

MEASUREMENTS  
OF SOME  
PREHISTORIC  
DESIGN DEVELOPMENTS  
IN THE  
SOUTHEASTERN STATES

JAMES A. FORD

VOLUME 44 : PART 3  
ANTHROPOLOGICAL PAPERS OF  
THE AMERICAN MUSEUM OF NATURAL HISTORY  
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## PREFACE

THIS PAPER WAS BEGUN as a section intended for a report by Philip Phillips, James B. Griffin, and myself on a survey of prehistoric sites in Mississippi and Arkansas.<sup>1</sup> While the five ceramic chronology area graphs for that study were being assembled and aligned, it also seemed worth while to assemble and align with them a graph for the region about the mouth of Red River in Louisiana. Once done, this suggested the desirability of extracting the same or related types and presenting information on temporal position and frequency in similar graphs. A tentative attempt at this sort of summary has appeared in a previous publication on the ceramics of Virú Valley in Peru.<sup>2</sup>

The manuscript and graphs prepared for the Mississippi Valley survey paper were not published there for several very good reasons. One of these was the fact that this draft contained a number of errors, and the drawings were not so well done as is desirable. Also new information from Willey's analysis of the Northwest Coast of Florida and from Cotter's excavations in Mississippi became available while this work was under way. Accordingly it has seemed best to reorganize both the paper and illustrations and to include information

now available from Texas and Florida.<sup>3</sup>

I wish to express my appreciation to Mr. John Cotter for making available the stratigraphic data from his excavations at the Emerald and Anna sites in Mississippi long before their recent publication. A similar favor was extended by Dr. Gordon Willey who provided me with page proof of his recently published study of the Northwest Coast of Florida archaeology.

The drawings of vessels used to illustrate types in Figs. 2, 8-21 have been copied from publications listed in the bibliography. There is no convenient way to list the source of each drawing, so this has not been done.

In reworking the illustrations I have had the voluntary assistance of Miss Susan Cooper who has drawn the frames for most of the figures and done the lettering. Mr. Fred Scherer of the Department of Anthropology prepared the map (Fig. 1) and in addition has retouched all of the illustrations to prepare them for reduction. The preliminary editing has been done by Miss Bella Weitzner, and I am very grateful to her for many necessary corrections and helpful suggestions.

JAMES A. FORD

August, 1951

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

<sup>2</sup> Ford, 1949, 58-60, Fig. 8.

<sup>3</sup> Another reason was that Griffin objected to the section as prepared in both detail and principle.





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## INTRODUCTION

THE STUDY OF ARCHAEOLOGY has changed considerably from a rather esthetic beginning as an activity devoted to collecting curios and guarding them in cabinets to be admired for their rarity, beauty, or simple wonder. Students are no longer satisfied with the delights of the collector and are now primarily interested in reconstructing culture history. In recent years methods and techniques have progressed rapidly, and there are indications which suggest that some phases of the study may develop into a truly scientific concern with general principles. This trend seems to be due more to the kinds of evidence that past human history offers than to any planned development. For centuries the perspective of the study of history was narrowed to a listing of battles, kings, political situations, and escapades of great men, an activity which is analogous to collecting curios and arranging them in cabinets. Such collections are fascinating to those who have developed a taste for them, but they contribute little towards the discovery of processes which are always the foremost interest of a science. The evidence that survives in archaeological situations has made it impossible to study prehistory in terms of individual men, or even in terms of man as an acculturated animal. When the archaeologist progresses beyond the single specimen he is studying the phenomena of culture.

In a recent monograph, Walter Taylor has clearly defined the difference between the interests of history and cultural anthropology, stating that archaeological activity, if successful, is, at best, historiography.<sup>1</sup> This definition appears to have predetermined his major conclusion which will be found embraced in a plea for a more vivid reconstruction of cultural history on the basis of archaeological evidence. I have no quarrel with either Taylor's definition or his conclusion; they seem to follow one another logically, and there is little profit in arguing definitions. If an archaeologist becomes a cultural anthropologist when he begins to inquire into the uniformities in his data, the change in classification has no great significance. I do question whether improvement in technique and a more adequate salvaging of

lost history should be the ultimate goal of the archaeologist. It seems to be axiomatic that the final objective has a marked directive and selective effect on all research. If a clear and complete reconstruction of all possible details of man's unrecorded history in all parts of the world is the primary goal of modern archaeology, then we have merely refined the ancient curio and fact-collecting activities of our predecessors and still can only beg that our studies be tolerated for esthetic purposes. In addition, students in the field must realize that many of us are in a trap which the recent culture history of this specialized discipline has sprung on us and can only make every possible effort to escape while there are still some years of life left to enjoy. If our meticulous scrutiny of constructions, bone awls, baskets, potsherds, sotal cuds, and other bits of ancient wreckage will serve no better purpose than to contribute to the pleasure of similarly conditioned savants, and later, in outline form, to plague long-suffering youth in high schools and colleges as an elevating but not particularly useful subject, we are wasting time and effort. We can have more fun, entertain rather than bore a much larger segment of the public, and certainly make more money by traveling to exotic places, having adventures, and then lecturing and writing popular books and spritely articles for magazines. To have abandoned the techniques of Layard, Squier, Stephens, and Moorehead was a major mistake.

If we were to poll the practicing American archaeologists we probably would find that, at the moment, the majority do consider that the reconstruction of history, to the fullest extent permitted by modern techniques, is the primary aim of the discipline. In so far as Taylor's "A study of archaeology" is intended to be a historical document, he seems to be entirely correct. However, archaeologists have perhaps less excuse than students in any other field to be blind to the fact that not only the methods but the ultimate objectives of their discipline are slowly but inevitably changing. One of the present less-popular concepts of the purposes of archaeological study will become the objective of the majority and then historiography pursued for its own sake will be old-fashioned. Of course, any new objective

<sup>1</sup> Taylor, 1948, 25-44.

will in turn be superseded, but we probably cannot now imagine in what way; neither can we be too concerned with this nebulous cultural type that will evolve from a stage of this discipline that is not yet fully developed. It is sufficient to recognize that our study is merely another example of cultural phenomena and to align our activities in the direction of the historical trend. To endeavor to exceed the limits imposed by sound methodology and information is quite as unrealistic as to lag behind. Dissipating effort in some divergent by-path destined to be abandoned is a waste of time. The most productive position is one slightly in advance of the majority.

I join a number of contemporaries in believing that archaeology is moving in the direction of its establishment as a more important segment of the developing science of culture than it has been in the past.<sup>1</sup> This does not mean that such objectives as discovering chronological sequences and more complete and vivid historical reconstructions will be abandoned; rather these present aims will become necessary steps in the process of arriving at the new goal.

Archaeology has two principal roles in "culturology" as it matures into a useful science. First, it must be relied upon to provide most of the background for existing cultures, our own as well as the more primitive cultures. Every living culture is composed of elements inherited from the past and modified. To attempt to describe and analyze any culture without this background resembles the description of a mountain range without reference to historical geology: it is art, not science. The second role is to provide basic data for a closer examination of general principles, of causes, speed, inevitability, and quantitative aspects of culture change over long periods of time. History does not entirely serve this purpose, for cultural phenomena have both qualitative and quantitative aspects. Varieties of customs and attitudes have been recorded in a haphazard

fashion, but the proportions of the competing cultural items were never set down. The task of providing the basic materials for the clear and accurate visualization of long time span cultural change seems to have been left to the prehistorian.<sup>2</sup>

As the reader may have suspected, the foregoing rationalizations are an attempt at justification of the archaeologists, particularly American archaeologists, in their happy preoccupation with potsherds. In both the Southwest and Southeast we have been collecting, washing, and classifying these bits of prehistoric refuse for a number of years. This has not been done solely because we liked potsherds, as has been hinted, but because pottery best fulfilled the necessary requirements for measuring cultural change; it is flexible, abundant, and durable. Changes in pottery have provided the time-space frameworks upon which other evidence of cultural activity has been arranged and upon which our attempts at historical reconstruction have been hung. Even when the role of relative dating, now occupied by ceramics, is transferred to the more accurate methods of dendrochronology or Carbon 14, this element will continue to maintain a position of importance in the study of a number of cultures, for it remains the best available register of cultural influence.

In this paper I attempt to contribute something to both the present and possible future interests of archaeology. The conventional contribution is an effort to align ceramic chronologies in adjacent geographical areas somewhat more accurately than has been done previously. In the Southeast, chronologies and correlations of time level between areas are based entirely on ceramics. Up to the present time the correlations have admittedly been somewhat gross. Chronologies have usually been divided into "periods" and we have been satisfied, or, perhaps more correctly, have only been able to align geographically separated periods on a one-for-one basis. Swift Creek of central Georgia does or does not equate in time with the Weeden Island I period of the Northwest Coast of Florida. That this is a gross approximation is recognized, and I venture to suggest

<sup>1</sup> As a move to free the study of cultural phenomena from the cabinet-library collection of curios and facts that still has a place in the tradition of American anthropology, Leslie White (1949, 116-117) has suggested that what is generally called "cultural anthropology" should be labeled "culturology," as first proposed by the German chemist Ostwald. This change of terminology has much to recommend it, for attitudes are undoubtedly shaped by the implicit meaning of such labels.

<sup>2</sup> As is so often the case, A. L. Kroeber has pioneered in studies of this type (Kroeber, 1919, 1944). These have been based on historical data in which quantity was difficult to measure.

that no one would argue in favor of the probability that chronological divisions arbitrarily drawn in Georgia and Florida have identical time spans, beginning and ending simultaneously. The refinement of these period alignments by the methods attempted here may become unnecessary in a few years, when numerous dates are available from measurements of radioactive carbon.

The second section of this paper is concerned with the change in these fossils of ancient cultural processes. I attempt to trace evolving strains through time and across space and measure them qualitatively and quantitatively. For the same reasons that pottery is the best available time-space measuring tool it is also the best medium for illustrating the mechanics of the change of culture through time. Ceramics are generally referred to as a part of "material culture"; although this term may be useful as a chapter heading in an ethnographic report, it can hardly be considered valid from a culturological point of view. Taylor has argued this matter in some detail, and there seems little point in repeating similar demonstrations here.<sup>1</sup> Briefly, the specific forms of ceramic variables are controlled by the attitudes and ideas that were held by the makers of the vessels. These ideas, transmitted from individual

to individual, are the cultural trait that is studied. The observable membership, paraphernalia, and interaction that characterized the Sun Dance ceremony among the Cheyenne resulted from the same kind of transmitted culture as did the incised scroll-decorated pottery among the Natchez at an earlier date or the recent cult of Nazism in Germany. A distinction is specious for it is impossible to study culture until it has been expressed in some material form. If traces of ancient political ideas, religious practices, or forms of social organization were preserved, and could be sampled and classified, then archaeologists certainly would take advantage of such material. Unfortunately, these are not available to us, and we are forced by circumstances to rely on more durable cultural equipment.

The second part of this paper cannot pretend to introduce any concepts new to anthropology. The best thinkers in the field have long been aware that culture derives from preceding culture and is not exuded by the human animal that carries it. Archaeologists have taken this for granted ever since they began comparing artifacts and deducing historical connections from similarities. Nevertheless, anthropocentric attitudes have confused the reasoning applied to this important subject in strange ways even among anthropologists, and for this reason it appears worth while to provide another illustration.

<sup>1</sup> Taylor, 1948, 97-112.



## CHRONOLOGICAL EVIDENCE

EVIDENCE ACCUMULATED within the past 15 years in the southern part of the United States now makes it possible to study a long span of the history of a segment of culture over a fairly extensive geographic area. This segment of culture is ceramics. The data are now available for ceramic chronologies extending from very near the time of the introduction of pottery in prehistoric Indian culture to, or very

the beginning of the Christian era to very near 1700 A.D.

