay; occasionally fragments of carbonized vegetable matter. A few sherds contain tiny fragments of white stone which may be volcanic tufa.

**TEXTURE:** Rather lumpy and contorted, but fairly compact. Cleavage planes due to poor wedging rather common.

**HARDNESS:** Average, 2.5; range, 2 to 3.

**COLOR:** The paste color is predominantly gray, indicating rather well-controlled firing in a reducing atmosphere.

#### SURFACE FINISH

Well smoothed on both interior and exterior when the paste was leather hard. Finer material has been floated to the surface, but surfaces are slightly uneven. Apparently the ware was not scraped before smoothing.

#### DECORATION

Before firing, a thin brownish-pink wash was ap-

<sup>2</sup> Willey, 1949, 425.

<sup>1</sup> Ford and Willey, 1940, Fig. 41.

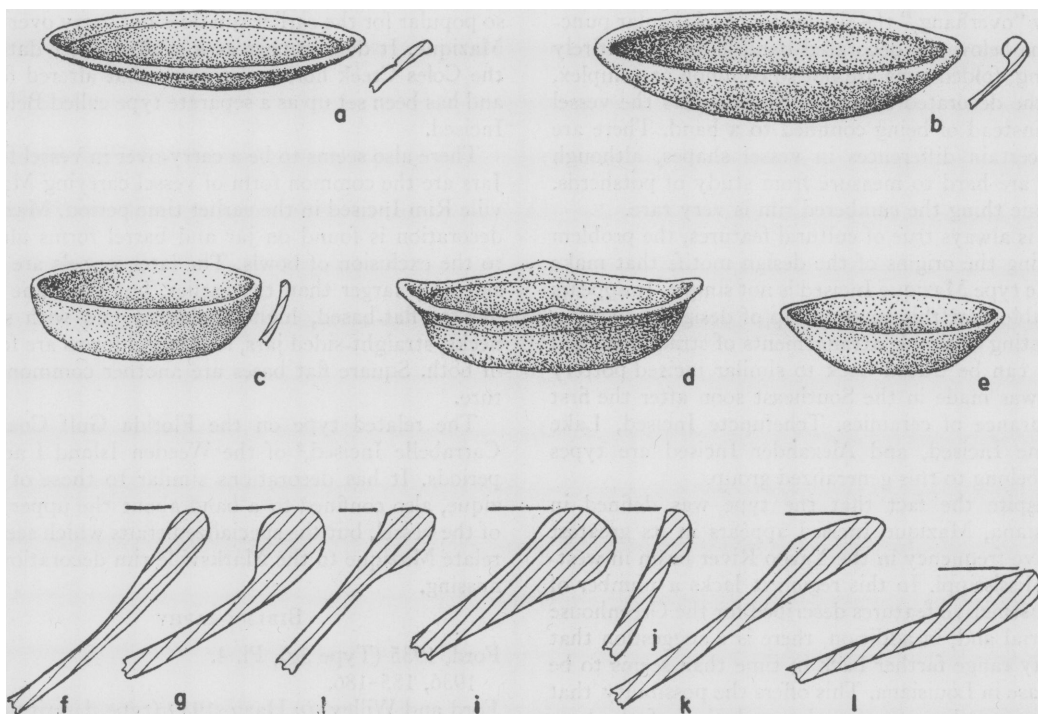


FIG. 19. Shapes and rim profiles of Larto Red Filmed. Bowls and deep plates are the usual forms. Most of the rims are folded, and the profiles shown are characteristic, but not enough are available to make percentages significant. See Pl. 11h-o.

plied to the ware. The color is fairly bright and well attached to the surfaces. Some sherds are slipped on both sides. However, most of the shallow bowls, the most popular form, seem to have been slipped only on the interior.

Also included in this group are several sherds indicating that the vessels from which they were broken bore a simple design painted in red with a wide brush (Pl. 11m-n), usually in the interior of shallow bowls. It consists of a band around the rim and curving lines in the bottom of the bowl. The relationship between this variation and the painted designs that have been classed as Woodville Red Filmed is obvious.

#### FORM

Bowls are the most common and nearly the only form determinable from sherds of this type. They are usually quite shallow and appear to have rounded bottoms, a feature not very common on the Troyville time horizon. However, the total numbers of the forms that could be deduced were too small to make percentages significant. A small number of bowls have four small scallops on the rim or bear small ears as shown in Fig. 19d.

There are a total of 87 rims of this type, of which 30 are direct rims with either rounded, square, or

pointed lips, in that order of frequency. The balance are thickened rims of a number of shapes. Most common is the rounded thickening shown in Fig. 19f-i. Other rim profiles are illustrated in the same figure.

The bowl diameters, as indicated by the rim sherds, range from 15 to 40 cm. The average is about 30 cm.

#### USUAL RANGE OF TYPE

Larto Red Filmed extends up the Mississippi Valley in decreasing frequencies to about the latitude of Memphis, Tennessee. It is slightly more abundant in the lower basin of the Yazoo River than to either the north or south.<sup>1</sup> As defined, the type apparently does not extend a great distance to either the east or west of the alluvial valley of the Mississippi River.

#### PROBABLE RELATIONSHIPS OF TYPE

Larto Red Filmed may have developed from both the fugitive red coating of vessels and the fired-on red slip type that have been noted in Tchefuncte Period ceramics.<sup>2</sup> It is probably significant that bowls were the only form found for the type Tchefuncte Red Filmed, a feature in common with

<sup>1</sup> Phillips, Ford, and Griffin, 1951, Fig. 9.

<sup>2</sup> Ford and Quimby, 1945. See descriptions of Tchefuncte Plain and Tchefuncte Red Filmed, 52-56.

Larto. However, if there was a development from Tchefuncte to Larto it apparently did not take place in the region around the mouth of the Red River, where no corresponding transitional type is found in the Marksville Period sites. The linking material will possibly be found in the Marksville sites of the Yazoo Basin, the frequency center of Larto.

Corresponding red slipping, also found only on bowls, is described on the northwest coast of Florida as a variant of the type Weeden Island Plain and is also listed as Plain Red.<sup>1</sup> Sometimes here too the red paint was applied only in a band around the rim.

#### BIBLIOGRAPHY

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 1936, 144-145 (Type 11;111;14).  
 Ford and Willey, *in* Haag, 1939 (type description).  
 Phillips, Ford, and Griffin, 1951, 102-105.  
 Walker, 1936, 42.

#### WOODVILLE RED FILMED

Plate 11a-g, Figure 20

##### PASTE

METHOD OF MANUFACTURE: Coiled.

TEMPERING: Small particles of clay, fragments of carbonized vegetable matter, and often small pieces of white stone, probably volcanic tufa.

TEXTURE: Lumpy and contorted due to the size of the tempering particles.

HARDNESS: Average, 2.5; range, 2 to 3.

COLOR: The paste is gray. Where the surface was not slipped, it too is predominantly gray. Reddish oxidized blotches are not common.

##### SURFACE FINISH

The surfaces of the sherds have been floated by

<sup>1</sup> Willey, 1949, 409, 448.

rubbing with a polishing stone or similar tool while the vessels were leather hard; the finish is smooth, but not very even.

#### DECORATION

The characterizing decoration of the type is formed by bands of red slip outlined by incised lines. Color and texture of the slip are identical with those providing the distinctive feature of the type Larto Red Filmed, a brownish-pink shade that adheres rather well to the vessel surfaces.

The design motifs of Woodville are not revealed clearly enough by sherds to permit description. The painted bands are curving and often branch. Incised lines sometimes center in the bands, and there is occasional use of large punctations on lines, or at the ends of lines, stippled lines, and areas filled with incised hachuring, all of which indicate that these designs are closely related to French Fork Incised. As a matter of fact, it will be noted in the description of the latter type that .5 per cent of the decorations had a red slip background. In contrast, the decoration of Woodville Red Filmed is formed by the red-painted areas, and the unmodified vessel surface provides the background. At the Greenhouse Site the Woodville Red Filmed decoration is found only on the interiors of shallow bowls of the shape so common for the type Larto Red Filmed.

#### FORM

Bowls, the only shape found, range from shallow simple forms, with rounded sides and bottoms, to almost flat plates. Plates are rare. Two of the fragments of bowls indicate that triangular ears had been formed on the rim. These were undoubtedly four in number.

The common bowl forms and rim sections are shown in Fig. 20. Rounded thickening is customary for the rims and parallels the profiles shown for Larto

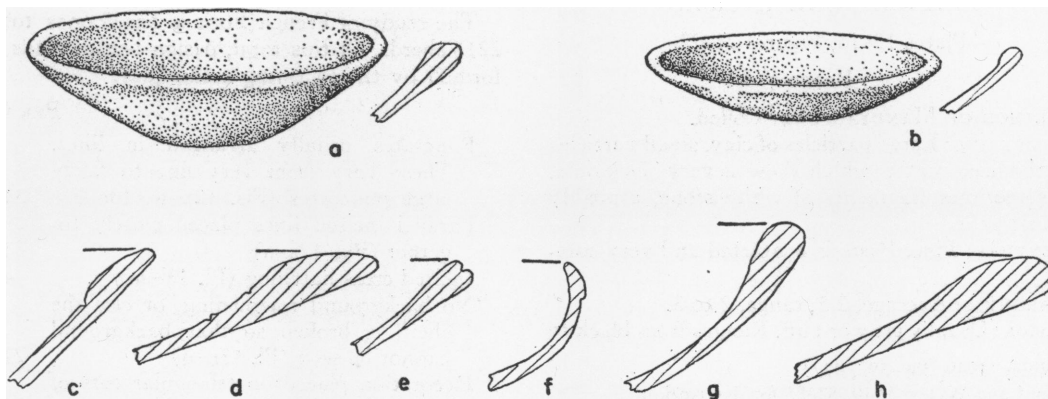


FIG. 20. Shapes and rim profiles of Woodville Red Filmed. The decorations that mark this type are always on the interior of shallow bowls. Thickened rims are characteristic. See Pl. 11a-g.

Red Filmed (Fig. 19). In diameter the bowls of this type range from 15 to 30 cm.

#### USUAL RANGE OF TYPE

Woodville Red Filmed is found in the flood-plain regions of Louisiana, Mississippi, and Arkansas. Maximum frequency of occurrence seems to be in the area near the mouth of the Red River.

#### CHRONOLOGICAL POSITION OF TYPE

Troyville Period.

#### PROBABLE RELATIONSHIP OF TYPE

Woodville Red Filmed is very similar and closely related to types found on the northwest coast of Florida: Crystal River Zoned Red, Pierce Zoned Red, and Weeden Island Zoned Red.<sup>1</sup> There are differences between these types in shape and design detail, but the most ready distinction can be made in the paste. The Florida types contain substantial quantities of sand, while the sherds from the Mississippi Valley are clay tempered.

The ancestral form of all these designs may be the Marksville Period ware, Marksville Red Filmed.<sup>2</sup> This incised and red-painted ware is found in very small proportions in Louisiana sites, a situation not inconsistent with the scant popularity of the possibly later derived types.

This tradition of zoned red painting may ultimately have evolved from the use of both fired-on and fugitive red coatings for ceramics in the Tchefuncte Period.<sup>3</sup> While red slipping was known this early in the Mississippi Valley, it was not confined to line-bordered zones before Marksville times.

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Ford and Willey, *in* Haag, 1939 (type description).  
Phillips, Ford, and Griffin, 1951, 101-102, Fig. 83a-k.

#### FRENCH FORK INCISED

Plates 12-13, Figures 21-22

##### PASTE

METHOD OF MANUFACTURE: Coiled.

TEMPERING: Large particles of clay, small particles of carbonized matter which show as very black dots, and sometimes fragments of white stone, probably volcanic tufa.

TEXTURE: Fine. Paste is contorted and very compact.

HARDNESS: Average, 2.5; range, 2 to 3.

COLOR: Usually gray or buff. Ranges from black to

reddish brown. Is sometimes marked with firing clouds. Interiors are often smudged.

#### SURFACE FINISH

Usually smooth and soapy to the touch. Marks of a polishing stone are parallel to the rim. Finish is fairly smooth, and on exceptional pieces a rather high polish has been achieved. In some cases the surface is rough, and tempering material shows. This may be due to erosion.

On very few sherds the interior has a red slip. Red filming is also rarely used in decorations as described below.

#### TECHNIQUE

Several decorative techniques are found in French Fork Incised. The designs are outlined by incised lines, overhanging incised lines, incised lines with delicate, spaced punctates or, occasionally, by punctations arranged in rows. The latter sometimes appear to have been made by rouletting, but close inspection of material from the Greenhouse Site shows that the linear punctating was accomplished free-hand. Large, triangular punctations and punctations made with the end of a hollow reed occur singly in incised lines and at the ends of lines.

#### DECORATION

Meanders and wavy patterns formed by the smoothed, unroughened surface of the vessel are the common design motifs for this type. These areas or bands were made to stand out by roughening the background by the techniques that are listed below, so in effect this is a "negative" type of design. In French Fork formalization and repetition of the motifs occur with greater frequency than in the comparable Florida type Weeden Island Incised, but the repetition of design units around the vessel is not so consistently carried out as in the later meander and scroll decorations of the Lower Mississippi region.

The study of French Fork is based on a total of 2217 sherds. Of this total, design backgrounds were formed by the following techniques:

	PER CENT
Punctates usually arranged in lines.	
These vary from very fine to fairly large punctates (Pls. 12p-w, 13a-h)	34.0
Parallel incised lines placed closely together (Pls. 12a-n)	33.0
Incised cross-hatching (Pl. 13i-m)	4.0
No background roughening, or else the sherd is broken so that background cannot be seen (Pl. 13n-q)	21.0
Decoration placed on triangular ears of bowls. Not classified as to background (Pl. 13s-t)	7.0
Red slip background (Pl. 13r)	0.5

<sup>1</sup> Willey, 1949, 389-392, 422.

<sup>2</sup> Ford and Willey, 1940, 82-85 for description.

<sup>3</sup> See Ford and Quimby, 1945, description of Tchefuncte Red Filmed, 54-56, and 52 for reference to fugitive painting in description of Tchefuncte Plain.

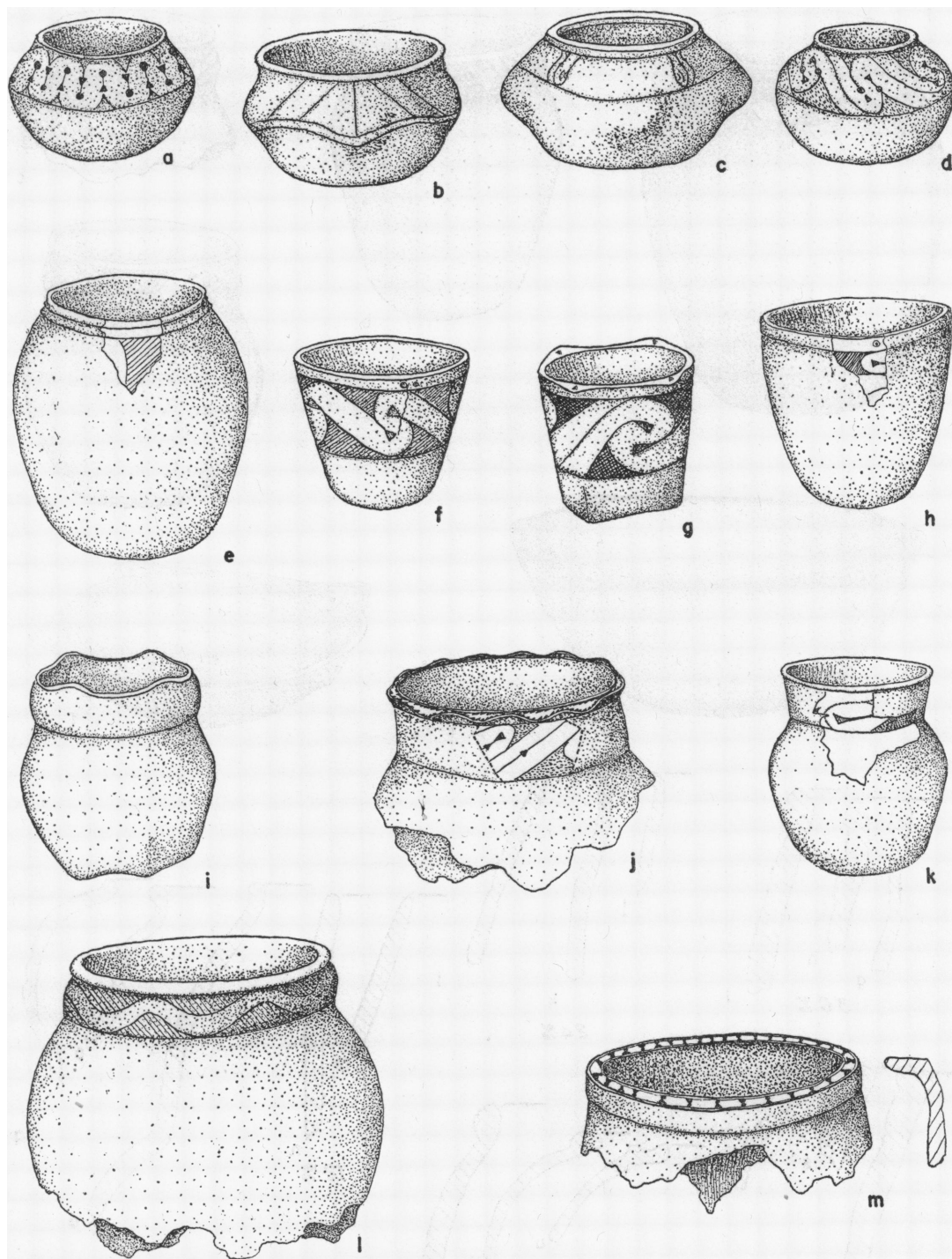


FIG. 21. Shapes of French Fork Incised. All of these forms are deduced from sherds, as no complete specimens were found. See Pls. 12-13.

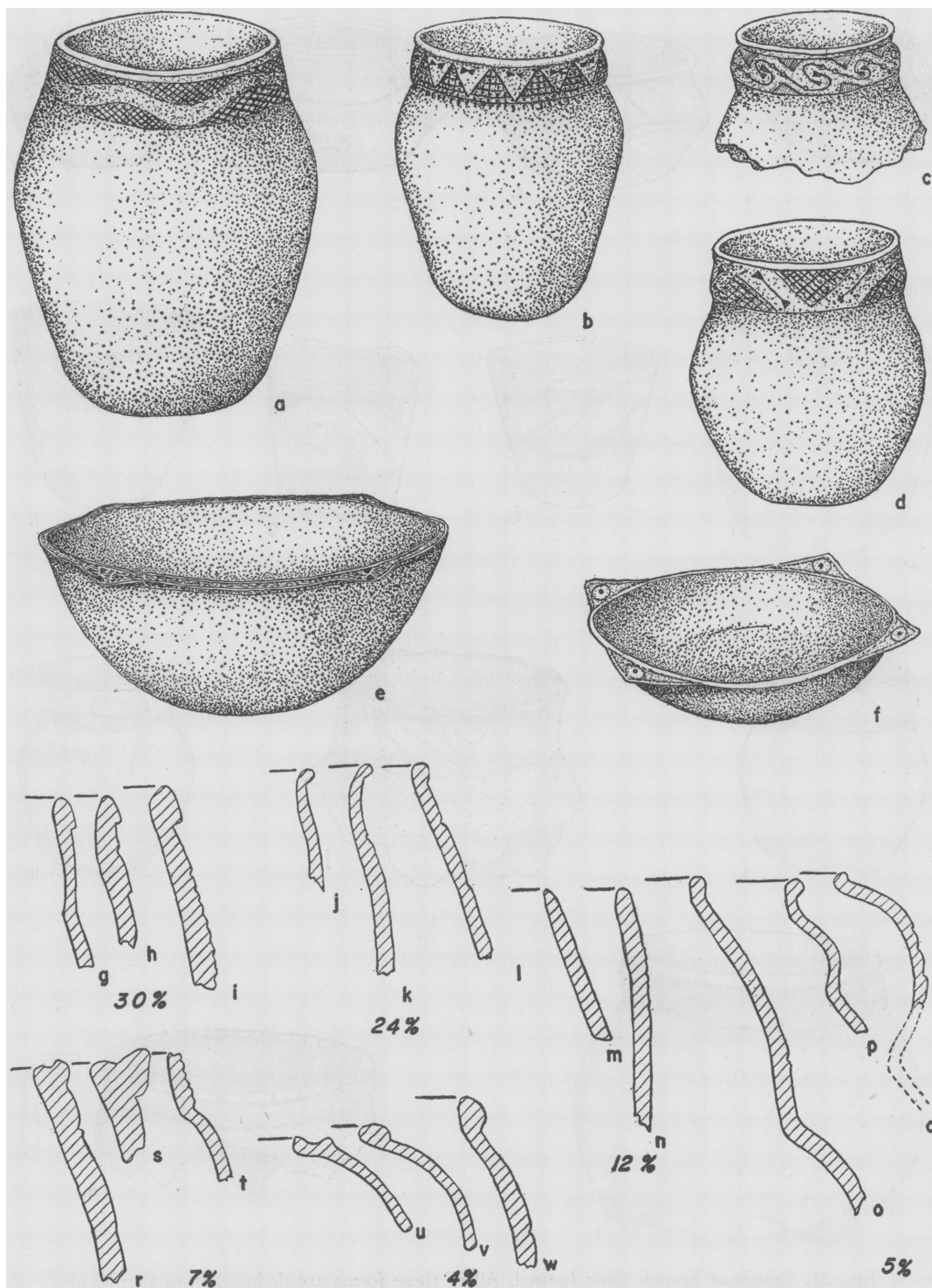


FIG. 22. Shapes and rim profiles of French Fork Incised. g-i. Rims with large exterior folds. j-l. Rims with small exterior folds. m-n. Direct rims with rounded lip. o-q. Cambered rims. r-t. Rims with line in lip. u-w. Incurving rims, thickened.



## DISTRIBUTION

Usually confined to a band encircling the upper part of the vessel. On vessels that have an incipient neck, it bears the band of decoration. On the constricted-mouth bowl form, the side walls are covered.

## FORM

**RIM:** Various treatments of the folded rim mark this type. Rims are very often thickened by folding a strap of clay over the outside and around the lip. Interior thickening, triangular in cross-section, is also fairly frequent. Occasionally one or more incised lines are inscribed in the thickened rim. Small ears are common. Rim shapes and frequencies are shown in Fig. 22g-w.

**LIP:** Lips are either rounded or flattened in the plane of the vessel mouth. In the latter case one or more incised lines may be inscribed in the lip.

**BODY:** There are three major body forms. The most common of these seems to be a globular vessel with gently incurving shoulder and a small aperture. In a few cases the vessel body has four lobes (Fig. 21a-d).

The second most common form is a jar with high but slight shoulders, insloping lower walls, and a flat bottom, either round or square. Above the shoulders the short neck varies considerably in profile and is frequently cambered. The band of decoration is usually confined to the necks. The jar form ranges in size from 15 to 45 cm. in diameter (Fig. 21i-l).

The third group, barrel-shaped vessels with a range in size similar to that of the jars described above, are decorated like them, and in many instances grade insensibly into the jars in basic form (Fig. 21e). Small beakers with vertical or slightly outslanting straight walls were also noted (Fig. 21f-h). The band of decoration usually covers the upper half of the walls of beakers.

The least popular form is a fairly large, shallow, simple bowl with ears (Fig. 22e-f, Pl. 13s-t). These ears are invariably four in number, extend outward from the rim at a slight upward angle, and range in size from small swellings of the rim to large proportions that form a square around the round bowls. The decoration is generally found on these ears.

Both the globular, constricted-mouth bowls and the simple bowls with ears have convex bases. All other forms have flat bases, about equally divided between round and square. Flattened bases are thicker than the side walls of the vessels. Vessel wall thickness ranges from 4.5 to 8 mm. The average is about 6 mm.

## USUAL RANGE OF TYPE

French Fork Incised centers in northeastern Louisiana. To the north it has been found up the alluvial

valley of the Mississippi in decreasing frequencies to about the latitude of Memphis, Tennessee.<sup>1</sup>

In southwestern Arkansas, in the Red River Valley, material that probably can be classified in this group has been described by Lemley<sup>2</sup> and Dickinson.<sup>3</sup> Somewhere in the region between Alexandria, Louisiana, and the Davis Site on the Neches River in northeastern Texas, French Fork will undoubtedly be found to change imperceptibly into Crockett Curvilinear Incised, an Alto Focus type that Krieger has set up in the material from the Davis Site.<sup>4</sup>

These two types are very similar in a number of characteristics. These include the application of decoration in a zone or band about the upper part of the vessel; the principal motifs of the design formed by a smoothed band outlined by incised lines and contrasting with a roughened background; the use of an incised line bisecting the smoothed band; meander and wavy patterns; and the use of both punctations and parallel incised lines to fill in the background. As these types have been defined at the Greenhouse and Davis sites, there are clearly a number of differences. Prominent are the absence of punctated lines, large triangular punctations, and overhanging lines in Crockett. The small circles filled with punctations common in Crockett are not found in French Fork, where large triangular punctates at the ends of lines serve a similar function as centers for the curving motifs. Much of the Crockett material is more lightly incised than French Fork, and the vessels are more frequently polished. French Fork has a greater occurrence of incising on the rim, and triangular ears are larger and more frequent.

Some of the most interesting differences between these two types lie in the vessel forms. Most of Crockett Curvilinear Incised vessels are carinated bowls, a shape not found with French Fork decoration. Carinated bowls were not introduced into the region about the mouth of the Red River until the Plaquemine Period. In Phase 2 at the Davis Site, the globular, constricted-mouth bowl, absent earlier, was introduced and formed 21.7 per cent of the Crockett forms. The similar shape already described for French Fork forms 18.3 per cent of the vessel forms that were determined, and the 13 sherds of this form, which came from areas in which analyses were made and thus could be located in the Greenhouse ceramic time scale, all fall between the middle of the Troyville and the middle of the Coles Creek periods.

Crockett has been found in the Haley Focus.<sup>5</sup> At the Davis Site Krieger found that the type increased

<sup>1</sup> Phillips, Ford, and Griffin, 1951, 100-101.

<sup>2</sup> Lemley, 1936.

<sup>3</sup> Dickinson, 1936, Pl. 7, Figs. 1-2, 4, 6; Pl. 8, Fig. 2; Pl. 10, Figs. 4-6.

<sup>4</sup> Newell and Krieger, 1949, 98-101, and Table 2 for Krieger's comparison with French Fork.

<sup>5</sup> Newell and Krieger, 1949, 217.



in popularity in the second and third phases of site construction. Thus the popularity peak of the type is as late as the last construction at the Davis Mound and perhaps even later. The occurrence of the type in the later Haley Focus may show it decreasing, but this is nothing more than a guess to be settled by future work.

To the east French Fork Incised has an obvious and close relationship to the types Weeden Island Punctated and Weeden Island Incised,<sup>1</sup> the graceful ware found so abundantly by Clarence Moore on the northwest coast of Florida. The principal differences are the sandier paste of the Florida specimens and their much more complicated and free-flowing designs. Repetition of design elements around a vessel is virtually absent from Weeden Island. Exactly the same methods of roughing the background are used as on the Louisiana type, but probably the proportions are different, stippled lines being more common in Florida. The flattened globular bowl discussed above is the most common vessel shape, but there are no data as to its popularity trends.

The rather extensive distribution of this family of negative or roughened background groups of decoration from the central west coast of the Florida peninsula to the Davis Site of eastern Texas and even farther north in the Haley and middle (?) Spiro Foci poses an interesting problem which may assist in aligning chronologies through the Southeast. Where did this decoration originate and in what direction was the cultural idea moving?

In Louisiana and to an even greater extent in Florida, parallels can be drawn between this class of roughened background, curving decoration and the decoration of pottery on the earlier Hopewell-Marksville time level. They share the over-all similarity that on both time horizons the decoration is effected by smoothed bands with linear outlines and the background is roughened; by the devices described for the Weeden Island-French Fork-Crockett group; and by rocker stamping in the Marksville. The general similarity is clear enough, but the older types, Marksville Stamped and the corresponding Florida type Alligator Bayou Stamped, do not serve to explain all of the variations found in the later group, although connection can be traced more clearly in Florida than to the west. The zoned triangular punctations, which are so common in the later designs, seem to have developed through a decoration that appears late in the Marksville-Santa Rosa period and marks the types Santa Rosa Punctated in Florida and Churupa Punctated in Louisiana. As do companion types of the early Troyville-Weeden Island I horizon, these types make extensive use of hemi-conical punctations, to fill background and at the terminations of lines.

Following a tendency that is general in ceramic decoration at this time, these punctations become triangular in shape, but Weeden Island Incised, even in its fully developed form, often makes use of the older shape of punctation.

The change in both lines and punctations seems to result from a choice of tools. The round-bottomed lines and hemi-conical punctations of the earlier decorations were made with a tubular point such as a small cane would provide. The later incising, the overhanging lines as well as triangular punctations, was made with a flat spatula or a wedge-pointed tool.

The stippled line decoration that seems to center in the Florida type, where it reaches its highest development, may represent a retention of the stippled-line technique that was so popular in the earliest ceramic horizon of the Southeast, the Stallings Island-Tchefuncte, where it is represented by such simple types as the linear-punctated, fiber-tempered ware of Stallings Island<sup>2</sup> and Lake Borgne Incised of Tchefuncte.<sup>3</sup>

It is also possible that the parallel-line background shading device may also have derived from a similar use of parallel lines in a type of the early Alexander group, Alexander Incised,<sup>4</sup> which has been described from the Tennessee River Valley and also occurs on the northwest coast of Florida. However, this type dates considerably before the appearance of the group with which we are concerned, and the genetic connection, if any, is not clear. The parallel lines in French Fork Incised are often overhanging, as are the lines of Coles Creek Incised, a feature that may have been added only after the latter decoration appeared in Louisiana.

It has already been intimated that, although French Fork Incised and Weeden Island Incised are highly similar types, they differ in the degree of formalization of designs. In Weeden Island Incised there is almost no repetition of design elements, in which respect it is more similar to the earlier Marksville. French Fork and the accompanying Louisiana types of the Troyville Period, which even more obviously are derived from Marksville, Troyville Stamped, and Yokena Incised, trend away from the freedom of design layout of the Marksville Period and become repetitive around each vessel. Nevertheless, an exact duplication of design is rarely observed on two different vessels. This freedom of design choice from vessel to vessel, with careful repetition of the same elements around each vessel, is even more marked a feature of Crockett Curvilinear Incised. Thus in this type-group there is decided loss of freedom in design layout from east to west. It can also be shown that this same trend is

<sup>2</sup> Claffin, 1931, 18.

<sup>3</sup> Ford and Quimby, 1945, 61-62, Pl. 4.

<sup>4</sup> Haag, 1939.

<sup>1</sup> Willey and Woodbury, 1942, 242-243; Willey, 1949, 411-422.

expressed in parallel types and extends through time from early periods to the historic period in the lower Southeast.

The frequency center for this decoration idea lies in Weeden Island Incised. This makes it probable (but by no means proves) that the basic ideas for the design in these groups developed principally on the northwest coast of Florida and spread westward. Crockett Curvilinear Incised is probably derived from French Fork and, developing the trend towards design formalization still further, adopted a few features that are different from its progenitors. These are polishing over incising and small circles used as centers for design elements. Both these traits survive to the historic period in the lower Red River and Ouachita valleys in related designs.<sup>1</sup>

The earliest application of Crockett is to the side walls of carinated bowls. The fact that the constricted-mouth globular bowl, so usual for the corresponding decorations in Louisiana and Florida, is not known until Phase 2 at the Davis Site<sup>2</sup> may be an example of selective borrowing. The decoration, accepted at the Davis Site before the globular bowl form, was perhaps applied to one of the popular local shapes, the carinated bowl.

In the Caddoan area other pottery types show evidence of influence from the stream of decoration ideas that are designated Weeden Island Incised and French Fork Incised. Natchitoches Engraved of the Glendora Focus<sup>3</sup> is one of several partial descendants of this tradition that are later than Crockett and last until the historic period. It seems obvious that the bottle forms of Natchitoches, the polished finish, and the engraving techniques are derived from the Alto Focus types, found farther up the Red River than this northwestern Louisiana historic type. But the usual decoration motif is a stylized negative meander that shows relation to French Fork. The elements suggesting this connection are not all the same as are found in Crockett Curvilinear Incised. The use of parallel lines as background fillers may be comparable, but cross-hatching, so frequent in Natchitoches and fairly common in French Fork, is not found in Crockett. The center line that bisects the negative band in Natchitoches is frequently spurred. In French Fork and in Weeden Island this line is often punctated, a possibly ancestral idea. The negative bands of both Natchitoches and French Fork designs form meanders and do not use small circles in the center of the design units as does Crockett. The latter feature is found in several of the later types such as Ripley Engraved, of the Titus Focus farther up the Red River.<sup>4</sup>

<sup>1</sup> Fatherland Incised, for example. See Quimby, 1942, Pl. 13, Figs. 1-2; Pl. 14, Fig. 4; also Ford, 1936, Fig. 9d.

<sup>2</sup> Newell and Krieger, 1949, 98.

<sup>3</sup> Defined by Krieger, 1946, Fig. 18.

<sup>4</sup> Defined by Krieger, 1946, Fig. 18.

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1936, 174-176.  
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Phillips, Ford, and Griffin, 1951, 100-101, Fig. 82s-w.  
Walker, 1936, Pls. 14f, h-k; 15e, g.

## TROYVILLE PLAIN

Plate 14a-f, Figure 23

### PASTE

**METHOD OF MANUFACTURE:** Coiled or built with annular rings.

**TEMPERING:** A large quantity of clay particles. Particles of carbonized vegetable material are rare, as are fragments of white stone which is probably volcanic tufa.

**TEXTURE:** Lumpy, coarse, and only semi-compact. The surface has a soft, chalky feel, and fine clay often rubs off on the fingers.

**HARDNESS:** Two to 2.5; softer than Coles Creek Plain.

**COLOR:** Ranges from light to dark gray. Numerous buff and brown areas result from allowing air to strike the vessel surface during firing. Some of the sherd interiors are black, indicating that the firing heat was inadequate to burn the carbon from this rather thick ware.

### SURFACE FINISH

Rather careless and crude. The surfaces were not scraped; consequently they are bumpy. They were over-floated in many examples, resulting in crazing.

### FORM

Not enough sherds reveal vessel forms to make percentages significant. Large, medium deep bowls, with either curved or flat bases, seem to be the most common shape. These, and variations on the barrel and jar (Fig. 23), are the only two classes of shapes found. The rims are predominantly direct, usually with rounded lip, but heavy exterior folds are not uncommon. Most of the folds have been welded onto the vessel wall so that they present curved contours (Fig. 23d-h). Notching and deep incisions are placed either horizontally across the lip or diagonally on its exterior. Several sherds have a single row of punctations on the exterior below the rim. Ears are not usually found on rims of this class. The possible exception shown in Pl. 14c may be a ladle handle.

The bases are always thicker than the side walls. Except for the simple bowls, which probably have rounded bases, all are flat, with a definite angle at the junction of the side walls and base. The majority of the flat bases seem to have been square.

The side walls average 9 mm. in thickness, with a range from 7 to 11 mm. This unusual thickness is one

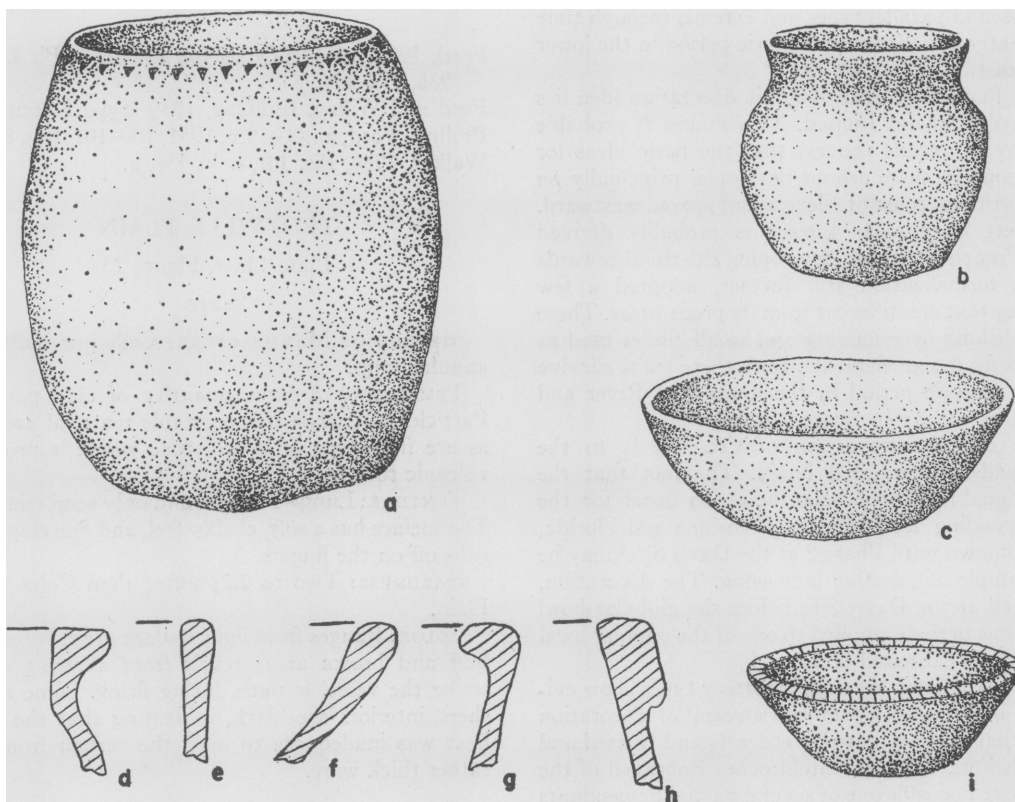


FIG. 23. Shapes and rim profiles of Troyville Plain. Punch marks below the lip on direct rims and a high proportion of folded rims are common. See Pl. 14a-f.

of the features that distinguishes the type from Coles Creek Plain.

#### USUAL RANGE OF TYPE

Alluvial valley region of Louisiana and adjacent parts of Mississippi.

#### CHRONOLOGICAL POSITION OF TYPE

Extends through Troyville and Coles Creek periods. Frequency maximum of type at Greenhouse Site falls at about the dividing line between the two periods.

#### PROBABLE RELATIONSHIPS OF TYPE

Troyville Plain is a thicker, cruder, and less well-fired variety of the accompanying type Coles Creek Plain. When this type was first set up it was thought that it would prove to be a Troyville Period type which would to some extent be transitional between Marksville Plain and Coles Creek Plain, but this was a bad guess. It marks an abortive trend towards crudeness in ceramics that may be fairly local in geographical extent and left no impression on the later pottery tradition. Among the accompanying types at

the Greenhouse Site it most nearly resembles Larto Red Filmed in thickness and vessel shapes.

#### BIBLIOGRAPHY

Ford and Willey, *in* Haag, 1939 (type description).

#### COLES CREEK POLISHED PLAIN

Plate 15, Figure 24

#### PASTE

**METHOD OF MANUFACTURE:** Coiled or built up with annular rings, as shown by coil-line breaks.

**TEMPERING:** Small lumps of clay, particles of white stone, probably volcanic tufa, and carbonized vegetable material.

**TEXTURE:** Ranges from medium coarse, with some laminations, to quite compact, fine-grained paste.

**COLOR:** The paste color ranges from light gray to brown. Surface colors are dark gray, light gray, and brown. Dark mottling caused by poorly controlled firing is very common. There is occasional interior smudging.

#### SURFACE FINISH

By definition, one or both surfaces of this ware are

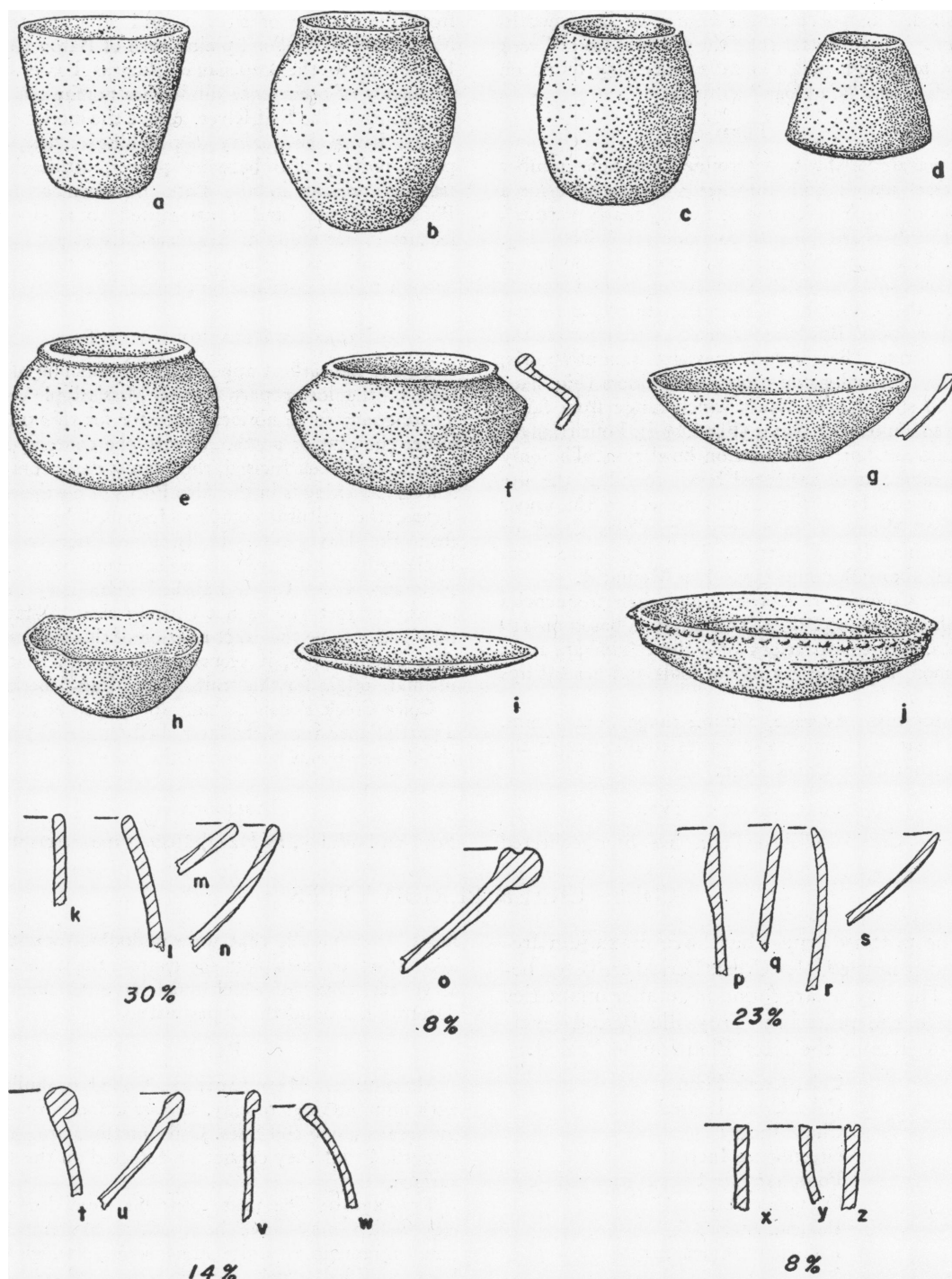


FIG. 24. Shapes and rim profiles of Coles Creek Polished Plain. Not enough vessel forms could be determined from sherds to make frequencies significant. k-n. Direct rims with rounded lips. o. Beaded rim with line in lip. p-s. Slightly thickened or direct rims with pointed lips. t-w. Rims with small exterior folds. x-z. Rims with squared lip, some with line in the lip. See Pl. 15g-o.

polished. This polish ranges from a careless smoothing only a little better than the finish of Coles Creek Plain to a high polish equal to anything found on vessels of the "Caddoan" cultures.

#### FORM

It was impossible to determine a sufficient number of vessel shapes from the sherds of this type for a listing of shape percentages. Small, nearly vertical-sided beakers are the most common vessel form (Fig. 24a). Less numerous related shapes are the barrel form and small jars with slightly constricted mouths (Fig. 24b-c). Flat bases, round or square, are usual for these pots. Bowls are almost as common as the above forms. These include constricted-mouth bowls, with both angular and rounded shoulders (Fig. 24e-f), and simple open bowls which range from fairly deep to almost flat plates (Fig. 24g-i). Four triangular ears are fairly common on bowl rims. The only two fragments of carinated bowls found at the site were of this type (Fig. 24j). One was in the upper level of Mound F in a very late Coles Creek or Plaquemine Period context. The other came from the fill above Building Level 7 in Mound A.

**RIM:** Common rim profiles and their frequencies are shown in Fig. 24k-z. This study is based on 119 sherds. Simple variations of a direct rim are most common, but a variety of rim folds and beaded lips is found.