This information derives from research by Gordon Willey and R. B. Woodbury on the northwest coast of Florida<sup>1</sup>; by myself,<sup>2</sup> John Cotter,<sup>3</sup> George Quimby,<sup>4</sup> and others for eastern Louisiana; by Alex Krieger and Perry Newell for eastern Texas<sup>5</sup>; and by P. Phillips, J. B. Griffin, and myself for eastern Arkansas and

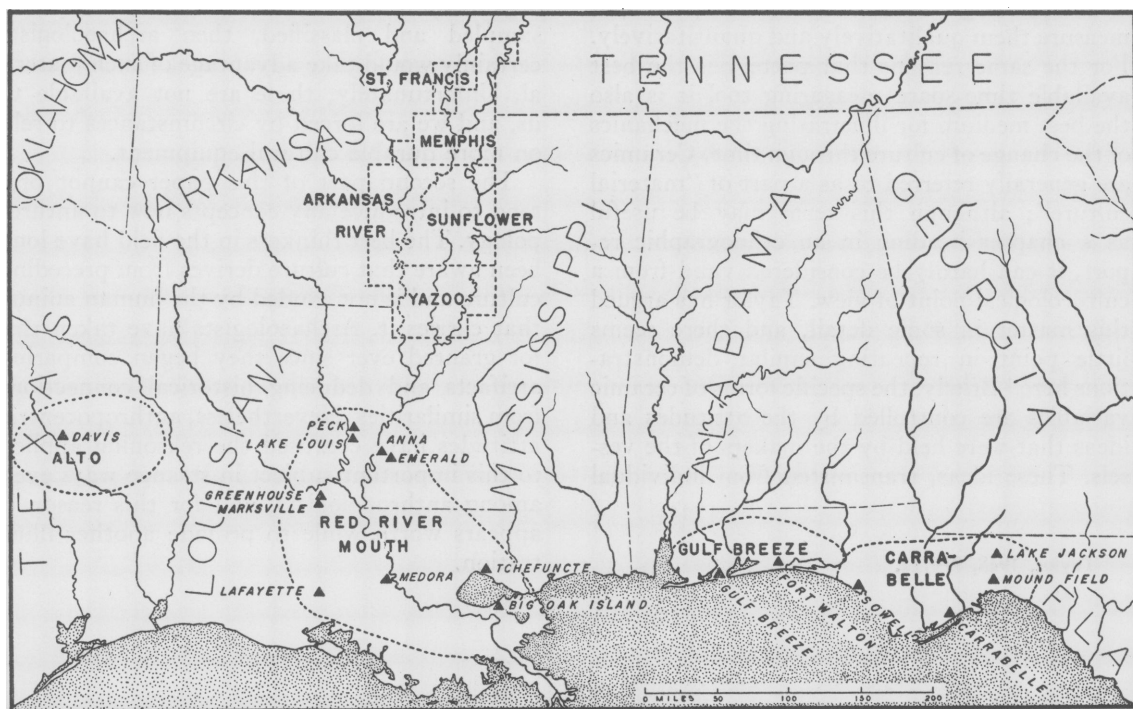


FIG. 1. Map of a portion of the southeastern United States. Dashed lines enclose the nine areas in which ceramic chronologies have been constructed. Sites that have yielded chronological information used in the area graphs are shown in the four southernmost areas. Too many sites contributed to the five area chronologies in Arkansas and Mississippi to be indicated at this scale (see Phillips, Ford, and Griffin, 1951).

close to, the historic period in some nine contiguous areas. These area chronologies are spaced from Tallahassee, Florida, at the base of the Florida Peninsula, to the upper drainage of the Neches River in eastern Texas, a distance of 650 miles east to west. South to north, they extend for 400 miles from New Orleans, Louisiana, to Marked Tree, Arkansas (map, Fig. 1). The time that is represented in all but one of the chronologies seems to be from about

western Mississippi.<sup>6</sup> Chronologies in each of these areas have been based on large samples of ceramics taken from refuse deposits, gathered and studied to secure data as to the quantita-

<sup>1</sup> Willey and Woodbury, 1942; Willey, 1949.

<sup>2</sup> Ford, 1935, 1951.

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

<sup>4</sup> Quimby, 1951.

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

<sup>6</sup> Phillips, Ford, and Griffin, 1951.

tive as well as the qualitative aspects of the ancient pottery styles. The techniques used in this work were stratigraphic excavation and analysis where possible and, failing this, the seriation of surface collections. A sufficient number of separate excavations and sites that parallel one another in time have been secured in most of the areas to provide a degree of confidence that the data presented actually represent the chronology.

Direct comparison between chronologies has been made possible by the similarity of approach to the paramount problem of typology. As Brew has remarked, cultural phenomena may be classified in almost unlimited ways.<sup>1</sup> Even if a limitation is imposed on this happy activity by a demand that the classification system be directed towards the discovery and measurement of change that occurred through time and space, the systems that might be applied with almost equally good results are still numerous. Cultural material is constantly changing in all its aspects, and the ways in which temporally significant divisions can be made in ceramics, for example, based on changes in form, or surface finish, or decoration, size, or many other categories are limited only by our abilities to perceive differences. The system that has been applied to all of the material that is compared in this paper is a simple adaptation of the typology that has been used in the Southwestern archaeological area for a number of years.<sup>2</sup>

A standard approach to typology is not enough, however, to make possible direct comparisons between ceramic chronologies. This should be accompanied by a knowledge and awareness of the divisions that have been set up in neighboring and related chronologies. The typologies must be directed towards the solution of the same problems. Measurements of cultural influence become difficult if not impossible when one of the measuring devices, the type, is defined to include two or more of the streams of prehistoric cultural concepts that have been isolated in an adjacent region. All degrees of fractioning of related cultural influence are possible and cannot be entirely avoided.<sup>3</sup> The way in which the typological di-

visions have been made relatively comparable in this part of the Southeast is instructive. Fortunately, the first chronologies to be divided into typological units were widely separated geographically and impinged upon one another culturally to a small degree. They were in central Georgia, northern Alabama, and the alluvial valley region of Louisiana.<sup>4</sup> When Gordon Willey began his survey and stratigraphic work on the northwest coast of Florida in 1939, he had had previous experience both in the Louisiana and Georgia areas and was thoroughly familiar with the ceramics of both. Thus he was able to design the northwest coast of Florida classification system so that it not only controlled time change there but also measured the common cultural connections between that region, Georgia, and Louisiana. Similarly, when Phillips, Griffin, and I set up pottery types in Arkansas and Mississippi, where possible, the divisions already established for the Tennessee River Valley and Louisiana were applied. Where the divergence from established type groups was too large, new types were isolated but on a similar basis.

Several limitations are imposed on this attempt at reporting a portion of culture history, and I would like to admit some of them here before they are pointed out by someone else. The first and most obvious error is that the proportions of the different kinds of ceramics to be discussed and compared cannot possibly be the actual proportions that existed among the living people, regardless of how perfect the sampling procedure may be. Krieger has discussed and demonstrated this effectively.<sup>5</sup> The material studied consists of pot fragments; sherd counts are used as a basis for computing frequencies. Big thin pots make more fragments than small thick ones, and many of the vessels are decorated only about the shoulders, with consequent overweighting of plainware counts. This is an error that applied equally to all the chronologies except one. Krieger attempted to avoid most of these sources of error by reconstructing vessels, but to compare his

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Dunkin Incised, are less comparable to the divisions to the eastward than in any of the other areas to be treated. Krieger's typology is not incorrect; it is just not so effectively designed to bear upon the present comparative problems as it might be (see p. 348 for explanation).

<sup>1</sup> Haag, 1939.

<sup>2</sup> Newell and Krieger, 1949, 75 ff.

<sup>1</sup> Brew, 1946, 44 ff.

<sup>2</sup> Haag, 1939; Krieger, 1944.

<sup>3</sup> This is demonstrated in the following discussion. The typological groups set up by Alex Krieger, particularly

data as I have below, it has been necessary to reload them with this error. As this is a constant, applying equally to all the chronologies, it should cancel out and not seriously alter deductions and conclusions.

The second admission is that I cannot pretend to measure and trace all of the streams of cultural influence that have left their mark on this small segment of prehistoric equipment. An obvious reason is that limitations are imposed by the condition of the material studied. Vessel shapes, sizes, and appendages are attributes that are difficult to determine from sherds, so that it is impossible to get the kind of accurate sampling that is essential. It has, therefore, been necessary to accept vessel decoration and surface finish as the guiding "determinants"<sup>1</sup> for the ceramic classification system, and these same characters will unavoidably be the aspects of ceramics upon which attention is focused in this study.

This is not the only reason why a selection must be made among the many varieties of evidence that offer in an attempt to trace a portion of culture history. Kroeber has used the apt illustration that though it is possible to diagram the history of the evolution of living forms as a branching tree, the corresponding representation of cultural history would then be a tree in which the branches grew back together as readily and as frequently as they separated. This unhandy phenomenon is as equally valid for a small segment of culture, such as ceramics, as for culture as a whole. It is impossible to follow all the branches simultaneously, and consequently a selection must be made. Thus it cannot be pretended that an attempt to depict a history of ceramic development is anything more than a more or less successful attempt to follow some of the more prominent streams of ideas.

The information contained in the nine chronologies that are compared is presented and analyzed in graphic form. These same data can be and to a certain extent have been outlined textually,<sup>2</sup> but the four aspects of the data that must constantly be kept in view cannot be clearly verbalized. These are:

#### A. Attributes of the ceramic groups

1. Quantitative. The relative proportions of each type can be shown graphically.
2. Qualitative. The range of features that have been included in the type by definition. This cannot be fully illustrated in graphs, and reliance must be placed upon memory. At best, the graphs include small illustrations of samples that will assist in visualizing each type.

#### B. Historical position of the ceramic group

1. Relative temporal position. This can be shown graphically.
2. Geographic position. A degree of control over this factor is achieved by grouping the data into sub-regions, each represented by a chronological column. Undoubtedly there is a more subtle gradation in both features and quantities than can be shown by this device.

Because the history was a continuous flow of cultural ideas in the two coordinates of space and time, it is obvious that it cannot be clearly stated and that only a slightly better approximation can be achieved through pictorial representation. Graphic representation on motion picture film, utilizing the technique of animated cartoons, would present a still better approximation of the story, but to make it fully clear the actual events would have to be repeated, as Lowie has remarked, and that hardly seems practical. The archaeologists who have worked with the ceramics involved in the reconstruction of this particular history undoubtedly have in mind more of the discrete bits of evidence—the small picture frames, which when coordinated constitute the full-length film, as it were—than they can ever transmit to the reading public. The fragment of a portion of culture history presented here is a fluid picture, as stated above, but the presentation is hampered by the necessities for conveying information in static abstractions.

These then are the limitation and defects of the devices that we are compelled to use in attempting to visualize this culture history. To sum them up, they are:

1. Typology is based primarily on decoration. As a result we are not even measuring ceramics as units. Ceramic decoration is the principal feature upon which this study is focused.

2. The quantitative data certainly do not conform to the proportion of the different kinds of pottery made and used by the Indians. This error is inherent in all the chronologies,

<sup>1</sup> Haag, 1939.

<sup>2</sup> Many of the conclusions presented here have already been published by Willey (1949) for the Florida area and by Phillips, Ford, and Griffin (1951) for the Mississippi Valley.

however, and for practical purposes may be considered as cancelled out.

3. The act of typing, by drawing arbitrary lines between related materials, has obscured the important evidences that demonstrate the real nature of the evolutionary process.

4. The grouping of sites into geographic areas has obscured the gradualness of quantitative and qualitative change across geographic space.

In previous papers I have attempted to contribute something towards the refinement of the study of ceramic chronologies.<sup>1</sup> This has taken the form of a technique for presenting graphically some of the factors that archaeologists have been trying to juggle mentally and describe verbally for a long time. It is a tool intended to simplify the comparison of data. Graphs are not new devices for illustrating chronological change. All that can be claimed

for this type of graph is that it is possibly somewhat better adapted to this specific purpose than were the preceding forms. Like any other cultural type this particular scheme is new only in the sense that it is a combination of concepts that are already available in our cultural equipment. The concern with type frequencies stems directly from Kroeber's<sup>2</sup> and Spier's<sup>3</sup> discussion and demonstration of old Zuñi ceramic changes. The style of these graphs is based on a developmental chart which E. B. Sayles used to show the history of utilitarian stone artifacts in Hohokam.<sup>4</sup> Sayles, in turn, may have adapted this graph style from paleontology. My very halting progress towards the present methodology can be traced through a series of articles beginning 15 years ago.<sup>5</sup> Continuing this trend I intend to experiment further with the same technique in this paper.

### FITTING THE RED RIVER MOUTH CHRONOLOGY

Stratigraphic evidence now available in the alluvial valley region of Louisiana and adjacent Mississippi covers the time from the Tchoufunct Period, which must be very near the time of the first introduction of ceramics, to the culture of the Natchez and other historic peoples whom the French explorers found in the region shortly before 1700 A.D. This is summarized in Fig. 2. The sites that have yielded this information are somewhat widely scattered up and down the Mississippi from the vicinity of the mouth of the Red River (map, Fig. 1). They lie in a roughly triangular area that measures about 130 miles east-west and north-south. This is a somewhat larger geographical area than is included in the other analysis regions. Considering their dispersal it is hardly to be expected that the fragments of ceramic histories produced by these several refuse deposits will fit together perfectly. If there had been no movements of population throughout this history—a far from justified assumption—then it still could be expected that there would at least be areal differences in emphasis on certain ceramic features. Figure 2, where the available evidence has been assembled, does show some discrepancies which are due partially to inconsistent typing and

probably also to areal differences. This is discussed below. In the main, however, the type frequencies shown by the different middens fit remarkably well, both typologically and quantitatively.

For the sake of convenience the chronology shown in Fig. 2 is referred to as Red River Mouth Area. The junction of the Red with the Mississippi is a central point for these scattered sites, and a brief name is needed. This figure presents the basic style of graph that is used for all nine chronologies. Sites and analysis units<sup>6</sup> are shown by staffs differentiated from one another by shading on the left-hand side. Corresponding type frequencies are indicated by the length of horizontal bars that can be measured by the percentage scale at the lower

<sup>2</sup> Kroeber, 1916.

<sup>3</sup> Spier, 1917.

<sup>4</sup> Gladwin *et al.*, 1937, Fig. 48.

<sup>5</sup> Anyone interested in tracing this slow and painful process of crystallization might compare the following in sequence: Ford, 1935, Figs. 5–9, 1936, Fig. 1; Ford and Willey, 1940, Fig. 59; Ford and Quimby, 1945, Figs. 22–23; Ford, 1949, Figs. 3–9; Phillips, Ford, and Griffin, 1951, Figs. 17–21; Ford, 1951, Figs. 35–41, and the present paper. This is a personal history. Parallel development may be traced in the work of other New World archaeologists.

<sup>6</sup> Analysis Units and Cuts are both limited areas in sites that were analyzed separately to discover relative ages of different parts of the sites (see Ford, 1935, 1951).

<sup>1</sup> Ford, 1949; Phillips, Ford, and Griffin, 1951; Ford, 1951.



left corner. Type names are given in sloping lettering; in addition, small line drawings will assist the reader who has not specialized in Mississippi Valley archaeology in visualizing this rather complex but consistent history. The total number of sherds in each site level is given by figures arranged in a column on the right-hand side. These totals range from as many as 21,100 to as few as five and, in a general way, show the respective reliability of the percentages. All of the percentage calculations include the plain clay-tempered sherds that normally form from 50 to 90 per cent of the collections in this part of the Mississippi Valley. The plainware percentages are not given here, but if the reader has need of them they can be obtained from the original data. As is to be expected, this clay-tempered plainware did not change so rapidly as the decorated wares, but it does serve to mark time in a gross fashion. The sequence from early to late is Tchefuncte Plain, Marksville Plain, Troyville Plain, Coles Creek Plain, and Addis Plain.

The time scale that has been applied to this chronology is on the right-hand side of Fig. 2. In this scale the arbitrary points that divide periods are marked A, B, etc., and the names of the intervening periods are given.

#### TCHFUNCTE PERIOD SITES

In discussing the collections used to make the composite Red River Mouth graph, I begin with the earliest sites, at the bottom of the graph, and proceed to the later. The first group of collections came from four sites described by George Quimby and myself in a previous publication.<sup>1</sup> These, the Tchefuncte Site, Lake Louis Mound, Big Oak Island Site, and the Lafayette Mound, have been assigned to the Tchefuncte Period. Though few in number these sites are rather widely scattered over the southern part of Louisiana (map, Fig. 1). The evidence utilized here is identical with that Quimby and I published in 1945. However, on re-analyzing the available data, in terms of the present technique for comparing chronological graphs, I arrived at slightly different conclusions as to the exact relative ages of the Tchefuncte Period refuse deposits. The greatest reversal of opinion is concerned with the time position of the Big Oak Island midden. In 1945 Quimby and I concluded that the relative

scarcity of sand-tempered types from that site argued that it was older than the Tchefuncte Site middens not far away.<sup>2</sup> However, now that the patterns of ceramic change at the two sites have been compared, I find that the Big Oak Island midden fits rather neatly above the Tchefuncte Site refuse and just below the Marksville Site. The evidence is still somewhat weak because of the scantiness of strata level collections and the lack of supporting data from other refuse deposits. The evidence has not improved since 1945, but perhaps our way of viewing it has. It now seems that the sand-tempered wares fall into the early portion of the Tchefuncte Period, and this is perfectly logical, for the ceramic complex of the succeeding Marksville Period is all clay-tempered.

The second change of opinion is in regard to the time positions of the two burial mound sites. In our previous study we suggested the possibility that Lafayette Mound and Lake Louis Mound were both constructed near the end of the period. This suggestion was influenced by the fact that burial mound building appeared later than ceramics in other parts of the Southeast.<sup>3</sup> However, I now prefer to place the sites temporally at the points where their collections best fit the type frequency curves in the chronological pattern. No change is indicated for the Lafayette Mound. It still dates late in the period. And, while the collection from the Lake Louis Mound must be placed early in Tchefuncte, the small collection and the absence of sand-tempered wares, which presumably should be present at that date, still leave the question open.

#### TCHFUNCTE SITE

The Tchefuncte Site consists of two small and rather thin shell middens on the north shore of Lake Pontchartrain near New Orleans. We excavated what remained of these middens and secured adequate collections which when analyzed gave virtually identical stratigraphic results from a total of nine analysis units. All of these units might have been included in the present composite graph, but the same results have been achieved by using only two, Nos. 1 and 5, from Midden A.<sup>4</sup>

<sup>2</sup> Ford and Quimby, 1945, 84.

<sup>3</sup> Ford and Quimby, 1945, 87-88.

<sup>4</sup> Ford and Quimby, 1945, 74-86. Note that the inclusion of Analysis Unit 1 of Tchefuncte Midden B would have shown the early Marksville Period type Crooks Stamped

<sup>1</sup> Ford and Quimby, 1945.

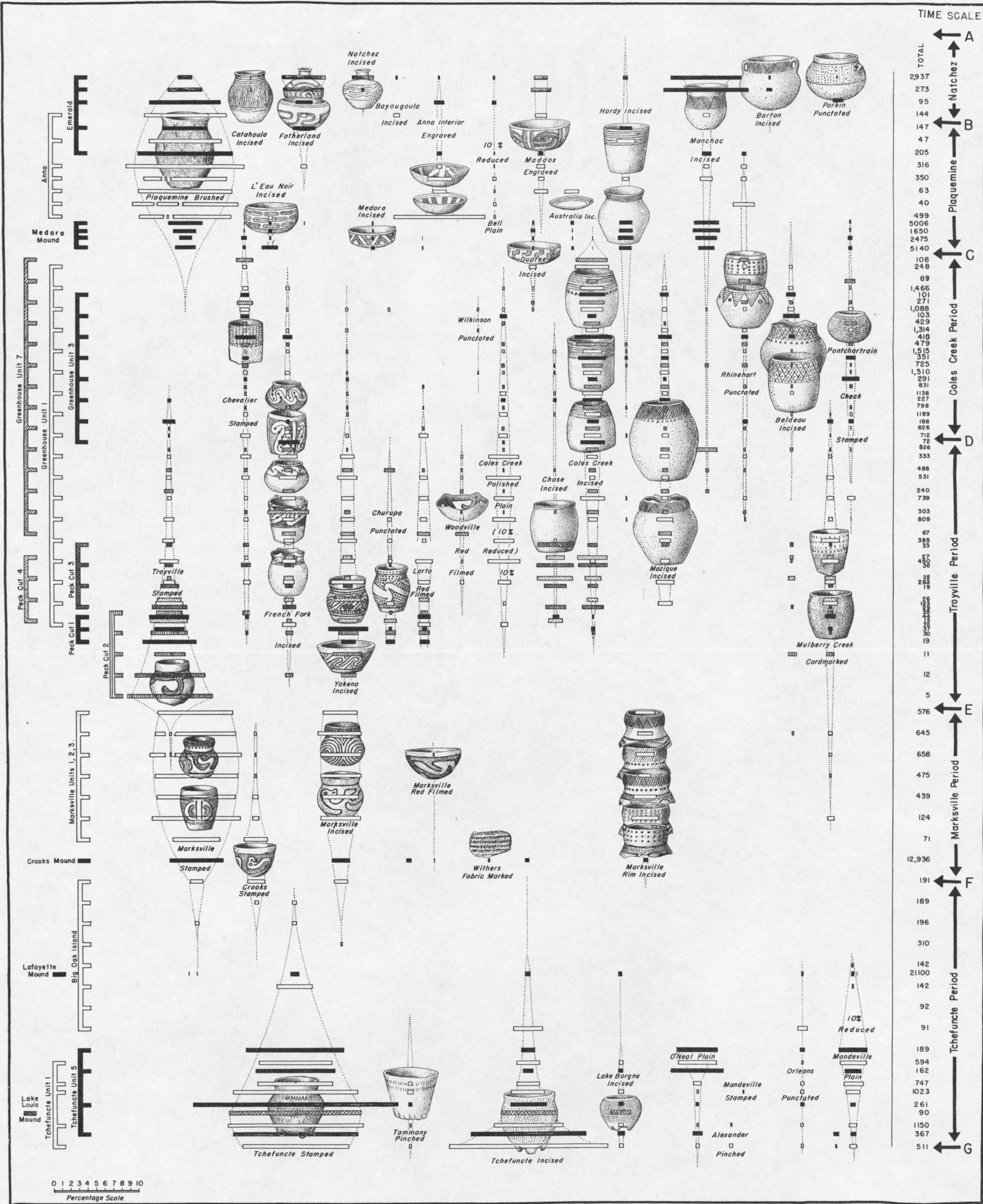


FIG. 2. Graph of ceramic chronology for Mouth of Red River Area. Shaded staffs on left-hand side indicate levels in strata excavations. Corresponding type frequencies shown by horizontal bars shaded to conform to staffs and aligned vertically according to level from which they were derived. Lengths of bars can be measured by scale in lower left corner. Collection totals and arbitrary time scale on right.



The lower levels of the Tchefuncte Site present the oldest ceramic complex thus far found in the Lower Mississippi. We have not as yet been successful in finding this complex directly overlying cultural deposits that lack ceramics. However, it seems probable, for several reasons unnecessary to discuss here, that this complex is very close to, if not actually the first appearance of, ceramics in this area.<sup>1</sup>

#### LAKE LOUIS MOUND

The Lake Louis Mound is located only about 1 mile from the Peck Site described below and is approximately 50 miles north of the mouth of the Red River. It was a large conical burial mound, and the single trench cut across it yielded only 90 sherds.<sup>2</sup> This small collection appears to fit somewhere in the time range represented by the Tchefuncte Site (Fig. 2).

#### BIG OAK ISLAND SITE

Big Oak Island is a small shell midden located in the marsh near the western shore of Lake Pontchartrain.<sup>3</sup> Despite the distance between this locality and the Crooks and Marksville sites it appears to fit immediately below the graphs of these two sites in a rather satisfactory fashion (Fig. 2). Only the top nine levels have been used because of the small number of sherds found in the lower parts of the excavation. This sample suffers from the fact that the excavated area was not very extensive and the sherd totals in each level were not large. Thus, the decorated types on which most reliance is placed cannot be expected to be abundant.

#### LAFAYETTE MOUND

The Lafayette Mound was a small conical burial structure, one of a group of three located in the valley of the Vermillion River near the town of Lafayette, St. Martin Parish, Louisiana

(Fig. 1).<sup>4</sup> The site is approximately 80 miles due south of the mouth of the Red River. This small burial mound was constructed in two stages, and the pottery collection, which was saved separately from each mantle, did show some differences. Only Tchefuncte Period types were found in the primary mantle. In the secondary mantle there were in addition a few sherds of early Marksville and fewer of Plaquemine Period types. The Marksville Period material may have been added while the builders of the mound were still using the site, but the scattering of Plaquemine sherds was undoubtedly considerably later. While this gross superposition of Plaquemine over Tchefuncte is significant, it does not add materially to the quantitative chronological picture. Despite this, the proportion of Plaquemine Period types has been graphed in Fig. 2 so that all the material from the site may be represented.

The collection from the Lafayette Mound totals 21,100 sherds. It has been fitted into the lower part of the time range represented by the Big Oak Island strata cut (Fig. 2).

#### CROOKS MOUND

The collection from the fill of the Crooks Mound, a Marksville Period burial mound in La Salle Parish, some 40 miles north of Red River, fits just above Big Oak Island and below the data from the Marksville Site (Fig. 2). This position seems to be consistent with the content of the mound and was also demonstrated in the report on the site.<sup>5</sup> Only the Marksville Period component from this site has been graphed, and percentages were calculated on the basis of the total number of sherds of that period of occupation. The type Withers Fabric Marked, illustrated but not identified in the site report, has been added to the list of types.<sup>6</sup>

#### MARKSVILLE SITE STRATA EXCAVATION

The graphed results of the stratigraphic excavations made by Robert S. Neitzel in 1939 around Mound 2 of the Marksville Site are shown in Fig. 2. Vescelius will report on this work at Marksville and will present the stratigraphic evidence in the form of three analysis units selected from three portions of the exca-

in the top levels. However, this portion of the excavation did not yield enough material to be considered an accurate register of cultural change. While the relative positions of the types are in perfect agreement with the chronology as developed in Fig. 2, the inclusion of this unit would seem to make the Crooks Stamped type begin earlier than is indicated by the other units. This probably is an example of a "telescoped" fragment of chronology.