**THICKNESS:** Average, 5 mm.; range, 3 to 7 mm. This relative thinness also serves to distinguish the ware from Coles Creek Plain.

#### USUAL RANGE OF TYPE

Coles Creek Polished Plain has been collected

### COLES CREEK PERIOD TYPES

The pottery types that have maximum frequencies in the Coles Creek Period are listed below. These types are found in smaller quantities both in the preceding Troyville Period levels and in sites of the later Plaquemine Period.

Coles Creek Plain  
Coles Creek Incised  
Chase Incised  
Greenhouse Incised  
Pontchartrain Check Stamped  
Chevalier Stamped  
Beldeau Incised  
Rhinehart Punctated

#### COLES CREEK PLAIN

Plates 15a-f, 22i-o, Figures 25, 26

This is the dominant plain type of the Troyville and Coles Creek periods. In the sherd counts have been included not only rim sherds and other frag-

ments from the surface of sites in and adjacent to the Mississippi River flood plain north of Baton Rouge, Louisiana, to the Louisiana-Arkansas border. The frequency of occurrence diminishes northward from the mouth of the Red River. Above the mouth of the Yazoo River the quality of polishing on clay-tempered pottery also becomes poorer, although the trait is present in the Late Baytown ceramics. Phillips, Griffin, and I attempted to isolate this feature in our study of Arkansas-Mississippi ceramics, but it was neither common nor pronounced enough to make separation practicable.

#### PROBABLE RELATIONSHIP OF TYPE

This is the earliest appearance of polishing of pottery in the lower part of the Mississippi Valley. There seems to be no local ancestor for this trait to either the east or north. As with the contemporary type Coles Creek Incised, the nearest early comparison for polishing is in the Alto Focus of northeastern Texas, the cultural complex described by Krieger from the Davis Site.<sup>1</sup> Holly Fine Engraved and Hickory Fine Engraved are well-polished wares. The plainware Coles Creek Polished Plain may be related, but just how is not entirely clear. Whatever may prove to be the exact relation of this type to the Alto Focus types, it seems fairly certain that the ultimate origin for this trait lies in Meso-America.

Coles Creek Polished Plain appears to be at least a partial ancestor of the later shell-tempered type of the Mississippian horizon to the north, Bell Plain.<sup>2</sup>

#### BIBLIOGRAPHY

Ford and Willey, *in* Haag, 1939 (type description).

ments from vessels that were undoubtedly without decoration, but also plain sherds from the lower parts of vessels, many of which must have had bands of decoration around the upper walls.

#### PASTE

**METHOD OF MANUFACTURE:** Coiled or built up with annular rings of clay. Construction is revealed by breaks along coil lines. Coil junctures are so well smoothed that they cannot be detected on the sherd surface.

**TEMPERING:** The paste contains small lumps of clay which may have been added as tempering. Small fragments of white stone, some of which have been identified as volcanic tufa,<sup>3</sup> are common, as are

<sup>1</sup> Newell and Krieger, 1949.

<sup>2</sup> Phillips, Ford, and Griffin, 1951, 122-126.

<sup>3</sup> Report on petrographic analysis by Dr. Frederick Matson of the Ceramic Repository, University Museums, University of Michigan, contained in letter of February 1, 1940.

small particles of carbonized vegetable matter which may be accidental inclusions.

**TEXTURE:** The material is fairly hard and compact, but in cross-section it frequently shows contorted laminations that indicate poor wedging.

**HARDNESS:** Fairly hard. Average, 2.3; range, 2 to 3.

**COLOR:** The paste core is customarily gray, indicating firing in a reducing atmosphere. Surface colors are mostly gray, with shades of brown less common. Reddish oxidized areas and dark firing clouds are usual.

#### SURFACE FINISH

The interior and exterior surfaces are generally smoothed, and the tracks of the smoothing tool are visible. However, the surfaces were neither scraped nor polished, and are somewhat rough and bumpy. Intentional interior smudging is noted on some fragments.

#### FORM

**RIM AND LIP:** The common rim and lip profiles are shown in Fig. 26d-gg where frequency of occurrence is also indicated. This is the result of the classification of 15,172 rim sherds. There is considerable variation in rim profiles, but it is not practical to illustrate all of the less common forms.

**SHAPE:** The most common vessel shapes and their relative frequencies, as far as can be determined from large sherds, are given in Figs. 25 and 26a-c. Beakers with nearly vertical or slightly outslanting sides are most common (Fig. 25a-c, 25 per cent). Barrel-shaped vessels (Fig. 25g-h) have a popularity of 19 per cent, while cauldron-shaped pots with rounded shoulders and slightly outflared necks are relatively rare (Fig. 25k-m), about 6 per cent. These vessels range from about 20 cm. in diameter to as much as 90 cm., with heights in proportion. Four ears, as described below, are common on the rims. Bases are usually flattened, with a definite angle between the base and side walls. Base shapes are about equally divided between round and square, the latter having well-defined corners. These flat bases are virtually always thicker than the vessel side walls. Rounded bases on these vessels are much less common than the flat bases, but they do occur.

Bowl forms are the second in frequency. Open bowls with curving sides, and generally with flattened bases, comprise 20 per cent of all the shapes identified (Fig. 25d-f). Some of these bowls have four triangular ears on the rim, ranging from small to a size so large that they give a quadrated appearance to the vessel when it is viewed from above. Others have thickened rims, some of them incised on the lip. Open bowls with straight outflaring sides and flat bases form 6 per cent of the total (Fig. 25i). Flattened globular bowls (Fig. 25j) have a frequency of 4 per cent. The rims of the globular bowls are sometimes

beaded. Bowls with rounded bases, sharp shoulder angle, and straight, inward-sloping side walls (Fig. 26a) have a frequency of 2 per cent. Shouldered bowls (Fig. 26c) are 3 per cent of all forms identified. A fairly rare form, shallow plates that often have incised designs on an interior ledge around the rim, is illustrated in Pl. 22i-o. Except for paste features and execution of design, these plates might have been classified as Evangeline Interior Incised,<sup>1</sup> a type of the Plaquemine Period. There are only 12 of these sherds from Greenhouse.

**APPENDAGES:** The only appendages found are triangular ears, always arranged in fours around the vessel rim. These vary from slight swellings in the vessel rim, often decorated (Fig. 25a), to large, triangular lugs projecting almost horizontally (Fig. 25e). Four scallops on vessel rims are still another variation of this idea (Fig. 25k-1).

#### USUAL RANGE OF TYPE

Coles Creek Plain is found in the eastern half of Louisiana and western Mississippi. The material to which this description may be said to apply most specifically lies within a 100-mile radius of the mouth of the Red River. To the north, at about the latitude of the mouth of the Yazoo River, it must be considered that Coles Creek Plain grades imperceptibly into Baytown Plain.<sup>2</sup> The transition is certainly gradual and does not lie in the material at all; it is forced by the locations of the areas in which the two types were first defined. The relationship of both Baytown and Coles Creek Plain to the type McKelvey Plain, defined in northern Alabama,<sup>3</sup> is obviously of the same nature. A similar situation obtains to the east, along the coast of the Gulf of Mexico. Coles Creek Plain changes gradually, but perhaps more markedly, into the type Weeden Island Plain which Willey has defined on the northwest coast of Florida.<sup>4</sup>

Similar difficulty has been experienced in drawing a line to delimit the chronological bounds of Coles Creek Plain. While typical examples of the preceding plain type, Marksville Plain,<sup>5</sup> and the succeeding Addis Plain<sup>6</sup> can be distinguished with ease, the transition is so subtle that we have avoided the task. This is regrettable, but I can only report the facts. All of the plainware from Marksville Period sites, such as the Crooks Site and the Marksville Site, has been called Marksville Plain; from Troyville and Coles Creek Period sites, Coles Creek Plain; from Plaquemine Period sites, Addis Plain. If all this plainware were combined and classified according to the stand-

<sup>1</sup> Quimby, 1951, 118-119.

<sup>2</sup> Phillips, Ford, and Griffin, 1951, 76-82.

<sup>3</sup> Haag, 1939.

<sup>4</sup> Willey, 1945, 236-238; 1949, 409-411.

<sup>5</sup> Ford and Willey, 1940, 59-65.

<sup>6</sup> Quimby, 1951, 107-109.

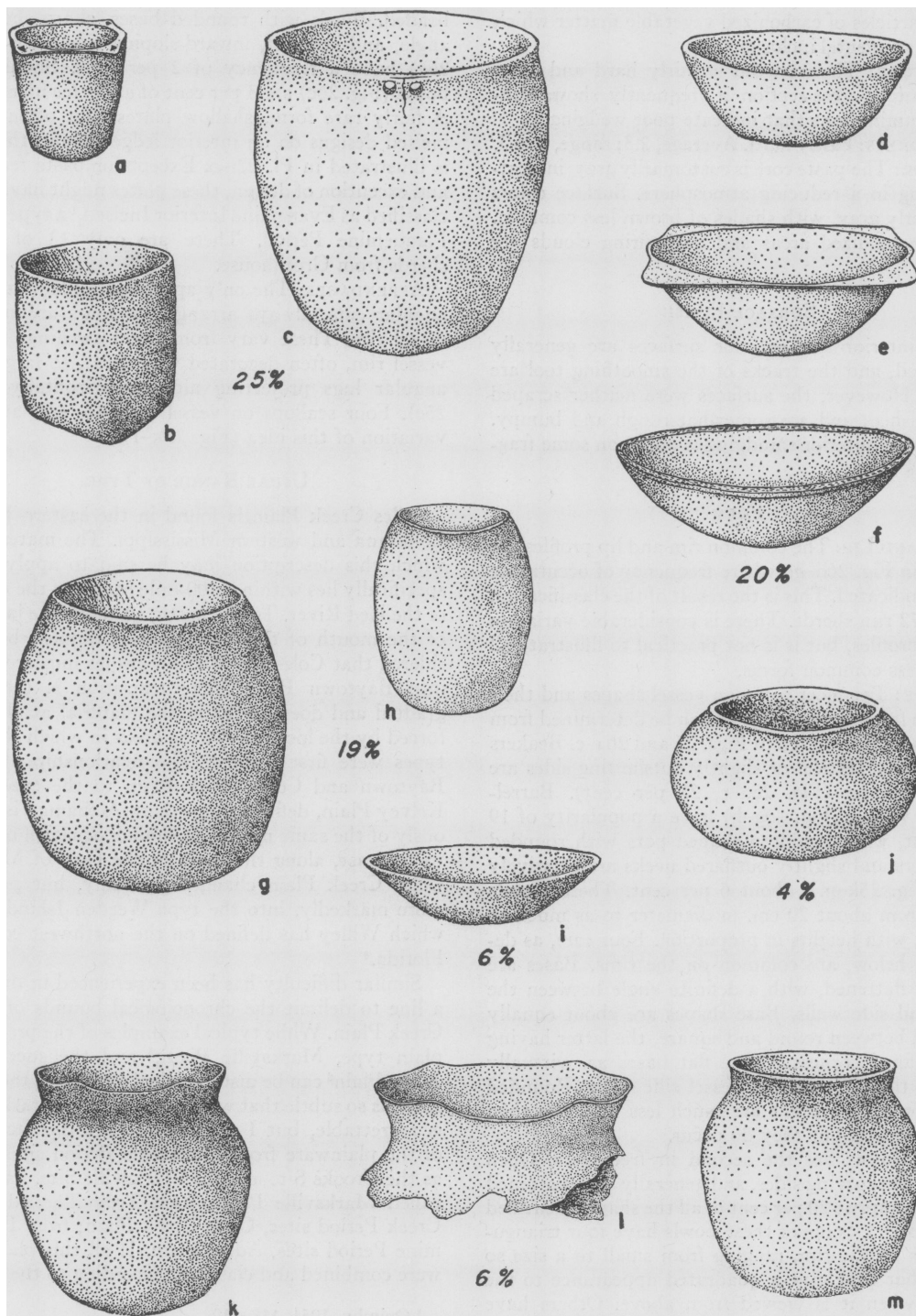


FIG. 25. Vessel shapes of Coles Creek Plain. All of these shapes have been deduced from large sherds, for no complete vessels were found. Proportions of the forms are indicated by percentage figures. See Pl. 15a-f.



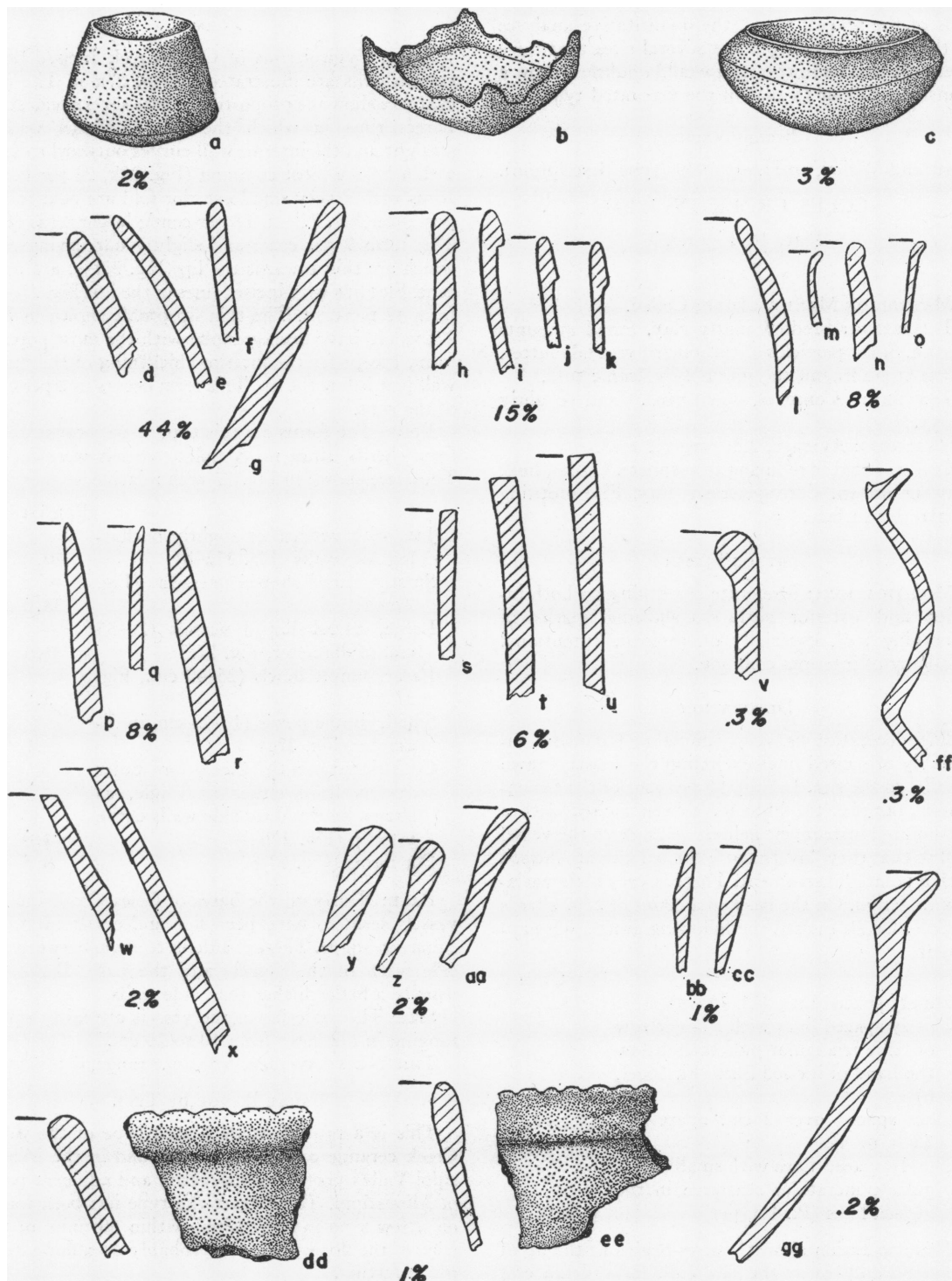


FIG. 26. Shapes and rim profiles of Coles Creek Plain. Frequencies of shapes a and c are given. The square vessel (b) is rare, although square bases for round pots are common. Percentages of occurrence for the various rim forms are indicated.

ards of the several types, the quantitative analyses of the stratigraphy from the several sites that have been reported on in this area would doubtless show a transition similar to that of the decorated types.

#### BIBLIOGRAPHY

Ford and Willey, *in* Haag, 1939 (type description).

#### COLES CREEK INCISED

Plate 16, Figure 27

#### PASTE

METHOD OF MANUFACTURE: Coiled.

TEMPERING: Predominantly clay. Small amounts of sand. Small particles of carbonized vegetal matter. White stone fragments, probably volcanic tufa.

TEXTURE: Compact, contorted, and slightly lumpy.

HARDNESS: Average, 2.5; range, 2 to 3.

COLOR: Fired in reducing atmosphere. Colors, buff, gray, or brown. Core generally gray. Fire mottling on exterior surface.

#### SURFACE FINISH

MODIFICATIONS: Moderate smoothing on both interior and exterior surfaces, showing marks of smoothing tool, especially on interior. Intentional smudging of interiors common.

#### DECORATION

The decoration is very simple and consists invariably of incised lines encircling the vessel, drawn parallel to the rim. In fully 95 per cent of the Greenhouse examples the lines have been incised with a flat-pointed instrument held at an angle to the vessel wall so that they "overhang"; the balance are incised with a pointed instrument. There is very little variation in design. On the basis of a count of 2197 sherds of Coles Creek Incised the following groups were apparent:

	PER CENT
Closely spaced lines (Pl. 16a-d)	73.5
Closely spaced lines with a single row of large triangular punctates below the band of incised lines (Pl. 16e-f, h)	19.8
Lines spaced over 2 cm. apart (Pl. 16i-j, m-n)	6.2
Closely spaced lines with small triangular punctations scattered in the incised lines (Pl. 16l, p-r)	1.0

This decoration almost always begins at the lip of the vessel and covers the side walls for a distance of one sixth to one half its height. On the few sherds with narrow exterior rim folds the design begins below the rim. In others the decorated area is slightly thickened.

#### FORM

RIMS: Typical rims of Coles Creek Incised decorated sherds are illustrated in Fig. 27k-u. The percentages show the proportions of the several varieties. Direct rims in which the outside vessel wall is straight and the interior wall curves outward to form a thin lip are most common (Fig. 27k, 23 per cent). Rims with a very small exterior fold are next in importance (Fig. 27l-m, 18 per cent); larger folds (Fig. 27n) form 9 per cent; and slightly outcurving rims which are thin towards the lip (Fig. 27r-s) are 6 per cent. Flat lips with incised lines in the lip (Fig. 27o-q) form 12 per cent. The thin lip profile shown in Fig. 27t would have been grouped with the most popular form, except for the interior thickening of the vessel wall just below the lip. This form occurs in 2 per cent of the rims.

BODY: The forms for this type were reconstructed from sherds, since no complete vessels were found. These are shown in Fig. 27 with relative frequencies.

#### PER CENT

Jars with vertical or slightly outflaring side walls (Fig. 27a-b)	40.0
Small, barrel-shaped vessels (Fig. 27c-d)	38.0
Large, barrel-shaped vessels (20-35 cm. in diameter, Fig. 27e)	3.0
Large, simple bowls (25-40 cm., Fig. 27f)	5.0
Small, simple bowls (10-25 cm. in diameter, Fig. 27g)	2.0
Constricted-mouth bowls or taller vessels have either an angle, as shown by rim u, or side walls curve into lip (Fig. 27h-i)	4.0
Pot forms (Fig. 27j)	0.8

BASE: Nearly all the bases of Coles Creek Incised vessels seem to have been flat and either round or square in shape. There is a definite angle between the side walls of the vessels and the base. Bases are usually a little thicker than side walls.

SIZE: The majority of the vessels are fairly small, ranging in diameter from 10 to 25 cm.

THICKNESS: Average, 6.5 mm.; range, 3 to 7 mm.

#### USUAL RANGE OF TYPE

This is a prominent decorated type of the Coles Creek ceramic complex as it is found in the Mississippi Valley portion of Louisiana and adjacent parts of Mississippi. To the east the type has been found on a few sites in Mississippi within 50 miles of the edge of the flood plain and probably does not extend much farther.

Frequency of occurrence rapidly diminishes in the Lower Mississippi River Delta region south of Baton Rouge, Louisiana. This decoration was not an element of the contemporary Bayou Cutler ceramic

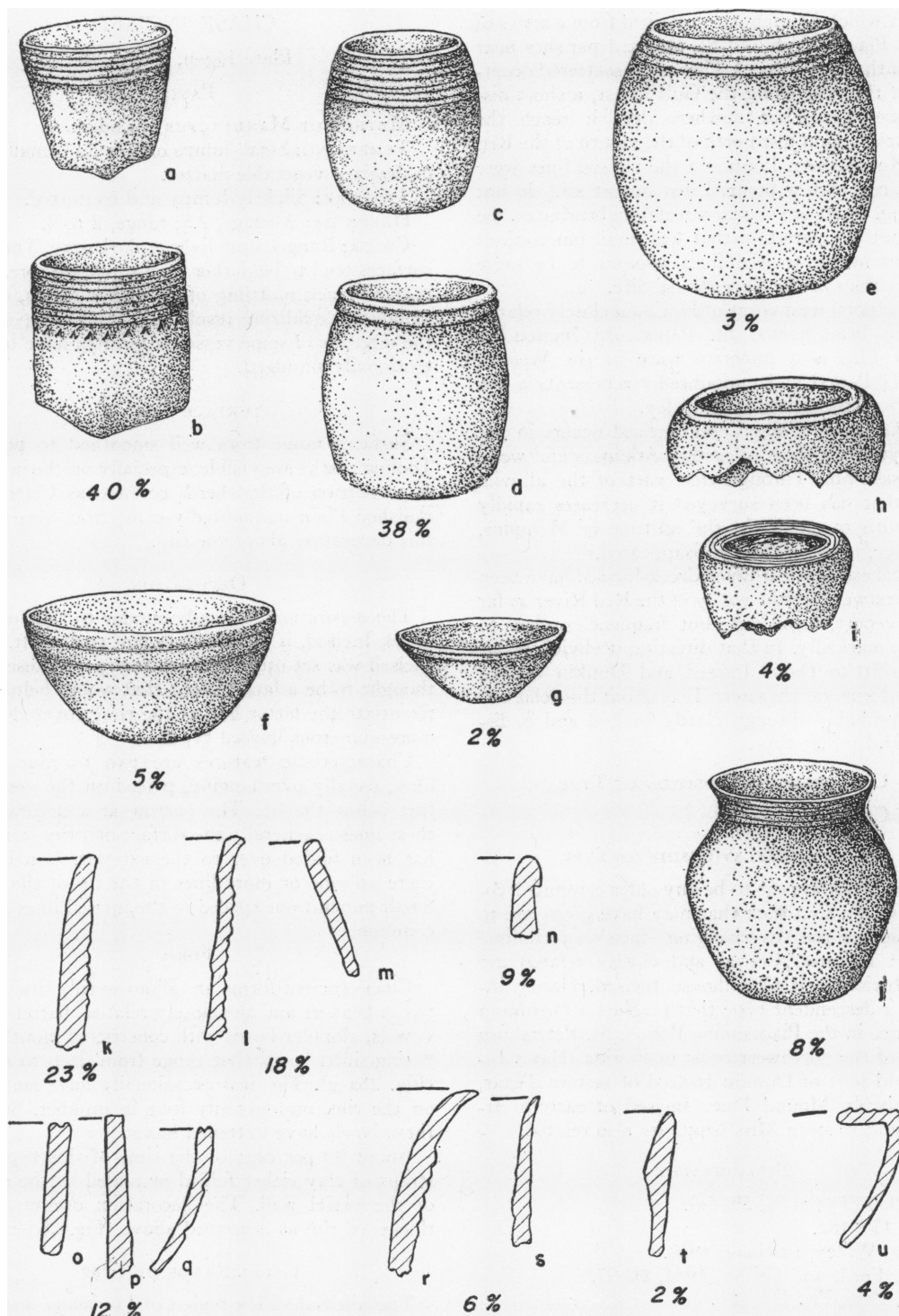


FIG. 27. Shapes and rim profiles of Coles Creek Incised. Frequencies of vessel shapes as deduced from large sherds and of rim profiles are given. a-b. Small vertical or flaring-sided beakers. c-d. Small, barrel-shaped vessels. e. Large, barrel-shaped vessels. f. Large bowls with flaring sides. g. Small bowls with flaring sides. h-i. Bowls or pots with incurved upper walls. j. Pot form. Rim forms occur in the frequencies shown from k to u. See Pl. 16.

complex which Kniffen has described from a series of sites in Plaquemines and St. Bernard parishes near the mouth of the river.<sup>1</sup> There is a scattered occurrence of the type along the Gulf Coast, a short distance westward, but nowhere does it reach the frequencies found just north of the mouth of the Red River. In southern Louisiana the incised lines were usually cut with a pointed instrument and do not overhang. There are no statistical data bearing on the point, but the variation that has small punctations scattered in the incised lines appears to be more frequent than at the Greenhouse Site.

On the northwest coast of Florida a closely related type has been named St. Petersburg Incised by Willey.<sup>2</sup> This is a minority ware in the Weeden Island II Period and undoubtedly represents a diffusion from the Mississippi Valley.

To the north, Coles Creek Incised occurs in the late Baytown horizon of eastern Arkansas and western Mississippi. Through that part of the alluvial valley that has been surveyed it decreases rapidly from south to north. In the latitude of Memphis, Tennessee, it has virtually disappeared.<sup>3</sup>

Typical examples of Coles Creek Incised have been found westward up the valley of the Red River as far as Shreveport, Louisiana, but frequencies seem to decrease markedly. In that direction it obviously has relationship to Davis Incised and Dunkin Incised described from northeastern Texas,<sup>4</sup> but this relationship is probably through Hardy Incised and is discussed under that type.

#### CHRONOLOGICAL POSITION OF TYPE

Coles Creek Period.

#### PROBABLE RELATIONSHIP OF TYPE

There do not appear to be any older ceramic decorations in the Southeast that may have given rise to this design or the "overhanging" incision technique which it features. Coeval and closely related are Chase Incised and Greenhouse Incised. Hardy Incised is a descendent type that reached a maximum occurrence in the Plaquemine Period. St. Petersburg Incised of the northwest coast of Florida, Davis Incised, and part of Dunkin Incised of eastern Texas, and probably Mound Place Incised of eastern Arkansas and western Mississippi are also related.

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- Ford, 1935 (Types 5a, 5b, 5c).  
1936, 179-182.  
Ford and Willey, *in* Haag, 1939.  
Phillips, Ford, and Griffin, 1951, 96-97.  
Walker, 1936, Pls. 11f, 15b.

<sup>1</sup> Kniffen, 1936, 413.

<sup>2</sup> Willey, 1949, 442.

<sup>3</sup> Phillips, Ford, and Griffin, 1951, 96.

<sup>4</sup> Newell and Krieger, 1949, 110-118.

#### CHASE INCISED

Plate 14g-n, Figure 28

##### PASTE

METHOD OF MANUFACTURE: Coiled.

TEMPERING: Small lumps of clay and small bits of carbonized vegetable matter.

TEXTURE: Slightly lumpy and contorted.

HARDNESS: Average, 2.5; range, 2 to 3.

COLOR: Ranges from light to dark gray. The vessel surfaces tend to be darker than the paste core. There is some black mottling of exterior surfaces, a small amount of oxidizing resulting in pinkish spots, and the interiors of some vessels appear to have been intentionally smudged.

##### SURFACE FINISH

Surfaces range from well smoothed to polished. Tooling marks are visible, especially on the interiors. A proportion of the sherds counted as Coles Creek Polished Plain undoubtedly came from vessels with this decoration about the rim.

##### DECORATION

The decoration, basically similar to that of Coles Creek Incised, is essentially a rim treatment. Chase Incised was set up as a separate type because it was thought to be a late variant that would help to differentiate the latter half of the time covered by the more numerous incised type.

Characteristic features are two to four incised lines, usually overhanging, placed on the vessel rim just below the lip. The narrow area decorated by these lines is generally the surface of a rim strap that has been folded over to the exterior. Usually also there are one or more lines in the lip of the vessel. Small punctations spaced in the incised lines are uncommon.

##### FORM

Chase Incised forms are about evenly divided between beakers and the closely related, barrel-shaped vessels, globular bowls with constricted mouths, and flaring-sided bowls that range from deep to shallow (Fig. 28a-c). The last occasionally have small ears on the rim, undoubtedly four in number. Some of these bowls have flattened bases.

About 90 per cent of the rims of this type have straps of clay either folded or added to the outside of the vessel wall. The decoration occurs on this thickened rim as described above (Fig. 28d-i).

##### USUAL RANGE OF TYPE

The alluvial valley region of Louisiana and adjacent parts of Mississippi.

##### CHRONOLOGICAL POSITION OF TYPE

Coles Creek Period.

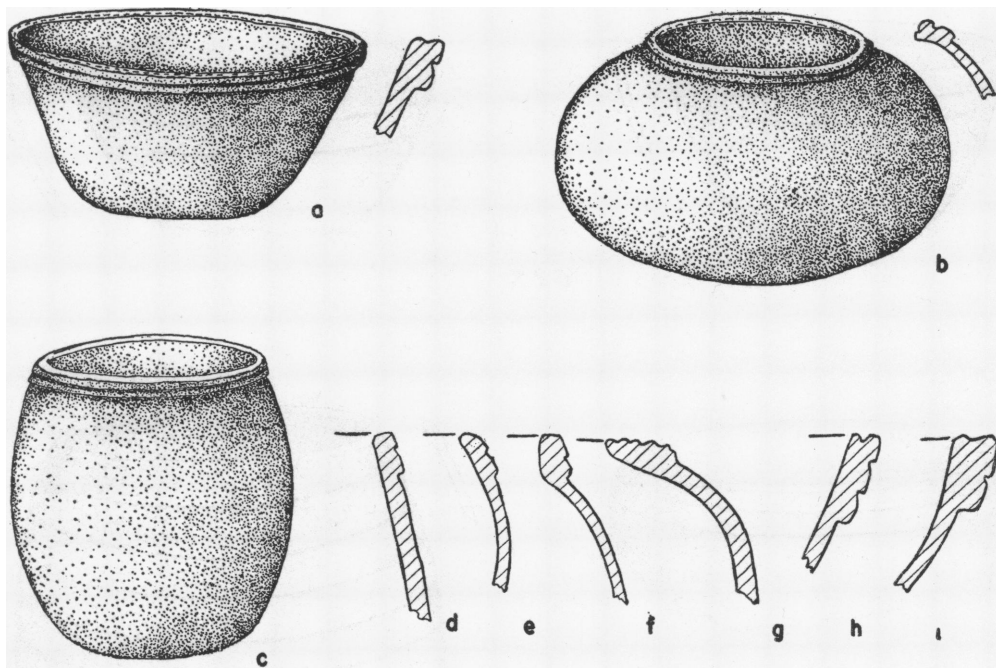


FIG. 28. Shapes and rim profiles of Chase Incised. Vessel forms are deduced from large sherds. See Pl. 14g-m.

#### PROBABLE RELATIONSHIPS OF TYPE

Chase Incised appears to be a fairly localized design development related to Coles Creek, which never achieved any great popularity. It appears to be a local variant. There is very little material in adjacent regions that is at all similar. Nor did it influence the ceramic tradition of periods later than Coles Creek. This is a highly specialized type, valuable for separating units of time and space rather than for showing connections.

#### BIBLIOGRAPHY

Ford, 1935, 15 (included in Type 5f), Pl. 3.  
Ford and Willey, *in* Haag, 1939 (type description).

#### GREENHOUSE INCISED

Plate 17a-g, Figure 29

##### PASTE

**METHOD OF MANUFACTURE:** Coiled. Coil-line breaks are fairly common.

**TEMPERING:** Small lumps of clay and fragments of carbonized vegetable matter.

**TEXTURE:** The paste is of somewhat finer texture than is usual for Coles Creek Plain. It is sometimes contorted, but usually fairly compact. The characteristics are the same as for Coles Creek Polished Plain which is in part undoubtedly composed of fragments

from the lower undecorated parts of these same vessels.

**HARDNESS:** About 2. Slightly softer than Coles Creek Incised.

**COLOR:** Paste color ranges from gray to black. Some sherds have a reddish brown paste, indicating firing in an oxidizing atmosphere. The surface colors have a similar range, but the majority of the specimens tend towards the darker end of the range. Many of the vessels were predominantly black, with gray mottled areas, producing a very handsome effect.

##### SURFACE FINISH

All of this material is polished. The polishing, which ranges from crude to a rather high luster, is so well done that tool tracks are not visible. Occasional pieces are over-floated, so that the surface has cracked slightly.

##### DECORATION

The characteristic decoration of Greenhouse Incised is basically similar to that of Coles Creek Incised in that it consists of incised lines running parallel to the rim. However, the incised lines are always widely spaced, never closely spaced, as in the majority of Coles Creek Incised examples, and in only a few cases are cut at an angle to "overhang." Lines occasionally are also placed in the vessel lips, but the

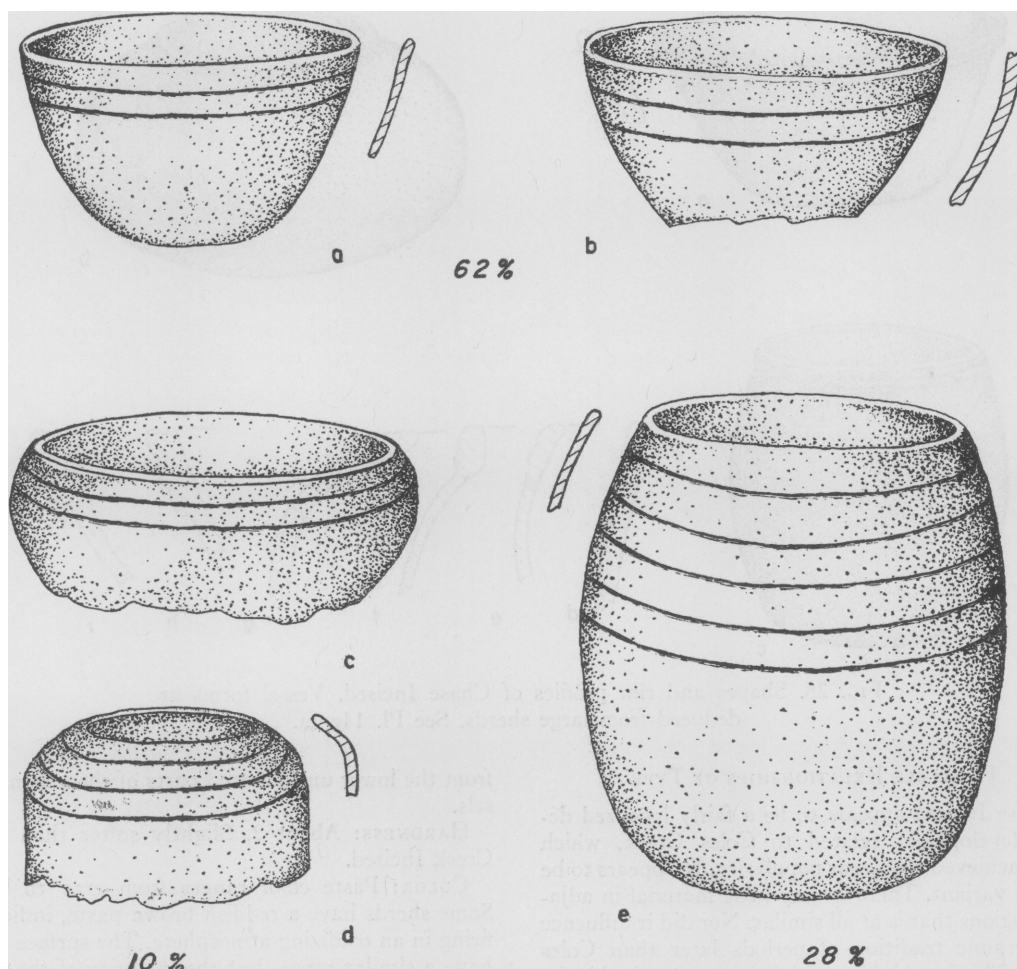


FIG. 29. Shapes of Greenhouse Incised as inferred from sherds. See Pl. 17a-g.

row of punctations often found beneath the incised lines of Coles Creek Incised is entirely missing here. This design characteristically occupies the upper part of the vessel walls.

#### FORM

The number of examples available are inadequate to permit a very reliable statistical treatment of vessel form. Forty-seven sherds large enough to allow the shape to be deduced indicate the following:

	PER CENT
Bowls with straight or slightly curved flaring sides (Fig. 29a-b)	62
Barrel-shaped pots (Fig. 29e)	28
Bowls with incurved upper walls (Fig. 29c-d)	10

As can be seen, the majority of the vessels are rather deep bowls with flaring sides. The exact shape of the

bases is uncertain because the decoration occurs near the rim; however, judging from the bases in the accompanying type Coles Creek Polished Plain, they are probably flat.

Rims are almost always direct. There is only one example of a folded and thickened rim. The rims tend to become thinner towards the lip, but despite the small space left several sherds have one or more lines delicately incised in the lip.

This ware is thinner than is usual for the other types of the Coles Creek Period. It averages about 4 mm. in thickness and ranges from 2 to 6 mm.

#### USUAL RANGE OF TYPE

Greenhouse Incised has been identified only from the excavations in the Greenhouse Site. In the past it has been included in the type Coles Creek Incised as an extreme in the range allowed for that type. When it is factored out it will probably fall well within its



geographical range. Some of the vessels illustrated by Lemley from the Crenshaw Site in the southwestern corner of Arkansas belong to this type.<sup>1</sup>

#### CHRONOLOGICAL POSITION OF TYPE

Late in the Coles Creek Period.

#### PROBABLE RELATIONSHIPS OF TYPE

Greenhouse Incised is certainly closely related to Coles Creek Incised which it partially parallels in time range. It may be a local development resulting from the impingement of the polishing trait, measured by the type Coles Creek Polished Plain on Coles Creek Incised.

#### PONTCHARTRAIN CHECK STAMPED

Plate 18i-q, Figure 30

##### PASTE

METHOD OF MANUFACTURE: Coiled. Flattened coils were from 2 to 3 cm. wide.

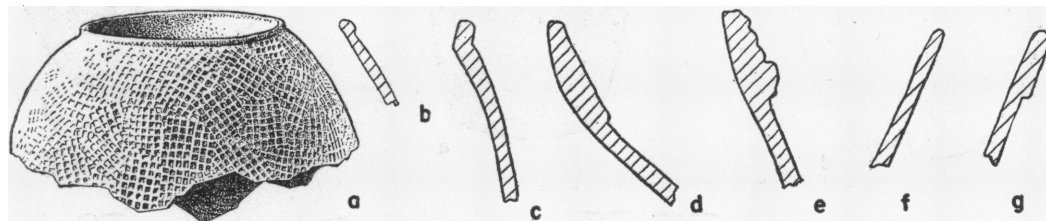


FIG. 30. A shape and rim profiles of Pontchartrain Check Stamped. See Pl. 18i-q.

**TEMPERING:** Large particles of clay, fragments of carbonized vegetable material, and occasionally bits of white stone which are probably volcanic tufa.

**TEXTURE:** Lumpy and contorted, but compact.

**COLOR:** Exteriors are principally shades of gray, with some brown and buff oxidized areas. Vessel interiors are occasionally smudged. Paste color is mainly gray, indicating well-controlled firing in a reducing atmosphere.

#### SURFACE FINISH AND DECORATION

Interior surfaces have been carelessly smoothed without prior scraping so that they are somewhat bumpy. Exterior surfaces, except for the vessel bases and occasionally on folded rim straps, are impressed with a carved paddle which produced a waffle-like or checkered finish to the surface. The impressions are either square or slightly rectangular and vary between 2 and 3 mm. in size. Apparently there was no regularity in the manner the paddle was applied. A few sherds with wide folded rim straps have a separate rim decoration, consisting of punctations or horizontally incised lines with punctations at spaced intervals.

<sup>1</sup> Lemley, 1936, Pl. 8, Figs. 5-6.

#### FORM

An insufficient quantity of sherds of this type is available to give an idea as to the popularity of vessel shapes. Several suggest that they came from medium-sized cauldrons with slightly outcurved rims. Others are from barrel-shaped or semi-globular vessels. Bowls do not seem to be represented. Four fragments of flattened bases indicate that these were a relatively common feature.

Rim sherds were not numerous enough for statistical analysis, but appear to be about equally divided between direct and folded rims (Fig. 30). Vessel side walls average about 6 mm., with a range from 5 to 7.5 mm. The bases are thicker than the side walls.

#### USUAL RANGE OF TYPE

As defined, the type is found in the Louisiana portion of the alluvial valley of the Mississippi. The Greenhouse Site lies near its northern geographical limits, and its maximum frequency increases rapidly to the south. While Pontchartrain reaches a maxi-

mum of only about 2 to 3 per cent at Greenhouse, on many sites in southern Louisiana near the Gulf the percentage of this type rises substantially. To the east, along the Gulf Coast, Pontchartrain connects in range with the type Waukulla Check Stamped which is found in large quantities in sites of the Weeden Island II Period of the northwest coast of Florida.<sup>2</sup> There seems to be little doubt but that this trait moved into the lower part of the Mississippi Valley from that direction.

The northward range of Pontchartrain seems to have failed by some 200 miles of reaching the southward extent of the very similar Wheeler Check Stamped which came into the Mississippi alluvial valley just to the south of Memphis, Tennessee.<sup>3</sup> This latter type also seems to have diffused from the east, from the Tennessee Valley area of northern Alabama. Curiously enough, these two invasions of the Mississippi alluvial valley by this ceramic finish appear to have occurred about the same time.

#### CHRONOLOGICAL POSITION OF TYPE

The evidence from the stratigraphic studies at

<sup>2</sup> Willey, 1949, 437-438.

<sup>3</sup> Phillips, Ford, and Griffin, 1951, 87-88.



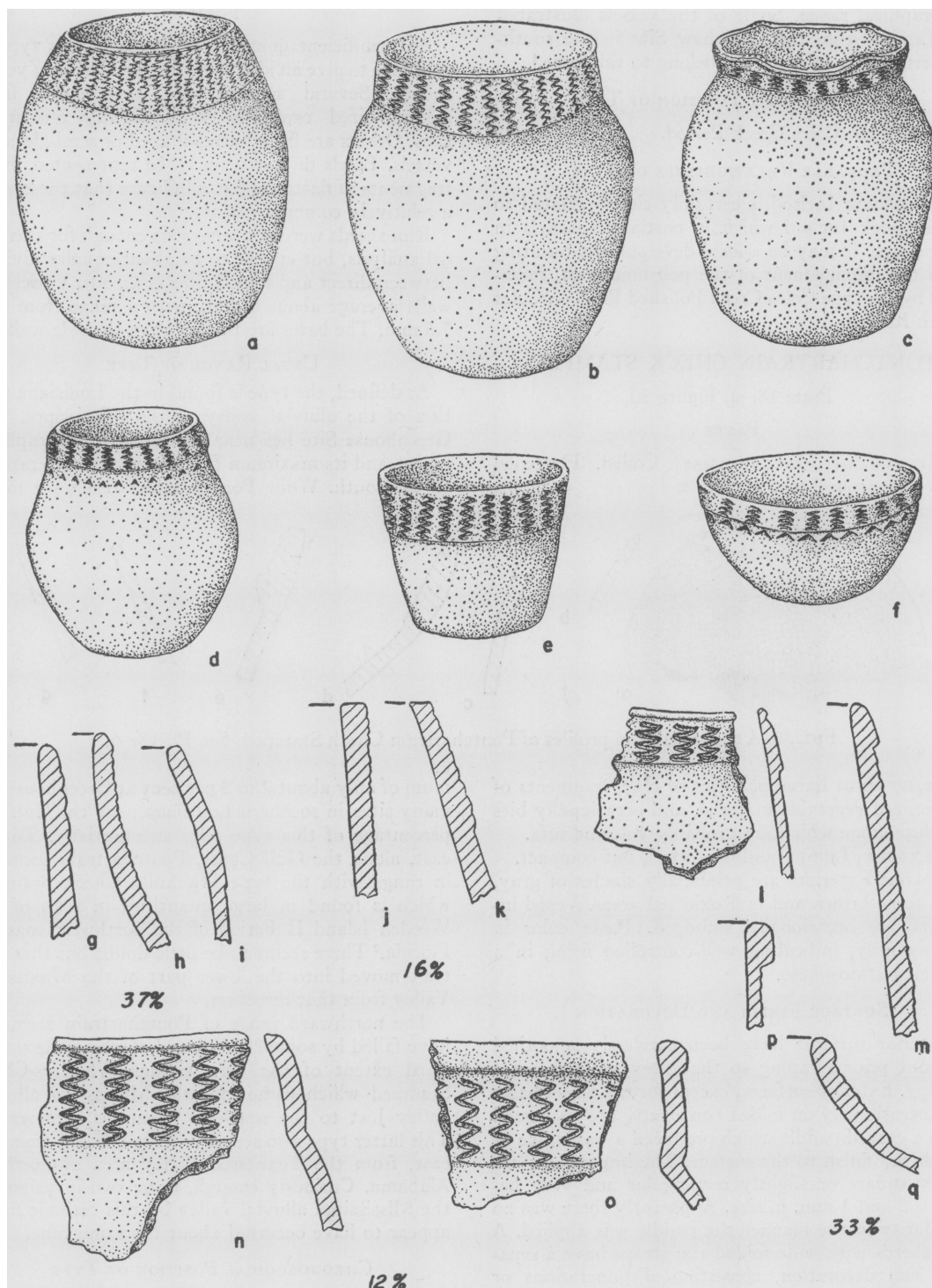


FIG. 31. Shapes and rim profiles of Chevalier Stamped. Shapes are based on large sherds. g-i. Direct rims with rounded lip. j-k. Direct rim flattened in the plane of vessel mouth. l-m, p-q. Folded rims. n-o. Cambered rims. Rim form frequencies are given. See Pl. 18a-h.