<sup>1</sup> Since the preparation of this paper, evidence of this superposition has been found at the Jaketown Site, Humphreys County, Mississippi.

<sup>2</sup> Ford and Quimby, 1945, 20-21.

<sup>3</sup> Ford and Quimby, 1945, 7-8.

<sup>4</sup> Ford and Quimby, 1945, 21-24.

<sup>5</sup> Ford and Willey, 1940.

<sup>6</sup> Ford and Willey, 1940, Fig. 20 j-k.

vations.<sup>1</sup> So close is the agreement between these units that I believe it unnecessary to present the analyses separately in Fig. 2; instead the levels of the three units have been combined.

The types Marksville Stamped and Marksville Incised found in the Marksville Site deposits are not shown on the graph as tapering off by degrees and as being replaced in an equally gradual fashion by the obviously derived types in the immediately later Peck Site, Troyville Stamped and Yokena Incised, respectively. Instead, the two type pairs abruptly replace each other from the top levels of the Marksville Site to the bottom levels of the older of the Peck Site cuts. This results from a classification anomaly for which I must ask the reader's indulgence. The Peck Site material was classified in 1934 before the Hopewellian-like ceramics of the South had been formally divided into earlier and later types. The Peck Site was occupied right at the time where the artificial line has been drawn between the Marksville and Troyville periods, and were it possible to rework the material according to current ceramic standards, there is little doubt but that the type curves would have the normal shapes. Judging from the material illustrated from this site, both Troyville and Marksville Period types were present.<sup>2</sup> In any event, this lapse will illustrate further the necessity for strict consistency in typology and one effect of inconsistency.

Despite the irregularity that appears between the top of the Marksville Site and the bottom of the Peck Site deposits because of inconsistent typology, it is interesting to note that the proportions of the early and later types match very well. The percentages of Marksville Stamped in the top levels of Marksville are about equal to those of Troyville Stamped in the lower levels of the Peck Site. The same is true to a lesser extent for Marksville Incised and Yokena Incised. When it is recalled that these sites are 40 miles apart, the degree to which they fit is all the more remarkable.

#### PECK SITE

In 1933 I dug four small strata cuts at the Peck Site, a small midden located in Catahoula Parish, Louisiana (map, Fig. 1).<sup>3</sup> The

system of defining and naming pottery types now in vogue in the Southeast had not then been introduced, and the descriptive classification of the pottery was specifically devised for the material from that excavation. Actually that classification was somewhat more detailed than the current divisions in comparable material, since experience has shown that such minute distinctions are not particularly useful for historical purposes. It is easy, therefore, to interpret the results of the Peck Site study in terms of the present system. As the material is in storage in Louisiana and is not available here for re-study, this has been done as follows:

PRESENT TYPE	PECK SITE TYPES
Churupa Punctated	8f, 14d
Yokena Incised	12a
Troyville Stamped	14a
Mulberry Creek Cordmarked	9a
Larto Red Filmed	11c
French Fork Incised	5-, 16-, 16b, 16c, 16d, 17a
Coles Creek Incised	5a, 5b, 5c, 5d, 5e
Chase Incised	5f
Mazique Incised	5g
Chevalier Stamped	13b
Beldeau Incised	16f

The unfortunate fact that this transfer of classification systems does not take into consideration the divisions that have been made since the sherds were first classified has been discussed in the preceding pages. This accounts for the apparent lack of smooth replacement of types from the time represented by the Marksville Midden to the Peck Site deposits. Further modification was necessary to make the Peck Site study comparable with Greenhouse. In the list of the material from each cut level at Peck the plain sherds, either body or rim fragments, were omitted. Therefore, it is necessary to weight the counts in each level with percentages representing the undecorated sherds. In Fig. 2 it has been assumed that 90 per cent of the material from each level was undecorated, and the frequencies of decorated types shown are calculated on that basis.

The graphed results from the four cuts in the Peck Site fit onto the bottom of the three units from the Greenhouse Site (Fig. 2). Cuts 3 and 4 at Peck are later than Cuts 1 and 2, as is shown here and as was noted in the brief report on the site.<sup>4</sup>

<sup>1</sup> Vescelius, MS.

<sup>2</sup> Ford, 1935, Pls. 1-2.

<sup>3</sup> Ford, 1935.

<sup>4</sup> Ford, 1935, 23-24.

### GREENHOUSE SITE

The excavation of the Greenhouse Site in Avoyelles Parish, Louisiana, has been reported in a previous paper.<sup>1</sup> This mound group, the northern end of the "Marksville Site" described by Gerard Fowke,<sup>2</sup> proved to date in the Troyville and Coles Creek periods. The three analysis units analyzed from trenches near Mound E (One, Three, and Seven) gave the most sensitive and clear-cut picture of the segment of ceramic history represented in the refuse deposits and for that reason were chosen for representation in the Red River Mouth composite graph (Fig. 2). The data shown here are the same as presented in the report on the site,<sup>3</sup> but the arrangement of the types has been altered and plainwares have been omitted. The older portion of the Greenhouse Site, as represented by the lower levels of Analysis Unit One, overlay the Peck Site in time, and the three analysis units show the ceramic change up to arbitrary Time Point C, the end of the Coles Creek Period.

### MEDORA SITE

The Medora Site is located on the west bank of the Mississippi River, a short distance to the south of Baton Rouge, Louisiana, and 50 miles to the south of the mouth of the Red River. Two rectangular temple mounds at this locality were excavated by the Archaeological Survey of Louisiana State University in 1939-1940. A report on this work has been published by George I. Quimby of the Chicago Natural History Museum.<sup>4</sup>

Four construction stages were found in the larger Medora Site mound. In his analysis of ceramics Quimby has arranged the ceramics recovered from this mound according to the building stages and concludes that no change in the ceramics can be detected.<sup>5</sup> Graphic analysis of the data that Quimby presents does suggest, however, that there is a very slight quantitative change in some of the types from the earliest to the latest of the mound stages. This change is so inconsequential that when considering this evidence alone Quimby was fully justified in doubting that the indicated

trends were reflections of cultural history. However, when the site graph is compared to graphs of the earlier Greenhouse Site and the later Anna and Emerald evidence, it becomes apparent that the Medora Site trends in pottery frequencies are roughly consistent with those shown for those sites and therefore must have historical significance (Fig. 2).

The small amount of the frequency change, compared to such sites as Greenhouse, corroborates Quimby's conclusion that the Medora Mound was constructed within a very short span of time. This slight revision of his conclusions should serve to illustrate the axiom that change must have occurred in the culture of people living at every site, no matter how short the occupation. If the archaeologist fails to find such evidence every time he digs it merely demonstrates the unrefined state of our techniques.

Since the collection dates immediately after the span of time represented by the cuts into Greenhouse, it has been placed above that site in Fig. 2. All of the pottery types defined by Quimby are not shown in the present graph. Several with quite low frequency percentages, representing degenerate and possibly local variations of Coles Creek Period types, have been omitted for lack of space. These occurrences give an even clearer concept of the relationship of this site to the ceramics of the earlier Coles Creek Period and are described by Quimby.

In addition to the material of the Plaquemine Period collected from Medora, there were a few scattered sherds of Marksville Period types. These sherds, which undoubtedly record an earlier and very brief occupation of the area where the mound was subsequently to be constructed, are not shown in the graph. Despite some type omissions, percentages of types shown have been derived from the total number of sherds recovered from the levels in the mound.

### ANNA SITE

In 1948 John Cotter, archaeologist for the National Park Service, assigned to the Natchez Trace Parkway Project, excavated at the Anna Site, some 12 miles north of Natchez, Mississippi, and 50 miles northeast of the mouth of the Red River.<sup>6</sup>

<sup>1</sup> Ford, 1951.

<sup>2</sup> Fowke, 1928.

<sup>3</sup> Ford, 1951, Fig. 35.

<sup>4</sup> Quimby, 1951.

<sup>5</sup> Quimby, 1951, 126-127.

<sup>6</sup> Brown, 1926, 40-42.



Located on the edge of the bluffs above the east side of the Mississippi River flood plain, the Anna Site consists of several rectangular temple mounds arranged around a plaza. Cotter's excavation was made in mound fill and sub-mound refuse accumulation at the southern edge of the site. The pattern of the graphed results of Cotter's work at Anna shows that at least this portion of the site was occupied in the Plaquemine Period. The graph has been fitted into Fig. 2 immediately above the representation of the collection from the Medora mounds.

Cotter very kindly provided me with the data from this site as well as those from the Emerald Mound, described below, soon after completing his initial classification. Graphs for these two sites were drawn from these data. Since then Cotter has completed the full report on the work at these two sites and has published it in *American Antiquity*.<sup>1</sup> A comparison will show that we have handled the data in a slightly different fashion but have reached practically identical conclusions.

#### EMERALD MOUND OR SELTZERTOWN SITE

Cotter also excavated at the Emerald Mound,

or Seltzertown Site as it is sometimes called.<sup>2</sup> The excavation (his Cut 1) was made in one side of the large, elevated, rectangular area, partially natural, partially intentionally constructed, and in part chance accumulation of refuse, which forms the bulk of the site.

The graph of the collections from Cotter's excavations demonstrates that the occupation overlaps the latter part of the time range of the Anna Site and continues later. The upper levels certainly represent the historic Natchez Period and cannot have been deposited very long before the time of effective French settlement in 1700 A.D. However, no European material was found.

The historic period in this region is best represented by cemeteries and one mound in which European artifacts are associated with native ceramics and other goods.<sup>3</sup> These sites show that the complex of types present in the top levels of the Emerald Mound were being made by the Natchez Indians and their neighbors in 1700, but, as most of the collections are not from refuse deposits, the proportions of the pottery types are not significant for comparison in this chronology.

### CORRELATION OF CHRONOLOGIES

Figure 2 presents a pattern of type frequencies that can best be visualized from the curves and relative vertical positions of the curves made by the dotted smoothing lines. In this attempt to correlate the Red River chronology with those in adjacent areas, I am concerned with these smoothed curves. The process of correlation is tedious and must be a total comparison of frequency peaks, duration, and internal features of types. This is most readily accomplished with chronological graphs representing neighboring areas laid side by side on a table. Then, bearing in mind the fact that we have no absolute time control over either the entire span of each chronology or of its segments, the parts of the chronologies are shifted upward or downward, until the best agreement is achieved between the patterning formed by corresponding or closely related types.<sup>4</sup> It has never been tried, but the process would probably be easier if the chronologies

were drawn on thin rubber sheets, so that they could be stretched and lengthened, both overall and in part, to achieve the best matching of patterns. I am not recommending that the student with similar problems should rush to the nearest hospital supply house, but the suggestion will serve to illustrate the process.

In a comparison of chronological patterning, area to area, it is not to be expected that temporally corresponding sections will resemble one another completely. The same degree of fit that is found in a comparison of stratigraphic graphs that represent the same span of time in one area cannot occur for several very good reasons.

A. The act of defining a cultural type automatically creates a geographical frequency center for that type (in a stable population, of course). This should be clear enough, but I shall provide an illustration to becloud the matter. Suppose, in a frequency study of United States architecture, we were to define

<sup>1</sup> Cotter, 1951.

<sup>2</sup> Brown, 1926, 36-40.

<sup>3</sup> Ford, 1936, 50-71; Quimby, 1942.

<sup>4</sup> This procedure has been described in a previous paper; see Phillips, Ford, and Griffin, 1951, 226-231.

a type "Gambrel-roofed red-painted barn." The largest proportion of total barns of this class would undoubtedly be in the Midwest. Another type, "Gambrel-roofed barn with basement and stone foundation" has a frequency center in New England. "Unpainted gambrel-roofed barns" are most common in the South. "Red-painted gambrel-roofed barns with a hex sign" have a frequency center in Pennsylvania and are of rather limited frequency and distribution. On the other hand, we might attach little importance to the shape of the roof and classify barns on the basis of other criteria so that the groupings cross-cut the above categories: i.e., Dairy Barns, Work Animal Barns, Hay Barns, Machinery Storage Barns. The possibilities for varying the classificatory groupings are as numerous as they are for any other cultural feature. As a result of each class definition a geographical frequency center (or centers) will be made.

B. Cultural influences take time to move across geographical areas, whether the fraction of a second required by the modern telephone or the longer spans of time more usual under primitive conditions. One certainty when comparing types in different regions is that they do not represent the same instant of time. This means that it is to be expected that identical types or types that have been defined on the basis of the same stream of cultural influence will shift their relative positions in the neighboring chronologies, depending on the direction in which they were moving. If cord-marked pottery diffused from north to south in the United States, its initial appearance must be, and its peak of popularity probably will be, later in the south than in the north.

The matching of patterns is somewhat simplified, however, by the fact that for immediately adjacent areas our time measuring devices seem not to be accurate enough to gauge the majority of ceramic trait movements. Only the slower drifts can be detected with any confidence. This seems to be particularly true for a fairly stable population that shared the same basic culture, and in which specific cultural changes proceeded in an almost parallel fashion, with relatively rapid diffusion of new ideas. Apparently it is safest to assume that the frequency peaks of the majority of the comparable types in immediately adjacent areas represent the same time horizon; the more unusual

instances in which there is a marked displacement from one area to another may then be interpreted as evidence of relatively slow trait movement. Fortunately, it will sometimes be found that the pattern displacement of one influence moving north to south, for example, will be balanced by another traveling in the opposite direction.

This factor of time lag of similar types in adjacent areas makes it necessary to draw conclusions as to direction of movement of influences when the columns are being aligned. This may appear to the reader as advice to lift himself by tugging on his bootstraps, but perhaps it is not quite that bad. Once again, conclusions must be based on the major part of the evidence and the most probable interpretation. It is hoped that the diagram in Fig. 3 will assist in this discussion. It compares the patterning formed by three cultural types, A, B, and C, in three neighboring chronological columns labeled Areas 1, 2, and 3. These patterns have been aligned in what appears as the most probable time relation, but this is not by any means the only interpretation that can be made. As arranged, the diagram indicates that Type A moved from Area 1 to 3, diminishing in frequency; C went from 3 to 1 at about the same rate of speed; and B moved at a slightly faster rate in the same direction as C, decreasing as it diffused.

An alternative interpretation that would be just as good as the first, if we had to rely entirely on the internal evidence shown by this figure, might be that the pattern alignment is wrong and that all three of these types had moved from Area 1 to Area 3, with the types shifting their relative positions in the time scale in the course of the process. The reverse direction of movement also might be true. The relative time positions of the patterns would then have to be shifted upward or downward. Only if we have some supplementary evidence as to the direction of movement of these cultural influences can we choose between these possibilities. It is not necessary to have this information for all the types; just one or two are sufficient. If it is virtually certain that Type A spread from Area 1 to Area 3, then the present alignment would become very probable. If, in addition, it were possible to show that Type B was moving in the opposite direction, there would be no question.

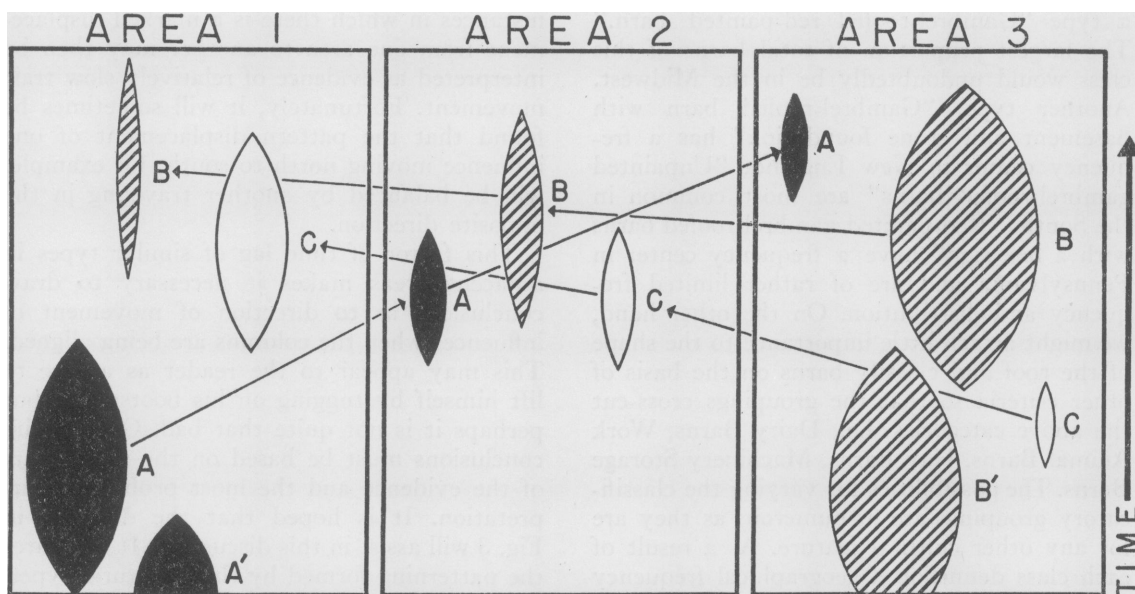


FIG. 3. Diagram illustrating quantitative change and time lag in diffusion—phenomena that must be considered in making temporal alignments of relative chronologies.

Fortunately, the direction of movement of a trait can be deduced in at least two ways. The less reliable of these is the comparison of relative frequency. It is not always true, but most of the time influences diffuse from the areas where they were most popular into the regions where they are found in lesser frequencies.<sup>1</sup> This is the usual situation, but it is not inevitable. Sometimes a trait becomes more popular in the course of diffusion. Type C in the simplified diagram given as Fig. 3 will serve as an illustration.

The most reliable basis for such judgment is the question of ancestry for the trait. If Type A in the illustration (Fig. 3) has older ancestral forms in Area 1, such as the type graphed as A', and no possible earlier forms are found in Areas 2 and 3, then the direction of diffusion becomes obvious.

C. As the third complicating factor in the matching of chronological patterning, it is well to recall that the device that is being used to measure cultural chronology is much less than perfect. Stratigraphic excavation and seriation of surface collections do not give an accurate record of what has transpired. Not that

they will be so inaccurate as to place cultural influences in an incorrect relationship with one another, but rather that each chronology will be "fuzzy." Each graph is a more or less out-of-focus picture of the culture history that it represents. Inadequate samples introduce some quantitative distortion, but this is fairly easy to evaluate and check. The most serious type of distortion for which allowance must be made in the Southeast is caused by the comparatively slow growth of refuse deposits. On village sites, when the accumulation was slow and thin, the overturning of the soil in the course of the normal activities of the inhabitants, digging post-holes, pits, etc., will have intermixed earlier and later artifacts so that types will appear to begin earlier and, particularly, to last longer than actually was the case. This is an element that should be taken into consideration in all stratigraphic samples, as has been discussed in another place.<sup>2</sup> Fortunately, this sort of distortion varies from one deposit to another according to the rapidity of accumulation for each. Where several excavations present parallel evidence, the data from the most clear-cut can be followed; this will be the situation in which the time spans of the types are

<sup>1</sup> As a fairly clear-cut illustration, see the discussion of Mulberry Creek Cordmarked in Phillips, Ford, and Griffin, 1951, 82-87, Fig. 7.

<sup>2</sup> Ford, 1949, 48; Phillips, Ford, and Griffin, 1951, 232-233.

the shortest and the greatest vertical separation is found in the pattern formed by the type frequency maximal. This distortion can be minimized by focusing attention on the patterning formed by type maximums and by placing less weight on the apparent starting and stopping points of type occurrences. For example,

in Fig. 6 I am not inclined to consider as at all decisive the fact that Weeden Island Incised seems to appear in western Florida slightly later than French Fork Incised first occurs in the Red River chronology. More important is the position of the frequency peak of French Fork as slightly later than Weeden Island.

## ARKANSAS AND MISSISSIPPI CHRONOLOGICAL COLUMNS

Philip Phillips, James B. Griffin, and I have recently reported on surveys made in the Mississippi alluvial valley regions of Arkansas and Mississippi.<sup>1</sup> The southern part of our survey area reached almost to the latitude of Yazoo City, Mississippi, and it extended north to Marked Tree, Arkansas. The region covered was about 190 miles north to south and from 50 to 80 miles east to west. As the result of the analysis of some 385 surface collections and 20 strata excavations we set up five chronological columns, each representing a sub-area. From south to north, these were designated Lower Yazoo Basin, Lower Arkansas River, Sunflower River Basin, Memphis Area, and Lower St. Francis Basin (map, Fig. 1).

The ceramic classification applied to this survey area was integrated with the type grouping that had already been made in Louisiana, so that no difficulties are encountered in comparing these results with the Red River Mouth column. French Fork Incised is the same material in all chronologies, with slight regional differences, naturally, but not enough to permit consistent sorting.

Another feature of this study that facilitates

comparison is the fact that the time scale applied to these five columns is identical with that used for the Red River column. The Red River data were already available when the Arkansas and Mississippi columns were correlated, and the six were aligned at the same time.<sup>2</sup> Pattern agreement between these columns is somewhat better than that found between Red River and the chronologies resulting from Willey's work on the northwest coast of Florida and much better than Kreiger's Texas chronology. This is not unexpected and undoubtedly results from the circumstance that the typology is more completely integrated. The types are more nearly equivalent from area to area.

As a total of six chronologies are involved a rather large chart would be needed to demonstrate the degree of pattern fit that is found from the Red River to the St. Francis area. Therefore, I will not demonstrate the process until the Florida area involving only three columns is treated. The alignment can be checked, if the reader wishes, by comparing Fig. 2 of this publication with Figs. 17 to 21 of Phillips, Ford, and Griffin.<sup>3</sup>

## DEVELOPMENT AND ALIGNMENT OF THE NORTHWEST COAST OF FLORIDA COLUMNS

Gordon R. Willey has recently published a study of the archaeology of the Florida Gulf Coast.<sup>4</sup> Using his own survey and strata excavations as a guide he has been able to interpret the data from the extensive excavations of Clarence B. Moore<sup>5</sup> as well as from the WPA

archaeological projects that were undertaken by the Smithsonian Institution under the direction of M. W. Stirling. The very thorough paper resulting from this study provides as complete an analysis of the prehistory of western Florida as can be made at this time.

In both the type descriptions and in the concluding sections Willey considers the relationships between the Northwest Coast of Florida and the Louisiana areas. He is particularly competent to make these comparisons for he has had considerable experience in the Lower Mississippi region.

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

<sup>2</sup> Phillips, Ford, and Griffin, 1951, 226 ff.

<sup>3</sup> Note that the percentage scales differ. Fig. 2 in this paper is graphed on a scale more than twice that of the graphs of Phillips, Ford, and Griffin, 1951.

<sup>4</sup> Willey, 1949.

<sup>5</sup> Moore, 1901, 1902, 1903, 1905, 1907, 1918.

I am in agreement with virtually all of Willey's comparisons and conclusions. The major excuse for rehandling some of his data, as I propose to do here, is to attempt to refine his chronological alignments. In Willey's time chart comparing the Florida Gulf Coast with neighboring areas, the Marksville Period is given as exactly equivalent in time to the Santa Rosa Swift Creek; Troyville is equated with Weeden Island I; and Coles Creek with Weeden Island II.<sup>1</sup> In gross terms this is undoubtedly correct. Willey has made his alignments on the basis of ceramic similarities.<sup>2</sup> In this re-treatment of his data the type similarities are also used as basic evidence. In addition, however, I emphasize the comparable patterning of types in the respective chronologies rather than rely entirely on a straight one-for-one comparison of types. In this way I expect to test Willey's conclusions and to achieve a more exact alignment of the chronological columns.

The Florida sites yielding stratigraphic data from west to east are Gulf Breeze, Fort Walton, Sowell, Carrabelle, Mound Field, and Lake Jackson (see map, Fig. 1). Fortunately, the material recovered from the small strata pits that were made in these refuse deposits was so classified that it is possible to make direct comparison to the Mississippi Valley studies without any rearrangement of classes or weighting of percentages. In addition, Willey also made a number of surface collections.<sup>3</sup> It would be possible to graph and seriate the collections from these to provide supplementary information, but as the stratigraphic excavations seem to be clear enough for the sections of the chronology which they cover, this has not been done.

In describing his excavations, Willey discussed each cut, tabulated the classification of the sherds from each level, and published graphs for some of the trends in type frequencies. In addition he presented a summary graph (his Fig. 14) illustrating the frequency trends of some of the types for the entire chronology of the Northwest Coast. Although this graph is similar to the graphs in this study and provides an excellent gross summary, it is not sufficiently detailed to be used as a basis for comparison with the Lower Mississippi Valley chronology. There are three reasons why it

will not serve. First, all "Santa Rosa" (Marksville-like) decorated types are combined and thus lose their identity. Second, he has omitted all of the minor types, many of which are significant for measuring connections between these areas. The third objection derives from a condition which Willey has discussed and has signaled by the application of the name "Santa Rosa-Swift Creek" to one of the time periods. It is the fact that there are marked differences in type frequencies on all time levels between the sites grouped towards the eastern and western ends of the 175-mile stretch of coast. The eastern sites (Lake Jackson, Mound Field, Carrabelle, and Sowell) have quantities of the stamped wares typical of Georgia. Those to the west (Gulf Breeze and Fort Walton) have lesser quantities of stamped ware and show stronger influence from the Mississippi Valley.