Greenhouse places the occurrence of Pontchartrain there in the Coles Creek Period.

#### BIBLIOGRAPHY

Ford and Willey, *in* Haag, 1939 (type description).

### CHEVALIER STAMPED

Plate 18a-h, Figure 31

#### PASTE

**METHOD OF MANUFACTURE:** Coiled or built up with annular rings of clay.

**TEMPERING:** Similar to Coles Creek Plain, small lumps of clay, carbonized vegetable material, and often fragments of white stone which are probably volcanic tufa.

**TEXTURE:** Compact, but somewhat lumpy and contorted paste.

**HARDNESS:** Average, about 2.5; range, 2 to 3.

**COLOR:** Surfaces predominantly shades of gray ranging from light to dark. Mottling, with some salmon-colored areas, indicates poor control of firing in a reducing atmosphere.

#### SURFACE FINISH

Smoothed but not polished. Surfaces are lumpy, indicating that they were not scraped.

#### DECORATION

The decoration that characterizes this type consists of zigzagged stamping applied by rocking a single unit stamp as it was moved sidewise down the vessel wall. The stamp impressions vary from 5 mm. to 2 cm. in length, are about 1 cm. wide, and were impressed to a depth of about 1 mm. The stamp was smooth, never dentated.

Parallel vertical rows of this stamping form the design. In two thirds of the examples, the stamped rows are so close together that impressions meet to form what appears at first glance to be a continuous textured design. On the balance of the sherds the rows of stamping stand apart, and the technique is clearly apparent.

This decoration is always arranged to form a band about the upper walls of the vessels, usually confined to the neck, if the vessel has one. In about 60 per cent of the examples the decorated area is very slightly thicker than the vessel walls below, and the lower border to the decoration is accentuated by a slight step in the vessel surface. Less often the lower border is marked by a simple "overhanging" line. A few examples have triangular or comma-shaped punctations in a single row beneath the decorated band.

#### FORM

The shapes of only 22 vessels were determinable from the sherds available, a number insufficient to make shape percentage significant. Variations on the

barrel form were most numerous (eight examples). Most of these had cambered decorated necks. Jar shapes with "vague" shoulders were next in number (seven examples), and vertical-sided beakers were third (six examples). One flaring-sided bowl form was found. These vessels range in diameter from about 20 to 40 cm. and are proportionately high.

As the decoration is arranged around the rim, few of the fragments gave any indication of base shapes. They probably were mainly flattened and have been drawn that way in the illustrations (Fig. 31). Rim forms and their frequencies are given in the same figure.

Small ears on the rim are rare for this type; no other appendages are found.

#### USUAL RANGE OF TYPE

Known from central eastern Louisiana and adjacent parts of Mississippi. The type does not seem to occur in either Florida or, except for one example, in eastern Texas.

#### CHRONOLOGICAL POSITION OF TYPE

The maximum frequency of Chevalier Stamped falls in the Coles Creek Period.

#### PROBABLE RELATIONSHIP OF TYPE

This is another of the group of decorations which seems to have been derived from the rim treatment of vessels in the Marksville Period. Zigzag stamping as a rim treatment is present in the Marksville Period, but is not very common and is probably late in the period.

The relation of Chevalier Stamped to rims of Marksville Period vessels is shown by the limitation of the design to a band around the rim, the fairly frequent appearance on slightly cambered jar necks (Fig. 31d), and the rare use of a single row of punctations below the decoration band.

#### BIBLIOGRAPHY

Ford, 1935, 16 (Type 13b), Pls. 3-4.

1936, 187 (Type 63;101).

Ford and Willey, *in* Haag, 1939 (type description).

Phillips, Ford, and Griffin, 1951, 100.

### BELDEAU INCISED

Plate 19h-o, Figure 32

#### PASTE

**METHOD OF MANUFACTURE:** Coiled. Coil-line breaks are fairly common.

**TEMPER:** Small lumps of clay, fragments of carbonized vegetable material, and occasionally bits of white stone which are probably volcanic tufa.

**TEXTURE:** Lumpy and contorted, but compact.

**HARDNESS:** Average, about 2.3; range, 2 to 3.

**COLOR:** Paste is usually gray, and surfaces are also

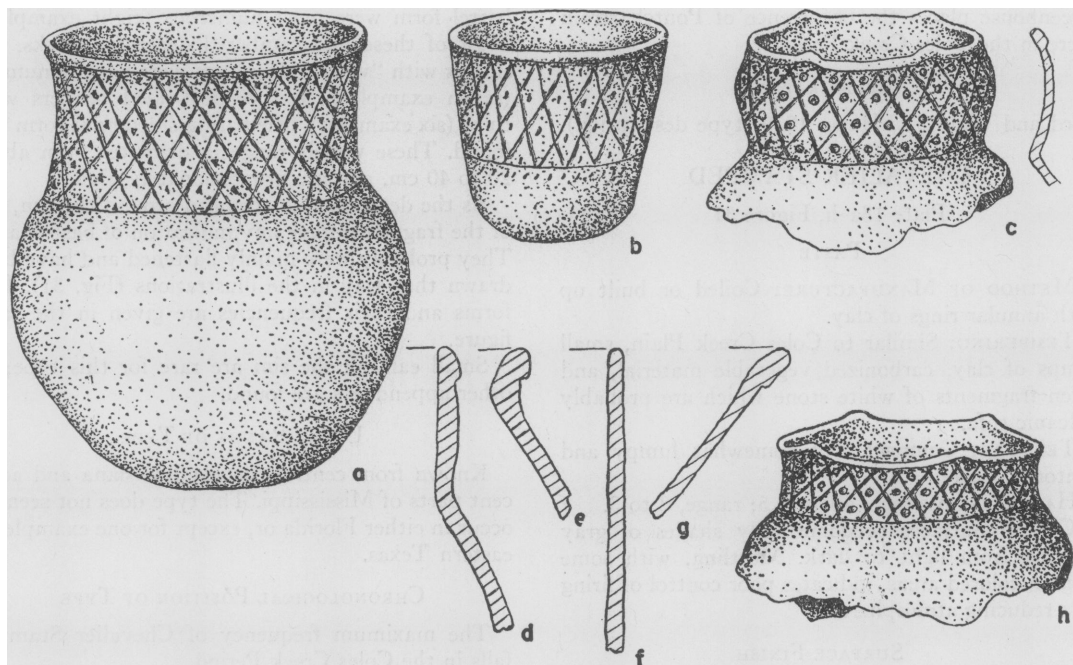


FIG. 32. Shapes and rim profiles of Beldeau Incised. See Pl. 19h-o.

predominantly of the same color. Some surface areas are oxidized to a light buff. Smoke clouding is found on some exteriors, and a few sherds seem to have intentionally blackened interiors. Firing was in a reducing atmosphere with fair control.

#### SURFACE FINISH

Smoothed, but not polished. Surfaces are bumpy, indicating that they were not scraped.

#### DECORATION

The decoration is rather consistent. Straight, incised lines placed at 45 degrees to the plane of the vessel rim form a cross-hatched pattern. In 95 per cent of the examples a single punctation is centered in each of the diamonds thus formed. The incised lines are cut either with a pointed instrument or with a flat tool so that they "overhang." The centered punctations are triangular-shaped in about 60 per cent of the examples (Fig. 32a), ring-shaped in 30 per cent (Fig. 32c, h), and made with a pointed tool in the remaining 10 per cent (Fig. 32b). An incised line generally borders the decoration at top and bottom, and in a few examples there is a single row of punctations below the incised pattern (Fig. 32b).

#### FORM

There are not enough fragments of Beldeau Incised from which the vessel form can be reconstructed to make percentages significant. Jars with slightly differentiated necks are undoubtedly the most popu-

lar shape (Fig. 32a, c, h). Two of these have cambered necks, and the neck is the area that is decorated in these cases. Vertical-sided beaker forms seem to be second in popularity; a few fragments suggest the barrel shape. Two fragments of bowls were found. Apparently these were simple bowls, and castellations on the rims of each were undoubtedly four in number.

About half of the rims are simple and direct. The others have narrow folds, usually undecorated, turned to the outside of the vessel. A single line is in the lip of one direct rim, and the flattened lip of another has shallow notches. Small ears, undoubtedly spaced at four points on the rim, are found on eight sherds.

The base of these vessels, except the bowls, was probably flat, either round or square in shape. As this is a rim area decoration, none of the sherds have bases attached.

#### USUAL RANGE OF TYPE

The alluvial valley region of Louisiana and adjacent parts of Mississippi.

#### CHRONOLOGICAL POSITION OF TYPE IN RANGE

The frequency maximum of about .75 per cent is in the Coles Creek Period at the Greenhouse Site.

#### PROBABLE RELATIONSHIPS OF TYPE

Beldeau probably derives from the cross-hatched rims that characterize the ceramics of the Marksville

Period.<sup>1</sup> This is suggested by similarity of the cross-hatching, position of the decoration on upper vessel walls, and occasional occurrence of this design on cambered rims similar to, but larger than, those of the Marksville Period. An additional connective feature is the sporadic use of a single row of punctations beneath the Beldeau design.

This indicated relationship parallels the development of partly contemporary designs, such as Mazique Incised, from other variations of the rim decorations of the Marksville ceramics and seems entirely reasonable. However, it appears that the cross-hatched rim to Beldeau development did not take place in the region in which the Greenhouse Site is located. No similar material in the intervening Troyville Period connects the time range of the two classes. This particular phase of development must center in some neighboring region, and the type Beldeau diffused to the territory around the mouth of the Red River in the form in which it has been described some time in the Coles Creek Period.

Beldeau Incised is ancestral to the highly similar Harrison Bayou Incised<sup>2</sup> of the later Plaquemine Period and the historic horizon. The two types overlap in time range. The principal changes are to be found in paste and the elimination of the punctations from the centers of the diamonds.

One of the variations included in the east Texas type Dunkin Incised is related to this group of decorations.<sup>3</sup> However, the Texas examples are more similar to Harrison Bayou than to Beldeau.

To the east, on the Gulf Coast of Florida, the comparable type is Keith Incised,<sup>4</sup> which occasionally has punctations in the diamonds or at the junctions of lines, but lacks the single row of triangular punctations placed below the incised pattern as occasionally found in the Louisiana type.

Beldeau extends northward into western Mississippi and eastern Arkansas in decreasing frequencies. In this region a later shell-tempered type of the Mississippian time horizon appears to be related to this group of types. This is the cross-hatched variation of Barton Incised.<sup>5</sup>

#### BIBLIOGRAPHY

Ford, 1936, 188.

Ford and Willey, *in* Haag, 1939 (type description).

#### RHINEHART PUNCTATED

Plate 20, Figure 33

#### PASTE

METHOD OF MANUFACTURE: Coiling. Flattened coils average about 2 to 3 cm. wide.

<sup>1</sup> Ford and Willey, 1940, 85-86, Fig. 41.

<sup>2</sup> Ford and Willey, 1940, 50.

<sup>3</sup> Newell and Krieger, 1949, Fig. 44f-i, k.

<sup>4</sup> Willey, 1949, 427-428.

<sup>5</sup> Phillips, Ford, and Griffin, 1951, 114-119.

TEMPER: Small particles of clay, fragments of carbonized vegetable matter, and occasionally small pieces of white stone which are probably volcanic tufa.

TEXTURE: Contorted and slightly lumpy, but compact.

HARDNESS: Average, 2-3.

COLOR: Predominantly gray, ranging from light to dark. All the ware was fired under reducing conditions, but occasional areas of surface are oxidized to a light buff.

#### SURFACE FINISH

Surfaces have been smoothed, but are not polished. Since the vessels were not scraped before polishing, the finish is somewhat bumpy. Occasional interior smudging may be intentional.

#### DECORATION

The characterizing decoration of Rhinehart Punctated consists of either triangular or round punctations, placed in a band around the upper walls of vessels. Incised lines are often used to zone these punctations. A count of 462 sherds shows the following variations:

	PER CENT
Entire decorated band filled with triangular-shaped punctations (Pl. 20a-e)	49
Entire decorated band filled with circular punctations made with the end of a reed (Pl. 20f-g)	7
Decorated band filled with lunar-shaped punctations (Pl. 20k-l)	11
Punctations used with horizontal incised lines. Similar to a variation of Coles Creek Incised (Pl. 20h)	5
Punctations arranged in zones bordered by lines which are usually straight. Punctated zones contrast with line-filled or smoothed bands (Pl. 20m-q)	28

#### FORM

Some typical examples of vessel forms reconstructed from large sherds and rim profiles are illustrated in Fig. 33. Neither group is numerically adequate to make frequencies of occurrence significant.

Most of the examples of this decoration have come from the neck area of vessels which are variations on the cauldron and barrel-shaped forms. Bowl forms are quite rare.

THICKNESS: Ranges from 5 to 10 mm.; average, about 6 mm.

APPENDAGES: Small castellations are rarely found in the rim. These are consistently four in number and are equally spaced around the vessel mouth.

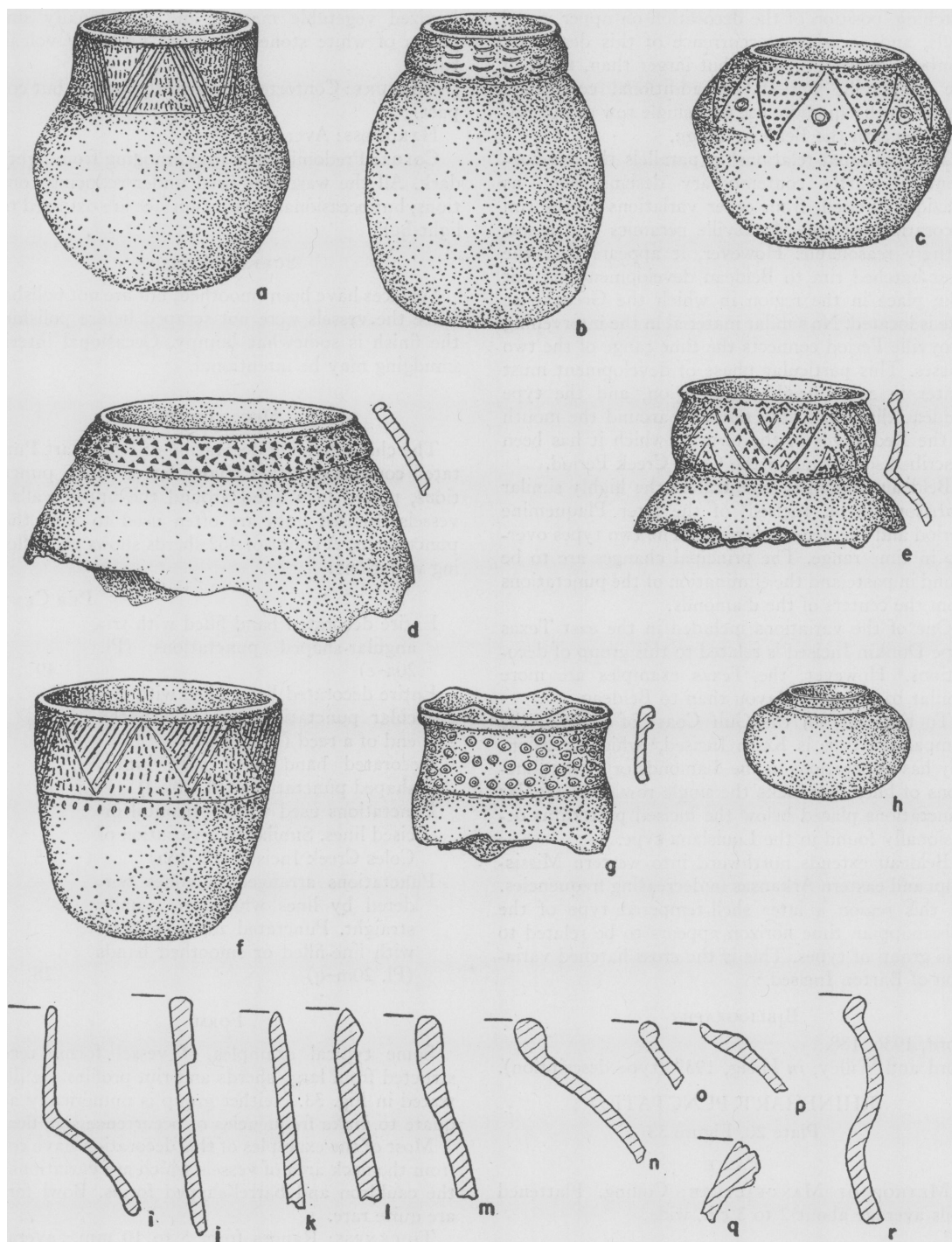


FIG. 33. Shapes and rim profiles of Rhinehart Punctated. See Pl. 20.

## USUAL RANGE OF TYPE

Mississippi flood-plain region of Louisiana and adjacent parts of Mississippi.

## CHRONOLOGICAL POSITION OF TYPE

Maximum in Coles Creek Period. Lasts in smaller percentages into Plaquemine Period.

## PROBABLE RELATIONSHIPS OF TYPE

In the majority of instances the band of punctations, which the distinguishing feature of Rhinehart Punctated, is placed around the upper parts of the vessel walls immediately below the rim. Lower parts of the vessel walls are undecorated. The occasional occurrence of a cambered rim area on which the band is placed and the even rarer use of a single row of punctations below the decorated band further suggest that at least the free-punctated variations of the design are derived from punctated treatments which were applied to vessel rims in the Marksville Period.<sup>1</sup> Other possible progenitors, particularly for the zone-punctated variations, are found in the still earlier Tchefuncte Period. Resemblance is particularly close to the early types of Orleans Punctated.<sup>2</sup> If either, or as seems likely both, of these groups of decorations were the progenitors of Rhinehart, the development of the type probably did not occur in the region of the mouth of the Red River. As noted above, Rhinehart dates in the Coles Creek Period. During the intervening Troyville Period, only a few examples were made that can serve to connect it with the earlier designs.

The parallel type on the northwest coast of Florida is Carrabelle Punctated,<sup>3</sup> which also has the punctations arranged on the upper part of the vessel wall. It does not seem to include incised-line zoned punctations, as does Rhinehart, but it does contain

a small percentage of finger pinching which is not found in the Louisiana type. Carrabelle dates in the Weeden Island I and II periods and reaches a higher popularity peak than does Rhinehart. Possibly the northwest coast of Florida is the major center for the development of the later phases of this design class.

In the Mississippi Valley region of Mississippi and Arkansas the similar type is Evansville Punctated.<sup>4</sup> This uncomplicated decoration features punctations all over the vessel body, not confined to a rim band as in the Louisiana and Florida types. Evansville appears to have evolved from the earlier types Tammany Pinched and Bluff Creek Punctated and, in turn, probably produced the shell-tempered type Parkin Punctated. It appears to be a stage in a parallel development centering to the north of the Louisiana area rather than a direct ancestral form for Rhinehart.

From the Davis Site, the type site of the Alto Focus, Krieger has described the type Pennington Punctated-Incised,<sup>5</sup> in which punctations are zoned by straight incised lines; the patterns are quite similar to the incised and punctated variations of Rhinehart. Frequent use of triangular punctations, contrasting punctated and smoothed bands, and occasional use of parallel lines to fill areas contrasting with punctations are common to both. A few of the vessel shape features are similar, including the beaker form, square flat bases, and, rarely, rims with four castellations. However, 88 per cent of the vessels bearing the Pennington design are carinated bowls, a form not found with Rhinehart at the Greenhouse Site. In several features Pennington compares with Dupree Incised, a Rhinehart descendant of the Plaquemine Period.

## BIBLIOGRAPHY

Ford and Willey, *in* Haag, 1939 (type description).

## PLAQUEMINE PERIOD TYPES

Except for the very latest structures in Mound F the Plaquemine Period is not represented at the Greenhouse Site. However, some of the pottery types that reach their maximum popularity in this later period are found in small proportions in the top parts of the deposits that are assigned to the Coles Creek Period. These types are described by Quimby (1951). Here they are discussed in the following sequence:

Plaquemine Brushed  
Manchac Incised  
Hardy Incised

Wilkinson Punctated  
Dupree Incised

PLAQUEMINE BRUSHED<sup>6</sup>

Plate 21i-n

The paste of the Plaquemine Brushed sherds from Greenhouse is tempered with small particles of clay, ranges from black to gray in color, and was not so highly fired as is the characteristic Coles Creek Period pottery. Nor was the firing so well controlled, and there are frequent oxidized areas on the sherds.

The decoration consists of brushing such as may have been accomplished with a bundle of rather stiff fibers. In some cases the lines may have been incised

<sup>1</sup>Ford and Willey, 1940, Fig. 31a.

<sup>2</sup>Ford and Quimby, 1945, 62-63, Pl. 6.

<sup>3</sup>Willey, 1949, 425.

<sup>4</sup>Phillips, Ford, and Griffin, 1951, 90-91.

<sup>5</sup>Newell and Krieger, 1949, 104-108.

<sup>6</sup>Quimby, 1951, 109-111 (type description).

separately, but the effect is similar, and it is impossible to be certain of the method. These brushed lines are placed either at angles to the vessel lip or horizontally. Cross-brushing is a very characteristic trait: a narrow group of brush marks was applied to form very simple, straight-line patterns after the vessel surface had already been brushed horizontally (Pl. 21i). Decoration usually begins at the lip and extends two thirds of the distance down the sides of the vessels. Occasionally, there is a single row of punctations below the decorated area.

Very little information can be gathered as to vessel shapes from the Greenhouse material. However, the shape associated with Plaquemine Brushed is fairly consistent. It is a deep cauldron, with slightly out-flared upper walls and flattened base. All the rims are direct.

#### PROBABLE RELATIONSHIPS OF TYPE

In decoration, and apparently also in form<sup>2</sup> Plaquemine Brushed is identical with variations of the Alto Focus type Dunkin Incised. These were originally named "Box Creek Brushed" and "Box Creek Cross-Brushed" when the first tentative divisions of the Davis Site pottery were made but later were grouped with other incised decorations under the name Dunkin Incised.<sup>1</sup>

#### BIBLIOGRAPHY

Quimby, 1942, 267, Pl. 15, Figs. 13-15.

#### MANCHAC INCISED<sup>2</sup>

##### Plate 21a-h

The present brief description applies specifically to the material from the Greenhouse Site.

#### PASTE

**METHOD OF MANUFACTURE:** Coiled or built with annular rings. Coil-line breaks common.

**TEMPERING:** Small particles of clay and occasional fragments of carbonized vegetable matter. The paste contained slightly more sand than is usual for Coles Creek Plain and accompanying types.

**TEXTURE:** Slightly lumpy due to large particles of tempering material.

**HARDNESS:** About 2. This material is softer than other types from the Greenhouse Site, such as Coles Creek Plain or Mazique Incised.

**COLOR:** Paste color ranges from black through dark gray to reddish brown. Surface colors are similar in range, but in the greater number of examples the material with a reduced core has been oxidized on the surface of the sherd. Evidently the firing atmosphere was not so well controlled as for earlier types from this site, and firing temperatures were lower.

<sup>1</sup> Newell and Krieger, 1949, 114-116, see Fig. 44a-c.

<sup>2</sup> Quimby, 1951, 111, Fig. 13 (type description).

#### SURFACE FINISH

The surfaces were roughly finished. No tracks of smoothing tools are visible, but this may be caused by the slight surface erosion suffered by nearly all the sherds. This erosion seems to have resulted from the softness of the ware.

#### DECORATION

The varieties of incised decoration that characterize this type are quite similar to those described for Mazique Incised. Line-filled triangles, slanting lines, vertical lines, and horizontal herringbone patterns formed by straight incised lines all occur. In most instances this decoration begins at the lip and extends only partly down the side of the vessel as in Mazique. However, the design tendency is to cover a greater proportion of the vessel than in the earlier type, and on some it extends almost to the base. Rarely, a single row of punctations is found below the incised decoration. These punctations are most commonly made with a pointed instrument in contrast to the triangular-shaped punctations usual for Mazique.

The most striking contrast between the two types lies in the execution of the designs. Manchac Incised is incised with a pointed tool that plowed up the surface, and the lines are uneven and carelessly applied. The incising of Mazique is much neater.

#### FORM

The sherds of this type are numerically inadequate to make possible very significant consideration of vessel shapes and rim profiles. Comparatively small beaker forms, which probably had flat round bases, are most common in the collection. There are no large vessels such as are found in the type Mazique. Vessel walls also tend to be thinner.

Direct rims are the only style found. There are no thickened or cambered rims.

#### USUAL RANGE OF TYPE

Manchac Incised is found in the alluvial valley of the Mississippi River, from the vicinity of Baton Rouge, Louisiana, to about the latitude of Vicksburg, Mississippi.

#### CHRONOLOGICAL POSITION OF TYPE

A few examples of the types are found in the Coles Creek Period, but the maximum frequency occurs in sites of the succeeding Plaquemine Period.

#### PROBABLE RELATIONSHIPS OF TYPE

Manchac Incised obviously evolved from the preceding type Mazique Incised. The transition is gradual, and the classifier often has difficulty in drawing the line between the two types. However, typical specimens can be consistently recognized, and the division is well justified by chronological considerations.



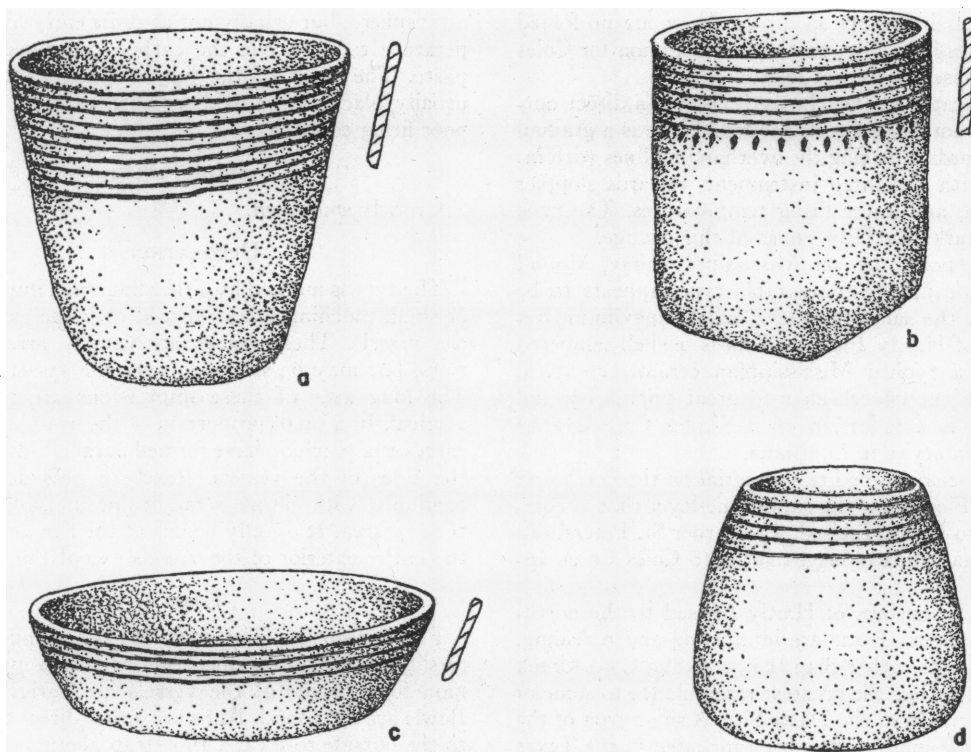


FIG. 34. Shapes of Hardy Incised. See Pl. 17h-o.

The comparable type that is at least partly coeval to the north, up the valley of the Mississippi, is Barton Incised.<sup>1</sup> This has similar incised patterns, but the vessel shapes are different and Barton is shell tempered. Barton Incised ranges from the vicinity of Vicksburg, Mississippi, to slightly north of Memphis, Tennessee, and perhaps farther north.

Northwestward, up the valley of the Red River, the sherds that show the greatest resemblances to Manchac seem to be some of the decorated examples which Krieger has included in the type Dunkin Incised.<sup>2</sup> The comparison is not direct, for Dunkin also includes horizontal incised lines comparable to Coles Creek Incised and Hardy Incised, cross-hatching comparable to the Louisiana type Beldeau Incised, as well as material that is here being classed as brushed.

#### BIBLIOGRAPHY

- Quimby, 1942, 267, Pl. 15, Fig. 7.  
Quimby, 1951, 111, Fig. 13.

#### HARDY INCISED<sup>3</sup>

Plate 17h-o, Figure 34

The paste is tempered with small particles of clay,

has some inclusions of carbonized vegetable matter, and ranges in color from black to gray. A majority of the sherds are quite dark, a result of the low firing temperatures, which have not burned out the carbon. The pottery was constructed either by annular rings or coiling, and coil-line breaks are frequent. An occasional example has been slightly polished, but the majority have smoothed surfaces.

The decoration has developed, or rather degenerated, directly from Coles Creek Incised. It consists of incised lines made with a pointed instrument that encircle the vessels parallel to the rim. Rarely do these lines "overhang" as in Coles Creek Incised. They are either widely spaced or quite close together, and the execution is generally careless and crude. The decoration extends from the rim part way down the vessel walls. A single row of punctations made with a pointed tool is sometimes found below the lines. Rows of punctations also alternate with incised lines on some examples. The number of examples from Greenhouse is not sufficient to warrant very extensive comments on shape. Straight-sided beakers with flat bases are most common. At least one beaker had a square, flat base. Barrel-shaped vessels with flat bases are also indicated. There is one straight-sided bowl (Fig. 34c). In general the vessels of this type are smaller than is usual for Coles Creek Incised.

<sup>1</sup> Phillips, Ford, and Griffin, 1951.

<sup>2</sup> Newell and Krieger, 1949, Figs. 41, 42c-e.

<sup>3</sup> Quimby, 1951, 113-114, Fig. 14 (type description).

The vessel rims are all direct. There are no folded rims. Lines in the lip, such as are common for Coles Creek Incised, were not found.

As indicated above, Hardy Incised is a direct outgrowth from Coles Creek Incised. There is a gradual drift towards replacing the overhanging lines with incisions with a pointed instrument, towards sloppier execution, and lower firing temperatures. The type Hardy marks the later phase of this change.

To the north, up the Mississippi Valley, Mound Place Incised,<sup>1</sup> the comparable type, appears to be on about the same time level as the maximum frequency of Hardy Incised. This is a shell-tempered ware in a typical Mississippian ceramic complex. Mound Place never achieved great popularity and probably is a reflection of the Coles Creek-Hardy decoration styles in Louisiana.

There seems to be little material on the northwest coast of Florida on the same time level that is comparable to Hardy Incised. The earlier St. Petersburg Incised has already been related to Coles Creek Incised.

The relationships of Hardy Incised to the northwest in eastern Texas are interesting and revealing. It is this type rather than the preceding Coles Creek Incised that has the greatest resemblance to some of the material from the Davis Site. A small part of the comparable material has been included in the Texas type Dunkin Incised. These are the horizontally incised line variations described and illustrated by Krieger.<sup>2</sup> However, the Texas material most similar to Hardy is the type Davis Incised.<sup>3</sup> Krieger describes Davis Incised as "polished," but a direct comparison made with samples which he has kindly provided shows that the surface is only slightly more polished than is Hardy. Neither has been burnished to the extent seen in Coles Creek Polished Plain and Greenhouse Incised.

#### BIBLIOGRAPHY

- Quimby, 1942, 267, Pl. 15, Figs. 8-12.  
Quimby, 1951, 113-114, Fig. 14.

#### WILKINSON PUNCTATED<sup>4</sup>

##### Plate 19a-g

##### PASTE

METHOD OF MANUFACTURE: Coiled.

TEMPERING: Small particles of clay and fragments of carbonized vegetable material.

TEXTURE: Ranges from fairly coarse and granular to lumpy and contorted.

HARDNESS: Average, about 2.

COLOR: Black, gray, and buff. Fired in a reducing

<sup>1</sup> Phillips, Ford, and Griffin, 1951, 147-148.

<sup>2</sup> Newell and Krieger, 1949, 110-116, Fig. 42B.

<sup>3</sup> Newell and Krieger, 1949, 116-118, Fig. 45.

<sup>4</sup> This type is represented by a small amount of material at the Greenhouse Site.

atmosphere, but usually not at sufficiently high temperature to burn out the carbon contained in the paste. The cores of the lighter-colored sherds are usually black. Some oxidized surface areas indicate poor firing control.

#### SURFACE FINISH

Crudely smoothed.

#### DECORATION

The type is marked by either fingernail impressions or small pinching marks spaced over the exterior of the vessels. These marks are usually arranged in rows, but may be scattered over the vessel surface. The long axes of these impressions are generally vertical. In a small proportion of the examples vertical rows of pinching have formed parallel ridges down the sides of the vessels. Rarely is this decoration combined with simple straight-line incising around the rim area. It usually begins at the rim and covers the entire exterior of the vessels except the base.

#### FORM

Fairly deep jars with flattened bases and vertical or slightly outflaring rims seem to be the most common form. Some of the vessels are barrel shaped. Bowls are not found. Rims are either direct or folded to the outside to form a rim strap about 1 cm. wide. Vessels range in size from about 10 to 30 cm. in diameter. Wall thickness ranges from 4.5 to 9 mm. and averages about 6 mm. Bases are thicker than side walls.

#### CHRONOLOGICAL POSITION OF TYPE

A few sherds are found in the latter part of the Coles Creek Period deposits at the Greenhouse Site, but the popularity maximum is in the succeeding Plaquemine Period or perhaps later. The type lasts until 1700 A.D.

#### PROBABLE RELATIONSHIPS OF TYPE

On a generally comparable time level fingernail punctations are commonly found on the ceramics of the "Caddoan Area" to the northwest, particularly in the later Fulton Aspect. In the earlier Gibson Aspect punctations comparable to those that mark Wilkinson are included in the types Weches Fingernail Impressed,<sup>5</sup> on about one third of the type Dunkin Incised,<sup>6</sup> and on many of the bodies of Duren Neck Banded.<sup>7</sup> These types span the three phases of the Davis Site, increasing from early to later; presumably the trait of fingernail punctating also increases. In addition to the occurrence of fingernail punctating as a variation of the above-listed types, some 20,000 nail-marked and punctated sherds are recorded at the Davis Site among the "left

<sup>5</sup> Newell and Krieger, 1949, 118-120.

<sup>6</sup> *Idem*, 110-116.

<sup>7</sup> Newell and Krieger, 1949, 120-123.

over sherds" which are not listed as to provenience.<sup>1</sup> This is a little over one fifth of the total number of sherds from the Davis Site. If these had been included in a complete sherd count like that employed in this paper, the proportion of this material would be very high.

This extremely simple decorative tradition is an old one in the Mississippi Valley. The earliest examples are to be found in the types Alexander Pinched<sup>2</sup> and Tammany Pinched<sup>3</sup> of the Tennessee River and Lower Mississippi valleys. These types are dated on the Louisiana Tchefuncte time horizon. A clay-tempered type, Evansville Punctated,<sup>4</sup> carries this tradition through the Baytown periods of northwestern Mississippi and eastern Arkansas, but strangely enough there is no comparable finger-punctated treatment on pottery from the end of Tchefuncte to the latter part of the Coles Creek Period in Louisiana. As we have seen, this technique reappears here as Wilkinson Punctated. The earlier frequencies have been quite small, but towards the latter part of the chronology there is a trend towards much greater popularity for the treatment. As an example, the shell-tempered type of the Mississippian Period in the St. Francis Basin, Parkin Punctated, reaches a maximum of about 15 per cent.<sup>5</sup> This and the "Caddoan Area" are undoubtedly the popularity center at a late date. The late occurrences in eastern Louisiana seem to be a reflection from this center.

#### BIBLIOGRAPHY

Ford and Willey, 1940, 50-51, Fig. 15d-f.  
Quimby, 1942, 267, Pl. 14, Figs. 8-12.

#### DUPREE INCISED

##### Plate 22a-h

This type reaches its frequency maximum in the Plaquemine Period. The samples from the Greenhouse Site come from the upper levels and are numerically so inadequate that they do not allow for a full description of the type. A brief description of this material is given here, but the formal type description was published by George Quimby in his report on the Medora Site.<sup>6</sup>

The decoration of this type is genetically related to the zoned punctuation variation of the type Rhinehart Punctated. Designs consist of a band of punctations confined by incised lines which form simple rectilinear patterns, and run either vertically, are slightly slanted, or are arranged in V's. The major differences between these designs and those included as Rhinehart lie in the execution. Rhinehart decora-

tions are neatly made, and the punctations are either triangular or circular. In Dupree the decorations are carelessly drawn, and the punctations are made with a pointed instrument, either dots or jagged commas. The two groups are similar in that the decoration tends to be confined to the upper areas of the vessel walls, but Dupree decorations cover more of the walls than is the case for Rhinehart.

Comparison of the paste provides another very important basis for differentiating the two types. Rhinehart has the hard, predominantly gray paste of the majority of the wares of the Troyville and Coles Creek periods. The paste of Dupree tends to be softer, more granular, and most frequently is fired to shades of black and brown. Some of the vessels were slightly polished.

#### CHRONOLOGICAL POSITION

Dupree Incised appears in the top levels of several of the analysis units at Greenhouse and thus is dated as beginning near the end of the Coles Creek Period. The maximum frequency of the type is in the later Plaquemine Period.

#### PROBABLE RELATIONSHIP OF TYPE

The derivation of Dupree from the immediately earlier Rhinehart, or better, from the zone-punctated variety of Rhinehart, appears to be obvious. Both of these types have a generalized resemblance to a much earlier type of the Tchefuncte Period, Orleans Punctated,<sup>7</sup> but there seem to be no local connecting links through the intervening Marksville Period, and the exact significance of this similarity must remain in question.

Both the zone-punctated designs included in the type Rhinehart and the designs of Dupree resemble the Alto Focus type Pennington Punctate Incised.<sup>8</sup> Which of the Louisiana types agree most closely with the Texas material has an important bearing on the alignment of the chronologies in the two areas. Rhinehart resembles Pennington in that they share triangular punctations, ring punctations, and neatness of execution. Dupree resembles it more in regard to firing, paste color, and occasional slight surface polish. In the Plaquemine Period, but not at the Greenhouse Site, Dupree is also found on the carinated bowl form that is usual for Pennington. One example has been published from the Dupree Site in Hinds County, Mississippi, where it accompanied early Mississippian ceramics.<sup>9</sup> This general design is also a minor element in the fully developed Mississippian ceramic complex of eastern Arkansas where it has been included as a variation of the type Parkin Incised.<sup>10</sup>

<sup>1</sup> Newell and Krieger, 1949, 128.

<sup>2</sup> Haag, 1939.

<sup>3</sup> Ford and Quimby, 1945, 58-60, 64-65.

<sup>4</sup> Phillips, Ford, and Griffin, 1951, 90-91.

<sup>5</sup> Phillips, Ford, and Griffin, 1951, Fig. 10.

<sup>6</sup> Quimby, 1951, 122-123, Fig. 21.

<sup>7</sup> Ford and Quimby, 1945, 62-63, Pl. 6.

<sup>8</sup> Newell and Krieger, 1949, 104-108, Fig. 39.

<sup>9</sup> Ford, 1936, Fig. 23g. Also note this design in Figs. 23a and 21i.

<sup>10</sup> Phillips, Ford, and Griffin, 1951, Pl. 12a-b.

## TRADE POTTERY

The collections from the Greenhouse Site included a few sherds that did not conform to the local pottery types and were recognizable as related to wares that center in the "Caddo Area" of northwestern Louisiana and the adjacent parts of Arkansas, Oklahoma, and Texas. All of these sherds were sent to Alex Krieger at the Department of Anthropology of the University of Texas. I wish to express my appreciation for his identification and comments which are used as a basis for the following discussion.

Nearly all of the sherds of "Caddoan" type are shown in Pl. 23a-m. The two sherds shown as "a" and "b" in this plate are identified as Crockett Curvilinear Incised by Krieger. This type is almost absent in Phase I of the Davis Site in northeastern Texas, but increases in popularity through Phases II and III.<sup>1</sup> Plate 23a is part of a large, simple, polished, brown bowl. It comes from a shallow refuse-filled pit connected with Building Level 6 in Mound A. The accompanying types can be seen on the graph for this level (Fig. 36). The other Crockett sherd (Pl. 23b) is from Level 27 inches in the trench that was run northward from Mound F. This section of trench was not used in an analysis unit, but the material seems to be related to the later phases of Mound F.

Krieger compares the two sherds shown in Pl. 23c-d to certain unnamed material from the Texarkana Focus of the Fulton Aspect. Sherd "e" he would identify as an example of "the tendency toward scroll" variety of Holly Fine Engraved, except for the fact that it is thinner than the normal range of that type.<sup>2</sup> This sherd is from Level 48 inches in the North 60-65 trench, but comes from immediately west of Analysis Unit Four, where the strata on the flanks of Mound G slope too sharply to allow the material to be analyzed. For that reason the associated types and percentages must remain uncertain.

<sup>1</sup> Newell and Krieger, 1949, 98-101, Figs. 35-36.

<sup>2</sup> Newell and Krieger, 1949, Fig. 32.

Plate 23f-i illustrates four engraved sherds which Krieger cannot assign to types. He suggests that "h" may be a Haley Focus sherd, but thinks it too thin to be a trade piece. These are from the following proveniences:

"f" Level 48 inches in Analysis Unit One

"g" Level 24 inches in trench to north of Mound F which was not used as an analysis unit

"h" Level 18 inches in Analysis Unit Four

"i" From the north flank of Mound F, from a midden stratum that seems to be connected with Building Levels 3 and 4. This area was not used as an analysis unit

The sherd shown as Plate 23j is a fragment of a brown, semi-polished vessel which Krieger says is rather close to his type Pennington Punctate-Incised. The thickness, coarseness of the paste, and firing are comparable, but the surface is more polished and the material harder than usual for that type. He does not think that this is a trade piece from the vicinity of the Davis Site. This sherd comes from Level 66 inches in Mound F.

Sherd "k" of Pl. 23 is similar to the last-described but is unpolished. Krieger says that it agrees in all particulars with variations of Pennington Punctate-Incised as found at the Davis Site.<sup>3</sup> It comes from Mound A from the fill between Building Levels 6 and 7. Its associated types can be seen in Fig. 36.

The two sherds shown as Pl. 23l-m have less certain relationships. Sherd "l" is a fragment of a highly polished shallow plate. The sherd "m" is part of a simple bowl, with a bird figure incised on the interior. In a general way these two pieces seem to resemble Weeden Island material of the northwest Florida Coast. The two sherds shown as "n" and "o" are very unusual. Sherd "n" seems to be a part of an effigy bowl, while "o" is part of a larger vessel, probably a jar form. Both paste and firing features are typical of the accompanying material, but the decoration is unique. It consists of designs formed by contrasting areas of red and white slip separated by broad incised lines. A black, bituminous-like material has been used to paint the incisions.

<sup>3</sup> Newell and Krieger, 1949, Fig. 38m-t.

## CERAMIC ANALYSIS

THE STRATIGRAPHIC RESULTS obtained from the 15 Analysis Units selected from the areas excavated in the Greenhouse Site are referred to in connection with brief descriptions of excavations and the features discovered. In this section I propose to outline briefly the method of analysis and to summarize the stratigraphy.

Neitzel excavated nearly all of his exploration trenches in 3-inch levels. In the mounds he attempted to follow natural strata as far as was possible, and when this proved impractical he reverted to arbitrary levels, usually 6 inches and occasionally 1 foot thick. In all of this work the material from short trench sections was saved separately. For the exploration trenches sections were 5 by 10 feet; for the mounds, usually 10 feet square. As the pottery, bone, and stone artifacts were taken from these limited levels they were shipped to the laboratory at New Orleans where, under the direction of Gordon Willey, they were washed and catalogued and the ceramics separated for classification.

The important work of classification of the pottery from the Greenhouse Site was all done by Mr. C. H. Hopkins, a professional bookkeeper who was assigned to the New Orleans laboratory unit of the project. Mr. Hopkins was selected from the personnel available because of his carefulness and consistency, and after some training by Willey and myself he achieved an almost machine-like precision in his separation of pottery into type groups. Not only was his work constantly checked by Willey, and to a lesser extent by me, but he was frequently tested for consistency. After lapses of from six weeks to three months, collections that he had classified were re-run without his being informed, and the results were checked with his earlier classification. The reclassification usually agreed perfectly with the first.