To adapt the information which Willey presents for comparison to the Louisiana chronology it was necessary to construct eastern and western chronological graphs from the tabulated results of the stratigraphic work. Accordingly, I graphed the information contained in Willey's Tables 1-16 on paper strips, eliminated entire excavations or bottom levels which contained too few sherds to be considered fairly representative samples, and interdigitated the remaining excavations into eastern and western summary graphs for the Northwest Coast. The two graphs were started by the use of the data from the Lake Jackson, Mound Field, and Carrabelle excavations for the eastern graph and Gulf Breeze and Fort Walton data for the western. The data for Sowell Site, which lies about midway between the sites grouped at the eastern and western ends of this stretch of coast, were assembled separately and compared with the eastern and western composite chronologies. As Sowell resembled the eastern group more closely than the western, it was added to the former.

The two graphs resulting from this arrangement of the data are given as Figs. 4 and 5, much reduced in size from the originals that were used for study and comparison. To facilitate reference the westernmost of the chronologies is called Gulf Breeze Area, and the eastern, Carrabelle Area.

Although the graphs are based on Willey's data, the relative time positions of the various excavations were worked out without reference

<sup>1</sup> Willey, 1949, Fig. 76.

<sup>2</sup> Willey, 1949, 575-576.

<sup>3</sup> Willey, 1949, 195-251.





to his conclusions. Comparison revealed a few differences. For example, in Fig. 4, Fort Walton Pit 4 is shown as somewhat earlier in relation to Pits 6 and 7 than in Willey's diagram (his Fig. 14) of the relation of these pits. In particular I have rearranged the relative spans of time covered by the excavations used by Willey to construct his Fig. 14. Neither Fort Walton Pit 6, Mound Field Pit 2, nor Carrabelle Pit 3 appears to begin recording ceramic change as early in the Santa Rosa-Swift Creek Period as Willey shows. All seem to start near the end of this period. A comparison of Willey's figure and the two columns given in Figs. 4 and 5 will explain the basis for this reinterpretation. Willey's Fig. 14 is a gross representation of chronology complicated and rendered inaccurate by areal quantitative differentiation.

What appeals as the best compromise for aligning the Red River Mouth, Gulf Breeze, and Carrabelle chronologies is demonstrated by a comparison of the smoothed type frequencies given in Fig. 6, where frequency curves of the corresponding and comparable types are grouped in columns. These curves are copied from the dotted smoothing lines that have been drawn for each type in Figs. 2, 4, and 5, and their position on the arbitrary A-B-C-time scale has been maintained. Shading identifies the types derived from each of the three chronological columns, as is indicated by the key in Fig. 6. It is immediately obvious that the pattern agreement is not perfect. This may be due to any one of the factors discussed above: the geographic location of the frequency center for the cultural complex being measured by the types; the relatively slow movement of cultural influence that would tend to displace related types chronologically; "fuzziness" of the chronological picture in one or more areas; or, finally and most embarrassing, the possible inaccuracy of the present alignment.

All these factors are undoubtedly operating, so it is advisable to examine alternative possibilities. Let us assume that the alignment of the two Florida columns (hachured and dotted) is correct, but that their lower ends have been placed too high in relation to the Red River (black) column. Perhaps the lower half of the Florida columns should be stretched downward so that they begin on the line that marks Time F. This is the beginning point for the Florida columns, if simple alignment of periods is followed: Marksville to Santa Rosa-Swift Creek.<sup>1</sup> This would lead to the following interpretations.

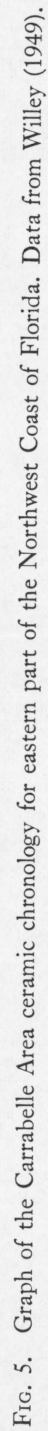
A. The zoned rocker-stamped type Alligator Bayou Stamped appears in the Gulf Breeze Area at Time F with a frequency of 5 per cent, with only 2 per cent of the corresponding Marksville Stamped in the Red River Area. In the west Florida area Alligator Bayou steadily diminishes to Time D, but in Louisiana this same influence in its two phases, Marksville and Troyville Stamped, has a frequency peak of about 10 per cent just prior to Time E and also continues until about Time D. The frequency peak of Alligator Bayou is smaller than that of the Louisiana type, but is obviously earlier. It would appear then that this influence is moving from east to west and increasing in frequency.

This inference is directly contrary to Willey's conclusions on the subject, for he is inclined to view the presence of this cultural feature in Florida as the result of a movement from the west.<sup>2</sup> That seems most logical to me, for the internal evidence of the type Alligator Bayou Stamped seems to argue for an alignment with Troyville Stamped rather than Marksville, its ancestral type. The brief comparisons given below will make this clear.

<sup>1</sup> Willey, 1949, Fig. 76.

<sup>2</sup> Willey, 1949, 564. In his type description (372-373) Willey compared Alligator to both Louisiana types.

MARKSVILLE STAMPED	TROYVILLE STAMPED	ALLIGATOR BAYOU STAMPED
Motifs often bird figures	Motifs geometric	Motifs geometric; some retention of elements resembling bird wings, heads, etc.
Motifs not repeated	Motifs repeated	Usually not repeated
Notched rocker-stamped	Smooth rocker-stamped	Both notched and smooth rocker-stamped
Background roughened	Background or motif roughened	Background or motif roughened
Delicately cross-hatched rim common	No separate rim decoration	No separate rim decoration
Folded rims very rare	Folded rims common	Folded rims fairly common





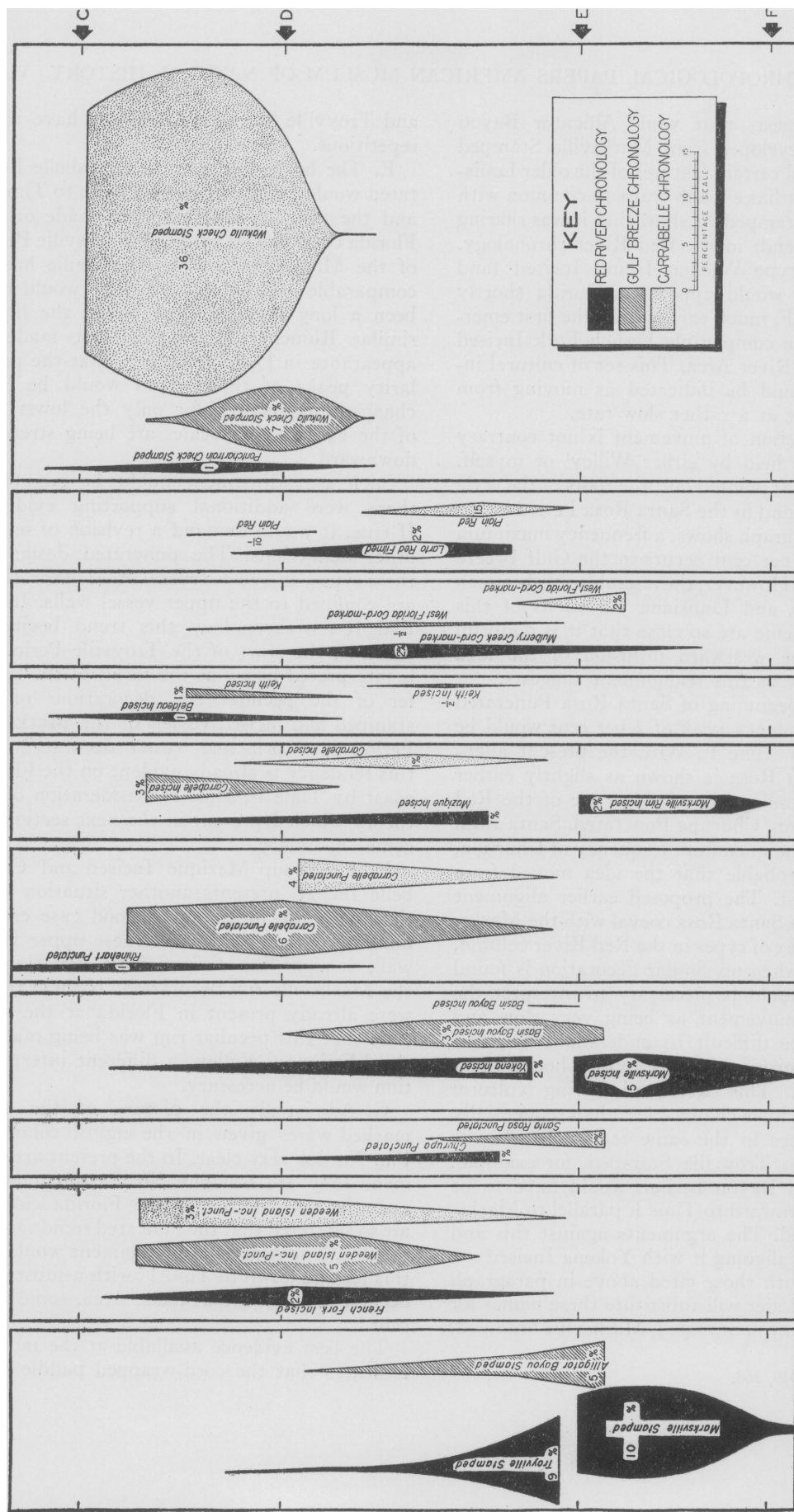


FIG. 6. Diagram showing temporal alignment adopted for Mouth of Red River, Gulf Breeze, and Carrabelle chronologies. Comparable types are grouped in boxes and identified as to chronology by shading. The frequency curves representing each type were derived from the dotted smoothing lines for these types given in Figs. 2, 4, and 5. The temporal positions of the types in relation to the arbitrary time scale on the right of the figure also are the same.

This suggests that while Alligator Bayou Stamped developed from Marksville Stamped and retained certain features of the older Louisiana type, it has enough traits in common with Troyville Stamped to show that it was sharing the later trends in the Red River chronology.

B. The type Weeden Island Incised (and Punctated) would appear in Florida shortly after Time F, much earlier than the first emergence of the comparable French Fork Incised in the Red River Area. This set of cultural influences would be indicated as moving from east to west at a rather slow rate.

The direction of movement is not contrary to opinions held by either Willey<sup>1</sup> or myself. As Willey has pointed out, the roots of the style are to be found in the Santa Rosa Period wares and, as our graph shows, a frequency maximum of about 5 per cent occurs in the Gulf Breeze chronology. However, the resemblances between the Florida and Louisiana variations of this common theme are so close that it is doubtful whether the westward diffusion of the idea was as slow as this realignment suggests.

C. The beginning of Santa Rosa Punctated and its frequency peak of 2 per cent would be placed near Time F. With the present alignment Santa Rosa is shown as slightly earlier than the similar comparable type of the Red River column, Churupa Punctated. Santa Rosa has twice the maximum frequency of Churupa, and it is probable that the idea moved from east to west. The proposed earlier alignment would place Santa Rosa coeval with the Marksville complex of types in the Red River column, at a time when no similar decoration is found there. It would be necessary to interpret the westward movement as being very slow and it would be difficult to understand why the related Churupa of the Troyville horizon was so similar. This westward-moving cultural trait would have changed less than sequentially related types in the same region, Marksville Stamped to Troyville Stamped, for example!

D. Basin Bayou Incised would have to be shifted downward to Time F parallel to Marksville Incised. The arguments against this and in favor of aligning it with Yokena Incised are identical with those cited above in paragraph A. If the reader will substitute these names for Alligator Bayou Stamped, Marksville Stamped,

and Troyville Stamped I will not have to be repetitious.

E. The beginning point of Carrabelle Punctated would be drawn down almost to Time F, and the type would have been made on the Florida coast coeval with the Marksville Period of the Mississippi Valley. Marksville has no comparable decoration, and there would have been a long lapse of time before the highly similar Rhinehart Punctated first made its appearance in Louisiana. Note that the popularity peaks of these types would be little changed in position, for only the lower half of the Florida time scales are being stretched downward.

Such a readjustment might be possible if there were additional supporting evidence. If true, it would demand a revision of several other deductions. The punctated designs of these types, as well as several other decorations, are confined to the upper vessel walls. In the Red River chronology this trend begins at Time E, the start of the Troyville Period. It is interpreted below as the result of the transfer of the peculiar rim decorations of the stamped and incised vessels of the Marksville Period into principal vessel decorations. If this tendency is already evident on the Florida coast by Time F, some reconsideration of the theory which I present in the next section becomes necessary.

F. The group Mazique Incised and Carrabelle Incised presents another situation identical with the foregoing. A good case can be made for the derivation of these upper vessel wall, straight-line designs from variations of the Marksville rim decoration. If these trends were already present in Florida at the same time that this peculiar rim was being made in the Mississippi Valley, a different interpretation would be necessary.

G. Admittedly the picture of the cord-marked wares given in the eighth column of Fig. 7 is not very clear. In the present arrangement they are brought fairly close together, and the occurrences in the Florida columns are so scattered that the indicated trends are not reliable. The suggested realignment would pull this feature down to Time F, with a substantial occurrence in the Carrabelle Area, some 2 per cent.