The setting up of a classification system requires a grasp of the historical problem and knowledge of related materials in surrounding areas. However, once a system is established, it frequently happens that an intelligent and careful person who has had no training in archaeology will do a better and more consistent job of classifying material than will the archaeologists who have originated it. This is

because such a classifier can readily learn the range of variation allowed for each group and with no knowledge of the broader implications of the work is not tempted to expand the range in one direction or another, to provide for divergent material. He has no preconceived ideas, no theories to prove, and he is less likely to let the classificatory categories "creep."

The data resulting from the classification were placed on file cards for permanent record. They were also listed on tracing-paper "shells" which fitted over drawings of the excavation profiles and showed the proportions of pottery types in relation to the strata revealed in the walls of the excavations as is described above. Analysis units were formed by merging levels in areas of the excavations where the strata were level and where the distribution of pottery types in the various trench sections seemed to be uniform. In merging levels in this way, it was necessary to ignore the local irregularities caused by post holes and all but the largest pits. Neitzel saved material from large pits separately, making it possible to eliminate these major disturbing factors from the stratigraphic analysis. Still it is inevitable that there was some mixing of the various levels of the deposits while the site was occupied, a condition that cannot be controlled or detected in each of the analysis units. This mixing tends to make types appear to have persisted longer than was actually the case and also makes them appear earlier in the deposits than they actually did in the cultural history.

To a certain extent this can be checked by a comparison of Analysis Units. Unit One (Fig. 35) which gives better separation between types that increase towards the bottom and the top of the deposit may be expected to be a somewhat clearer picture of the chronology than such analysis units as Number Seven which shows more overlapping.

After the analysis units were selected the ceramics in the levels were totaled and percentages worked out. Each type percentage represents the proportion of the type forms of the total number of sherds recovered from the merged level. In theory, this is supposed to represent the relative popularity of the decoration style at the time when the level was deposited. Thus, a comparison of type percentages

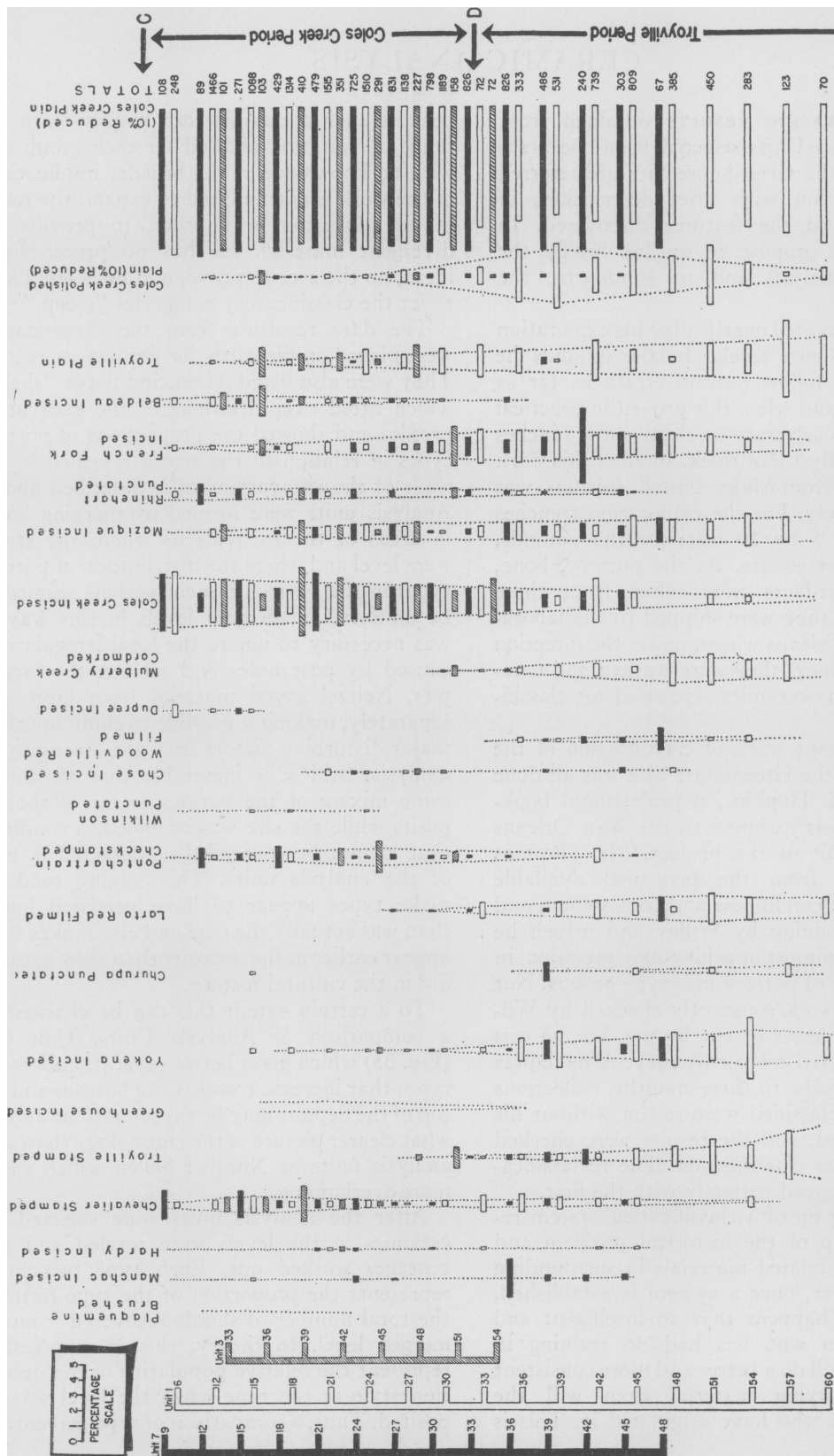


Fig. 35. Graph of Analysis Units in the vicinity of Mound E, Nos. One, Three, and Seven. The locations of these units are shown in Fig. 3. The dotted smoothing curves developed on this graph have been applied to the following graphs (Figs. 36-41) and serve as a standard for comparison of type time range, and frequency.

from level to level will reflect what has happened to the type in the history of the culture studied. Sherd percentages for each level of the total number of that type in each excavation are not given. I am not certain of the significance of such percentages in working out culture history, and consequently have not used them.

In the recent excellent report on the excavation of the Davis Site, Alex Krieger<sup>1</sup> has advocated the matching of sherds into vessel units so far as this can be done and utilizing these units as the basis for type percentages. He points out that unweighted percentages that include all of the plain fragments are rather far from a correct representation of the proportions of the types actually in use in the living culture. Fragments of designs that are sometimes incorrectly placed and particularly the large number of plain sherds from the lower parts of vessels decorated about the rim change the percentages considerably from what they would be if complete vessels were available for study. This is undeniably true and would be a serious objection to the kind of ceramic analysis undertaken in this paper if the primary object of such a study was to reflect accurately the ancient pottery styles. Fortunately, that is not the case. In stratigraphic studies the time changes that can be measured in ceramics serve mainly as a ready and useful device for placing cultural features (including ceramics, of course) in correct temporal and spatial relation. The admittedly warped quantitative picture given by unweighted sherd counts is fully as useful for this purpose as would be a study based on the reconstruction of every vessel ever broken on the site. The resultant stratigraphic graphs would have a somewhat different appearance, of course, as the decorated types would assume larger proportions in relation to the undecorated, but it is very doubtful that there would be any difference in the configuration of the ceramic histories. The relative proportions of one decorated type in comparison with another would not be much changed, and tendencies towards an increase or decrease in proportion at any one time would certainly be the same. Also the suggested methodology would not affect the relative time positions of the maxi-

mum frequencies of any of the types. Considering these facts it is difficult to see how one methodology will measure cultural change through time or across space better than the other.

The comparison of statistical studies of ceramics in which sherd lots have and have not been matched presents certain difficulties of a quantitative nature. The relative maximum percentages that comparable types reached when they were most popular cannot be of any significance unless the collections compared have been handled in the same way.

The secondary purpose of studying ceramics, description of this cultural feature, would be better served by assembling sherds into vessel lots. This would give a much clearer idea as to the complete range of variation in decoration, the association of shapes with decoration, and the proportions of each class of vessel that actually had been in use.

Our reasons for not having undertaken the type of analysis that Krieger advocates, and illustrates so well, are primarily practical ones. First, in order to be reasonably certain of securing fragments derived from the same vessels it is necessary to excavate fairly large continuous areas. The narrow test trenches we ran through the Greenhouse Site undoubtedly gathered one or two fragments from a number of different vessels, but probably uncovered the majority of fragments of very few. This would make matching extremely difficult and rather unrewarding. On the other hand, it is certain that the same amount of excavation done in a continuous part of the site would not have given as much information about the relative ages of the various structures on the site.

The second reason for not undertaking the imposing task of sherd matching is the practical impossibility of sorting out sherd lots in a culture where many of the ceramic designs are relatively simple and in addition have become formalized and repetitive. During times and in areas where the ceramic pattern was characterized by considerable freedom and variety, as in the Marksville Period in Louisiana, or during the Weeden Island Period on the northwest coast of Florida, the identification of sherds belonging to individual vessels is comparatively easy. In the Troyville and Coles Creek periods of Louisiana formalization had developed in the ceramic tradition, and sherd



matching is almost impossible except in certain unusual cases.

For purposes of comparing areas and site chronologies it is much more convenient if ceramic analyses are presented in a similar fashion. As sherd matching is not practical in many cases, and is entirely out of the question for surface collections that have been of considerable use in the Lower Mississippi, I have not been convinced that the effort was justifiable, so I have made no particular attempt to do so. When several fragments of the same vessel have been found together, they have been listed as one sherd.

The locations of the Greenhouse Site analysis units are shown on the map (Fig. 3), and the graphs resulting from the study of the ceramics from these units are given as Figs. 35 to 41. There are a total of 15 units, and in these illustrations they have been grouped according to the part of the site where the unit was situated. For example, Fig. 36 shows the four analysis units that were formed in and around Mound A. As reference to the map (Fig. 3) will show, Unit Ten was formed from the portion of the North 60-65 trench where it crossed the saddle between Mounds A and B; Unit Eleven lay on the south flank of Mound A; Unit Five was made from a portion of the East 80-85 trench tangent to the toe of the mound; and Unit 13 consists of the actual mound-building levels and underlying midden.

The plan of these rather simple ceramic frequency graphs is explained in a preceding section (pp. 26-27). The lengths of the bars shaded and set in position to correspond with a staff on the left-hand side of the figure indicate the percentage of total sherds in each level which were of the type under which the bars are centered. Totals in each level are listed on the right-hand side. After some consideration I decided not to present the occurrence of sherds of different types in all the levels. The chief purpose would seem to be to prove my arithmetic (doubtless often in error). These figures can be approximated by measuring the percentage bars and taking that proportion of the total, or by applying to the American Museum of Natural History where the original data are filed for the use of any serious student.

In its preliminary form for study and arrangement, the information contained in these

graphs of type frequencies was drawn up along the top of strips of millimeter-centimeter graph paper, 5 cm. wide and long enough to accommodate all the graph frequencies. Each level in each analysis unit was represented by a paper strip. Next, with care to maintain the proper vertical sequence of levels, the strips were fitted together and moved either up or down until the type frequency patternings of the 15 analysis units were best adjusted one to another. How and why it is assumed that this is a valid procedure has been discussed at length in previous papers.<sup>1</sup> It is apparent then that the relative vertical spacing which has been allotted each of the analysis units in Figs. 35 to 41 is not dependent on the depth of midden accumulation removed to secure the pottery for analysis, but rather on the relative quantities of the types. For example, Analysis Unit Eleven in Fig. 36, with 19 3-inch levels of deposit, shows by its type patterning that it represents a shorter portion of the site history than does Unit Ten in the same illustration which was secured from only 14 3-inch levels.

The effects of the upward and downward movement of pottery in midden deposits by mechanical means have also been discussed at length elsewhere, and it hardly seems worth while to repeat these obvious arguments.<sup>2</sup> Owing to this factor, what appeared to be the most clear-cut of the graphs, the one in which the early and late types were best separated, was selected for smoothing. This was Fig. 35, consisting of Analysis Units One, Three, and Seven. So far as I have been able to discover, there is no mathematical method that can be employed to smooth graphs of this sort. Even if there were, I would hesitate to use it, for that would introduce a spurious accuracy into what the reader must be aware by now is a sampling device of only moderate sensitivity. The smoothing in Fig. 35 is shown in the form of dotted lines. In placing these lines an attempt was made to divide the differences in the lengths of the bars and also to take into account the fact that types are not represented in some of the excavation levels, a situation that has been assumed to have the value of zero. The smoothed curves can be measured by means of the percentage scale. The exact placement of

<sup>1</sup> Ford, 1949, 48-49; Phillips, Ford, and Griffin, 1951, 228-233.

<sup>2</sup> Phillips, Ford, and Griffin, 1951, 232-233.

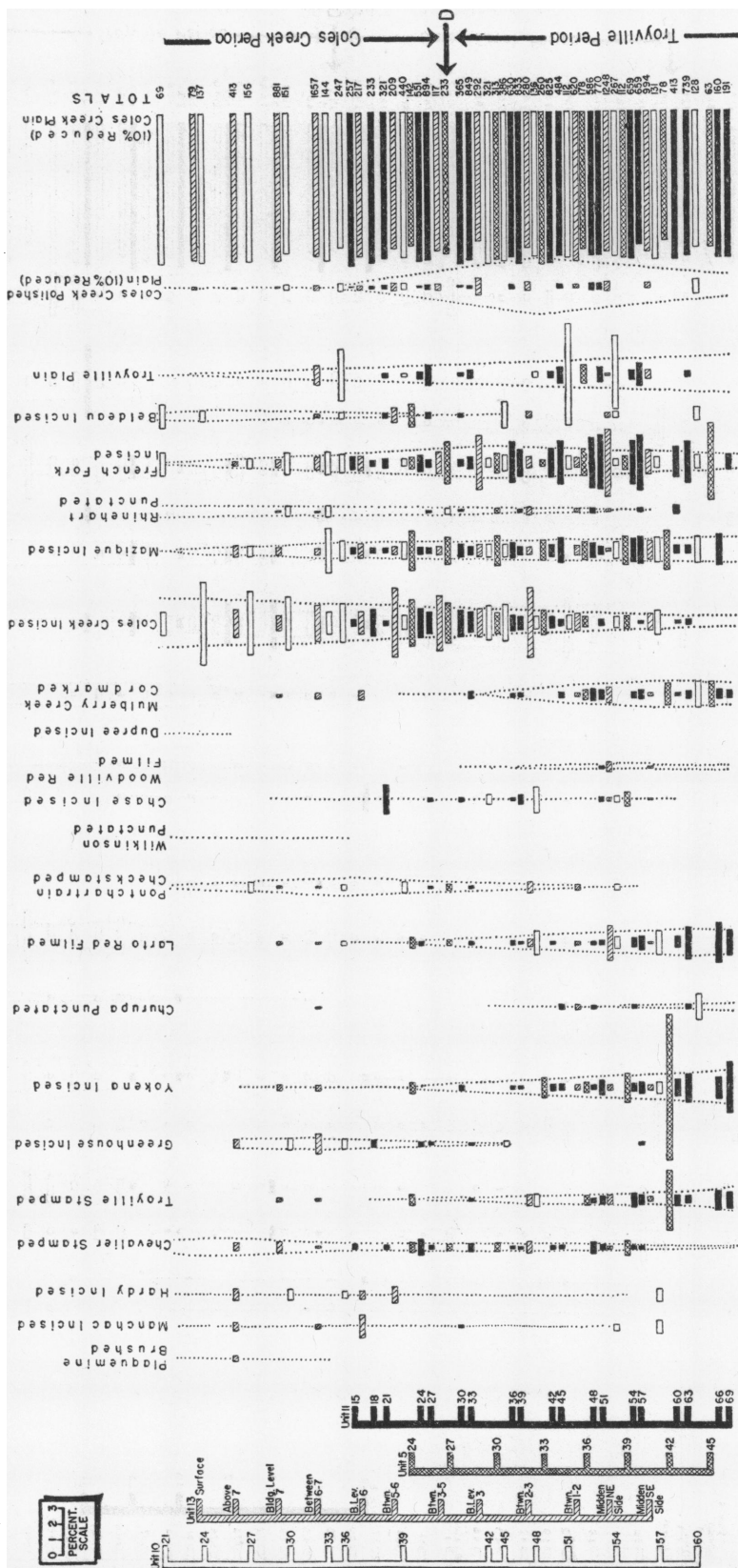


FIG. 36. Graph of Analysis Units in the Vicinity of Mound A, Nos. Five, Ten, Eleven, and Thirteen. Locations of these units are shown in Fig. 3.

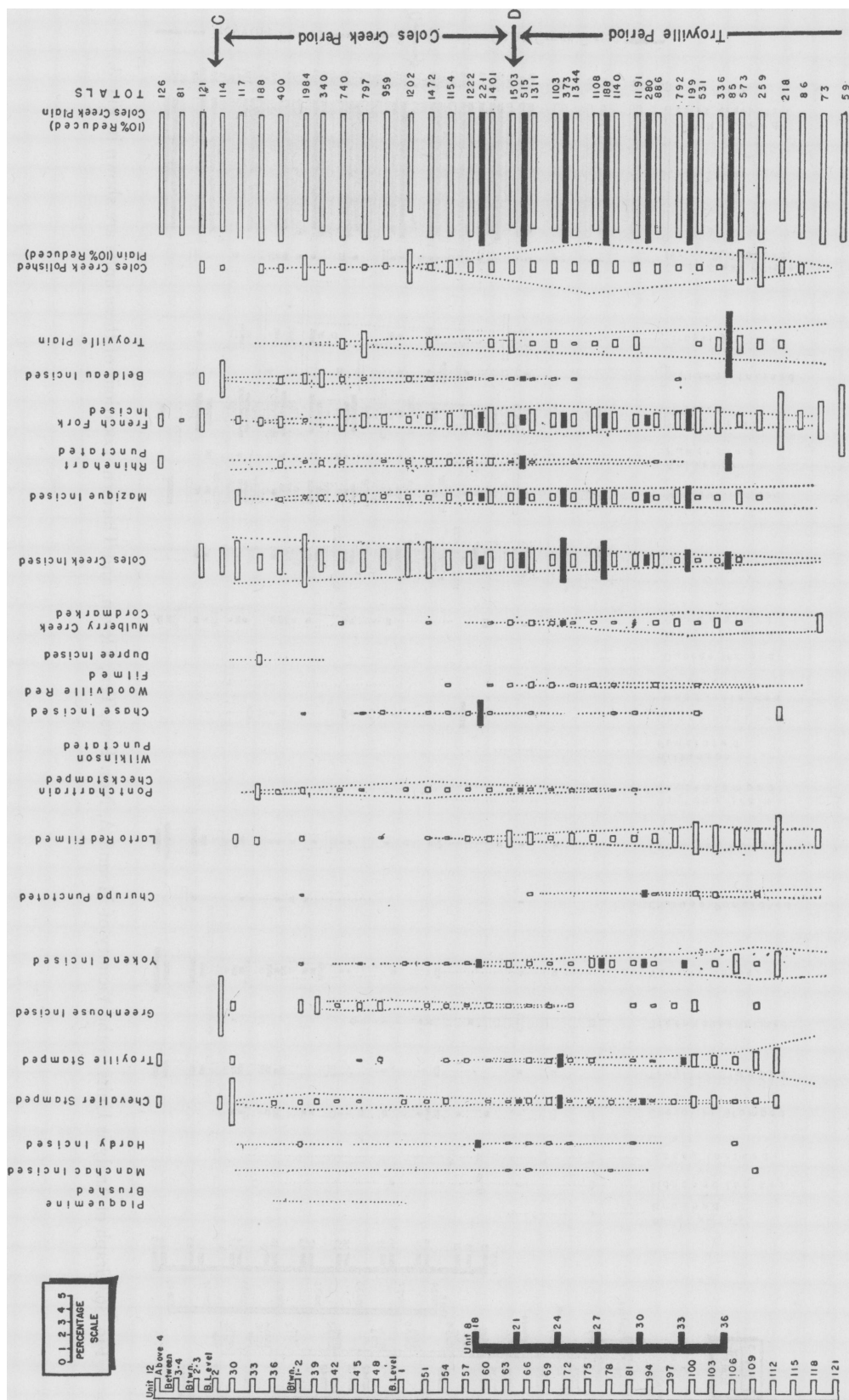


FIG. 37. Graph of Analysis Units in the vicinity of Mound F, Nos. Eight and Twelve. Locations of these units are shown in Fig. 3.

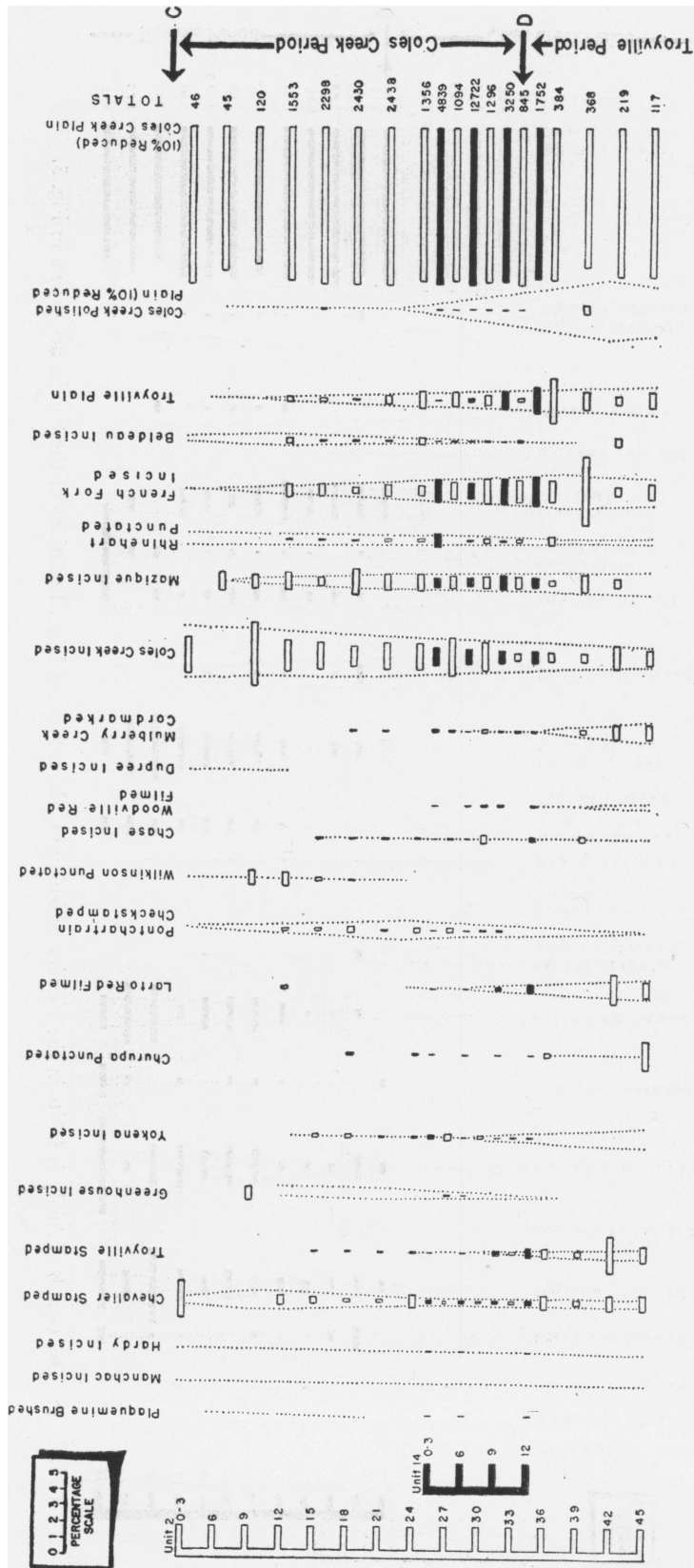


Fig. 38. Graph of Analysis Units in the vicinity of Mound D, Nos. Two and Fourteen. Locations of these units are shown in Fig. 3.

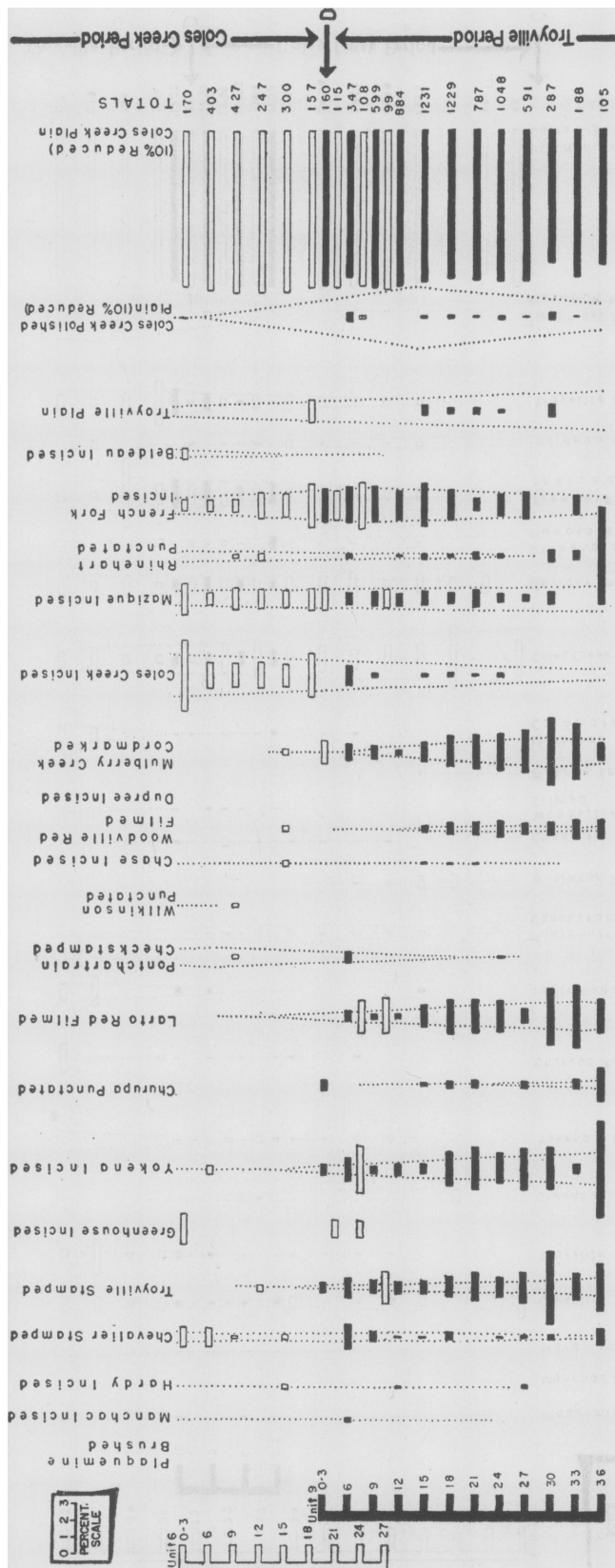


FIG. 39. Graph of Analysis Units in the vicinity of Mound C, Nos. Six and Nine. Locations of these units are shown in Fig. 3.

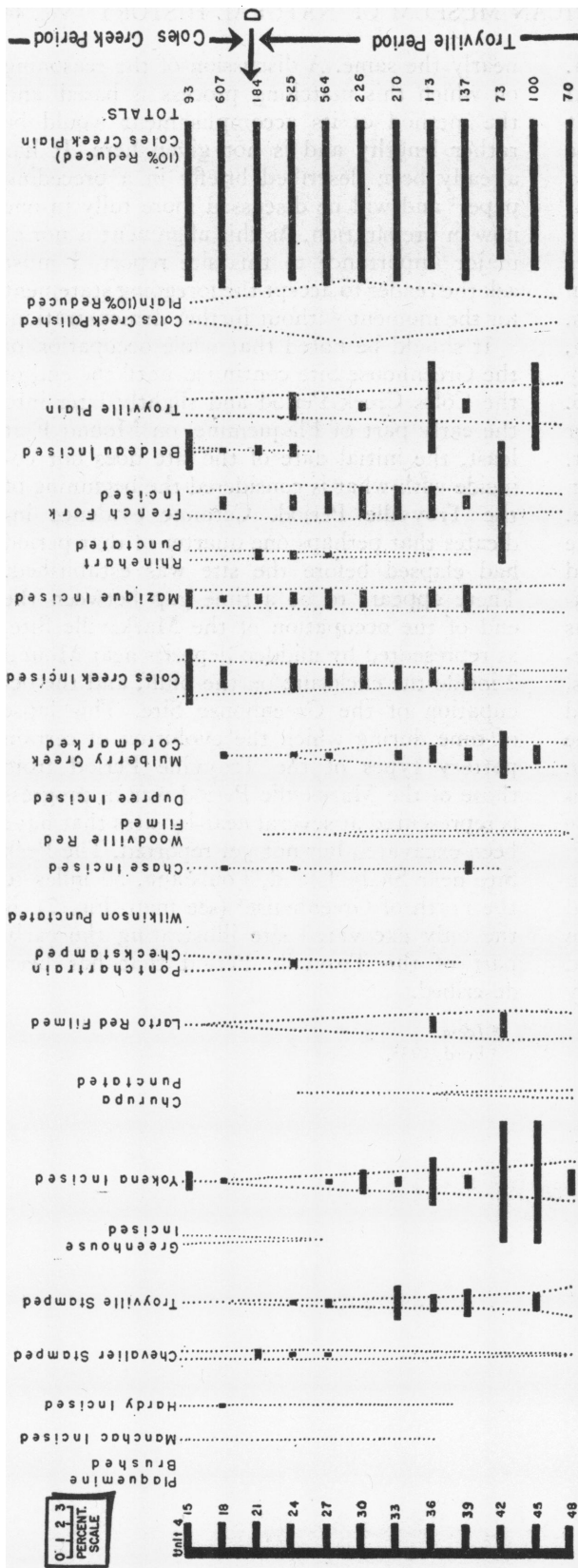


Fig. 40. Graph of Analysis Unit in the vicinity of Mound G, No. Four. Location of this unit is shown in Fig. 3.

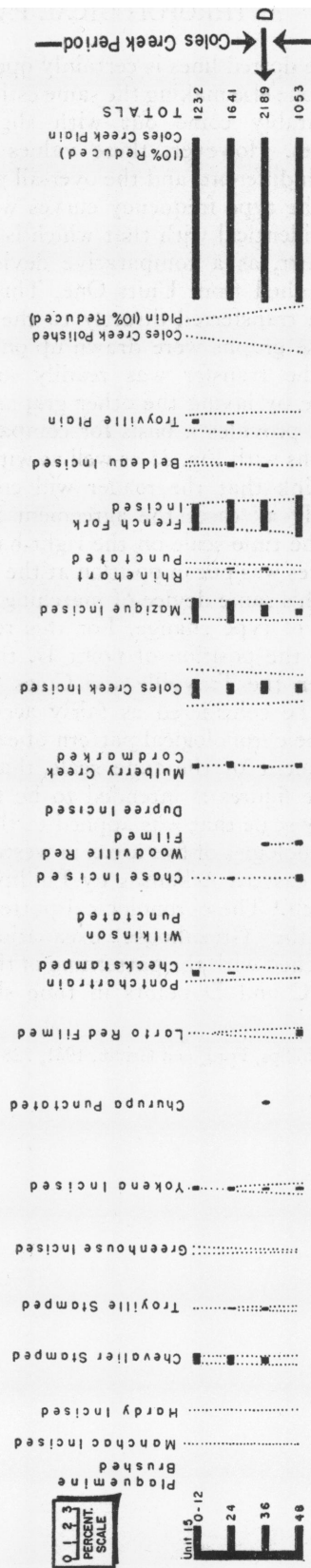


Fig. 41. Graph of Analysis Unit located between Mounds B and C, No. Fifteen. See Fig. 3.

these dotted lines is certainly open to question. Anyone else making the same estimations would inevitably come out with slightly different values. However, these values could not be much different, and the over-all pattern formed by the type frequency curves would be virtually identical with that which is shown.

Next, as a comparative device, the curves smoothed from Units One, Three, and Seven were transferred directly to the other graphs. These graphs were drawn up on tracing cloth, so the transfer was readily and accurately made by laying the other graphs over Fig. 35. This provides a basis for comparing the other graphs with Fig. 35 as well as with one another. I think that the reader will concede that in nearly all cases the agreement is remarkable.

The time scale on the right-hand side of the figures was put in position at the same time and by this same device of matching the configuration of type change. For this reason it seems that the position of point D, the division between the Troyville and Coles Creek periods, can be considered as fairly accurately placed in the chronological pattern of each graph. The fragment of the time scale that is shown in these figures is intended to be the same arbitrary scale that was applied to the study of the chronologies of five areas in western Mississippi and eastern Arkansas by Phillips, Griffin, and myself.<sup>1</sup> The chronological patterning revealed by the Greenhouse excavations has been matched with the patterning of those areas, and the C and D points in time should be very

nearly the same. A discussion of the reasoning on which this matching process is based and the method of its accomplishment would be rather lengthy and is not given here. It has already been described briefly in a preceding paper<sup>2</sup> and will be discussed more fully in one now in preparation. As this alignment is not of major importance to this site report, I must ask the reader to accept the foregoing statement for the moment without further demonstration.

It should be noted that while occupation of the Greenhouse Site continued until the end of the Coles Creek Period and slightly later into the early part of Plaquemine, on Mound F at least, the initial date of the site does not coincide with what is considered the beginning of the Troyville Period. Ceramic evidence indicates that perhaps one quarter of that period had elapsed before the site was established. There appears to be a time gap between the end of the occupation of the Marksville Site, as represented by midden deposits near Mound 2 inside the enclosure on the bluff, and the occupation of the Greenhouse Site. This lapse of time during which the evolution of certain pottery types of the Troyville Period from those of the Marksville Period was in progress is represented at several near-by sites that have been excavated but not yet reported. The Peck Site near Sicily Island, Louisiana, 50 miles to the north of Greenhouse<sup>3</sup> (see map, Fig. 2), is the only excavated site illustrating the early part of the Troyville Period that has been described.

<sup>1</sup> Phillips, Ford, and Griffin, 1951, 228-229.

<sup>2</sup> *Idem.*

<sup>3</sup> Ford, 1935.



# CULTURAL INFORMATION

## MOUND STRUCTURES AND PLAZA

ONE OF THE MOST IMPORTANT ITEMS of information yielded by the excavation of the Greenhouse Site is the relative time of the introduction into the Lower Mississippi Valley of the trait of constructing rectangular mounds about a plaza or court. The earlier practice found locally at sites of the Tchefuncte and Marks-ville periods had been to build conical mounds that served primarily as sepulchers for the dead. This trait of burial-mound building is the early form all through the Mississippi Valley and contrasts with the later temple-mound structures that are commonly considered to be associated with Mississippian cultures.<sup>1</sup> Surface collections from Troyville and Coles Creek sites in Louisiana and Mississippi<sup>2</sup> and from Middle and Late Baytown sites in western Mississippi and eastern Arkansas have suggested that rectangular temple mounds arranged about a plaza and constructed in stages with buildings on each level of construction were introduced into the Lower Mississippi region substantially before the Mississippian cultural influences.<sup>3</sup> The work at Greenhouse provides excavation data bearing on this question.

Direct ceramic dating was secured on only two of the mounds at Greenhouse, A and F. The pottery from their constructional stages matched the ceramic chronology yielded by the site as follows:

### MOUND A AS DATED BY ANALYSIS UNIT THIRTEEN (FIG. 36)

(Refer also to section of mound in Fig. 5)

Building Level 7	Middle Coles Creek
Fill between 6 and 7	Middle Coles Creek
Building Level 6	Early Coles Creek
Fill between 5 and 6	Early Coles Creek
Fill between 3 and 5	Late Troyville
Building Level 3	Late Troyville
Fill between 2 and 3	Middle Troyville
Fill between 1 and 2	Middle Troyville

<sup>1</sup> Ford and Willey, 1941. In this paper Willey and I divided the prehistory of the Eastern United States into the following major sequential stages: Archaic, Burial Mound I, Burial Mound II, Temple Mound I, and Temple Mound II.

<sup>2</sup> Ford, 1936, 217-218.

<sup>3</sup> Phillips, Ford, and Griffin, 1951, 337-340.

### MOUND F AS DATED BY ANALYSIS UNIT TWELVE (FIG. 37)

(Refer also to section of mound in Fig. 8)

Building Level 4	Early Plaquemine
Building Level 3	Early Plaquemine
Building Level 2	Late Coles Creek
Building Level 1	Middle Coles Creek

In addition, there is some indirect evidence for the dating of Mound G. As Fig. 3 shows, the North 60-65 trench touched the southern corner of this mound and revealed three construction levels, the earliest of which was formed of basket-loaded soil relatively free from cultural refuse. The two layers above this, however, were formed of black midden soil obviously derived from, and resting on, the flanks of two building stages in Mound G.

The portion of the North 60-65 trench that cut through Mound G for a length of 70 feet has been analyzed as Unit Four (Fig. 40). The sherd-bearing 3-inch levels extended from 12 to 48 inches below the surface. The top foot of deposit consisted of sterile Red River soil, and the original surface was 4 feet deep. Only the upper two levels fall into the early part of the Coles Creek Period; the lower levels extend back well past the middle of the Troyville Period. If these lower deposits do represent material from the earlier building stages of Mound G, as assumed, then it may well be the earliest mound structure at the site. Unfortunately, this mound was not excavated, for we mistakenly relied on Mound C for early construction data.

Analysis Units One, Three, and Seven (Fig. 35) were expected to give some information as to the relative date of Mound E. However, the association of the material sampled by these units with building stages in that mound is by no means clear. Possibly the older stratum in this area extends beneath the mound as in Mound A. For this reason the dating of the initial stages of Mound E must remain in doubt.

The concentration of the refuse at the Greenhouse Site around the borders of the plaza area, whether it extended beneath some of the later mounds or was related to the flanks of different stages of mound construction, appears

to indicate that from the earliest date of the occupation of this site the plaza plan of site arrangement was in effect. The center of the area was remarkably free from refuse. It is possible that this was intentional and that the plaza was a bare, clay-surfaced courtyard that was regularly cleaned.

A further point of interest is the fact that all of the refuse in the vicinity of the Greenhouse Site plaza seems to have originated from buildings that were arranged around the plaza. Neitzel ran a trench extending the South 80–85 trench westward to the foot of the bluffs. In addition, he made a number of 10-foot square test pits in the field that lies between the site

and the foot of the bluffs. This work has not been mentioned before, for there is no refuse beyond about 100 feet west of Mounds E, F, and G. The Greenhouse plaza had no satellite buildings, and the mound group had no related adjacent village site. Evidently it was a ceremonial center consisting only of mounds with superimposed buildings. The building found on the slight rise called Mound D is probably on a mound in the initial stage of construction, so low and indistinct that its outlines were not discovered. The low 1-foot rise that marks the spot is probably a secondary mound stage, and the superimposed building that may have stood here has been destroyed by cultivation.

## HOUSES

The Greenhouse excavations were somewhat disappointing as regards evidence of buildings. Nine were found, but only six could be worked out with sufficient clarity to determine their size and shape. This absence of evidence is not the result of any carelessness on the part of the excavators. In the process of stripping the mounds, Neitzel and Doran repeatedly scraped the mound surfaces and plotted the position of every post mould found in both the mounds and the level ground in the plaza. All of these data were plotted by draftsmen in the laboratory in the hope of working out patterns that had not been detected in the excavation process.

The buildings discovered are described in the record of the excavations in a preceding section (p. 22 ff.). Here an extract of the data is presented in tabular form. The arrangement of Table 3 from top to bottom conforms to the relative time position indicated for each of the house structures by the ceramic material found on, above, and below the house floors. This arrangement and the indicated dating are directly derived from the positions suggested for these floors in the ceramic analysis graphs given in Figs. 35 to 41.

Our failure to discover the wall outlines of the other structures that obviously stood on the building levels of Mounds A and F can be explained by the possibility that they were intentionally destroyed by pulling up the wall posts. In the later Caddoan sites and in the temple mounds of the Mississippian culture sites ceremonial buildings on mound surfaces seem to have been generally destroyed by fire before another layer of earth was added and a

new building constructed. There is no evidence that the buildings that stood on the Greenhouse mounds were burned, but there probably was some kind of intentional destruction that makes the discovery of wall patterns very difficult.

The arrangement of the house structures according to ceramic dating as in Table 3 suggests a temporal change in building shape. The three structures that date before the middle of the Coles Creek Period were circular. The three latest structures, dating from the middle of Coles Creek to Early Plaquemine, were probably rectangular, although the wall outlines were found in only one. Nearly all the buildings had basin-shaped fire pits near the center of the floor. Wall-post trenches were found in two structures, dating Early and Middle Coles Creek.

The circular-shaped buildings at the Greenhouse Site and the use of wall trenches recall the somewhat larger circular structures from the Deasonville Site in Yazoo County, Mississippi, described by Collins.<sup>1</sup> However, I do not now think that the Deasonville houses are dated by the cord-marked pottery that was found in the fill of the wall trenches. There was also a considerable quantity of shell-tempered and red and white painted pottery in these trenches. The lateness of these types<sup>2</sup> has clearly been shown by the work done in the Yazoo River valley in the last few years. The houses at Deasonville probably date A to C on the time scale that is being applied to the pre-

<sup>1</sup> Collins, 1932.

<sup>2</sup> Phillips, Ford, and Griffin, 1951, 133–134.

TABLE 3  
COMPARISON OF BUILDINGS DISCOVERED

Locality	Floor	Fire Pit	Post-mould Pattern	Date	Illustration
Mound F, Level 4	Baked clay, shape uncertain	Circular basin	None found	Early Plaquemine	—
Mound F, Level 3	Baked clay, roughly rectangular, 25 feet square	Circular basin	Rectangular with open corners; large posts	Early Plaquemine	Fig. 10; Pl. 2b
Mound F, Level 2	Clay floor, possibly rectangular, 17 by 26 feet	Circular basin	Uncertain	Late Coles Creek	—
Mound F, Level 1	Clay floor, apparently rectangular, 25 by 28 feet	Circular basin	Uncertain	Middle Coles Creek	Fig. 9
Between Mounds A and B, Unit 11	Some burned clay, circular, 22 feet diameter	2 circular basins	3 superimposed circular patterns; wall trenches	Middle Coles Creek	—
Mound A, Level 7	Some burned clay	Circular basin	Possibly circular	Middle Coles Creek	Fig. 7
Mound A, Level 6	Some burned clay, circular, 35 feet diameter	None	Circular pattern; large posts possibly grouped in pairs	Early Coles Creek	Fig. 6; Pl. 3b
In Mound D	Not found	None	2 superimposed circles; wall trenches; about 25 feet diameter	Early Coles Creek	—
Mound A, Level 3	Some burned clay, shape uncertain	None	Uncertain	Late Troyville	—

history of the lower part of the Mississippi Valley.

Clarence H. Webb describes circular houses from the Belcher Site near Shreveport, Louisiana.<sup>1</sup> These structures do not have wall trenches and resemble most of the Greenhouse examples in having large posts and central fireplaces. However, the fire does not seem to have been placed in well-shaped basins, as in most of the Greenhouse structures. The earliest house in the Belcher Mound B was rectangular, with wall trenches that did not meet at the corners. Most of these houses were burned before being covered by later mound mantles. The Belcher Site belongs to the later Fulton Aspect of the four-states Caddoan region,<sup>2</sup> and probably will date between A and B on the

arbitrary time scale used in this paper.

The Davis Site in northeast Texas belongs to the earlier Gibson Aspect. Round and, rarely, oval houses with and without wall trenches, similar to the early Greenhouse examples in size and in having central fire pits, were found underneath the Davis Mound and in the surrounding field. Square houses without wall trenches and marked by post moulds and central fire basins were found on top of a building stage of the superimposed mound. There was also a round house at this level. I am of the opinion that this site equates in date with the Plaquemine Period of east central Louisiana.<sup>3</sup> This would be Time C-B on the arbitrary scale used here.

<sup>1</sup> Webb, C. H., 1940.

<sup>2</sup> Krieger, 1946, Fig. 26.

<sup>3</sup> This is at variance with Krieger's conclusions that the Davis Site possibly extended from Marksville to the end of Coles Creek (D-F). See Newell and Krieger, 1949, Fig. 66,

## BATHTUB-SHAPED FIRE PITS

A few round or irregularly shaped pits, varying in depth from 1 to 4 feet, were found at different points in the excavations. Their forms were not similar enough to lead us to suspect that they represent a cultural element such as do the cache pits of some of the Mississippian culture sites. The contents of these random pits were saved separately from the arbitrary strata collections and, although each pit is completely described in Neitzel's field notes, it does not seem that they are worthy of further attention here.