The best evidence available at the moment indicates that the cord-wrapped paddle finish

<sup>1</sup> Willey, 1949, 568.

was a trait that was moving southward all across the Eastern United States, and it does not seem probable that the Louisiana and Florida occurrences are directly related; rather, that both areas were receiving this influence from the north. It is possible that the trait arrived in the Carrabelle Area substantially before it did in the Red River region, but this type group presents no evidence in either direction.

H. The suggested rearrangement would place red-slipped wares on the Florida coast at the same date as the Marksville Period wares were being made in the Lower Mississippi Valley. It would be necessary then to interpret this feature as having originated in the eastern Gulf Area and having moved slowly westward, arriving in Louisiana before Troyville times.

This is possible, but not probable. Very likely, the feature of red-slipped, fired-on vessel surfaces was developing in both regions out of the earlier use of both a permanent and non-permanent coating of red coloring that is found in the general area on an earlier time horizon, notably in the Tchefuncte ceramics.<sup>1</sup> However, the feature may have been accepted in quantity earlier in Florida, and consideration of the internal evidence leaves this case in doubt.

The foregoing paragraphs outline the arguments which have led me to match the lower

part of Red River, Gulf Breeze, and Carrabelle chronologies as shown in Fig. 6, rather than to pull the lower parts of the Florida columns down to Time F. A downward realignment would make it appear that the majority of the influences discussed had developed in Florida and moved westward at a very slow rate, contrary to the internal evidence of some of the types. The alignment used suggests that the ceramic trends shared by all three areas were occurring at about the same time and that most of the diffusion west to east and east to west was comparatively rapid, so far as our measuring devices are able to demonstrate.

If the chronological alignment used here is correct, the Carrabelle (eastern) chronology gives detailed information on type frequencies back almost to Time F, but the Gulf Breeze, or western column, extends back only a little beyond Time E with the information shown by the lower levels of Gulf Breeze and Fort Walton Pit 4 excavations. This leaves unanswered the question as to whether or not the western column extends far enough into the past to illustrate the first introduction of the Santa Rosa (Marksville-like) ceramics. It may be that still undiscovered refuse deposits will in the future reveal the types of this complex in higher frequencies, but this seems unlikely.<sup>2</sup> Even if this should be true it does not affect the data now available for comparison.

## ALIGNMENT OF DATA FROM THE CADDOAN AREA OF NORTHEAST TEXAS

The work of Alex Krieger, Clarence Webb, Harry J. Lemley, and their associates, in the past few years has gone for towards untangling the formerly baffling problems of the so-called "Caddoan Area" of northeastern Texas and the adjacent parts of the states of Louisiana, Arkansas, and Oklahoma. The abundant data have been organized into cultural foci, and a degree

of chronological control has been established and signalized by the naming of two aspects, the earlier Gibson Aspect and the later Fulton Aspect. In 1946 Krieger published a masterly presentation of the data in which he also gave convincing evidence for aligning the Caddoan Area chronologies with the dated sequences in the Southwest. In addition to the text discussion he summarized the alignment in his Fig. 26, and for the first time the archaeologists working in the Mississippi Valley were given a better basis for dating the later parts of their sequences than simple imagination.<sup>3</sup>

Krieger's general summary is being followed by detailed reports on individual sites and cultural complexes. The first of these describes the excavation and analysis of the Davis Site in

<sup>1</sup> Ford and Quimby, 1945, 52, 54-56.

<sup>2</sup> The collections obtained by Willey and Woodbury from five surface middens of the Santa Rosa-Swift Creek Period were graphed and compared with the two Florida chronologies. Since these surface collections all fit later than the lower levels of the excavated middens and furnish no new information, they have not been included in the illustrations given here. Willey (1949) lists the sites on p. 367. Only the collections from the midden sites can be used for this purpose, since those from the burial mounds have been selected thrice—by the Indians, by C. B. Moore, and by various museums.

<sup>3</sup> Also see Krieger, 1947.



Cherokee County, Texas.<sup>1</sup> This is the type site of the Alto Focus of the Gibson Aspect and is considered to be the earliest ceramic-bearing site that has been thoroughly investigated in the Caddoan Area. In addition to the information it contributes on the Caddoan problem, the site and the report on it are singularly important because of the evidence of exchange of cultural influence between Meso-America and the Mississippi Valley. The probable implications are discussed extensively in the comparison and conclusions sections of the paper.

The Davis Site report is the first for the Caddoan Area that provides the kind of sampling of ceramics from refuse deposits that is necessary for the type of comparison being made here. Krieger has described the material recovered by Newell's excavations in the flat-topped mound and the surrounding village site, and the results of his ceramic analysis are summarized in a convenient form in 13 tables.<sup>2</sup>

However, certain factors in Krieger's method of analysis and presentation of the Davis Site ceramic data make some adjustment necessary before direct comparison can be made with the other ceramic chronologies that have been discussed. First, after long and tedious work the sherds were grouped into vessel lots wherever possible, and these groups were counted as one.<sup>3</sup> This grouping tends to decrease the relative proportion of the wares that were treated in this fashion as against the unmatched, undecorated pottery. In other areas sherds have not been matched; therefore, it must be remembered that the apparent quantities of decorated types in Krieger's material will, at least, be slightly smaller than in the other chronologies.

Secondly, Krieger's analysis varies from the system used in the other areas in that his percentages are based on the sherds matched—a fraction of the gross total of sherds recovered.<sup>4</sup> The grand total of 96,000 sherds recovered from

Newell's excavation was handled in the following fashion:

"Left-over" body and rim sherds, excluded from analysis	80,000
Fitted to other sherds and so disappeared from the count	4,160
Used as basis for analysis	11,840
Total	96,000

This is a marked departure from the method of calculating frequencies used in Florida and the Mississippi Valley, and in order to make comparison possible an adjustment must be made. This can be done most readily by weighting Krieger's individual collection totals with the frequencies of plain and unclassified decorated sherds that were probably present in each. In the Davis Site report Krieger states that the classified pottery which he used constitutes 12.3 per cent of the total of 96,000.<sup>5</sup> However, I doubt whether it is reasonable to use this proportion, for, as listed above, 4160 sherds were fitted to others and disappeared into the classified category. It will possibly be more consistent with practice elsewhere and will tend to minimize the effect of sherd fitting if the "left-over" sherds are utilized in calculating the relation between decorated and plain. This has been done as follows:

Decorated sherds reported in Krieger's Tables 3-15	11,840
"Left-over" sherds	80,000
Total	91,840

When this is done the decorated and classified sherds comprise 12.9 per cent of the total. This proportion has been used in preparing the graphs from Krieger's data that appear as Fig. 7. It has been assumed that the total number of sherds for each level in the village area and each phase of mound construction is 12.9 per cent of the total number of sherds actually found.<sup>6</sup>

This reloading of Krieger's figures is necessary for comparative purposes, but at best the results can be considered as only approximations. However, the element of doubt introduced applies only in comparing this with the other areas. The loading does not affect the relative

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

<sup>2</sup> Newell and Krieger, 1949, Tables 3-15.

<sup>3</sup> Newell and Krieger, 1949, 75-78. In his discussion Krieger quite rightly charges that the usual method of counting each sherd as a representative of its type results in a highly distorted conception of the actual number of vessels used and broken by the prehistoric inhabitants of a site. The implications of Krieger's demonstration and the fact that this distortion does not invalidate the use of straight sherd counts for measuring chronology have been discussed in a previous paper (Ford, 1951, 93-94).

<sup>4</sup> Newell and Krieger, 1949, 77.

<sup>5</sup> Newell and Krieger, 1949, 77.

<sup>6</sup> Perhaps this is unnecessary quibbling. In graphs of the scale published here, the difference between assuming 12.3 and 12.9 per cent decorated sherds is almost imperceptible.

frequencies of the types in the different levels and other proveniences in the Davis Site, for all the collections are equally weighted. A beneficial effect of this procedure is to make possible direct comparison of the *rate* of type frequency change in the Davis Site evidence with that of other Southeastern chronologies.

Figure 7 gives in graphic form the results of adjusting the data in Krieger's Table 13 for the three phases into which he has divided the construction of the mound and the three arbitrary levels of excavation in the field near the mound.<sup>1</sup> I am somewhat uncertain, as apparently Krieger is,<sup>2</sup> as to the justification for including some of the house collections in one or another of the phases. In doubtful cases the collections seem to have been listed in the later phase in order to keep the earlier deposits uncontaminated. This cautious approach and the additional factor of older sherds carried into the structure during the building process may have produced unduly high frequencies in the later phases, a possibility to which attention is called in the site report.<sup>3</sup> However, if there are marked changes in type frequencies, it is hardly to be expected that these would be entirely masked by these conditions.

Krieger's evidence for cultural change in the ceramics from the Davis Site was derived from an interpretation of the contents of the levels in the mound. He has relied on the percentage that each type formed of the total number studied from each construction phase, and also on the proportion of the total sherds of a type found in each phase.<sup>4</sup> The latter is clearly a function of the total number of sherds that happened to have been found in each level, and I cannot see how percentages calculated in this way can be useful for measuring temporal change of type quantities. Therefore, the following discussion is based entirely on the proportion which each type forms of corresponding level totals.

Krieger has carefully reviewed all the evidence for chronological change in ceramics in the mound construction stages and summarizes

this evidence on pages 128-129 of the Davis Site report. The evidence seems convincing enough to me. There does seem to be time change in the material, both in kind and quantity, but this change is not so great as the method of figuring the frequencies used in the study would suggest. Nor does the site appear to have been occupied for any considerable span of time.

This opinion as to the relative brevity of the occupation of the Davis Site is in conformity with that of Perry Newell who excavated the site,<sup>5</sup> but differs from the conclusions reached by Krieger as a result of his study of the material. The Alto Focus, the three phases of which are based on the divisions made in the history of the Davis Site, is shown in Krieger's latest chronological comparison with the Mississippi Valley as extending from the beginning of the Marksville Period to the end of Coles Creek. This is a time range from F to C on the arbitrary time scale that has been applied to the Mississippi Valley and Florida chronologies. In Krieger's earlier publication a different alignment of Alto Focus with the Louisiana Red River chronological column is suggested, with the relative time span of the focus somewhat shorter.<sup>6</sup>

It must be conceded that there may have been an appreciable upward movement of refuse material in the mound construction that would have tended to confuse the record of quantitative change. But even when this factor is considered it is impossible to believe that the evidence from the site suggests any greater time span than that of a number of other briefly occupied sites in the Southeast. The adjusted diagram (Fig. 7) shows about the same amount of change as is given by Cut 1 in the Peck Site (Fig. 2) and less than is found in sites of such relatively short time span as Gulf Breeze (Fig. 4), Tchefuncte Site, the Anna Site, or the Emerald Mound (Fig. 2). The last excavation was in an intentionally constructed platform subject to the same chance of redeposition of older sherds as was the Davis Mound. The same possibilities of mixture apply, of course, to Mounds A and F of the Greenhouse Site.<sup>7</sup> In addition,

<sup>5</sup> Newell and Krieger, 1949, 57.

<sup>6</sup> Krieger, 1946, Fig. 26.

<sup>7</sup> See graphs representing ceramic changes found in these structures in Ford, 1951 (Mound A is represented by Analysis Unit Thirteen in Fig. 36; Mound F by Unit Twelve in Fig. 37).

<sup>1</sup> Type occurrences in the field have been summarized from Krieger's Tables 3-12. Only material from arbitrary levels has been used. Features 9, 2, 3, 4, 6, and 8 have been omitted, so the gross total used in Fig. 7 is considerably less than Krieger's site total.

<sup>2</sup> Newell and Krieger, 1949, 79-80.

<sup>3</sup> Newell and Krieger, 1949, 145.

<sup>4</sup> Newell and Krieger, 1949, 81-129.

TABLE 1

	FROM NEWELL AND KRIEGER, 1949, TABLE 15	USING LOADED TOTALS AS DESCRIBED IN TEXT
A. Decrease in frequency of Holly Fine Engraved		
Phase 3	24.7%	3.7%
Phase 2	21.3	3.2
Phase 1	32.8	4.9
	<hr/>	<hr/>
	Decrease 8.1	Decrease 1.2
B. Decrease in "sand-tempered" ware		
Phase 3	.9	.1
Phase 2	5.6	.8
Phase 1	9.7	1.4
	<hr/>	<hr/>
	Decrease 8.8	Decrease 1.3
C. Increase in Crockett Curvilinear Incised		
Phase 3	12.3	1.8
Phase 2	9.7	1.5
Phase 1	3.9	.6
	<hr/>	<hr/>
	Increase 8.4	Increase 1.2

it will be instructive to examine and compare the basis on which both Krieger and I are estimating time change in the ceramics. Table 1 gives a comparison of the significance of the changes in ceramics cited by Krieger.<sup>1</sup> In addition Krieger has listed five features which do not appear prior to Phase 2 (see Table 2).