However, eight remarkable pits that did conform to a pattern and that warrant description were found. These were the oblong, bathtub-shaped pits with heavily fired walls that are mentioned several times in the description of the excavations. Their features are summarized in Table 4.

As can be seen from Table 4 these pits are remarkably similar. They are from 6 to 10 feet long, 2 to 3 feet wide, usually with straight sides and rounded ends, and vary from slightly under 2 to over 3 feet in depth. The bottoms are rounded and always had a layer of ash and charcoal. The side walls were baked, ranging from lightly fired to well-burned clay 2 to 3 inches thick. These latter pits must have been subjected to very intense heat. Re-use, with second and third beds of ash above the bottom of the excavation, was observed in most pits. In two instances later pits had been re-dug on the sites of earlier ones. None are on mound surfaces, but all are arranged around the edges of the plaza adjacent to mounds. Nor do they appear to be associated with buildings.

In addition to the nine oval fire pits that we examined, Gerard Fowke describes one that he discovered in his excavation of Mound B (his Mound 14).<sup>1</sup> This was near the base of the mound. Although the exact shape is uncertain from Fowke's description, he has made careful note of heavily fired walls, curving walls, a clean ash layer at the bottom of the pit, and above that alternating layers of ash, charcoal, burned clay, and ordinary soil. Fowke excavated only a portion of this pit.

Without any hesitation Fowke identified it

as a barbecue pit made for the roasting of meats. I suspect that this conclusion was influenced by the favorite week-end diversion of the modern citizens of Marksville, Louisiana, for Fowke must have attended some of the barbecue parties that are enjoyed by the French-speaking men of the community. I do not blame him for being impressed. Possibly he is correct and these pits were made for cooking. I do not know of other occurrences of similar evidence in the Eastern United States, but round pits with fired walls and filled with heat-cracked stones are a feature of Mogollon sites in Arizona. These have been interpreted as cooking pits which were used somewhat on the principle of the fireless cooker.<sup>2</sup> The complete lack of stone in the surrounding Mississippi River alluvium may explain why cooking stones were not found at Greenhouse. A few of the curious baked-clay balls called "Poverty Point objects" were found. These are supposed to be substitutes for boiling stones in this stoneless region, but none of these were in the fired pits. At first Neitzel held the theory that these were possibly crematory pits similar to those found at the Snaketown Site in Arizona in which the bodies or preserved bones of the inhabitants of the community served by this religious center were finally disposed.<sup>3</sup> With this in view he carefully examined the fill of each pit, but did not succeed in finding fragments of charred human bone to support this theory. The third possibility is that these pits may have been used as pottery kilns. The evidence for this is also very weak. The abundant local pottery is reduced fired under well-controlled conditions and must have been fired at a considerable temperature. In general this ware is the hardest that is found in the Mississippi Valley region. The necessary conditions would have been provided by these pits. However, the complete fragments of only two vessels were found lying together in pit fill and, if these pits had served as pottery kilns, there probably should be more evidence of breakage in firing.

<sup>2</sup> Haury, 1940, 56-62.

<sup>3</sup> Gladwin *et al.*, 1937, 95-97, Pl. 35.

<sup>1</sup> Fowke, 1928, 430-431.

TABLE 4  
COMPARISON OF LARGE, OVAL FIRE PITS

Feature Number	Location	Size (in Feet)	Depth (in Feet)	Orientation	Description	Date
634	S145.5-W16.5 Mound D	8.0 by 3	2.3	NW-SE	Heavily fired walls; 6 inches ashes and charcoal in bottom; parts of two pots found in ash	Early Coles Creek
646	S155-W55 Mound D	8.5 by 3	3.4	NE-SW	NE end of pit rebuilt; walls heavily fired; second puddled clay bottom made after 1 foot of ashes had accumulated	Early Coles Creek
647	S60-E105 Analysis Unit Fifteen Two superimposed pits: A (earlier)	6.0 by 4	2.2	N-S	Walls fired; fill ash, charcoal, and sherds	Division point between Coles Creek and Troyville
	B (later)	10.0 by 5	2.0	NE-SW	Walls fired; on bottom 1 foot of ash and charcoal	
648	S51-E99 Analysis Unit Fifteen	6.5 by 2	3.4	NE-SW	Walls fired; fill ash, charcoal, and fired clay	Division point between Coles Creek and Troyville
1000	N80-E150 Analysis Unit Eleven between Mounds A and B	8.0 by 3	1.7	E-W	Walls and bottom fired; fill burned clay; on bottom 4-inch layer of ash and charcoal	Early Coles Creek
617	N70-E155.5 Analysis Unit Eleven (slightly later than—1 foot above—Feature 1000. See Pl. 6a)	7.5 by 2.5	2.0	E-W	Walls lightly fired; 4 inches ash in bottom	Early Coles Creek
417	S70-E96.6 Portion of oval, fired-wall pit not completely excavated owing to rising water	—	—	—	Ash and charcoal in bottom	No date
198	S80-E65 Analysis Unit Six (see Pl. 6b)	8.0 by 3	3.4	N-S	Walls fired; ash, charcoal, and burned clay in fill	Beginning of Coles Creek

## BURIALS

Descriptions of the burials discovered at the Greenhouse Site are given in the foregoing pages. Nine were found in Mound A (p. 36), two in Mound F (p. 41), and 93 in Mound C (p. 42 ff.). In each locality the skeletons appear to have been disposed of very carelessly: there is no clear evidence that they were intentionally buried, there are no grave goods, and semi-disarticulation suggests that the bodies had been exposed for some time before interment.

This method, or rather lack of method, is reminiscent of the 12 burials that Walker uncovered at the Troyville Site at Jonesville, Louisiana.<sup>1</sup> The skeletons there were extended, crowded closely together, and were not accompanied by grave goods. Walker, however, found no evidence of pre-burial disarticulation. The Troyville Site is located only 40 miles to the north of Greenhouse and appears to cover about the same time span.

Greenhouse burials also might be compared with those that Lemley has described at the Crenshaw Site on the Red River in southwestern Arkansas,<sup>2</sup> and that Moore<sup>3</sup> and later C. H. Webb<sup>4</sup> excavated from the Gahagan Mound about 100 miles up the Red River from Greenhouse. All are similar in that they are multiple burials, but the differences outnumber the similarities with the Greenhouse and Troyville burials. In both the upper Red River sites the skeletons are placed in large, deep pits, have not been disarticulated, and are accompanied by burial offerings. There is reason to suspect that the Crenshaw burials are slightly later, and the Gahagan burials at least one period later, than the finds at Greenhouse and Troyville.

As a matter of fact, the burials at the Greenhouse Site do not have the appearance of intentional interments. The 93 found in Mound C were apparently all placed at the same time and were in a state of disorder such as might have resulted from a rude and careless emptying of a house of the dead or a large scaffold which held that number of desiccated bodies. Another interesting point in this connection is the relative dating of the three groups of burials in

Mounds C, A, and F. In Mound C they cluster about arbitrary Level 24 inches in Analysis Unit Nine and so appear to date about, or slightly after, the middle of the Troyville Period. The nine burials found in Mound A were scattered around the flanks of the mound, but all were on the surface of Building Level 5. Apparently they too were deposited about the same time and, if the dating of Unit Thirteen in Fig. 36 is correct, this time was at the end of the Troyville Period. Two burials, a human and a dog, were discovered underneath Mound F in the underlying midden. These were 20 feet apart, but lay on the same stratum and were not in pits. The human burial was obviously secondary and partially disarticulated. The 78-inch stratum on which they lay dates in the latter half of the Troyville Period in Analysis Unit Twelve (Fig. 37).

It was only after I began to write the summary section that I noticed that the relative dates of these three groups of burials fell so closely together in the latter part of the Troyville Period. It is entirely possible and well within the limits of the expected accuracy of the pattern-matching process that is being applied for dating purposes that these three groups of burials were deposited at the same time. If this were true it offers an opportunity for some lurid speculation of the sort that is generally confined to the Sunday supplements of newspapers.

To draw a background for the reconstruction of this sad drama we had best start by considering the burial practices of the preceding Marksville Period in this portion of the Lower Mississippi. There is fairly clear, although indirect, evidence that the bones of the dead were carefully saved, probably in special structures, and later were placed in conical burial mounds.<sup>5</sup> The essentials of this method of disposing of the dead, which was introduced throughout the central Mississippi Valley in the Marksville-Hopewell cultural stage, lasted until historic times at the peripheries of the region where the later Mississippian custom of direct and immediate interment in single graves let down from the ground surface was practised.<sup>6</sup> The Choctaw of southeastern Mis-

<sup>1</sup> Walker, 1936, 32-35, Fig. 13, Pl. 2b.

<sup>2</sup> Lemley, 1936.

<sup>3</sup> Moore, 1912, 511-522.

<sup>4</sup> Webb, C. H., and Dodd, 1939.

<sup>5</sup> Ford and Willey, 1940, 11-33.

<sup>6</sup> Ford and Willey, 1941.

Mississippi are among the groups that retained, until 1700 A.D., the older custom of preserving bones and bodies and later giving them secondary burial. On occasions these Indians built small burial mounds for the accumulated remains.<sup>1</sup>

The final disposition usually made of the remains of the dead during Troyville and Coles Creek times was in doubt before excavation of the Greenhouse Site and, if the interpretation of events given here is correct, is still unknown. Dozens of sites of the Troyville and Coles Creek periods have been examined and surface collections made from them throughout the alluvial valley region of Louisiana, and only a few have conical mounds that could have been built as sepulchers. None of these have been excavated. Nor are any quantities of human bones exposed by cultivation, as happens where graves were let down from the surface, as in Mississippian sites. The work of Clarence B. Moore and other private and professional collectors has been remarkably unrewarding where they have turned their attention to sites of these periods.

However, we do know a little more about the disposal of the dead than formerly. Both Walker's find at the Troyville Site and the condition of the remains at Greenhouse suggest that the bodies of the dead were preserved in charnel houses. At the Greenhouse Site the depository for the dead possibly stood on Mound C, and sudden dumping of the remains that occurred late in the Troyville Period may be explained by an event similar to one that occurred while Hernando de Soto's exploration party was in eastern Arkansas in 1541. De Soto and his small army allied themselves with the Indians of the province of Casque to attack the province of Pacaha, the traditional enemies of the Casque. The people of Pacaha fled, and the Spaniards and Casque entered the principal frontier town without opposition and captured prisoners and booty. Then, as translated from the account of Garcilaso de la Vega:

The Casques were not content with having sacked the house of the chief, and robbed the town and having done all the killing and made what prisoners they could, but they went to the temple which was in a large plaza that the town had. This temple was the burial place of all the chiefs there had been of that province; fathers, grandfathers, and ancestors

of Pacaha. These temples and burials, as has already been said in another place, are the most esteemed and venerated of anything the Indians of Florida have and I believe that it is the same with all nations. And, not without much reason for these are relics, I will not say of saints, but of the past ones whom we represent in life. To this temple went the Casques shouting one to the other for all were overjoyed at the victory. Pacaha was arrogant and overbearing because until now they had never dared offend him. And now they intended very much that he should be aware that his enemies had had the daring to enter into his temple and burial place to desecrate it. They not only entered it but they also did all the ignominious and affronting things they possibly could. They took all that there was in the temple of riches, ornaments, and plunder and trophies which last had been made of their own forefathers.

They threw out on the floor all the wooden chests which served as sepulchers and for their own satisfaction and vengeance, as well as to affront their enemies, they threw on the ground the bones and dead bodies which were in the chests. Not content with merely throwing them on the ground they stamped on them and kicked them with great contempt. They took off the numerous heads of their own people which the Indians of Pacaha had placed on the points of lances before the doors of the temple as symbols of triumph and in their places they put other heads which they had cut off that same day from the citizens of the town; in short they didn't think of a thing which they didn't do!<sup>2</sup>

A similar incident may have occurred at the Greenhouse Site late in the Troyville Period and may be the cause for the condition in which the burials were found. In view of this possibility it can hardly be considered certain that the Greenhouse finds represent any intentional and planned disposal of the dead.

#### DOG SKELETONS

Scattered among the human remains in the burial areas of Mounds A, C, and F were the skeletons of 11 dogs, which seem to have been treated exactly as were the human skeletons, except that it was impossible to determine whether or not any had been disarticulated before being covered with earth. It seems probable, however, that these dogs accompanied the humans in the presumed pre-burial scaffolds or charnel houses and that the intact condition of the skeletons may be attributed to the fact that a flexed and desiccated dog forms a more compact bundle, less liable to damage,

<sup>1</sup> Collins, 1927.

<sup>2</sup>Garcilaso, 1723, 182-183.



than is the extended dried corpse of a human.

The dog skeletons from Greenhouse were forwarded to Dr. William G. Haag of the Department of Anthropology, University of Kentucky. He was able to utilize five of them for osteometric comparison in a study of aboriginal dogs of North America.<sup>1</sup> Haag groups them with other dog skeletons found in sites of the Mississippian culture pattern, and, as far as can be judged from the few specimens

available, they seem to fall within the range of this group. The Mississippian dogs are quite similar to those found in the earlier Woodland culture sites, but tend to be larger. Haag is inclined to attribute this to better nutrition.<sup>2</sup> In this study he found no somatological differences which would suggest the introduction of new and different breeds between the Mississippian, Woodland, and the still earlier Archaic period dogs.

## ARTIFACTS OF CLAY

### EAR SPOOLS

The ear spoons, or, more accurately perhaps, earplugs, from the Greenhouse Site were made of fired clay, similar in material and firing to the pottery from the site. A total of seven of these small earplugs was found (Fig. 42a-e). Six of these are solid and approximately cylindrical, ranging in size from 2.8 cm. in diameter by 2.5 cm. in thickness to 2 by 2 cm. The ends of the cylinders tend to be slightly bulbous. Two have a marked groove around the periphery, to facilitate holding the plugs in the ear lobes (Fig. 42d). In the other specimens the concavity ranges from slight to entirely lacking (Fig. 42a-b).

There is some question as to whether the object shown in three views in Fig. 42c was used as an ear spoon or not. This is hat-shaped, 3.2 by 1.8 cm., is hollow, and has been broken on the flat face. If it were an ear spoon it is possible that an ornament had been attached to this broken face. However, the absence of a groove around the periphery of the projecting knob, which would have assisted in keeping this somewhat bulky object in the ear lobe, seems to cast some doubt on this identification.

None of these earplugs was found with burials. All came from refuse in different parts of the site. Four were associated with Coles Creek Period ceramics; one was with Troyville material; and two were found on the surface in overturned earth.

Earplugs of this type are not very common in the Mississippi Valley. The only similar plug reported is from the Oak Bend Landing Site in eastern Mississippi, illustrated by C. B.

<sup>1</sup> Haag, 1948. These skulls are presented as Haag's catalogue numbers 25-1, 25-2, 25-2a, 25-3, and 25-4 (Haag, 1948, 205).

<sup>2</sup> Haag, 1948, 241-244.

Moore.<sup>3</sup> Burials accompanied by European trade material were found at this site, but this does not necessarily date the earplug. Small clay earplugs are occasionally found in the Mississippian sites to the north, in Mississippi and Arkansas, but these are usually shaped like a thick pin with a head at one end.<sup>4</sup> This latter is a form frequently found with Mississippian burials, but the material is generally shell. The blunt-pin form made of shell was also used in the late Caddoan cultures and in historic Natchez<sup>5</sup> but does not appear as early as the Troyville and Coles Creek horizons.

The closest resemblance to these solid earplugs is found in material recovered by Ekholm from the Rio Panuco Valley in the Huasteca, northeastern Mexico.<sup>6</sup> There, small clay plugs of similar size range in time from his Period II to Period VI. However, most of these plugs are considerably thinner than the Greenhouse specimens, have deep grooves around the peripheries, and the faces are concave, in contrast to the convex or flat faces of the Greenhouse specimens. Four specimens which do have convex faces and are not so well made as the balance of the earplugs are closest to the Greenhouse type. These are associated with Ekholm's Tancol Complex of Period II. This general class of small, crude, solid earplug is common in the Middle culture sites of the Valley of Mexico.<sup>7</sup>

### PIPES

Six fragments of clay pipes and part of a stone pipe were found. All are badly broken, but enough remains of each to make a generalized

<sup>3</sup> Moore, 1911, 379.

<sup>4</sup> Moore, 1911, Fig. 28.

<sup>5</sup> Quimby, 1942, 272.

<sup>6</sup> Ekholm, 1944, 469, Fig. 47 l-p.

<sup>7</sup> For example, see Valliant, 1934, Fig. 30, 1-4.

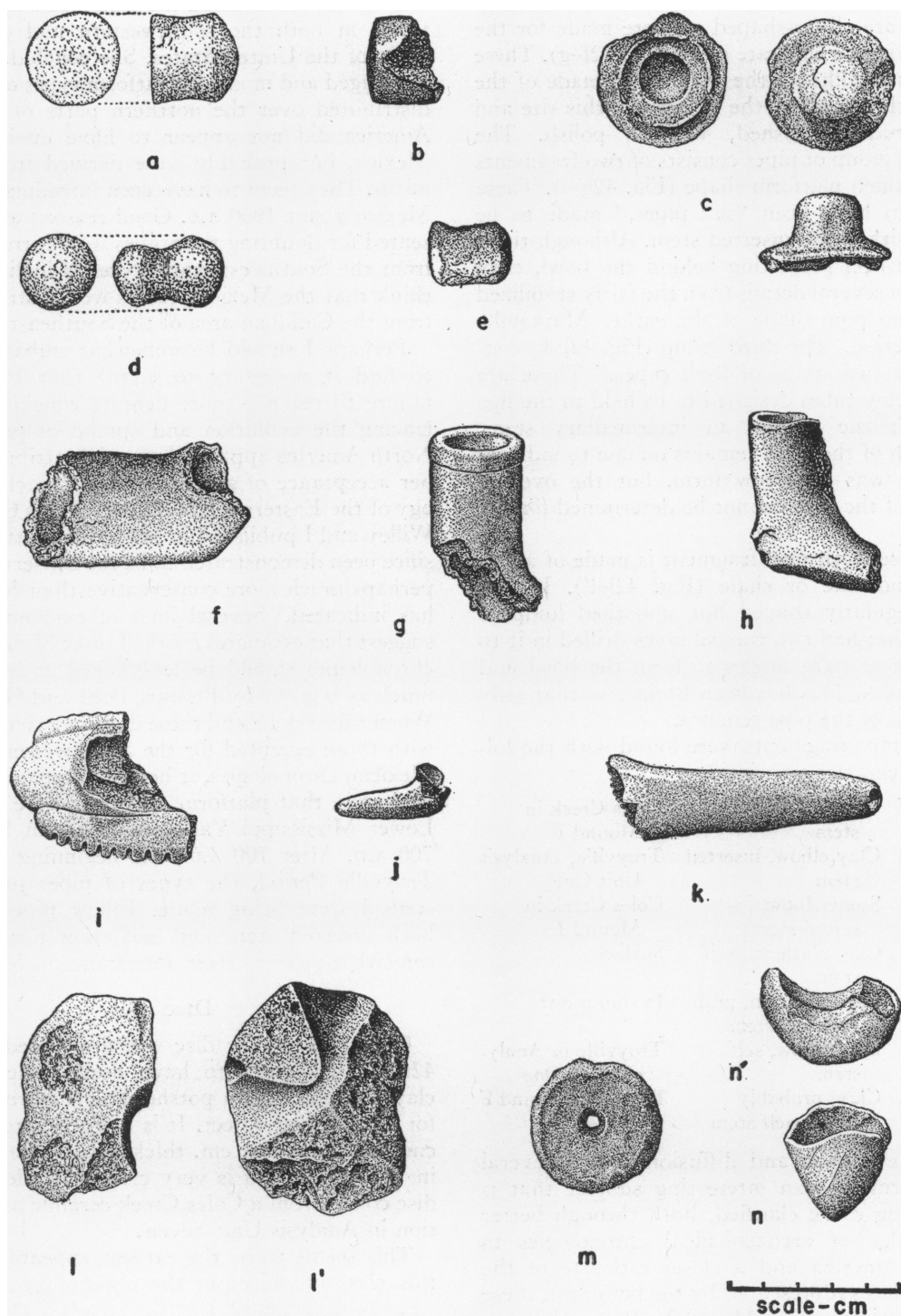


FIG. 42. Clay artifacts. a-e. Ear spools. f-l. Pipes. m. Pottery disc. n. Unidentified object.

classification possible. Two of the clay pipe fragments are elbow-shaped and are made for the insertion of a separate stem (Fig. 42f-g). These specimens, like all the others, are made of the same clay used for the pottery at this site and are crudely finished, without polish. The second group of pipes consists of two fragments of modified platform shape (Fig. 42h-i). These seem to have been "self pipes," made to be used without an inserted stem. Although these have a heel projecting behind the bowl, they differ in several details from the fairly stabilized platform pipe shape of the earlier Marksville time period.<sup>1</sup> The third group (Fig. 42j-k) consists of two stems of "self pipes." These are crude clay tubes designed to be held to the lips without the use of an intermediary stem. Enough of the bowl remains on one to indicate that it was an elbow form, but the over-all shape of the pipe cannot be determined for the other.

The seventh pipe fragment is made of a soft red mudstone or shale (Fig. 42l-l'). It was an irregularly shaped but smoothed lump of stone that had two conical holes drilled in it to connect at right angles to form the bowl and stem holes. This has been broken so that only one half of the pipe remains.

The pipe fragments were found with the following ceramic associations:

Fig. 42f	Clay elbow, inserted stem	Coles Creek in Mound F
Fig. 42g	Clay elbow, inserted stem	Troyville, Analysis Unit One
Fig. 42l	Stone elbow, inserted stem	Coles Creek in Mound F
Fig. 42h	Clay platform, self stem	Surface
Fig. 42i	Clay platform, probably self stem	In dump dirt
Fig. 42j	Clay elbow, self stem	Troyville in Analysis Unit One
Fig. 42k	Clay, probably elbow, self stem	Troyville, Mound F

The evolution and diffusion of the several pipe forms are an interesting subject that is beginning to be clarified, both through better knowledge of archaeological chronologies in North America and a closer estimate of the actual dates represented by the periods in these relative time scales. Muriel N. Porter, in a recent study of pipes in Mexico, has also briefly

but adequately treated the distribution of pipe forms in both the southwestern and eastern parts of the United States. She concludes that the legged and modified platform types of pipes distributed over the northern parts of Meso-America did not appear to have evolved in Mexico, but probably were derived from the north. They seem to have been introduced into Mexico about 1000 A.D. Good reasons are presented for doubting that pipes were introduced from the Southwest, and Porter is inclined to think that the Mexican forms were distributed from the Caddoan area of the Southeast.<sup>2</sup>

Perhaps I should be somewhat embarrassed to find it necessary to admit that Porter's failure to reach a more definite conclusion in tracing the evolution and spread of pipes in North America apparently can be attributed to her acceptance of guess-dates for the chronology of the Eastern United States which Gordon Willey and I published in 1941.<sup>3</sup> Our dating has since been demonstrated to be too conservative, perhaps much more conservative than Krieger has indicated.<sup>4</sup> Several lines of evidence now suggest that estimates for the Lower Mississippi chronologies should be lengthened at least as much as is given by Phillips, Ford and Griffin.<sup>5</sup> When this is done and these dates are compared with those accepted for the Southwestern and Mexican chronologies, it becomes apparent immediately that platform self pipes were in the Lower Mississippi Valley region from 500 to 700 A.D. After 700 A.D., the beginning of the Troyville Period, the types of pipes just described were being made. Elbow pipes with both inserted stem and self stem here date somewhat prior to their appearance in Mexico.

#### Disc

Only one pottery disc was discovered (Fig. 42m). This seems to have been made from clay, not cut from a potsherd as is more usual for this type of object. It is approximately 3.5 cm. in diameter, 1 cm. thick, has a small hole in the center, and is very crudely made. This disc comes from a Coles Creek ceramic association in Analysis Unit Seven.

This seems to be the earliest appearance of this class of object in the chronology of the

<sup>2</sup> Porter, 1948, 228.

<sup>3</sup> See Porter, 1948, Table 5, 213.

<sup>4</sup> Krieger, 1946, 271, Fig. 26.

<sup>5</sup> Phillips, Ford, and Griffin, 1951, 454, Table 17.

<sup>1</sup> Ford and Willey, 1940, Fig. 52.

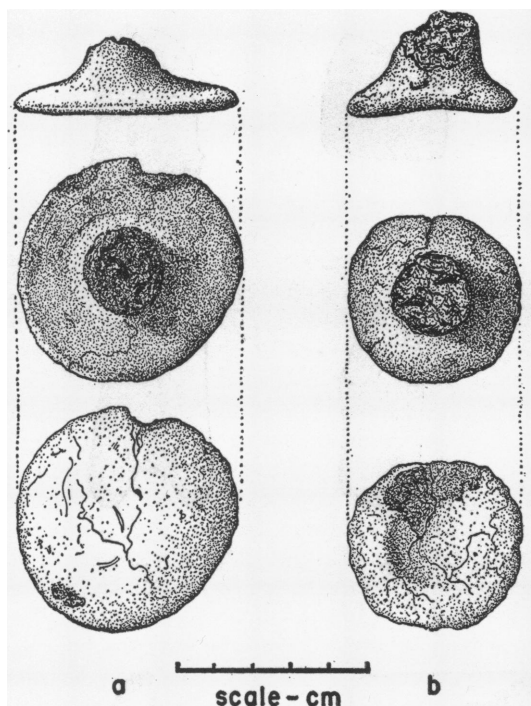


FIG. 43. Two pottery trowels found in the Coles Creek Period deposits.

local area. In the Mississippi cultures, widespread over the Mississippi Valley at a later date, this is a very common artifact. It is also frequently found in the late Caddoan sites that have been assigned to the Fulton Aspect. In the Southwest, pottery discs are found in the later sites of the Anasazi culture and first appear in the Sweetwater Phase of the Hohokam.<sup>1</sup>

#### CRUDE CUP

Figure 42n-n' are two views of a small and very crude, boat-shaped cup of fired clay. This object is so carelessly made that it probably was a purposelessly shaped fragment of clay that was thrown into a fire.

#### TROWELS

Two crudely made, mushroom-shaped clay objects are identical to the pottery trowels that are found widespread in the sites of the Mississippian cultures (Fig. 43). One is 5.5 cm. in diameter, the other 4.5 cm.; in both the handles have been broken off. The larger trowel has a flattened and rather smooth face,

showing signs of considerable use, while the face of the smaller is slightly dished and rough. Both are from Analysis Unit Eight and are associated with Coles Creek Period ceramics. This is the earliest this trait has been found in the local chronology.

Trowels of this exact shape are not generally reported from prehistoric sites in Mexico, with the exception of the Huasteca. Ekholm found two in the Las Flores Site on the Panuco. Both of these occurred in his Period V levels.<sup>2</sup>

#### HUMAN FIGURINES

Ten fragments of baked-clay, human figurines show that, while not abundant, the making of small, rather simple, and crude human figures can be considered a trait of the site. All of these representations are solid, in contrast to the widespread Mississippian custom of making larger and hollow human figures.

An interesting little head, 2 cm. in diameter, has been broken from the body of a figurine (Fig. 44a). The eyes are incised ovals; the mouth is a small incision; the nose is high and beak-like; and an incised line marks the hair line above the forehead. Two other lines that extend across the top of the head may indicate hair arrangement. This head was found in the extreme southern end of the West 295-300 trench, where differentiation between the Coles Creek and Troyville ceramic complexes has not been possible.

Unfortunately, the figurine shown as Fig. 44b was found on the surface in dirt that had been thrown from trenches. For this reason it cannot be exactly dated. It is broken, and only the upper part of the torso was found. The incised lines that cover the face and chest may represent body decorations.

Three figurine torsos, with legs and heads missing, are parts of seated human figures (Fig. 44c-e). They are well modeled in the round, and the material and finish are like Coles Creek plain pottery. The first of these has a nicely formed body, and the arms, while only roughly indicated, appear to be crossed on the chest. This piece comes from Analysis Unit Seven and is in association with Coles Creek Period ceramics. The second of the seated figures is represented by only the lower

<sup>1</sup> Gladwin *et al.*, 1937, 242-243.

<sup>2</sup> Ekholm, 1944, 476, Fig. 48a.

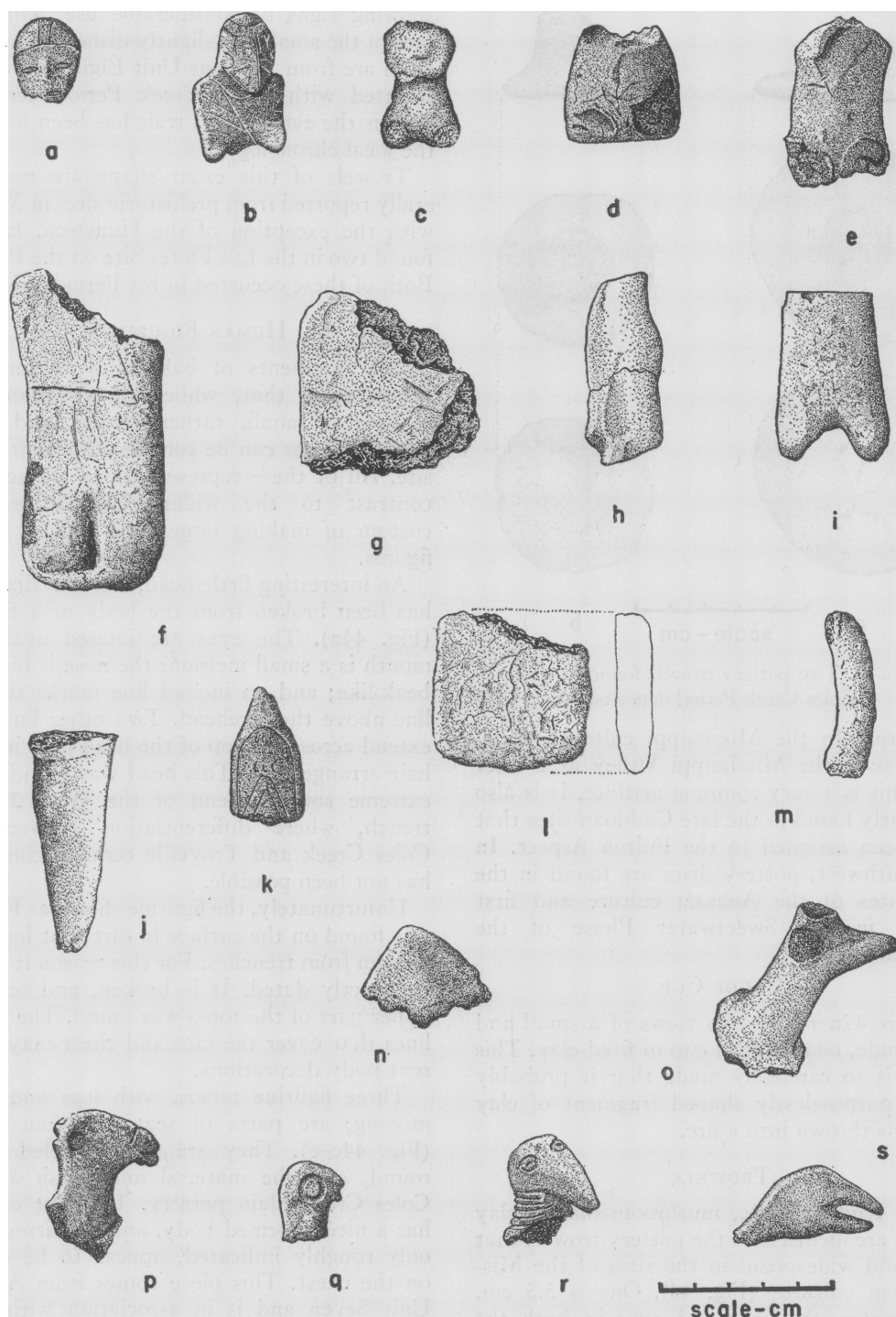


FIG. 44. Clay figurines and artifacts. a-l. Figurines. m. Clay coil fragment. n. Portion of clay ball of "Poverty Point" type. o-s. Bird heads broken off vessels.

part of the trunk and was slightly larger than the preceding ones. It comes from 24 to 27 inches in depth in Mound A and is also in a Coles Creek Period association. The legs and head of the third torso are missing. Apparently there was no intention of representing the arms. This also is from a Coles Creek association (3 to 6 inches deep in Analysis Unit Nine in Mound D).

A more crudely made torso is shown in Fig. 44f. This is flattened in cross-section, the head and left shoulder are broken off, and the legs are represented only to the knees. A single incised line extends across the waist. This comes from Analysis Unit Twelve in Mound F, and its ceramic association is on the dividing line between the Troyville and Coles Creek periods.

What seems to be a fragment of a similar flattened torso is shown in Fig. 44g. This crude piece is from the North 60-65 trench between West 210-220, in an area where it has not been possible to differentiate clearly between the two ceramic periods.

A somewhat questionable fragment of a torso is shown in Fig. 44h. Not only are the legs and head missing, but the piece has been broken in such a way that the identification as part of a figurine is uncertain. This was found in dump dirt, and its age cannot be determined.

The broken lower part of a crudely modeled figure with short stubs to represent legs is shown in Fig. 44i. This torso is also somewhat flattened front to back. It comes from the East 80-85 trench near Analysis Unit Fifteen. While it is not in this unit, it was found very near the surface, and the few associated sherds agree with the suggestion that it dates from the Coles Creek Period.

Figure 44j seems to be a leg broken from a standing figurine. At the lower end there is a slight suggestion of a foot which does not show well in the drawing. This is from Analysis Unit 12 in Mound F and comes from near the surface in a Coles Creek Period association.

#### MISCELLANEOUS SMALL OBJECTS

The fragment shown in Fig. 44k has a simple incised design. This might possibly be a portion of a figurine but cannot be identified with any certainty, for the design does not suggest human features. This specimen was found in dump dirt, and its ceramic association must remain in doubt.

The flattened clay tablet illustrated in Fig.

44l may also have been a part of the body of a figurine but, if so, it was a very crude one and there are not enough features shown to be certain. This piece also was found in a dump some weeks after the dirt had been moved and after the rains had cleaned off small objects.

Figure 44m shows a piece of burned clay about the size of the little finger. This is a portion of a clay rope, rolled and prepared for coiling, which probably was accidentally fired. A number of these coil fragments were found at various points in the excavations, associated with pottery from both time periods. They add to an understanding of the process of pottery manufacture.

Seven baked-clay lumps from both Troyville and Coles Creek proveniences are fragments of the class of the so-called "Poverty Point" objects (Fig. 44n). All of these seem to have been of the biconical shape that was one of the variety of forms which are found in sites of the earlier Tchefuncte Period.<sup>1</sup> If the theory that these are artificial boiling stones is correct, then this trait must have lasted as late as Troyville and Coles Creek times. However, this site did not yield anything like the number of these objects found on the earlier time level.

#### BIRD HEADS

The last five objects shown in Fig. 44 are clay representations of bird heads that seem to have been broken from pottery vessels. The material and finish do not differ in any way from those of the majority of the pottery found at the Greenhouse Site. These objects probably should have been treated in the section on ceramics. This was not done, as there is no way to determine the type to which they should be assigned. Figure 44o was attached to the shoulder of a vessel; Fig. 44p was attached to the rim. The method of attachment of the remaining three is not clear.

Proveniences are as follows:

Fig. 44o	Analysis Unit Twelve, Mound F	Coles Creek association
Fig. 44p	Analysis Unit Fourteen, Mound D	Coles Creek association
Fig. 44q	Analysis Unit Two	Coles Creek association
Fig. 44r	From dump dirt	Provenience uncertain
Fig. 44s	From dump dirt thrown out of	South 80-85 trench

<sup>1</sup> Ford and Quimby, 1945, Pl. 1b.

In comparison with the total number of sherds recovered from the Greenhouse Site there are relatively few of these small effigy heads. This certainly was not a very strong local ceramic trait, if indeed the vessels bearing these heads were not trade pieces. They may have been, in spite of the fact that the material of which they are made resembles the balance of the ceramics from the site.

Despite the paucity of these small heads, their presence here on the Coles Creek time level is of considerable interest. There is no earlier source for this treatment in the Mississippi Valley. However, there is on the northwest coast of Florida. If our northwest Florida Coast-Louisiana chronological alignment is correct, then modeled bird heads were placed on ceramics in Florida at a time generally corresponding to the Troyville Period: Weeden Island I. Bird heads in semi-round relief (as well as free standing above the rim) are an occasional feature of the pottery type Weeden Island Incised which begins during that period.<sup>1</sup>

This use of bird representations for ceramic decorations probably derived in turn from the bird-figure motifs that were rather common on the still earlier Marksville time level in the Lower Mississippi area. Birds were often delineated in the early phases of the decorated pottery type Marksville Stamped<sup>2</sup> and associated types but, curiously enough, are not very usual for the comparable type in Florida, Alligator Bayou Stamped.<sup>3</sup> Late in the time span of the Louisiana type the unmistakable

representation of birds becomes less frequent, and in the succeeding type of the Troyville Period, Troyville Stamped, the decoration motifs are entirely geometric. Outlined bird figures of an identical style are found on Hopewell Zoned Stamped over a large part of the range of that cultural manifestation, and there is a possibility that inspiration for the Weeden Island Period bird representations may have been drawn from the Ohio or Illinois centers rather than from the Louisiana area. This appears doubtful, however, for, aside from the relative distances involved, a number of other features indicate close connections between the Louisiana and northwest Florida areas on this time level.

Apart from the question of the earlier source for the trait, there can be little doubt but that the frequency center for the modeling of birds, and particularly bird heads, was on the northwest coast of Florida during Weeden Island times. From there the fully developed trait probably moved into Louisiana during the Coles Creek Period, but it was never very popular.

Modeled heads, generally on the rim of bowls and usually representing birds, are a common feature for the still later Mississippian cultural manifestations widespread over the Southeast, particularly in the Tennessee-Cumberland area. That this trait may have been introduced into the developing Mississippian cultures from the Florida area has been suggested by Willey.<sup>4</sup>

## CHIPPED STONE ARTIFACTS

### PROJECTILE POINTS

In comparison to the large quantity of broken pottery produced by the excavations in the Greenhouse Site the amount of material that falls into other categories was surprisingly small. Most of the cultural equipment of the people who lived here must have been of a perishable nature. This is particularly true of chipped stone projectile points which total only 44 specimens. The scarcity of stonework

cannot be blamed entirely on a local unavailability of materials, for deposits of gravels that provide chert and other suitable stones are abundant in the hills that lie a few miles to the north, across the Red River. It is more likely that this scarcity indicates a cultural factor and is the result of adaptation to flood-plain conditions. Even where suitable stone was available, the majority selected perishable materials for projectile points.

A simple empirical system devised by Gordon Willey has been applied to the projectile points excavated from sites in Louisiana. This system was explained in our report on the ex-

<sup>1</sup> Willey and Woodbury, 1942, 242-243; Willey, 1949, 411-419.

<sup>2</sup> Ford and Willey, 1940, Figs. 28d-f, 30a-b, 31c-d, 32a-b.

<sup>3</sup> Willey and Woodbury, 1942, 242; Willey, 1949, 372-374.

<sup>4</sup> Willey, 1949, 568-570.



cavation of the Crooks Site.<sup>1</sup> Two major divisions were made in the material: points with "simple hafts" on which the blade shoulders did not form barbs at the base of the stem, and those with "barbed hafts" where the blade shoulders did project. The secondary divisions in this scheme were based on blade shape:

1. Ovate-triangular or leaf-shaped
2. Large triangular, varying from long and narrow to medium broad
3. Small, approximately an equilateral triangle
4. "Fir-tree"-shaped blade

These basic divisions were inadequate to characterize the material fully, for they did not include important chronologically significant features, such as size, thickness, and chipping technique. Accordingly, letters "A," "B," and "C" were added to the type designations to indicate these equally important details.

The satisfactory use of this scheme, so far, has been due principally to the simplicity of the local projectile point forms. As is always true of coded classifications, an appalling complexity would result if we tried to extend the classification to other areas. Also, it is doubtful that all the minor variations set up by such systems are useful for the purposes of the culture historian.

In recent years the Texas archaeologists have been using a system devised by J. Charles Kelley in which projectile point types are given names.<sup>2</sup> The procedure is analogous to the identification of ceramic types and has similar advantages. Groupings that are useful for working out culture history are much easier to handle by a name than by a code, as I have ably demonstrated by a bad example in a previous publication.<sup>3</sup> It is desirable to extend this system to the Mississippi Valley and present the projectiles from Greenhouse in a comparable framework which will point out significant relationships to the Texas projectile types.

It has been quite easy to make this transfer. The more minute divisions that we have made in the Louisiana material can readily be grouped into the larger and, doubtless more significant, divisions of Kelley and Krieger. In

the following descriptions of the Greenhouse Site points, our more detailed classification is presented as subdivisions of the named types defined in Texas.

#### GARY STEMMED

##### Figure 45a-l

The points of this class are made of flint, ranging in color from gray to reddish brown. The blade shape is triangular and ranges from a rather long and narrow blade, which we called "Simple Haft 2A," to a short, almost equilateral triangle (SH3A). The shoulders slope and nearly all of the stems contract towards the base, an outstanding feature of the type as described by Krieger.<sup>4</sup> The points are fairly thick in section and are rather crude in appearance, having been made by taking off large flakes. Very rarely is there any retouching on the edges. The Greenhouse specimens range in length from 4 to 7 cm.

#### ELLIS STEMMED

##### Figure 45m-o

This is a slightly smaller projectile point than Gary Stemmed. The blade is usually triangular, with straight edges and wide shoulders. The chief distinguishing feature is the expanding stem which provides notches for lashing the point to the shaft. These points have been chipped with smaller flakes than in Gary, and retouching of the edges is not uncommon (Fig. 45n). Most of these points are somewhat thinner than the Gary type of point of comparable size.

#### ALBA BARBED

##### Figure 45p-w

These small arrowpoints are made of cream, brown, and reddish brown flint. The workmanship is much better than that of the larger points described above, and secondary chipping has made most of the blade edges rather sharp. The blades range in shape from triangular with straight sides (formerly Barbed Haft 4A, Fig. 45s) to recurved-sided blades which, together with the stem, have a distinctive "fir-tree" shape (Barbed Haft 4B, Fig. 45v). The shoulders of these points form barbs, and the stems are either straight sided or slightly bulbous. Over-all length varies between 2 and 4 cm.

<sup>1</sup> Ford and Willey, 1940, 93-104.

<sup>2</sup> For example, see Newell and Krieger, 1949, 161-173.

<sup>3</sup> Ford, 1936.

<sup>4</sup> Newell and Krieger, 1949, 164-165.

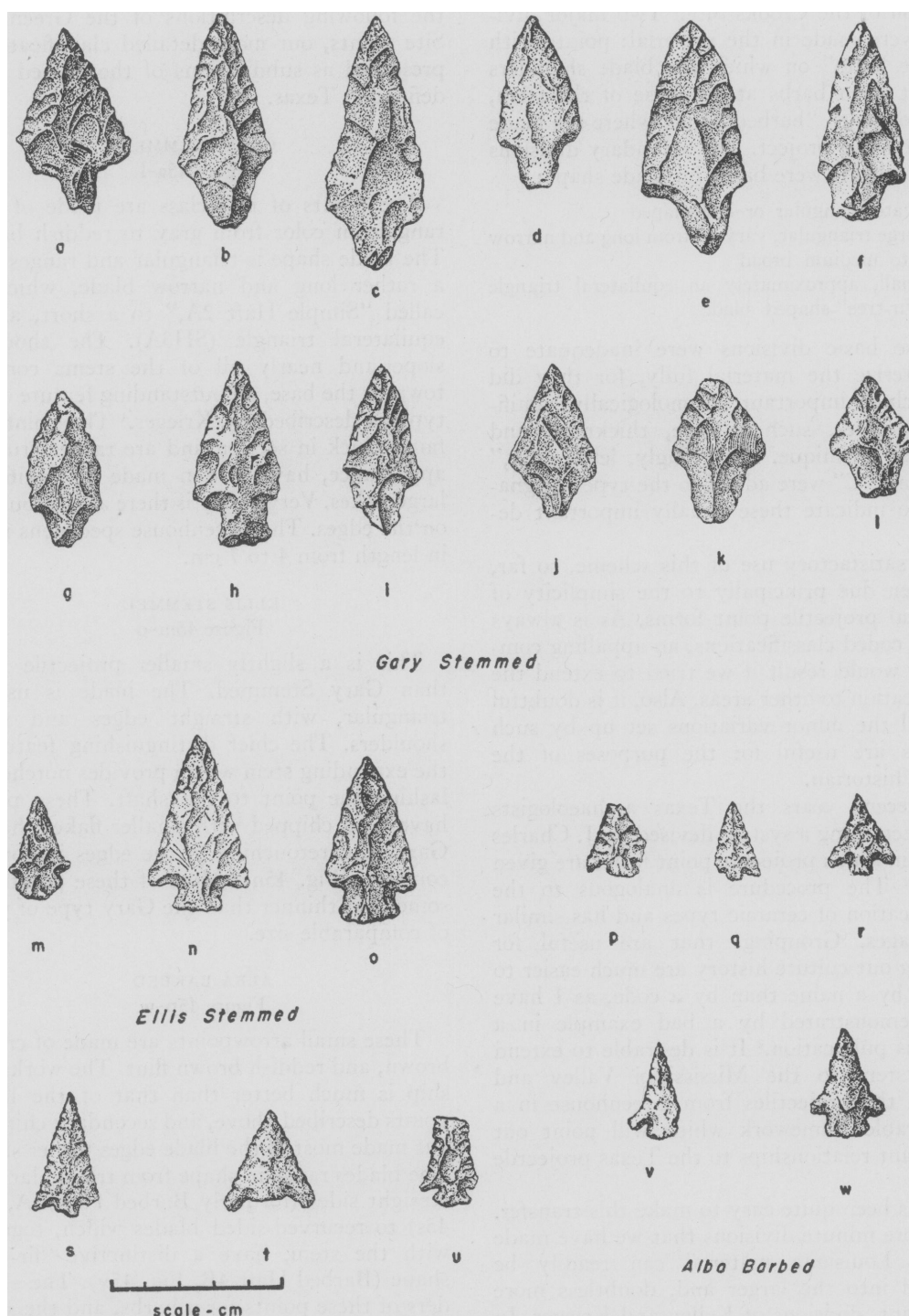


FIG. 45. Flint projectile points. a-l. Gary Stemmed. m-o. Ellis Stemmed. p-w. Alba Barbed.

## PROVENIENCE OF PROJECTILE POINTS

The three types described above include all of the 44 points found in the course of excavating the Greenhouse Site. This total is hardly large enough to make statistical treatment very significant. It also seems futile to detail the exact provenience of each, for this information would have to be translated into cultural terms before it would have any meaning. Instead, I list the types of points according to the cultural period indicated for them by their associated ceramics. Projectile points that did not come from analysis unit areas or were found on the surface are placed in an undated category.

	GARY STEMMED	
	SH2C	SH3A
Coles Creek Period	8	5 (13)
Troyville Period	1	3 (4)
Undated	2	2 (4)

Krieger has listed the two large, crudely chipped types, Gary Stemmed and Ellis Stemmed, as dart points. He remarks on their wide distribution in the Eastern United States and infers that their presence indicates the use of the atlatl and dart. Small, light, projectile points like Alba Barbed are supposed to indicate the use of the bow and arrow.<sup>1</sup> This reasoning appeals to me as probably correct, for the larger and heavier points are larger than points generally used to tip arrows by most of the recent primitive groups. If this distinction is valid, it provides a means to date the introduction of the use of the bow and arrow into the Eastern United States.

The small points Alba Barbed occur in both Troyville and Coles Creek deposits, and, so far as their small number allows us to judge, the proportion of this to the other types was about the same throughout both periods. Evidently, then, the people who lived at the Greenhouse Site knew and used the bow and arrow. The entire collection contains a total of 18 arrowpoints as compared with 26 dart points. This is the earliest form of small projectile point in this region, and the type has not been found earlier than the Troyville Period.

## DRILLS

Two of the artifacts usually classed as expanded base drills were found (Fig. 46a). One

<sup>1</sup> Newell and Krieger, 1949, 161.

of these appears to be unfinished; the other has the tip broken off, so that it is not possible to determine from signs of use whether these tools were actually used as drills or not. The stems of both are flattened, and the points are bilaterally chipped so that they are almost round in cross-section. As both of these drills were found on the surface, it is impossible to assign them relative dates.

## SCRAPERS

Three scrapers of the type described as Scraper Type I in the report on the Crooks Site<sup>2</sup> were found at Greenhouse (Fig. 46b-d).

ELLIS STEMMED		ALBA BARBED	
SH2D	SH4A	BH4A	BH4B
3	1 (4)	3	3 (8)
1	— (1)	2	— (2)
—	— (—)	6	2 (8)

Two of these are very roughly plano-convex in section and are oval in form. The other is slightly more rectangular or celt-shaped. All are about 5 cm. long, 3 cm. wide, and 2 cm. thick. The chipping is quite crude, and there is very little evidence of secondary flaking.

Fourteen triangular scrapers were found (Fig. 46e-h). These are comparable to Scraper Type 2 from the Crooks Site,<sup>3</sup> but they differ from the scrapers found there in that all of these tools are smaller and not so well chipped. Eight of the 14 average 4 cm. in length and 2.5 cm. in width. The other six are all less than 3 cm. long, and the blades are narrower in proportion.

These finds have been assigned either to the Coles Creek or Troyville time periods on the basis of the ceramics with which they were associated. Their occurrence was as follows:

	TYPE 1, OVAL FORM	TYPE 2, TRIANGULAR FORM	
		Large	Small
Coles Creek Period	2	4	5
Troyville Period	—	2	—
Uncertain	1	1	2

The small number of these objects makes it impossible to draw any conclusions from these occurrences.

## CHIPPED FLINT REJECTS AND FLAKES

Every piece of flint found at the Greenhouse

<sup>2</sup> Ford and Willey, 1940, 104-105, Fig. 47a.

<sup>3</sup> Ford and Willey, 1940, 104-105, Fig. 47b.

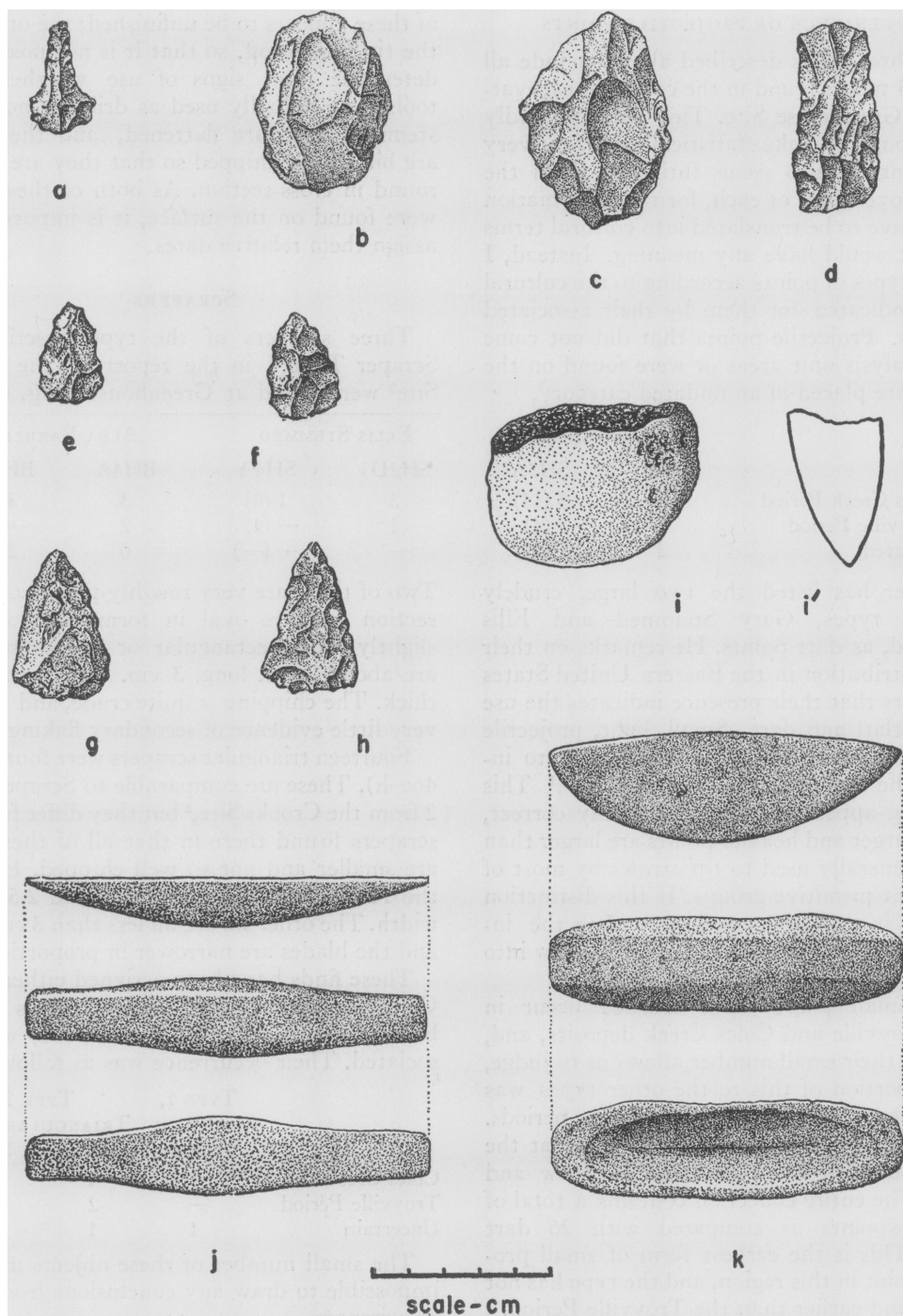


FIG. 46. Flint drills, scrapers, and other stone tools. a. Drill. b-d. Scrapers, Type 1. e-h. Scraper, Type 2. i-i'. View and section of a celt fragment. j-k. Three views each of two "boatstone" atlatl weights.

Site was carefully saved, because the workmen could not be trusted to distinguish artifacts from flakes and also because they were very rare. As an indication of this scarcity of flint, in comparison to the tons of pottery fragments

recovered, the list of flint work is concluded with the following:

Reject cores of amorphous shapes	10
Uncompleted projectile points	25
Flint flakes without signs of use	20

## GROUND STONE ARTIFACTS

Ground stone artifacts were even less abundant than were those that were chipped; not only were they few in number, but the variety of tools is limited. This again is probably not due solely to lack of suitable material locally but suggests that to a great extent this culture used wood and other perishable materials for tools.

### HAMMERSTONES AND MANOS

It seems likely that the same natural pebbles, selected for suitable size and shape, were used interchangeably for grinding and pounding corn, nuts, or other foods that needed to be milled and for hammers whenever the need for such tools arose. At any rate, we were not able to make any satisfactory differentiation between such objects on the basis of the kind of wear they showed.

Ten stones of this general class had evidently been selected because they approached the shape of a flattened oval. In addition most of them had been battered about the edges, perhaps to shape them further. These probably were primarily hammerstones, for on each of the flattened faces there are fairly deep pits resulting from battering. Sandstone and flint were the materials used. They range in size from 8 cm. in diameter and 4 cm. in thickness to one third again as large (Fig. 47e).

Sixteen handstones of similar materials were unpitted, although they did show some shaping at the edges (Fig. 47b-c). These are less clearly shaped than are the pitted stones, and many of them are considerably smaller. Probably these stones were used primarily for grinding and had seen less use for heavy hammering.

Handstones of the two categories discussed were found in the following ceramic associations:

	PITTED STONES	UNPITTED STONES
Coles Creek Period	5	2
Troyville Period	2	3
Unassigned	3	11

### "CUPSTONES" AND SHALLOW MORTARS

Twenty-five stone slabs show signs of use as mortars or perhaps as abrading stones on which tools were ground. The majority are of Catahoula sandstone, a soft white stone that must have been obtained from outcroppings which are found 50 to 60 miles to the north, in the hills on the western side of the Mississippi Valley. Aside from the modifications by use, these pieces of stone show no sign of intentional shaping. They range from thin flat slabs 7 to 10 cm. wide and 18 cm. long, which show wear on both faces (Fig. 47d), to chunks of stone that approximate the size and shape of the hammerstones just described. The wear on these stones is usually localized. Some have small, well-worn pits in their faces (Fig. 47i-j). These have sometimes been called "cupstones" or "nut stones."

The majority of the stones of this class were found in the excavations made near Mounds A, C, and E. Eleven have been stratigraphically related to the Coles Creek horizon and five to the Troyville. No typological differences can be noted.

### LARGE STONE MORTAR

Only one mortar found at the Greenhouse Site was large enough to have been very efficient for the grinding of maize. This was broken on one side, and one quarter is missing (Fig. 48). The mortar was about 30 cm. in diameter, and each face has been worn to form a deep basin, its shape showing plainly that a rotary motion was used in grinding. This mortar is made of a ferruginous sandstone which must have been transported some distance from outcroppings of such material in northern Louisiana or Mississippi. It was found in the West 295-300 trench, at the southwest edge of the site, where the stratum sloped so that the ceramic complex with which it was associated cannot be identified with certainty.

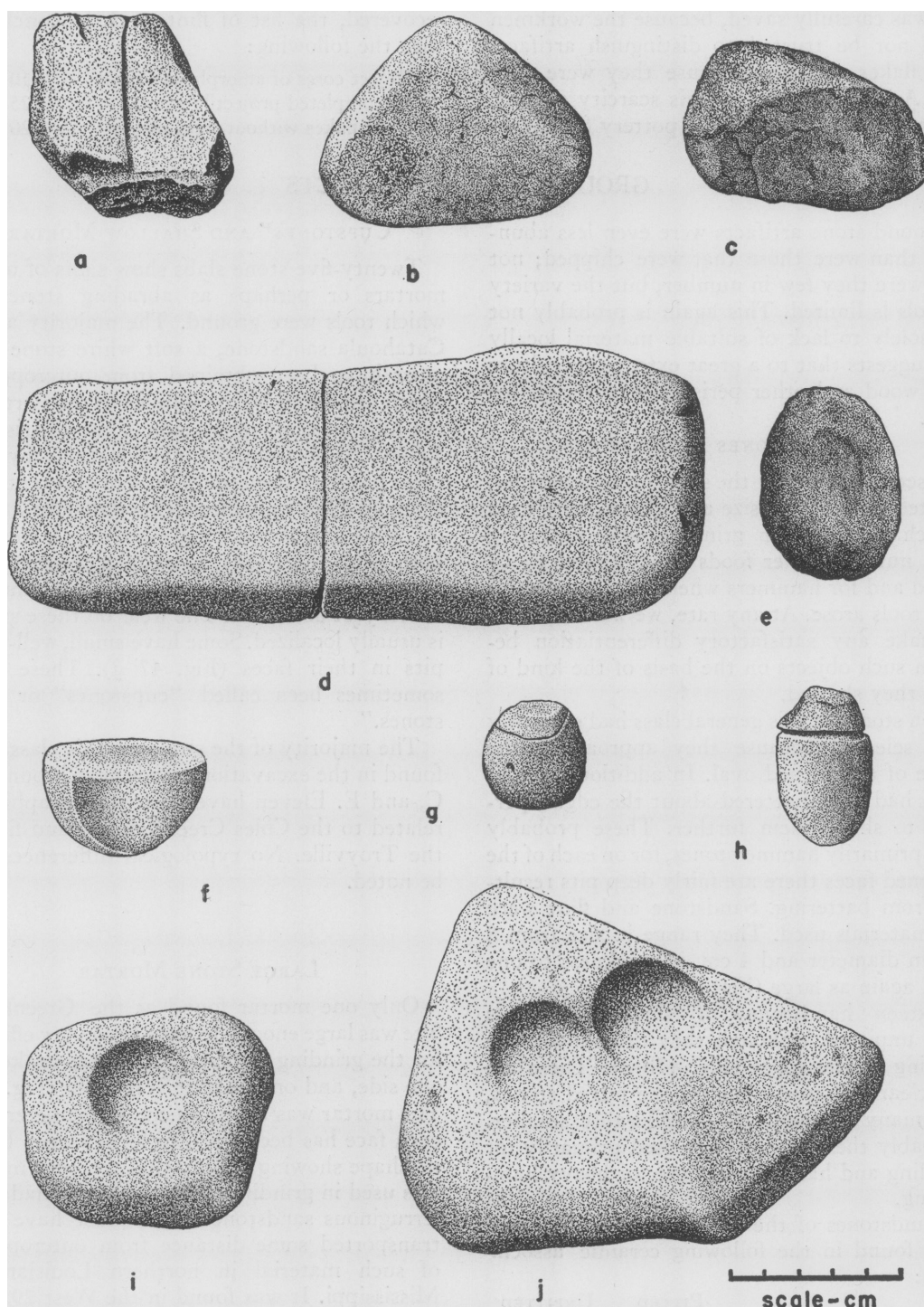


FIG. 47. Ground stone tools. a. Stone showing saw marks. b-c. Unpitted hand stones. d. Grinding slab of Catahoula sandstone. e. Pitted hammerstone. f. Unfinished boat stone. g-h. Grooved plummets. i-j. "Cupstones" or small mortars.

### SMOOTHING STONES

Four water-worn flint pebbles have a gloss which suggests that they may have been used for polishing pottery. As there is no stone in the local soils, these pebbles were undoubtedly intentionally transported here. They are about 2 inches in diameter, and the shapes are entirely natural. Four are of flint and one is a hard, silicified palm wood. Only two can be identified as to ceramic association, and both date in the Coles Creek Period.

### CELT

A fragment of a celt made of black and white travertine was found in Mound A and dates in the Coles Creek Period (Fig. 46i-i'). The

tened face. This form has sometimes been called a "bar amulet." It is 13 cm. long. This specimen comes from a Troyville Period ceramic association in Analysis Unit One. A third stone, which may be a boatstone in the process of manufacture, was picked up on the surface (Fig. 47f). It has been pecked into a shape that outlines the form of a boatstone, but this may be nothing more than the result of its use for hammering.

The theory that these objects were attached to the atlatl and performed a similar function to the "banner stones" distributed through the northern states is gaining favor with Eastern archaeologists. If this is true, the presence of these two artifacts reinforces the deductions

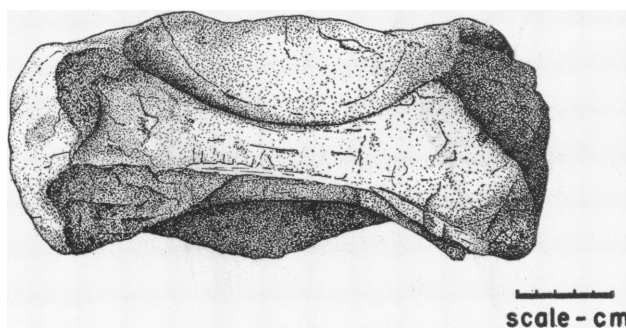


FIG. 48. Large, basin-shaped, stone mortar.

fragment includes the blade and is well shaped. It is oval in cross-section, 3 cm. thick, 6.25 cm. wide, and, before it was broken, was perhaps 13 to 15 cm. long. This celt is rounded, not angular, and the blade is dull.

### BOATSTONES

Two boat-shaped stones were found. One of these (Fig. 46k) is of gray quartzite and is 10 cm. long. It is well made, has angular corners, and on the flattened side there is a groove about 2 cm. deep. It was found associated with Coles Creek Period ceramics near the top of Mound A. The other stone is of black and white diorite, is of even better manufacture, and has a higher polish (Fig. 46j). It has no groove in the flat-

drawn from the size of many of the projectile points found at this site: that the spearthrower continued in use throughout the Troyville and Coles Creek periods.

### STONE PLUMMETS

Two small, grooved, flint pebbles were found which might be called plummets. One of these, an unmodified, egg-shaped stone, is about 2.5 cm. long. It has a narrow and shallow groove around one end (Fig. 47g). The second is slightly longer, has a larger and deeper groove, and has been broken at the grooved end (Fig. 47h). The first of these was found on the surface. The second was associated with Coles Creek Period ceramics in Mound F.



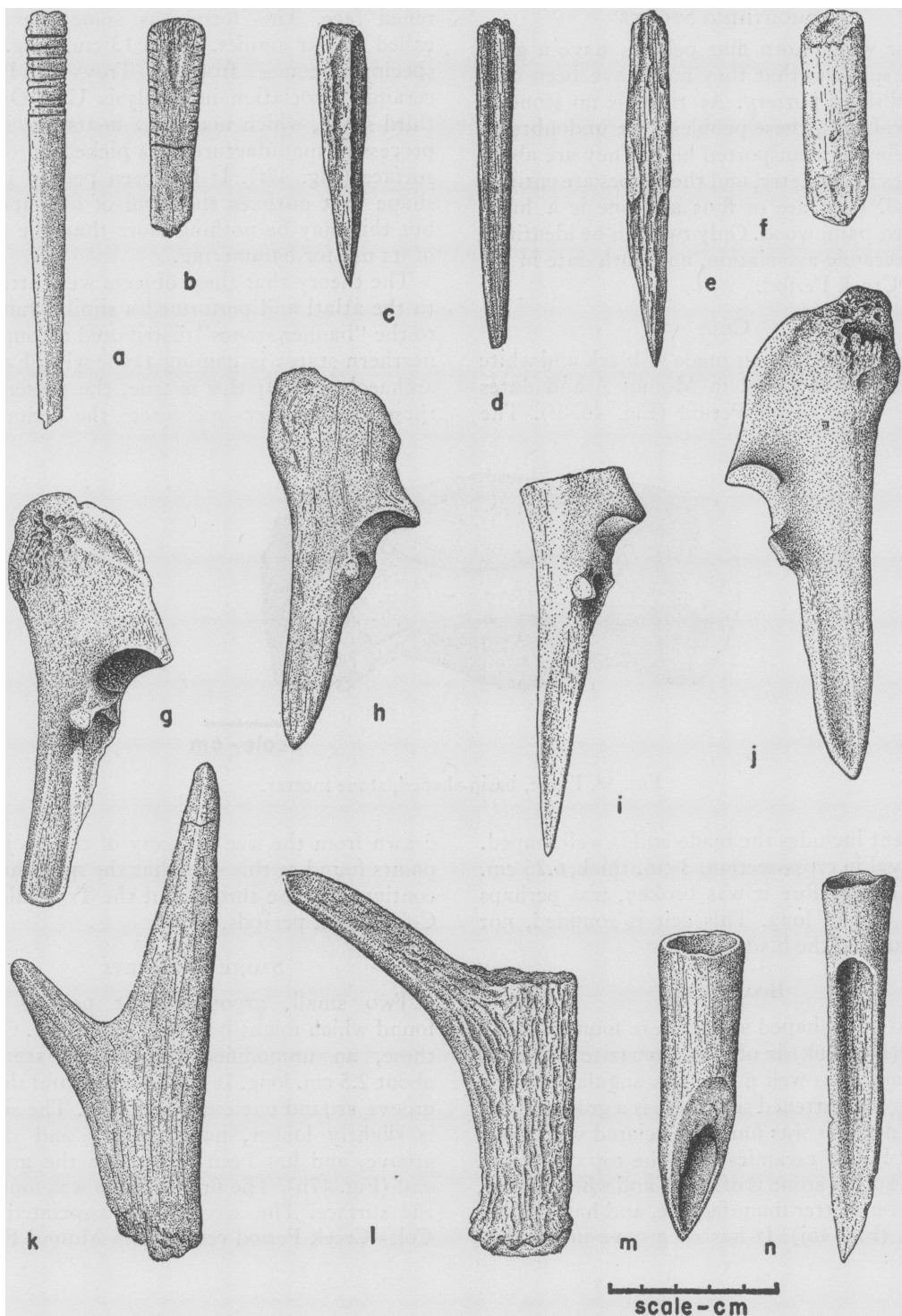


FIG. 49. Tools of bone and antler. a-b. Bone pins with decorated heads. c-e. Split bone awls. f. Cut antler fragments. g-j. Deer ulna skindressing tools. k-l. Antler tines showing signs of use. m-n. Bone projectile points.

## TOOLS OF BONE AND ANTLER

### BONE PINS

The upper portions of two slender bone pins were found. The longer fragment was decorated with crude scoring near the head and comes from Troyville Period levels in Mound F (Fig. 49a). The shorter fragment (Fig. 49b) is more flattened, and the large end is notched on each edge for a short distance. This comes from Coles Creek Period deposits in Analysis Unit Seven.

### SPLIT BONE AWLS

A total of 11 awls was found, which had been made from fragments of split long bones of animals, generally deer (Fig. 49c-e). Most of these showed little evidence of finishing other than the grinding of the points. Most of them had rounded points, but in two the points were worked to the shape of a narrow chisel.

These tools were found in the following locations and ceramic associations:

Analysis Unit Nine, Troyville Horizon	2
Analysis Unit Nine, Coles Creek	1
Analysis Unit Ten, Troyville	1
Analysis Unit Eleven, Troyville	1
Analysis Unit Twelve, Coles Creek	3
Analysis Unit Thirteen, Coles Creek	1
From dirt dumps	2

### SKINDRESSING TOOLS

The second class of awl-like instruments are made of deer ulna, with the proximal end either left complete or slightly trimmed (Fig. 49g-j). The points of these instruments are usually rounded and not very sharp, so it appears probable that most of them were not used for piercing. Possibly they were used for skindressing. Ten of these tools were found. Seven were

associated with Coles Creek Period ceramics in Mound F; one was in the Coles Creek level of Mound A; one dated Troyville, in Mound F; and one was from the Troyville levels of Analysis Unit Nine.

These tools are quite similar to finds from the Tchefuncte Period sites in southern Louisiana, where they were called "flakers."<sup>1</sup>

### ANTLER TOOLS

Two sections of deer antler included the tines, the points of which showed signs of use (Fig. 49k-l). They were not very sharp and might have been employed as picks for moving dirt. One came from a Coles Creek context in Analysis Unit Two (Fig. 49k) and the other from the surface of a dump.

Five short, cut sections of antler were found (Fig. 49f). These are sometimes called "tapping tools," but there is no assurance as to the purpose of these crude and unfinished fragments. Two were associated with Coles Creek ceramics, one in Mound F and the other in Unit One; two dated Troyville, one in Unit One and the other from Unit Nine. The third came from the West 235-240 trench and could not be dated.

### BONE PROJECTILE POINTS

Two short sections of long bones had been pointed and hollowed to serve as points for projectiles (Fig. 49m-n). One of these (m) comes from the Troyville levels of Analysis Unit One, and the other cannot be dated. Identical points were relatively abundant in the Tchefuncte Period sites of southern Louisiana.<sup>2</sup>

<sup>1</sup> Ford and Quimby, 1945, 46, Fig. 13d, i.

<sup>2</sup> Ford and Quimby, 1945, 44-45, Fig. 12.

## COMPARISONS AND CONCLUSIONS

IF ONE CAN JUDGE FROM CERAMIC COMPARISONS and superficial site features such as mounds, the Greenhouse Site is far from unique in the alluvial valley region of Louisiana and the adjacent parts of Mississippi. Surface collections have been made from dozens of sites with rectangular mounds, many larger than Greenhouse, which yield the ceramic complexes of Troyville and the Coles Creek periods. A few of these have been briefly described,<sup>1</sup> but many more are represented by surface collections in storage at Louisiana State University. After completing work at the Greenhouse Site, Neitzel excavated two other similar sites a few miles south of Marksville. These are listed as Avoyelles Parish Numbers 22 and 25 and cover part of the same time span and show many features similar to those of Greenhouse. It is hoped that publication of this work will not be delayed too much longer.

The excavation of two sites of similar age in this general region has been reported. These are the Peck Site near Sicily Island,<sup>2</sup> Louisiana, and the Troyville Site at Jonesville<sup>3</sup> (see map, Fig. 2). The Peck Site was a simple midden deposit, and the collection consisted entirely of ceramics. The deposits appear to date in the Troyville Period and to extend back in time slightly earlier than Greenhouse. As a matter of fact, this site covers part of the time gap that appears to exist between the occupation of the Marksville Site (Av-1) and the Greenhouse midden.

Walker's exploration of the Troyville Site centered in the basal remains of the great 80-foot mound that once was the most prominent feature of the group of eight or more at the site. The large mound seems originally to have been a stepped pyramid surmounted by a cone, but the other mounds were rectangular. At the base of the great mound Walker found pottery that corresponds to the present types Troyville Stamped, Yokena Incised, and Churupa Punctated. At several points on the surface he collected these types mixed with such later material as Coles Creek Incised, Beldeau Incised, Mazique Incised, and French Fork Incised. Mulberry Creek Cord Marked was

also gathered in the surface collections.

At another point in the site Walker found 12 burials disposed in a fashion almost identical to that of the burials in Mound C at the Greenhouse Site. No intentional offerings were deposited with these skeletons. Cultural material other than pottery was very scarce. This includes six projectile points; four of the type Gary Stemmed, one Ellis Stemmed, and one, found near the knee of a burial, is of the type Alba Barbed. The triangular chipped scraper found corresponds to Scraper Type 2 of this paper. Two ground stone celts were oval in section and have blunt edges. Two small grooved plummets similar to the two from the Greenhouse Site (Fig. 47g-h) complete the list.

To the north, in the valley of the Ouachita River in southern Arkansas, Dickinson and Lemley have reported the results of their excavations at the Kirkham Place in Clark County, Arkansas.<sup>4</sup> From a midden deposit, which appears to extend underneath a rectangular mound, they obtained pottery and artifacts that differ slightly from the Greenhouse material, possibly owing to the distance involved. This site seems to represent the early part of the Greenhouse Site time range, that is, the Troyville rather than the later Coles Creek Period.

In other papers Lemley and Dickinson have described their very interesting work in the Crenshaw Site on the Red River in the extreme southwestern corner of Arkansas.<sup>5</sup> C. B. Moore worked here in 1911.<sup>6</sup> This site has a group of six mounds, at least two of them rectangular. Underneath the base of Mound B, Lemley excavated three large shallow pits cut from the original ground level. One of these contained 12 skeletons, another 14, and the third 18, all extended on the back and resting side by side. Later, burials accompanied by "Caddoan" ceramics and other artifacts were dug down from the mound surface and in several instances cut through the earlier burials. A few additional single burials accompanied by what Lemley has termed "pre-Caddo" pottery were found in Mound D and in the field to the south of this mound.

<sup>1</sup> Ford, 1936, 193-218.

<sup>2</sup> Ford, 1935.

<sup>3</sup> Walker, 1936.

<sup>4</sup> Dickinson and Lemley, 1939.

<sup>5</sup> Lemley, 1936; Dickinson, 1936.

<sup>6</sup> Moore, 1912, 620-627.

The disposition of the skeletons in the older burials at the Crenshaw Site certainly suggests that the bodies had been preserved until a number were accumulated and then disposed of simultaneously. However, Lemley does not mention any evidence of disarticulation. Isolated skulls were found at certain points in the excavation of Mound D, but not in the great pits under Mound B. With this exception and the fact that the skeletons are more carefully arranged, these burials are similar to the mass disposal of bodies at both Greenhouse and Troyville. They are even more similar to the burials described by Moore<sup>1</sup> and later by Webb<sup>2</sup> at the Gahagan Site near Natchitoches, Louisiana.

However, the ceramics are distinctly different from most of those found at Gahagan. They are late Coles Creek Period in type. In addition to the pottery that Lemley found with the burials he also obtained other vessels previously excavated from the earlier graves at the same site. The entire collection which I have been permitted to examine and photograph is adequate in size to leave little doubt as to dating. Representative specimens are illustrated in Lemley and Dickinson's papers and include the following types:

LEMLEY, 1936

French Fork Incised	Pl. 7, vessels 1-2, 4-6 Pl. 8, vessels 1-3 Pl. 10, vessels 4-6
Greenhouse Incised	Pl. 8, vessels 5-8
Coles Creek Incised	Pl. 9, vessel 2
Chase Incised	Pl. 9, vessel 4
Rhinehart Punctated	Pl. 10, vessel 2

The balance of the vessels illustrated can be classified as Coles Creek Plain. Several of these vessels are polished, a feature that is usually combined with decoration only from the beginning of the Plaquemine Period to historic times in the region at the mouth of the Red River. Lemley has noted that a number are made of brownish-colored ware, also a late feature in the lower part of the Red River Valley. Until the end of the Coles Creek Period all the material is a hard gray; brown-colored and softer paste pottery is later.

A certain amount of areal variation might be expected in the typology, considering the 130

miles between the Mississippi Valley flood plain where these types were defined and the Crenshaw Site. However, these vessels vary very little from the standards in shape or decoration. As regards the late Coles Creek dating that I am inclined to assign to this site, the absence of typical Troyville Period material is significant. All the types, such as Troyville Stamped, Yokena Incised, Larto Red Filmed, etc., that mark the earlier period at Greenhouse are absent in the collection. These types were found by Lemley<sup>3</sup> in the valley of the Ouachita River, a short distance to the east, in southern Arkansas, and by myself at the Fredricks Place in the Red River Valley, a few miles below Natchitoches, Louisiana.<sup>4</sup> The Fredricks Site, in particular, conforms well with Troyville ceramic characteristics. Evidently the Troyville Period influences did extend far enough up the Red River Valley to have affected any occupation at the Crenshaw Site, if there had been any at that date.

While concerned with comparable sites located up the Red River from the Greenhouse Site, it will be advisable to consider the Alto Focus which has been set up in the past few years through the work of Alex Krieger. The definition of the focus is based primarily on the excellent report of the excavations at the George C. Davis Site in Cherokee County, Texas,<sup>5</sup> located in the valley of the Neches River, east central Texas, about 100 miles due west of Natchitoches, Louisiana. This discussion also includes the Gahagan Focus, based on the Gahagan Site located on the Red River only a few miles from the town of Natchitoches. As noted above, this has been excavated and reported by C. B. Moore<sup>6</sup> and C. H. Webb.<sup>7</sup>

The Alto and Gahagan foci have been demonstrated by Krieger to be a part of the Gibson Aspect, apparently the earliest foci of that aspect, and the Gibson Aspect everywhere underlies the Fulton Aspect which is comprised of the cultural features held by the Caddoan Indians up to historic times.<sup>8</sup> Krieger has compared the Gahagan Focus to Davis Site Phases

<sup>3</sup> Lemley and Dickinson, 1939.

<sup>4</sup> Ford, 1936, 235, Fig. 44, also see table in Fig. 1 (Site 99).

<sup>5</sup> Newell and Krieger, 1949.

<sup>6</sup> Moore, 1912, 511-522.

<sup>7</sup> Webb, C. H., 1939.

<sup>8</sup> Krieger, 1936, especially Fig. 26; Newell and Krieger, 1949.

<sup>1</sup> Moore, 1912, 511-522.

<sup>2</sup> Webb, C. H., and Dodd, 1939.

1 and 2, and the relationship cannot be doubted. For the present discussion, I consider these two foci together.<sup>1</sup>

Krieger has very capably summarized the traits of the Alto Focus.<sup>2</sup> It seems unnecessary to reproduce the entire list here. Briefly the Alto Focus ceramics are characterized by:

**HOLLY FINE ENGRAVED:** A beautiful, polished, engraved ware of black or brown paste which features "stepped" and scroll designs and is commonly found on bottle and carinated bowl forms. Red ochre has usually been rubbed in the engraved lines.

**HICKORY FINE ENGRAVED:** Also found on bottle and carinated bowl forms and also has stepped and scroll designs. In addition, the engraving forms horizontal lines and large cross-hatched patterns.

**CROCKETT CURVILINEAR INCISED:** Usually found on carinated bowl forms; has negative scroll-like figures similar to French Fork, but is considerably more stylized. Punctations and parallel incised lines are the usual background fillers.

**PENNINGTON PUNCTATE INCISED:** Straight-line incised patterns with alternate areas filled with punctations. The decorations are basically similar to the more involved patterns of the Louisiana type Rhinehart Punctated. The majority of the vessel forms are carinated bowls.

**DUNKIN INCISED:** Consists of large, vertical-sided pots, carinated bowls, barrel-shaped vessels, and beakers carelessly incised with straight-line patterns that resemble the Louisiana types Coles Creek Incised, Mazique Incised, and large cross-hatching as in Beldeau Incised. Fingernail punctations or careless vertical striations are often found on vessel bodies beneath the incised designs. A minor proportion of the pottery included in this type is identical in decorative treatment with Plaquemine Brushed.<sup>3</sup>

**DAVIS INCISED:** A decoration consisting of parallel, horizontal, incised lines that usually begins at the rim and extends a short distance down the vessel walls. Simple and carinated

bowls are the most common forms, but the bottle is also represented. Krieger has pointed to the resemblance of this type to Coles Creek Incised.

**WECHES FINGERNAIL IMPRESSED:** This is the third most frequent type from the site. It features fingernail impressions in horizontal rows parallel to the rim, alternating with incised lines. Vessel bodies below this decoration are sometimes either pinched or scored. Alternate horizontal lines and punctations, but never fingernail punctations, have been included as a variation in the Louisiana type Coles Creek Incised (Pl. 16l, p-r).

**DUREN NECK BANDED:** Appears to be a feature imported from the west in the Davis Site and has no parallels in the Mississippi Valley.

**GROOVED VESSELS:** These are well-polished designs made with wide, round-bottomed lines, a decoration feature sometimes combined with engraving. Similar but not identical decorations were found by Moore at Glass, Mississippi,<sup>4</sup> accompanying vessels of Natchez types and by Ford and Chambers at the Smith Mound in Madison County, Mississippi.<sup>5</sup> This latter example is in the museum of the Mississippi Department of Archives and History, but unfortunately has never been published.

**MOLCAJETE-LIKE BOWLS:** These are simple bowls with engraved decoration on the interior. The simple patterns are usually formed of straight lines.

Krieger has analyzed the Davis Site into three sequential phases and has demonstrated that there is cultural change from the earliest to the latest. These he considers to be three phases of the Alto Focus and is of the opinion that these phases represent considerable relative time. In the latest correlations with the Louisiana chronology and other parts of the East the following alignment is suggested:

	Haley Focus, Spiro late component, and Sanders Focus	Coles Creek Troyville
Alto 3		
Alto 2	Spiro Focus, Spiro middle component	Late Hopewell, Copena
Alto 1	Gahagan Focus	Hopewell, Marksville

<sup>1</sup> Although Krieger does not make a statement to that effect, I suspect these two foci are separated mainly because of the contrasting nature of the evidence—only occupation refuse for Davis and burial goods alone at Gahagan.

<sup>2</sup> Newell and Krieger, 1949, 186–191.

<sup>3</sup> Newell and Krieger, 1949, Fig. 44a–c.

<sup>4</sup> Moore, 1911, Figs. 6–7.

<sup>5</sup> Ford, 1936, 121–122.

In an earlier alignment Krieger has placed the Alto Focus as a whole approximately coeval with Troyville and Coles Creek.<sup>1</sup>

I am afraid that I must disagree with Krieger on two points in these conclusions. First, while there clearly is evidence for cultural change at the Davis Site, this evidence does not suggest that the site was occupied for any great length of time. Cultural changes are shown mainly by shifts in ceramic type percentages, the absence of some minor types from the early level, and also by small modifications in paste color and vessel sizes. Other phase differences are cited, but the most certain evidence lies in the pottery. The percentage shifts from phase to phase appear somewhat larger in the data than is normal for a site of short time span in other parts of the Southeast, but this is because the frequencies were calculated on the basis of matched sherd groups and are percentages of the total decorated sherds. Totals of all sherds found have been the customary basis for percentages in other parts of the East.<sup>2</sup> When the Davis Site frequencies are loaded with the totals of all sherds found, graphed, and compared to chronological graphs of other near-by chronologies,<sup>3</sup> then the amount of change appears very small, quantitatively less than one quarter of the frequency changes that have been demonstrated at the Greenhouse Site.<sup>4</sup> The qualitative changes are equally minor, compared with other Eastern chronologies. Krieger's latest alignment would make it necessary to grant that Alto Focus ceramics had been remarkably stable through the time that the pottery of the region near the mouth of the Red River had changed from the complex of the Marksville horizon to that of the Coles Creek; in eastern Arkansas and western Mississippi from Early Baytown to Late Baytown; and in the northwest coast of Florida from Santa Rosa-Swift Creek to Weeden Island II.

The second point of disagreement is the relative dating. Unfortunately, owing to the interruption of the war, the unpublished data

stored at Louisiana State University were not available to Krieger while he worked up the Davis Site material. From the viewpoint provided by these data there seems to be little doubt that the Alto Focus ceramics are roughly coeval with the Plaquemine Period. The matter cannot be fully discussed very conveniently until complete reports of a Plaquemine Period site have been published, but the ceramic evidence can be given briefly as follows:

The carinated bowl form, bottle form, engraved technique for pottery decoration, bowls with interior engraved designs ("Molcajete-like"), "stepped designs," brushed decoration, polishing on decorated vessels, or large beaded rims circular in section<sup>5</sup> do not occur in the chronology of the region about the mouth of the Red River before the end of the Coles Creek Period. They have not even been found as trade pieces. They do occur with considerable frequency in the ceramics of the Plaquemine Period. In some cases the similarities are strikingly close.

These traits may have been moving from west to east; in the case of engraving, this is almost certain. This introduces the possibility of a very substantial time lag between their manufacture in the Alto Focus and their arrival at the mouth of the Red River. If this were true it would be unusual, in terms of experience in other parts of the East, and it is almost impossible to visualize the sort of cultural barrier that would have made this condition possible. The Gahagan Site near Natchitoches, Louisiana,<sup>6</sup> yielded the major Davis Site ceramic types. Not only is this very close to the center of the Louisiana chronology, but a few miles to the south of Natchitoches there is a Marksville Period site (Fredricks Place), and

<sup>5</sup> For example, see Newell and Krieger, 1949, Fig. 35k, n. As an additional note, the use of the term "cambered" for lips having rounded exterior rim straps is misleading (pp. 98, 220). This is not the characteristic Hopewell "cambered" rim.

<sup>6</sup> In 1932 Mr. and Mrs. U. B. Evans of Alexandria, Louisiana, excavated a small, dome-shaped mound on the northwest shore of Catahoula Lake, only 25 miles north of the Greenhouse Site. A number of pottery vessels were recovered. Some of the whole vessels are in the collection of Mr. Edward F. Neild of Shreveport, Louisiana, but the majority of the material, broken vessels and sherds, was donated to Louisiana State University and is in the collections there. This material resembles that which Krieger illustrates from the East Mound to a remarkable degree. (Newell and Krieger, 1949, Figs. 63-65.)

<sup>1</sup> Krieger, 1946, Fig. 26.

<sup>2</sup> Newell and Krieger, 1949, Table 13.

<sup>3</sup> For example, Phillips, Ford and Griffin, 1951, Figs. 17-21.

<sup>4</sup> I have gone through the process described above in preparing illustrations for a future paper, where this entire question can be discussed more clearly after evidence has been presented.

Lemley's discovery of Coles Creek Period burials at the Crenshaw Site lies over a hundred miles farther up Red River. If Gahagan (or Davis) were coeval with either of these it would truly be remarkable considering the lack of evidence of interinfluence.

While there is a possibility that the above ceramic traits may have lagged markedly in a west-to-east diffusion, there is another decoration motif common in all phases of the Alto Focus that was almost certainly diffused from the east. This is identified by the name of Crockett Curvilinear Incised. Krieger has discussed the resemblance of this decoration to Churupa Punctated and French Fork Incised.<sup>1</sup> It seems to me that Crockett more nearly resembles French Fork Incised and represents a further development of the tendency towards formalization and repetition of decoration motif that can be traced from Weeden Island Incised of the Florida Gulf Coast into the Lower Mississippi Valley. This relationship has already been discussed under the type description of French Fork (p. 62 ff.). It is interesting to note that the same tendency towards formalization of these curvilinear designs can be noted in the Florida chronology, and Fort Walton Incised of the Fort Walton Period has designs almost identical with those of Crockett.<sup>2</sup>

Another decoration similarity shared by the east Texas and Louisiana chronologies is represented in the Alto Focus by Davis Incised. This has been correctly compared to Coles Creek Incised which it resembles rather closely.<sup>3</sup> However, Davis Incised, and the horizontal line variety of decorations included in the Alto Focus type Dunkin Incised,<sup>4</sup> are even more similar to Hardy Incised. Except for paste features, they are almost identical.

Fingernail punctating and pinching on vessel bodies is a frequent feature of Davis Site ceramics. This trait is present in the Tchefuncte Period of the Lower Mississippi Valley, but after that it does not reappear in more than very fractional quantities until Plaquemine. In eastern Arkansas it carries through this span of time in small quantities as Evansville

Punctated,<sup>5</sup> an all-over, clay-tempered, punctated decoration. However, this treatment does not reach proportions comparable to those found at the Davis Site, until the appearance of Parkin Punctated after the arbitrary time Point C. Fingernail punctating on the bodies of jars that have simple incised patterns confined to the area below the rim is a common feature of Dunkin Incised.<sup>6</sup> This combination is absent from the Lower Mississippi until it appears in eastern Arkansas as Barton Incised.<sup>7</sup> This also dates from Time C, coeval with the Plaquemine Period farther down the Mississippi. It should also be noted that typical Davis Site features already cited, which were probably moving from west to east, were also introduced into the eastern Arkansas-western Mississippi portion of the Mississippi River Valley at this same time—engraving, polished and incised pottery, carinated bowls, and the bottle form.

Part of the argument for an early alignment of Phase I Davis Site materials has been based on the presence of sand-tempered ware supposedly directly related to the early sand-tempered pottery to the east, such as Mandeville Plain, Alexander Incised, and O'Neal Plain. I would suggest that too much reliance should not be placed upon sand tempering as a trait. To the east of the Mississippi Valley sand is used for tempering pottery up to quite late in the chronologies, and there is no reason to assume that this did not also occur to the west. More specific Tchefuncte-Alexander features would have to be present in the Texas area to demonstrate a cultural connection.

If one can judge solely from the illustrations and description of the material in the Davis Site report, there are only a few trade sherds that I would unhesitatingly identify as possibly having originated in the Lower Mississippi Valley region. One is the sherd of Troyville Stamped illustrated by Newell and Krieger (1949) as Fig. 49q-q'. If the site dates on the Plaquemine time level, this sherd is too early for the occupation and must be explained. The three sherds shown in the same report as Fig. 49p, r-r', and s-s' appear to be Chevalier Stamped, as identified by Quimby, and are normal for the suggested age of the site.

Other traits found at the Davis Site tend,

<sup>1</sup> Newell and Krieger, 1949, Table 2.

<sup>2</sup> Willey, 1949, Fig. 57a-b.

<sup>3</sup> Newell and Krieger, 1949, Table 2.

<sup>4</sup> Newell and Krieger, 1949, Fig. 42b, d, f. Compare with Ford, 1936, Fig. 23b, k.

<sup>5</sup> Phillips, Ford, and Griffin, 1951, 90-91.

<sup>6</sup> Newell and Krieger, 1949, 112, Fig. 43b, d-e.

<sup>7</sup> Phillips, Ford, and Griffin, 1951, 114-119.



by their chronological position in the Lower Mississippi Valley, to corroborate the evidence of the pottery. Round and rectanguloid houses with wall trenches first appear during the time represented at the Greenhouse Site and continue to the historic period. The rectangular form seems to be replacing the round through Coles Creek and Plaquemine times. Thin triangular arrowpoints, small celts or adzes rectangular in section and with sharp blades, adzes chipped into form and ground along the blade to form a sharp edge, or (from the Gahagan Site) graves goods in quantity, crouching human and animal effigy pipes, ear spools of wood or stone plated with copper, spatulate celts or "spuds," and discoidal stones and masses of galena with burials are not found in the Lower Mississippi region earlier than Time C, the beginning of the Plaquemine-Mississippian Period. After that date all occur in forms identical to those listed for the Alto and Gahagan foci.<sup>1</sup> The two long-nosed copper masks found by Webb at Gahagan<sup>2</sup> are identical with a pair excavated by Moore from the Grant Mound on the St. Johns River, Florida.<sup>3</sup> Goggin places the Grant Mound in his St. Johns IIA Period, just before the arrival of Mississippian culture traits. His estimated dates for the period are from 1120 A.D. to 1450 A.D.<sup>4</sup> Another pair of these peculiar copper masks in the Milwaukee Public Museum are recorded as coming from Aztalan, an early Mississippian site that must be of about the same date.<sup>5</sup>

When I first read the report on the Davis Site, I was considerably impressed with Krieger's argument for an early comparative alignment with Mississippi Valley prehistory and was inclined to welcome these new data as an explanation for the introduction of certain traits from Meso-America. Rectangular mound construction for use as a temple base was the foremost of these traits. Another was polished, but not engraved, pottery. The third was a derivative source for the decoration that marks the type Coles Creek Incised. The limited ex-

tension of this design to the east and north, together with at least a superficial resemblance to Southwestern neck banding and an incised type in the Huasteca, suggested an importation from this direction. Pottery figurines, pottery trowels, and small projectile points of the type Alba Barbed also could not be accounted for in terms of earlier cultural complexes in the East. However, closer inspection of the evidence has resulted in the foregoing argument. The Alto Focus is just not old enough. Either there remains to be found an earlier cultural stage in east Texas which will provide a link of the proper date with Meso-America, or these traits may have bridged an area devoid of a culture of a comparable development even wider than the one Krieger has suggested.

Alignment of the Greenhouse Site occupation with the five chronological columns which Phillips, Griffin, and I have described for the alluvial valley region of eastern Arkansas and western Mississippi is very easy. When these columns were aligned to determine the relative positions of the A to G time points, the ceramic data from the region of the Red River mouth, including the Greenhouse excavations, also lay on the table. The patterns of all six of these chronologies were adjusted at that time, as has been briefly described. To the degree of exactness which this pattern-matching technique makes possible, the points C and D shown on the ceramic graphs in this paper are the same as those indicated for the alluvial valley to the north. The Troyville Period equates with the middle part of the Baytown Period. Coles Creek is coeval with Late Baytown, and Plaquemine equates with at least the early part of the Mississippian Period.

The relations of the Louisiana data to the Gulf Coast of Florida also seem to be clear. In his recent exhaustive study of west-coast Florida prehistory Gordon Willey has drawn on his intimate knowledge of the Lower Mississippi obtained while supervising the WPA laboratory in New Orleans and helping to prepare an early draft of this report. The comparisons that he has made in type descriptions and in the section relating Florida with the west and north<sup>6</sup> are conclusions to which I also subscribe in gross outline. As he has stated

<sup>1</sup> For example, compare with the small series of sites described in Ford, 1936, 115-128.

<sup>2</sup> Webb, C. H., and Dodd, 1939, Pl. 29-2, 107.

<sup>3</sup> Moore, 1894, 200-204.

<sup>4</sup> Goggin, 1949, 27, Fig. 3.

<sup>5</sup> See Griffin, 1946, 87-89, for further discussion of these similarities.

<sup>6</sup> Willey, 1949, 562-570.

the case so well it seems unnecessary to repeat it here.

I suggest only minor modifications for Willey's chronological alignments. Southeastern archaeology has reached the point where the one-for-one alignment of time periods that has been customary and necessary in the past can now be improved. For example, there is evidence that the Florida Santa Rosa-Swift Creek Period does not equate exactly with the

Louisiana Marksville. It lasted until about the middle of the Troyville Period. Nor are Weeden Island I and II exact time equivalents of Troyville and Coles Creek. (It would be strange if they were, considering the arbitrary and accidental aspects of period definitions.) I shall not argue the matter here, for it will be necessary to present considerable data to make this clear. It will be a subject included in a paper being planned for the near future.

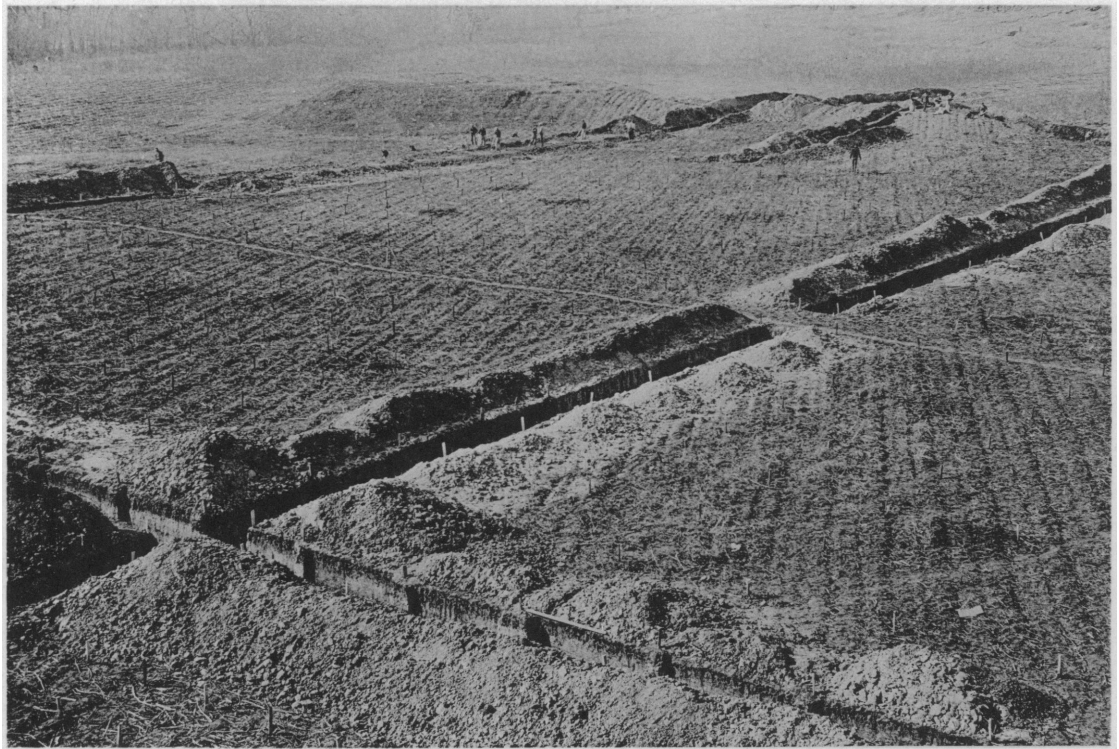
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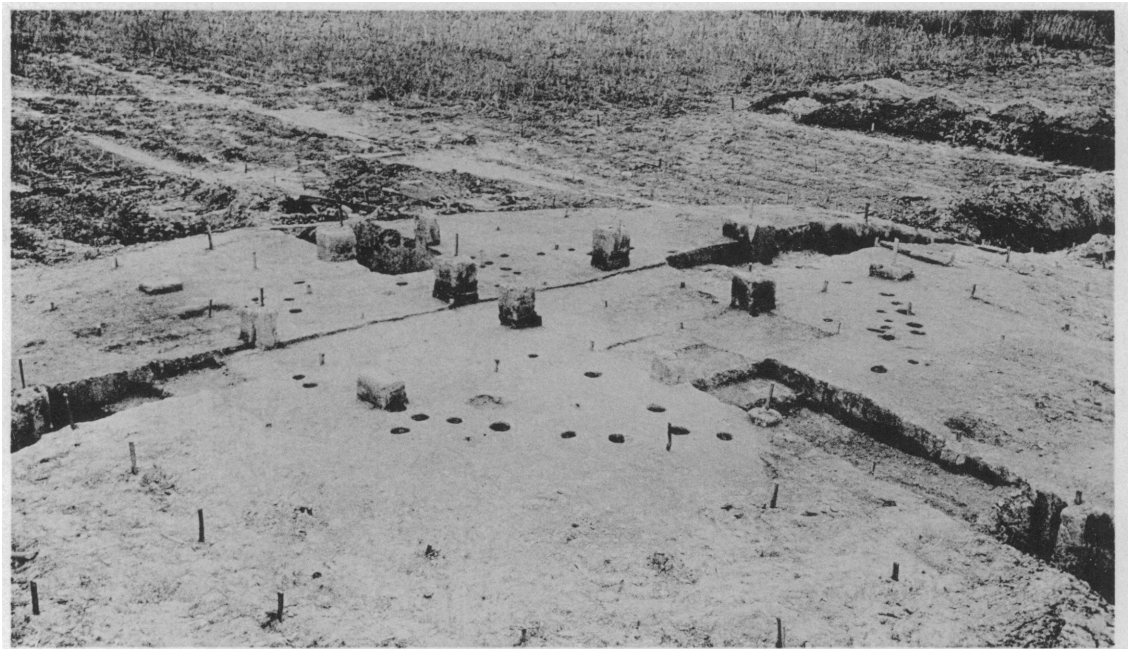
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The Greenhouse Site from the Marksville Prairie bluffs in June, 1939. Backwater from Red River covers the level ground. The continued rise halted work for a few weeks soon after this picture was taken. Excavation of Mound F, in the center, is well along, and work has been begun on Mound A to the left



a. Mounds E and F, from photography tower on top of Mound A (see Pl. 3a). The approach trenches in Mound F are being excavated. The two long, east-west trenches are North 60-65 and South 80-85. The north-south trench in foreground is East 80-85; note capping layer of dark red soil of Red River origin exposed in wall of this trench

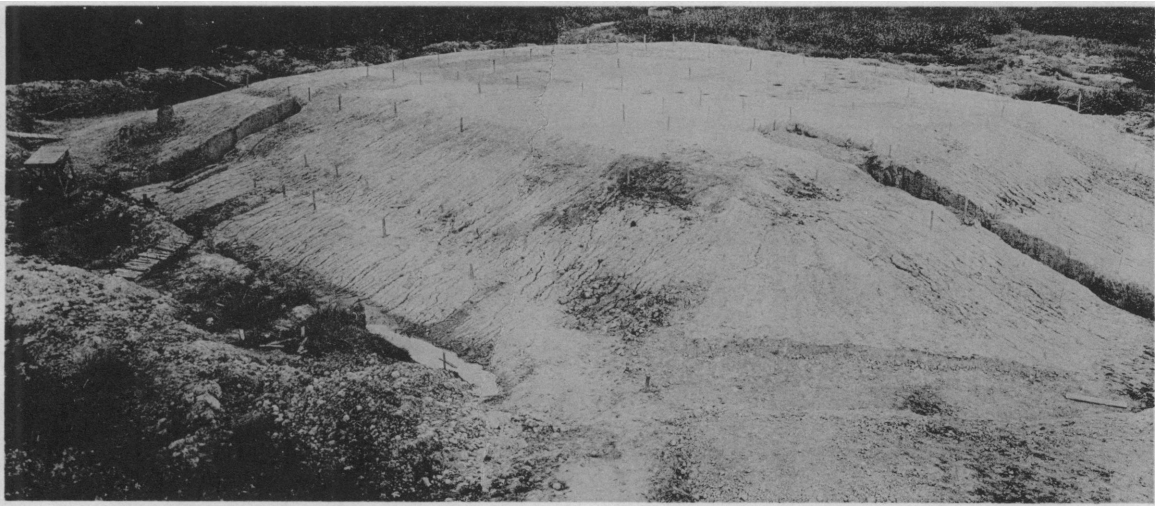


b. Building Level 3 in Mound F. See map of this structure, which was probably rectangular, in Fig. 10. This level dates late in the Coles Creek Period





a. Mound A before excavation. View from near the center of the plaza; the trench in the foreground is North 60-65. The contrasting overlay of dark, Red River deposited soil can be seen in the trench wall

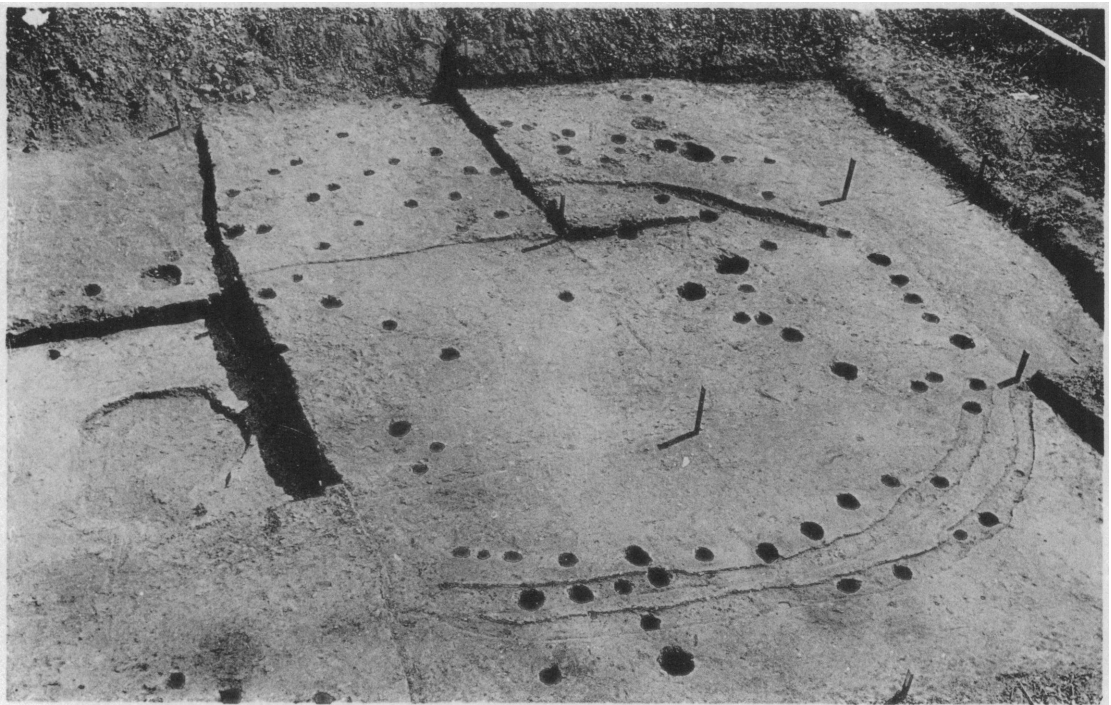


b. Mound A as it appeared after it was stripped down to Building Level 6. See Figs. 5 and 6 for profile of the mound and map of this building stage. The holes for the posts of the building that stood on this stage can be seen. Ceramics date this level as early in the Coles Creek Period

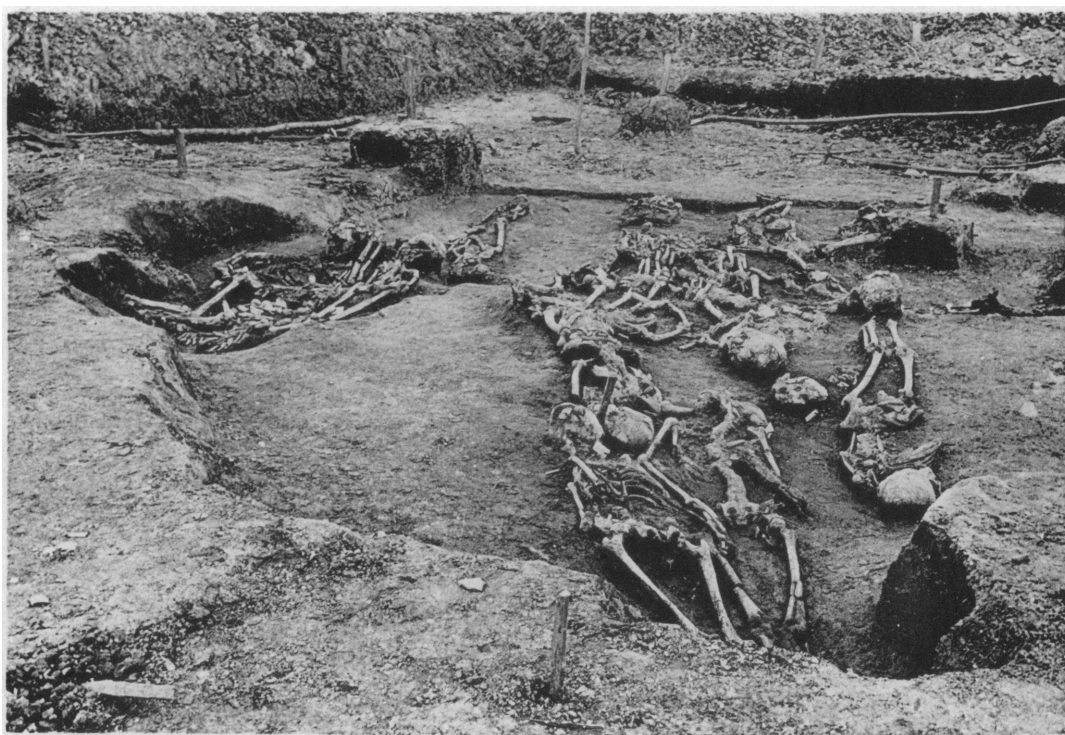




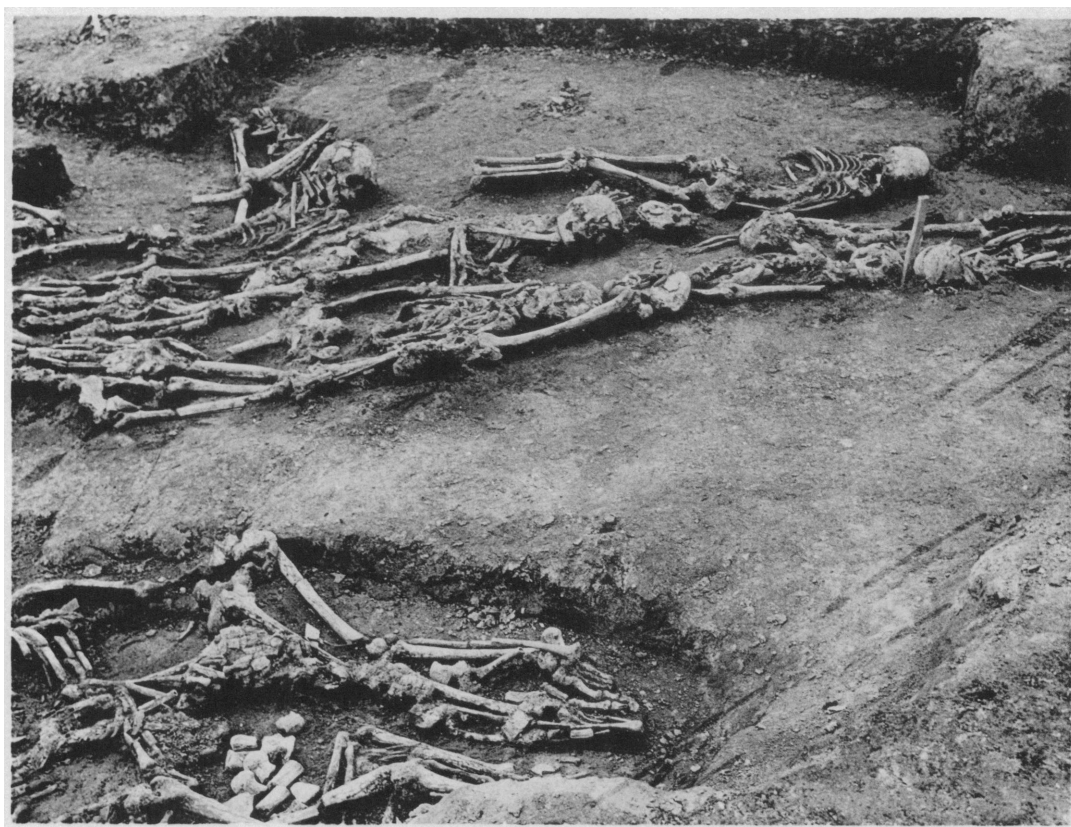
a. Circular house pattern between Mounds A and B in area North 65-90, East 140-170. House dates about the middle of the Coles Creek Period



b. House structures found in Mound D, viewed towards the east. The circular building appears to have been rebuilt several times on the same level. Ceramic analysis dates it as early Coles Creek. See Fig. 12

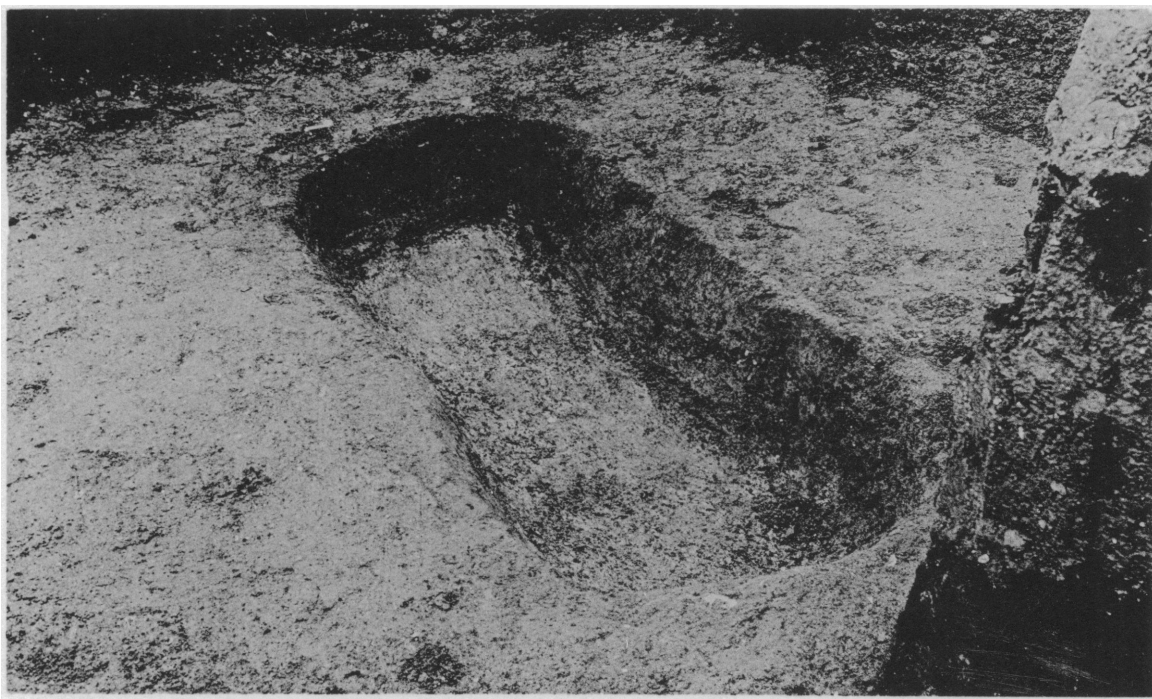


A

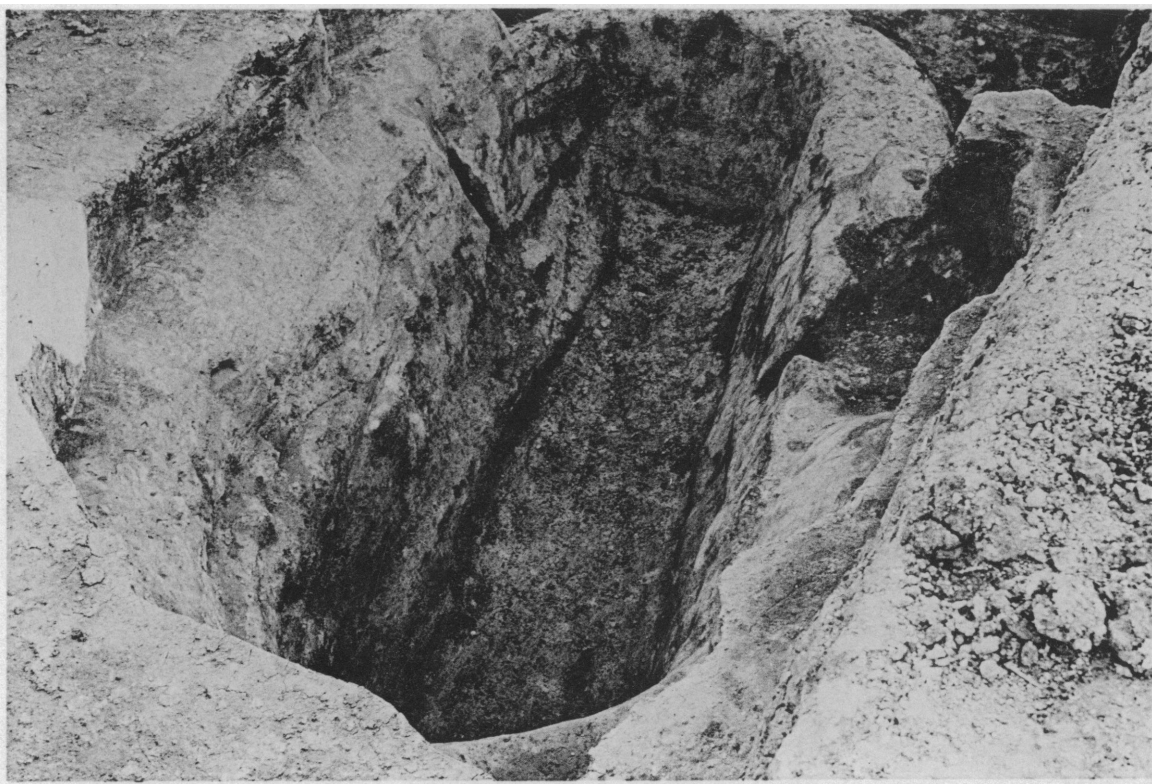


B

a, b. Views of part of burials found in Mound C. See Fig. 11



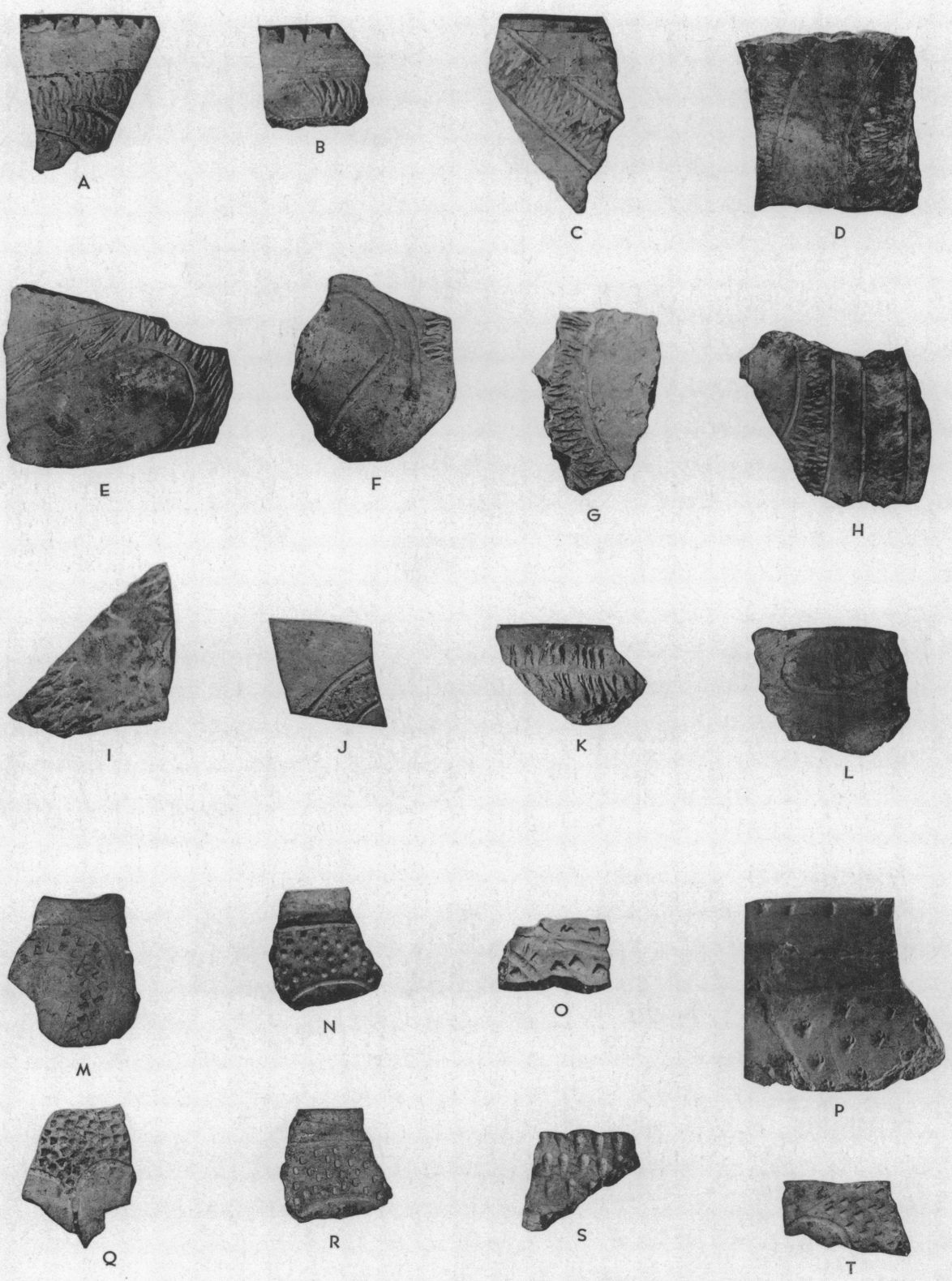
A



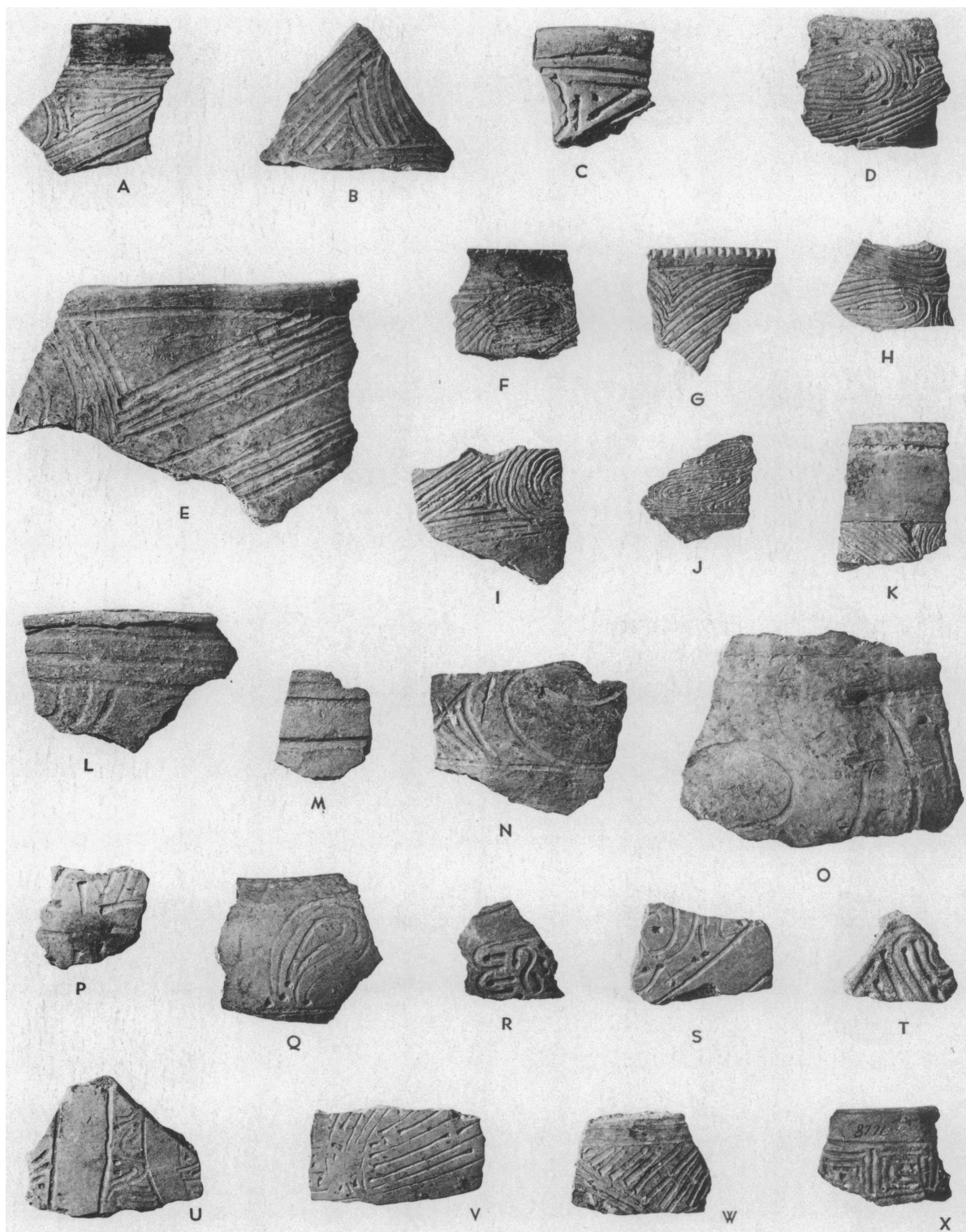
B

Bathtub-shaped fire pits. a. Feature 617, found in midden deposits between Mounds A and B. b. Feature 198, found in area of Analysis Unit 6, near Mound C

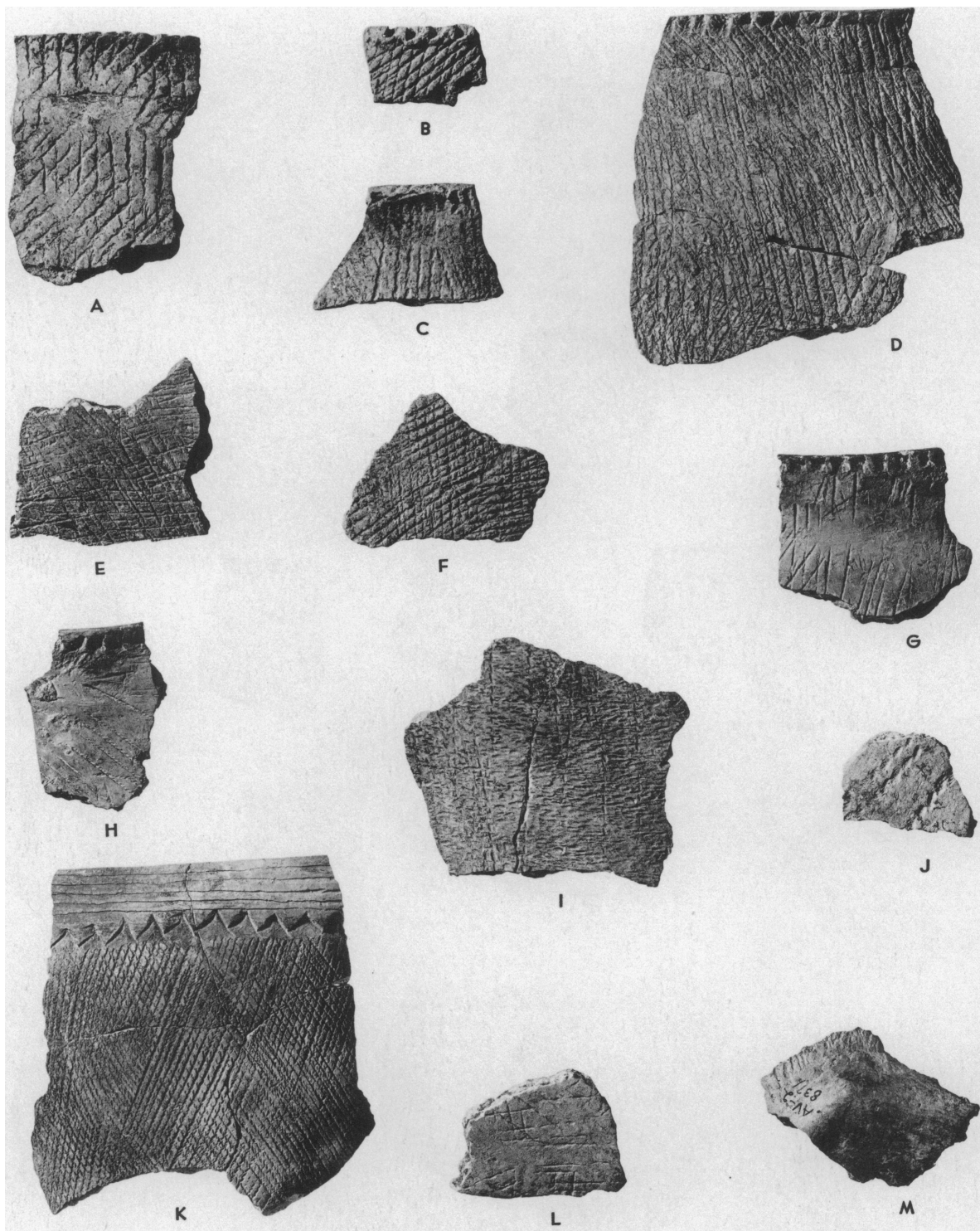




Sherds of Troyville Stamped (a-l) and Churupa Punctated (m-t)

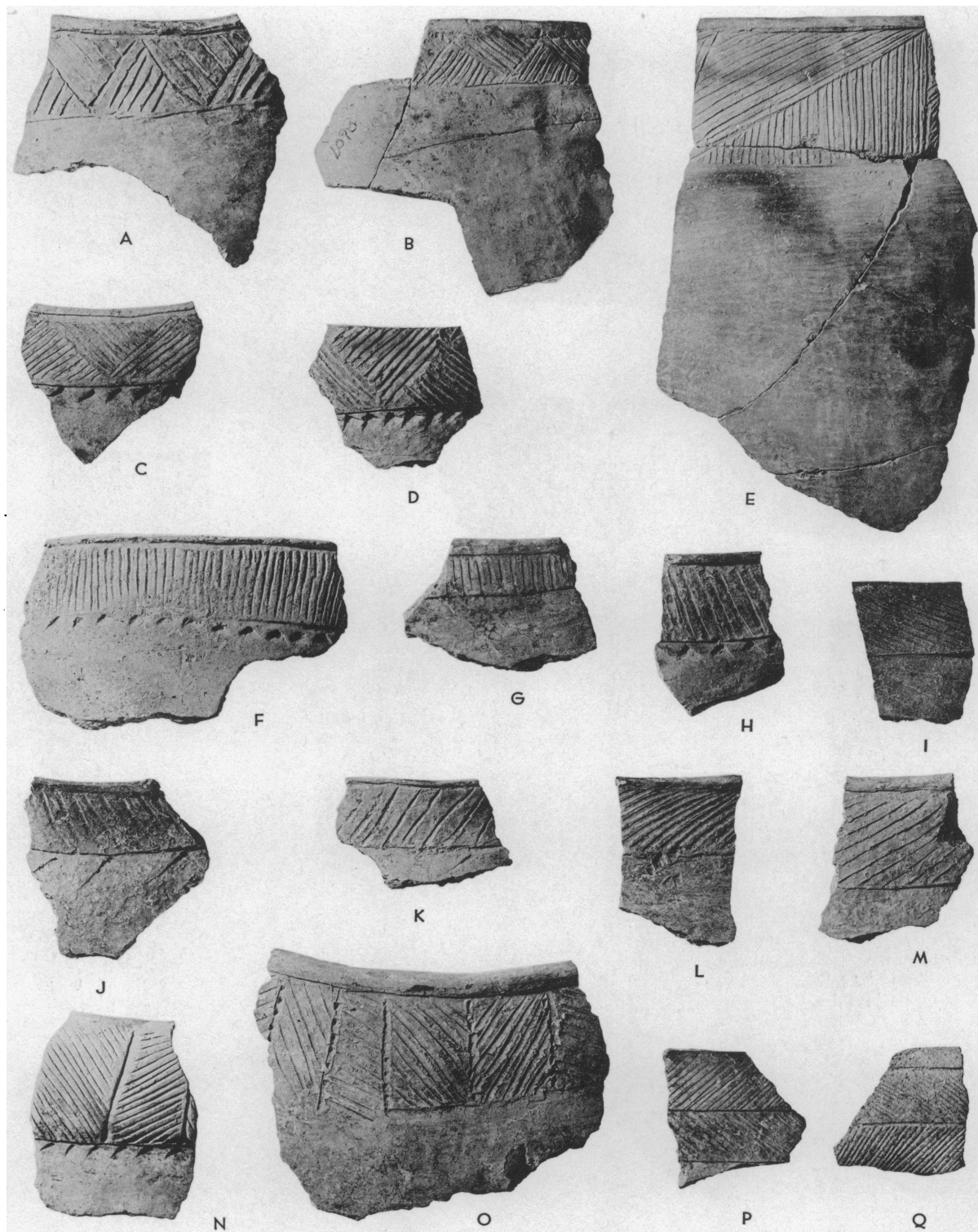


Examples of Yokena Incised. a-o. Curvilinear meander motifs. p-v. Irregular motifs. w-x. Angular motifs. a-x. 20.2-5678-20.2-5701



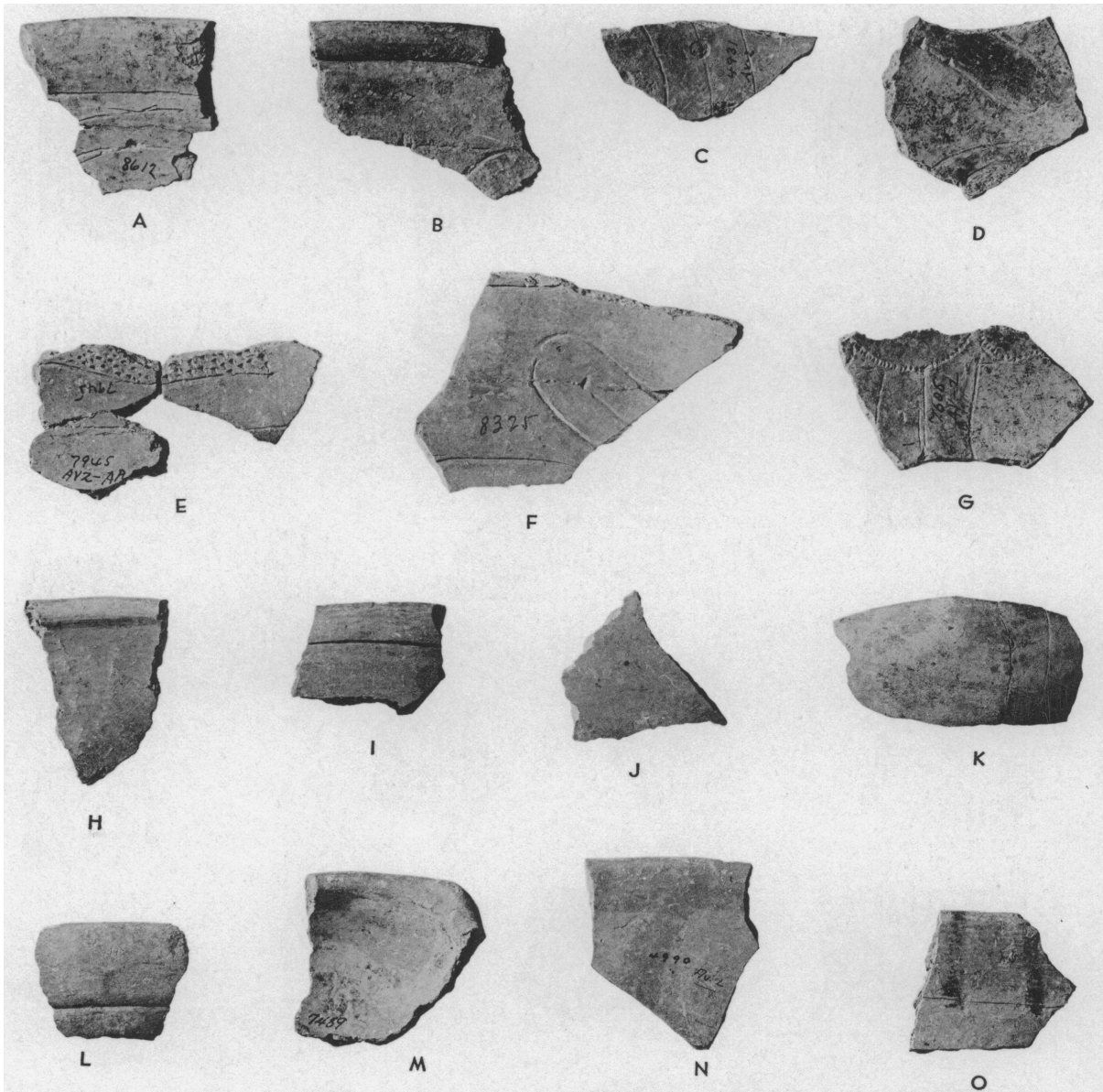
Mulberry Creek Cord Marked. Sherd k illustrates a variation found only in the Louisiana-Mississippi area.  
a-m. 20.2-5723





Mazique Incised. a-e. Line-filled triangles. f-g. Vertical lines. h-m. Slanting lines. n-o. Vertical herringbone arrangement. p-q. Horizontal herringbone motif. a-q. 20.2-5726

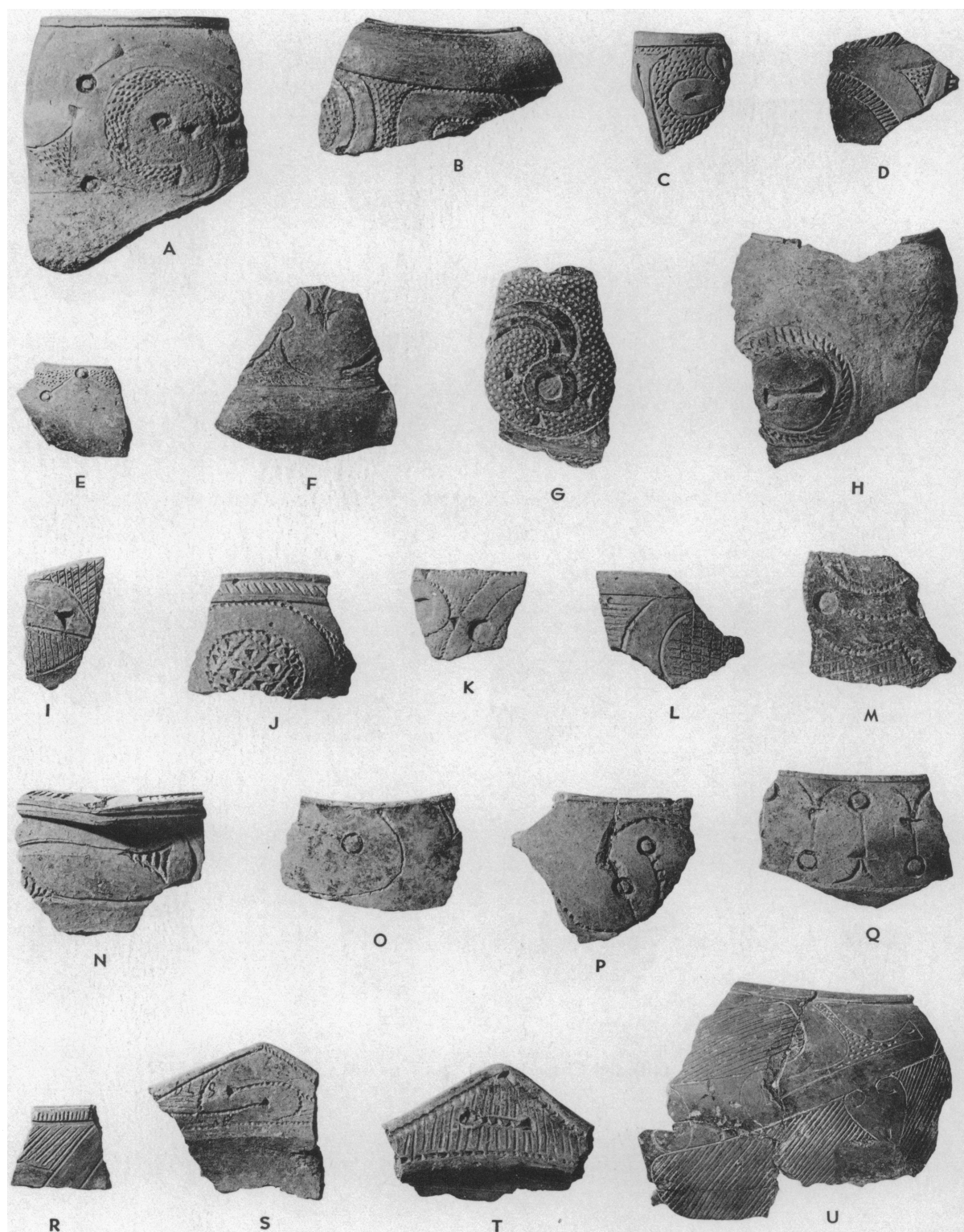




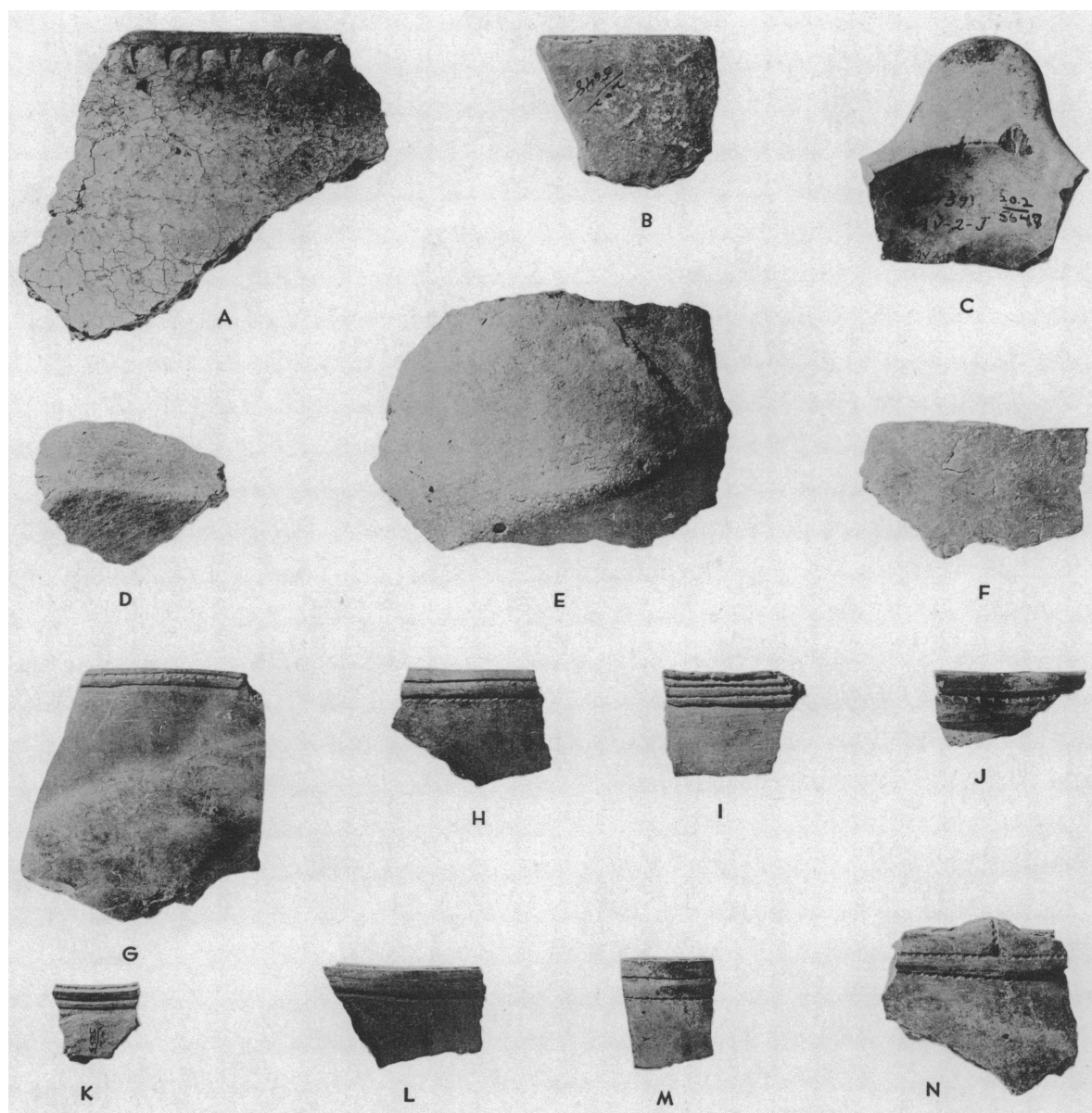
Woodville Red Filmed (a-g) and Larto Red Filmed (h-o). Woodville decorations are on bowl interiors. m-o. Examples of Larto with red painted areas. a-g. 20.2-5635. h-o. 20.2-5636



French Fork Incised. a-n. Incised line background. o-w. Punctated background. a-w. 20.2-5717

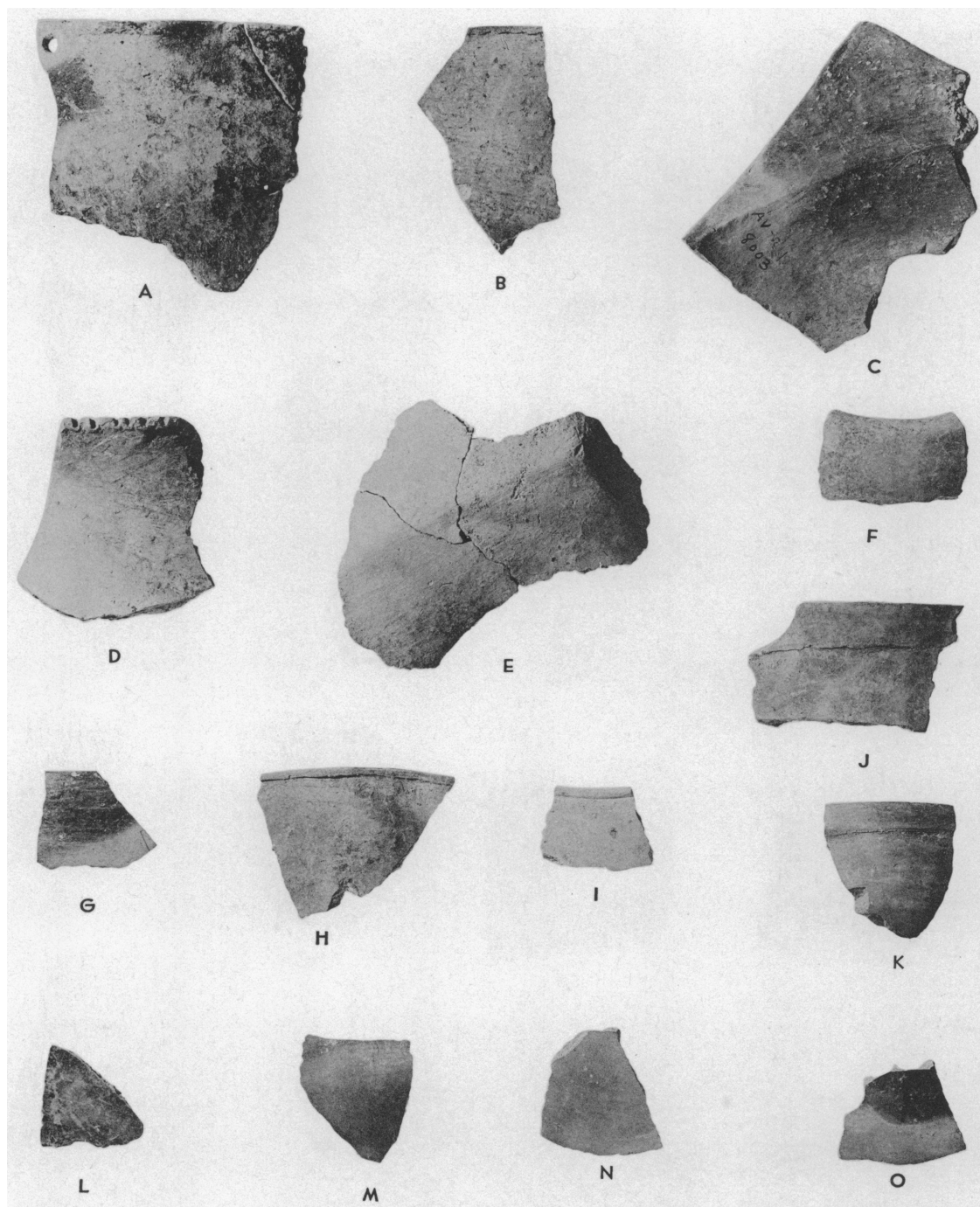


French Fork Incised. a-h. Punctated background. i-m. Cross-hatched background. n-q. No background. r. Incised and red painted background. s-t. French Fork on ears of shallow bowls. u. An unusual design. a-u. 20.2-5731

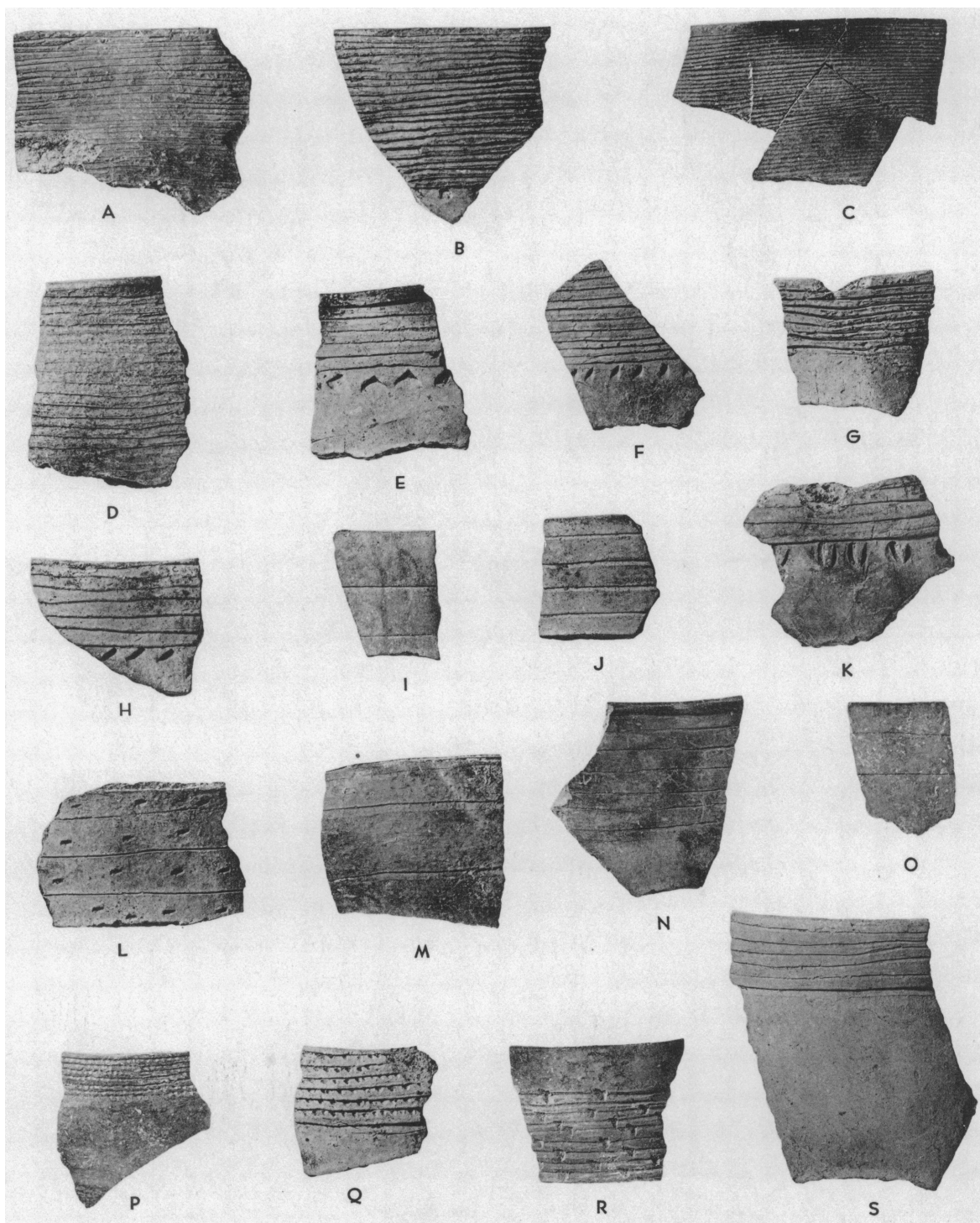


Troyville Plain (a-f) and Chase Incised (g-n). a-f. 20.2-5730. g-n. 20.2-5729

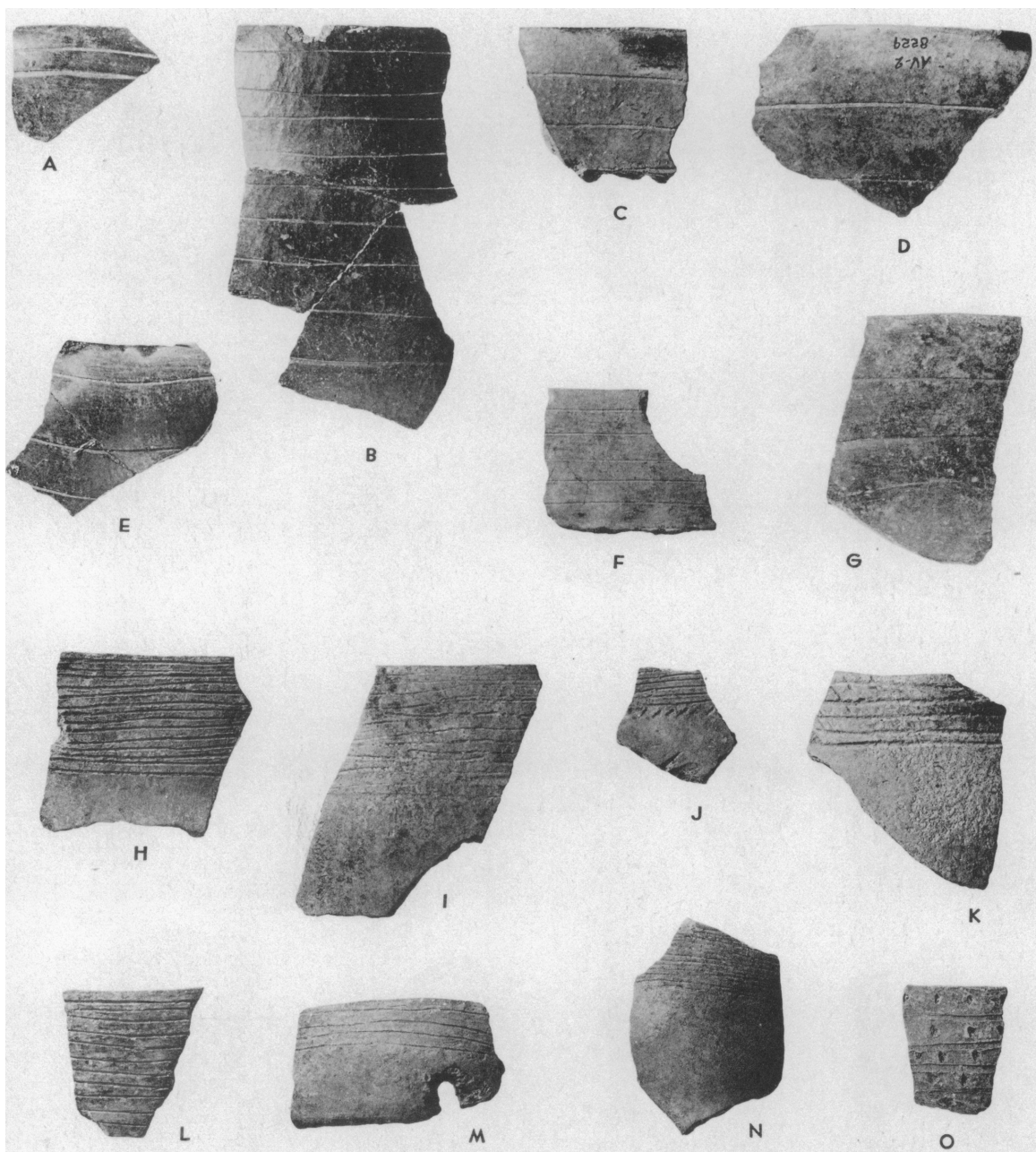




Coles Creek Plain (a-f) and Coles Creek Polished Plain (g-o). Rare incised plate rims classified as Coles Creek Plain are shown in Pl. 22i-o. a-o. 20.2-5708

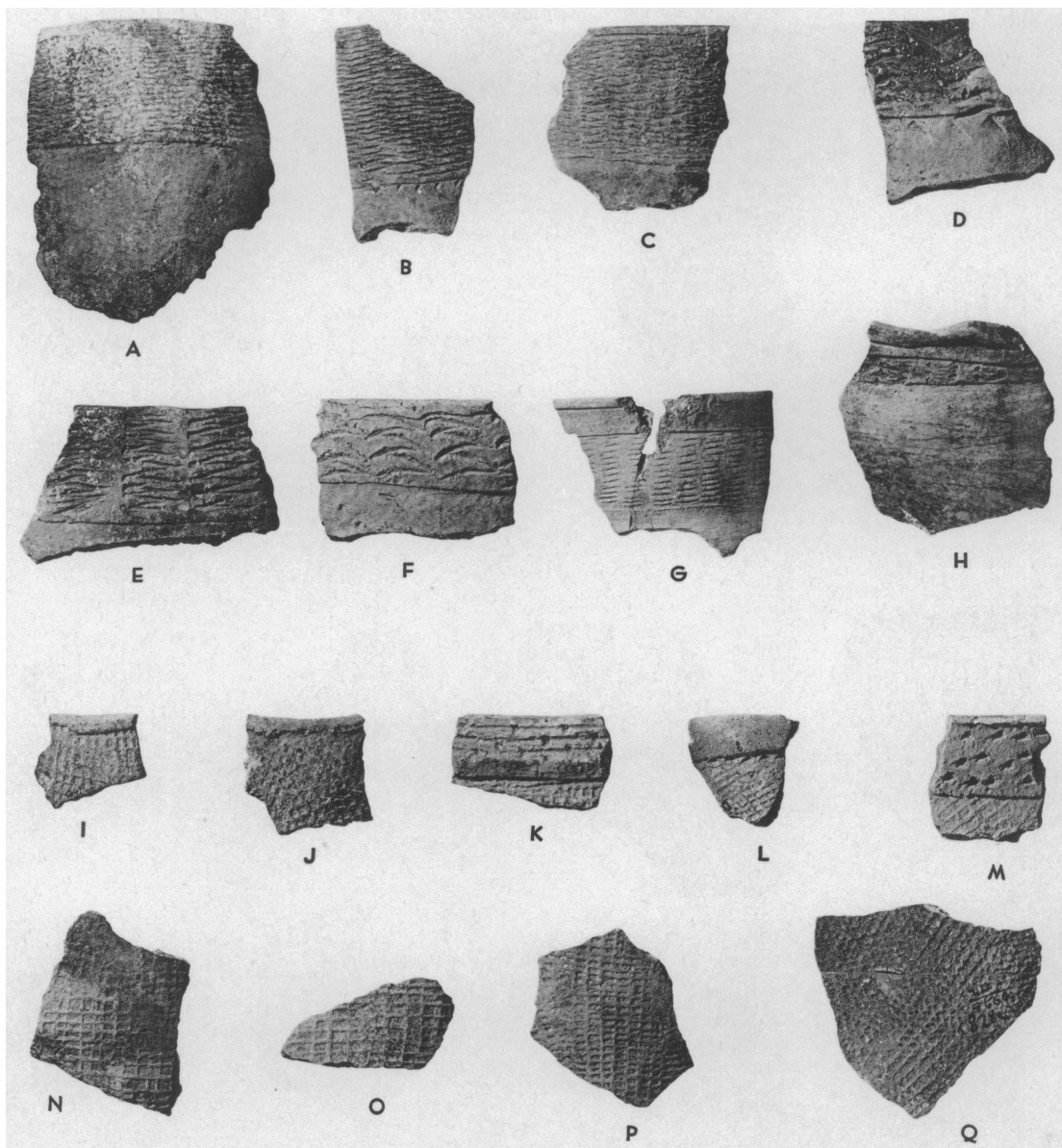


Coles Creek Incised. a-d, g, s. Closely spaced lines. e-f, h, k. Closely spaced lines, with a single row of triangular punctations. i-j, m-o. Widely spaced lines. l, p-r. Punctations in lines. a-s. 20.2-5734

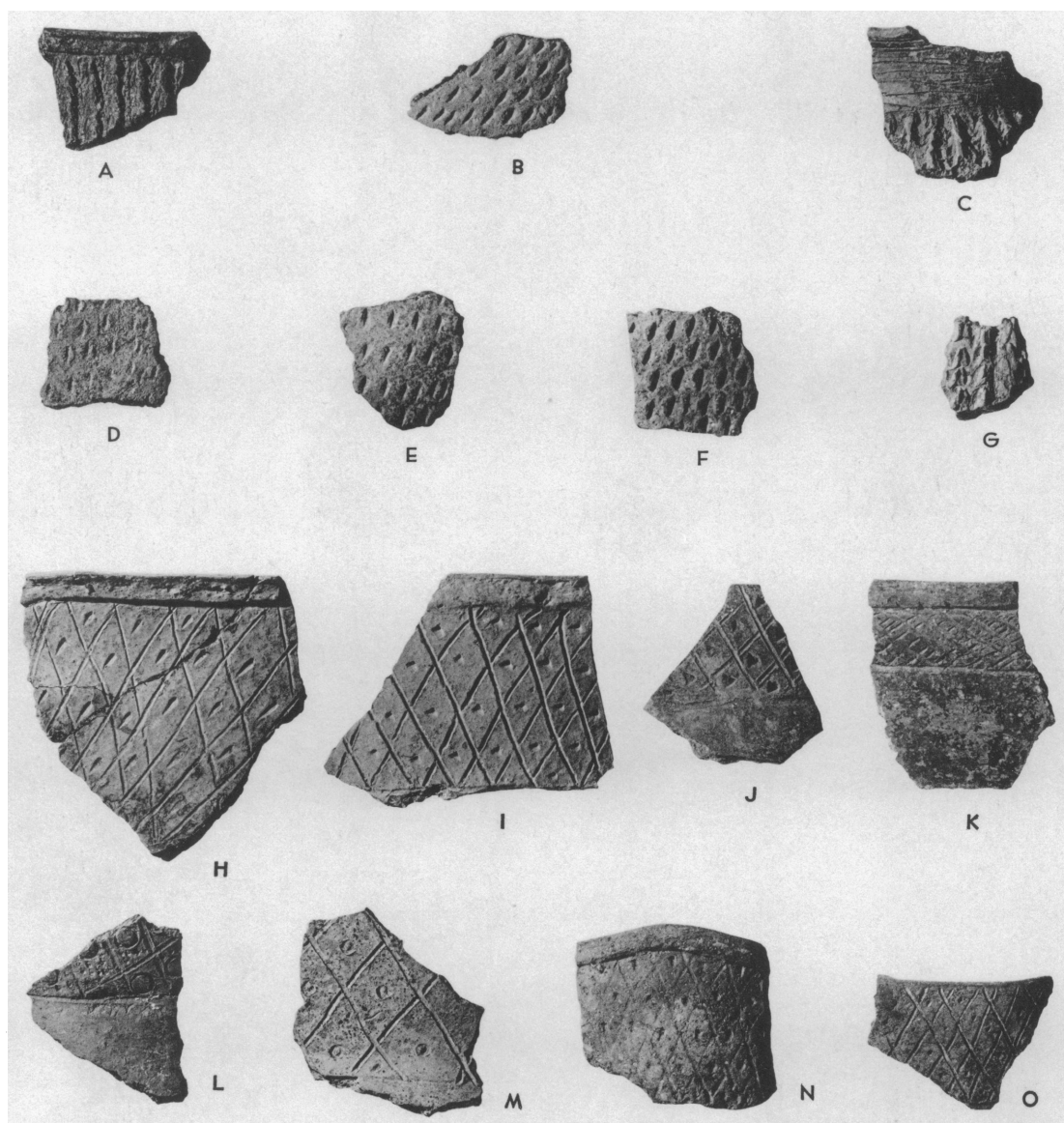


Greenhouse Incised (a-g) and Hardy Incised (h-o). a-g. 20.2-5728. h-o. 20.2-5727

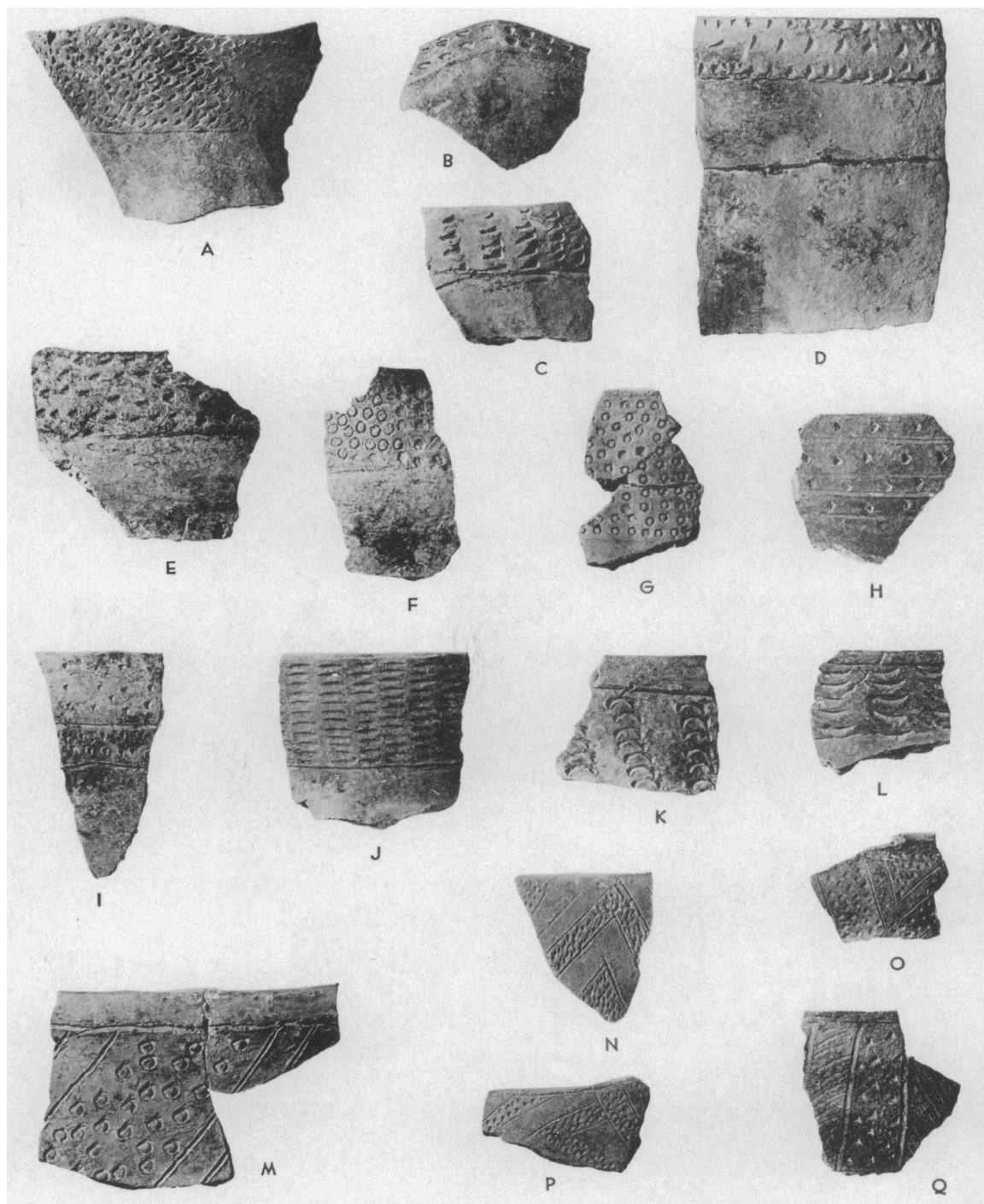




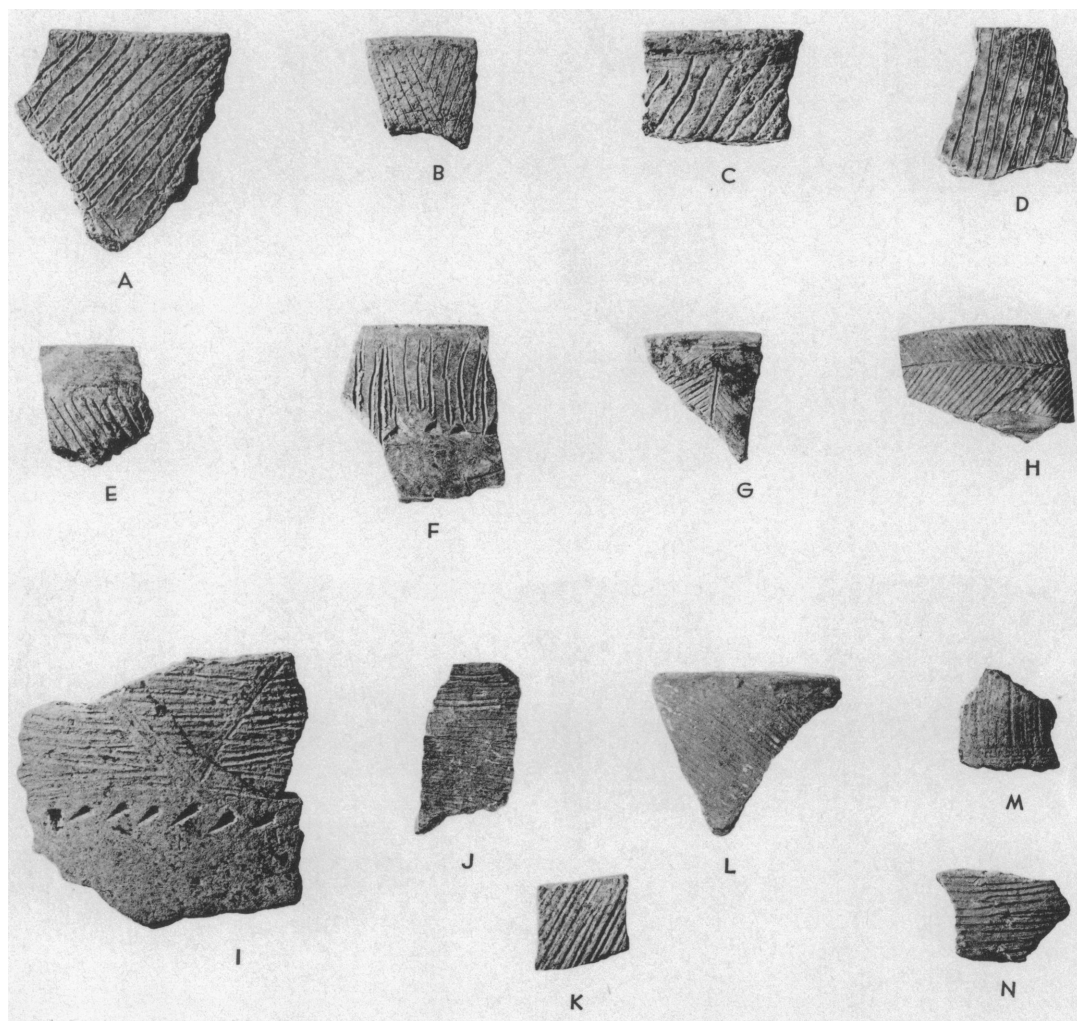
Chevalier Stamped (a-h) and Pontchartrain Check Stamped (i-q). a-h. 20.2-5722. i-q. 20.2-5721



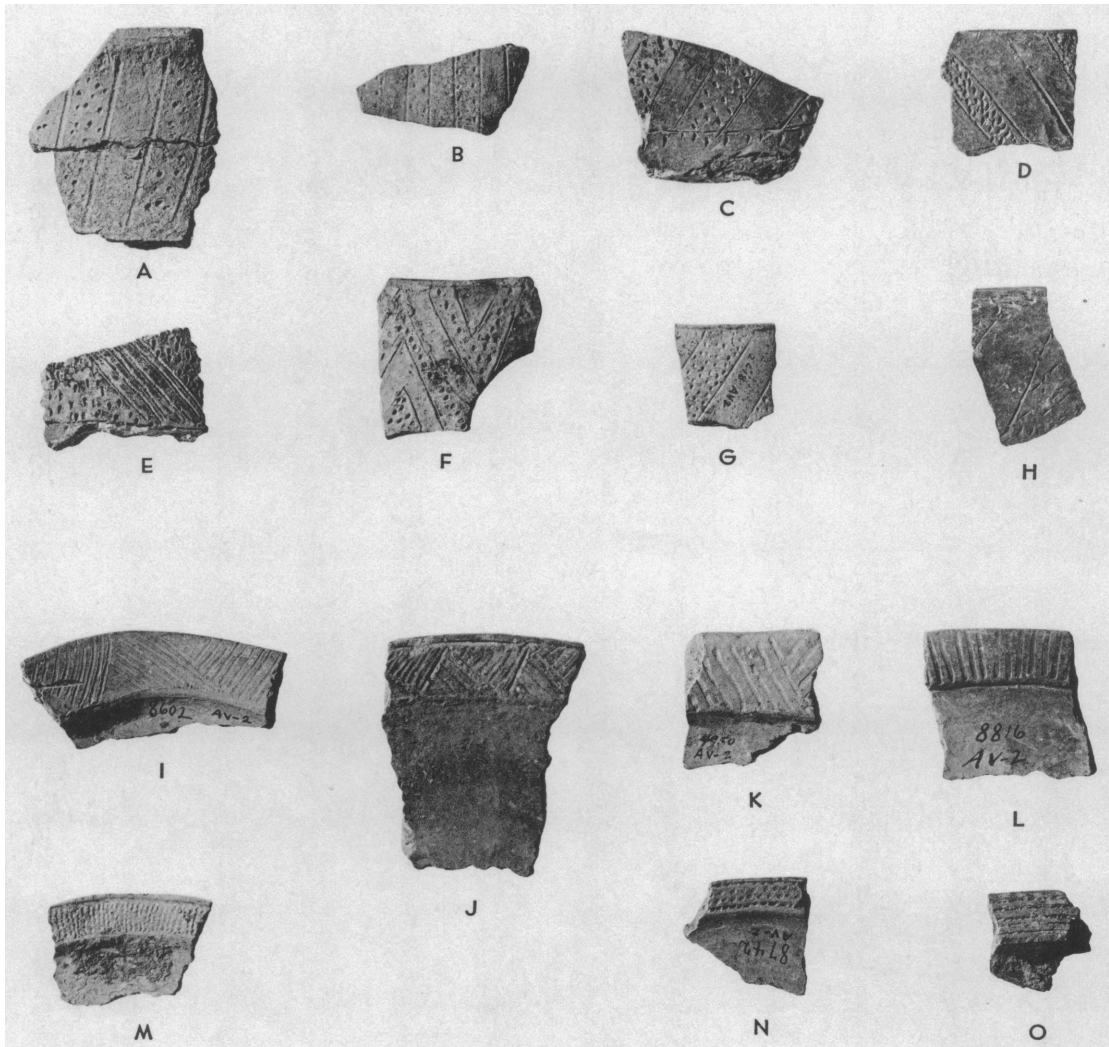
Wilkinson Punctated (a-g) and Beldeau Incised (h-o). a-g. 20.2-5719. h-o. 20.2-5720



Rhinehart Punctated. Except for paste features, sherds n-q might have been classified as Dupree Incised (see Pl. 22a-h). a-q. 20.2-5718

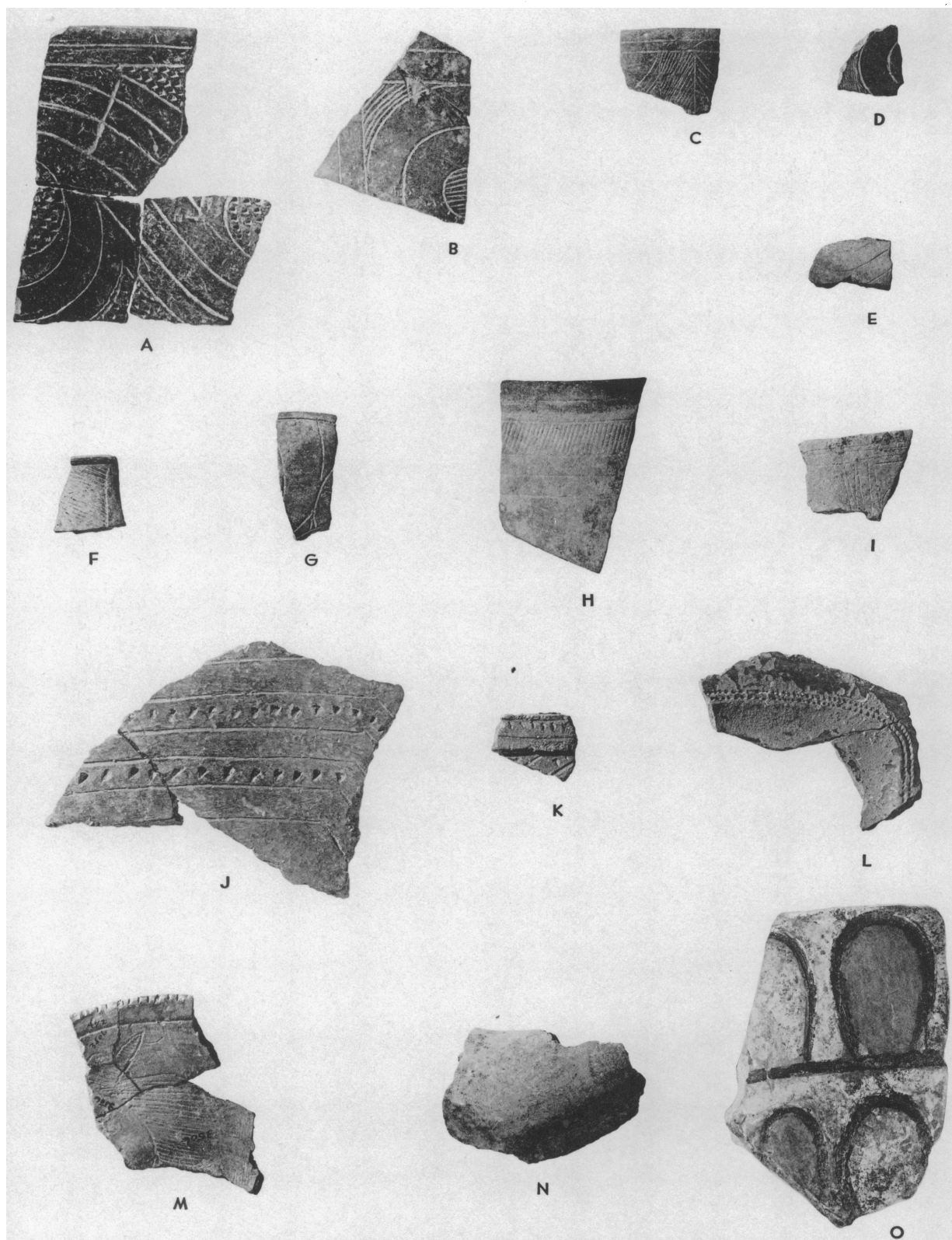


Manchac Incised (a-h) and Plaquemine Brushed (i-n). a-h. 20.2-5733. i-n. 20.2-5732



Dupree Incised (a-h) and Coles Creek Plain incised rims (i-o). a-h. 20.2-5724. i-o. 20.2-5725





Crockett Curvilinear Incised (a-b) and unclassified pottery (c-n). o. A rare painted sherd





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