The primary purpose of Tables 1 and 2 is not to disprove Krieger's contention that there is some change in Davis Site ceramics, but rather to demonstrate the insignificance of the change when it is expressed in the usual frequency terms. In general practice I am inclined to be very suspicious of small ceramic trends derived from a single stratigraphic situation. The examples of the relatively minute occurrences, given as 1, 2, and 3 in Table 2, are particularly suspect, and, if there were no supporting evidence, they probably should be disregarded. Fortunately such evidence is available from the village area lying immediately around the mound. The authors of the report have placed only secondary reliance on the information from this area,<sup>2</sup> but when the data listed in Krieger's Tables 3 to 12 were graphed, the results appeared to be about equally sensitive as those obtained from the mound (Fig. 7). All the frequency trends found in the mound,

except Crockett Curvilinear Incised and Dunkin Incised, are substantiated; gross frequencies are quite similar, except for Dunkin Incised and sand-tempered ware.

If, as has been argued, the Davis Site occupation represented a short span of time, then the next question is where does it fit in relation to chronologies in neighboring areas. Krieger has drawn careful comparisons between the ceramic types set up for the pottery of the Davis Site and that found in the region around the mouth of the Red River in Louisiana and adjacent Mississippi. These comparisons are conveniently summarized in his Table 2.<sup>3</sup> Unfortunately a complete series of Louisiana material was not available to the students of the Davis Site ceramics for direct comparison, so that they were forced to work with only a portion of the pottery type descriptions, brief preliminary condensations published in the mimeographed Newsletters of the Southeastern Archeological Conference.<sup>4</sup> Now I have the great advantage not only of Newell and Krieger's careful report,

Newell and Krieger, 1949, Table 2.

<sup>4</sup> I must apologize for the regrettable fact that up-to-date comparative material was not available to the Texas archaeologists while the Davis Site report was being prepared. Archaeological research was discontinued at Louisiana State University in 1941, and the collections were put in storage. It was not until late in 1948 that this material was again accessible.

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

<sup>2</sup> Newell and Krieger, 1949, 65.

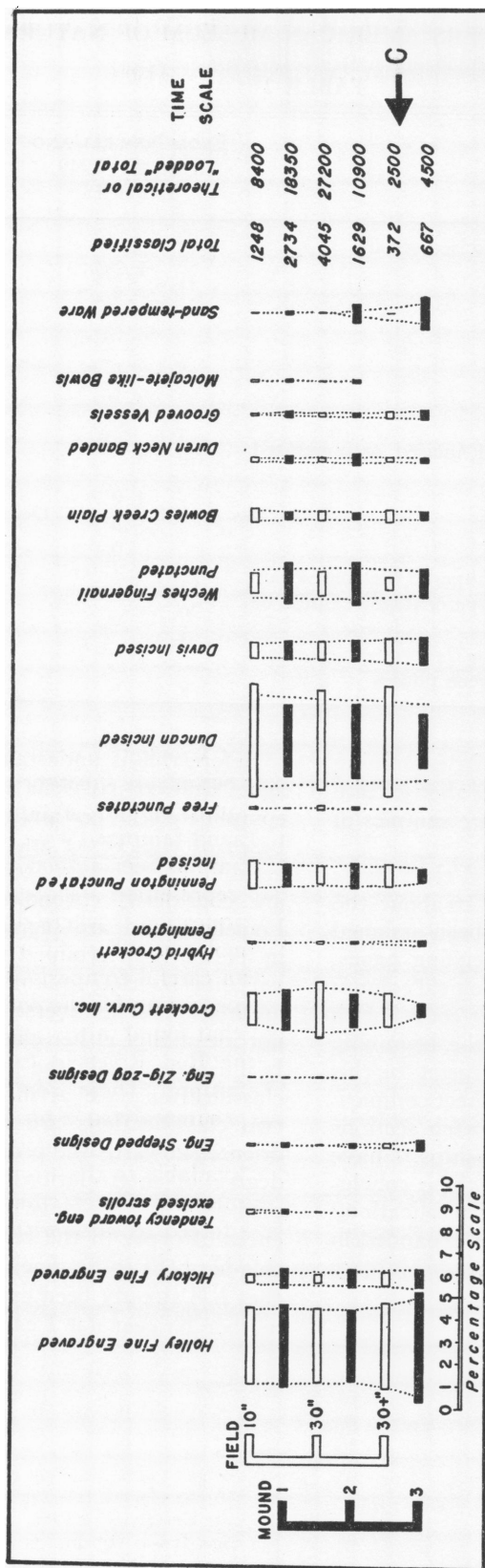


FIG. 7. Graph of type frequencies from the Davis Site excavations in northeastern Texas. Data from Newell and Krieger (1949) adjusted as described in the text to make them comparable to other collections used here.

TABLE 2

	FROM NEWELL AND KRIEGER, 1949, TABLE 13	USING LOADED TOTALS AS DESCRIBED IN TEXT
1. Tendency towards engraved and excised scroll		
Phase 3	1.2%	.2%
Phase 2	.5	.07
Phase 1	0	0
2. Engraved "zig-zag" designs		
Phase 3	.1	.02
Phase 2	.1	.01
Phase 1	0	0
3. Molcajete-like bowls with engraved, incised, or punctated interior designs		
Phase 3	1.0	.1
Phase 2	.5	.07
Phase 1	0	0
4. Very large, thick-walled, coarse-tempered, flat-based jars found only in Phase 2 and later; percentages cannot be directly compared		
5. Bone temper first appears in Phase 2; frequencies of occurrence cannot be compared between phases		

but Krieger has been most kind in examining trade sherds found at the Greenhouse Site and in supplying me with adequate samples of Davis Site material.

To me it seems clearly indicated that Davis is a short time span site dating at about the arbitrary Time Point C that has been assigned to other chronologies in the foregoing pages. In terms of the Red River chronological column of eastern Louisiana this places it coeval with the end of the Coles Creek and the beginning of the Plaquemine periods. The reason for this placement can best be given in a direct comparison of ceramic types in the following sections devoted to discussions of relationships. I have already presented the reason for these conclusions in outline form in a previous publication,<sup>1</sup> and these arguments can best be expanded in terms of an over-all appraisal of ceramic history in this part of the Southeast.

<sup>1</sup> Ford, 1951, 126-128.

Before this is undertaken I must emphasize again that comparisons are necessarily slightly complicated in certain instances because the bases of the Texas and Louisiana typologies are different. Certain decoration variants which are considered chronologically significant in Louisiana and are segregated as types have, in Texas, been grouped with other decoration variants so that quantitative characteristics are masked. The reverse is also true. This does not mean that either classification is incorrect. It illustrates again the fact that these cultural classifications are artificial constructs. These two classifications are not designed for and oriented towards the problem of measuring the degree of interrelationships. They are made primarily for the development of time differences of types in the respective regions. That this happens to be true is a historical accident that has already been explained, but for which neither Krieger nor I can be "blamed."

## PREHISTORIC MOVEMENTS OF CERAMIC DESIGN CONCEPTS

IN THE FOREGOING PAGES I have explained and attempted to justify the rather arbitrary manipulations of available chronological data and have arrived at a temporal alignment for the two chronologies on the Northwest Coast of Florida, the six in the lower Mississippi Valley, and one in eastern Texas. I am far from satisfied that this is the best possible fit for the patterns of all portions of these chronologies and elaborate some of this dissatisfaction in the following pages. All these alignments are open to argument and certainly subject to slight rearrangement. However, I do not believe that there are any major errors and ask the reader to accept the present arrangement for purposes of discussion. In the succeeding sections I propose to utilize this alignment and trace the movement of selected streams of ideas across space and follow their development through time.

The reason for selecting these streams and for neglecting some of the ramifications of these developments has already been given in the introductory section. Descriptions and even graphs cannot strike out in a dozen or more directions at once, but an evolving cultural trait can and usually does. In so far as is possible attention is focused on the main streams, the developments which are most important because they are proportionately dominant in the ancient cultures.<sup>1</sup>

It cannot be maintained that the expositions in the following pages derive from and are proved by the chronological alignments that have been argued in the foregoing. To do so would be circular reasoning, for it is the consciousness of the probability of these prehistoric events that has led to the alignments. These histories of cultural streams are nothing more than an attempt to illustrate more clearly the information upon which the foregoing conclusions have been based.

Eight ceramic decorative traditions have

<sup>1</sup> I cannot resist noting here that the unconscious development of an uncontrolled segment of culture is a thoroughly democratic process. As each of the prehistoric potters fashioned a vessel, incorporating features selected from his (or her) training and experience, in effect a vote was cast for the direction in which that segment of the culture would continue to evolve. Perhaps the early Greek use of sherds for balloting has anticipated me on this rather obvious conclusion.

been selected from this prehistory for presentation in graphic form. Other less popular but equally obvious traditions can be followed for at least part of the time but these are omitted; to include all of them would expand this paper beyond practical limits. The traditions that are illustrated are:

1. Scattered punctations used as primary elements of design
2. Arrangements of straight incised lines
3. Curvilinear incised designs
4. Motifs developed by roughening the background
5. Applications of the rocker stamping technique
6. Paddle impressed decorations
7. Red-slipped and painted designs
8. Engraved designs

In addition the horizontal incised line tradition is discussed but not illustrated, and certain relationships of Caddoan Area ceramics are considered.

This discussion of each of the first eight traditions refers to two graphs that present the data in visual form. Figures 8 and 9 serve as an example. Horizontally the coordinates of these diagrams indicate geographic area; longitudinally, the passage of time. The first graph of each pair represents a historical profile extending south to north from the Red River region in eastern Louisiana to the St. Francis Area, a short distance north of Memphis, Tennessee. The second is a similar profile west to east from the Alto Focus region of eastern Texas to the Carrabelle Area, at the base of the Florida Peninsula. For comparative purposes this second profile also includes data from the mouth of the Red River. The columns in these illustrations represent the several chronologies already discussed and are appropriately labeled. Their geographic locations are given on the map (Fig. 1). Wavy lines terminating the columns at top and bottom mark the time limits of the information available. As with all other features in the illustrations their vertical position is measured by the arbitrary A-G time scale on the right-hand side, the same time scale used in previous diagrams in this paper.<sup>2</sup>

<sup>2</sup> This same scale applies to the chronologies published by Phillips, Ford, and Griffin, 1951, Figs. 17-21, and by Ford, 1951, Figs. 35-41.

The black "battleship" frequency curves given for each type are reproductions of the dotted-line smoothing curves drawn for these types in the graphs presenting the original frequency data. All the reservations referring to the accuracy of this process must be recalled. While there is room for some variation in the exercise of judgment in smoothing the frequencies, the gross results of two students would be similar. I do not intend to attach any significance to differences between two quantities of a fraction of a per cent, so there is little use in belaboring this point further.

In the foregoing, I have also discussed the several conditions inherent in both the stratigraphic and surface methods of sampling refuse deposits that might extend the frequency bars at both the beginning and end of the time range of a type. For these reasons, it seems best to place more weight on the temporal position of the type maximum than on the apparent vertical position of its initial appearance.

The miniature drawings that accompany the frequency bars are intended to assist the reader in visualizing the type and recalling the particular aspects that are pertinent to the discussion. These drawings do not illustrate the full range of variation in decoration, and it is sug-

gested that any serious student of Southeastern prehistory refer to the original type descriptions or, better still, to the material. No attempt has been made to illustrate the range in shape. That is an aspect of ceramics that the basic data are ill-adapted to measure.

I am well aware of the fact that the decorative motifs and techniques to be considered are by no means limited to the parts of the Eastern United States for which we have quantitative chronological information. Most of these developments were occurring over a much wider area than the region embraced by the Lower Mississippi Valley and the Northwest Coast of Florida. In several instances, where events do appear to center in this region, there is very good reason to suspect that similar developments, possibly tenuously connected, were taking place in other parts of the East. Where such possibilities are especially pertinent to the subjects under discussion they are mentioned, but no attempt is made to reconstruct the ceramic history of the eastern, or even the Southeastern, United States. The sort of data necessary to trace cultural features with the degree of exactitude that is attempted here is not yet available for most other parts of the Southeast.

## PUNCTATED, NAIL-PUNCHED, AND PINCHED TRADITION OF DECORATION

### Figures 8, 9

The decorative concept of covering the surface of vessels with indentations made with a stick or similar instrument, finger-nail marks, or small pinch marks is among the earliest in Southeastern ceramics, carries through their entire history, but does not reach its greatest popularity until shortly before 1700 A.D. This is such a simple and apparently inevitable mode of decorating ceramics that it may surprise some readers to learn that it was subject to the same principles of diffusion and trend of development as more complex designs. The tradition is first measured in the Lower Mississippi as the type Tammany Pinched,<sup>1</sup> a soft, clay-tempered ware of the Tchefuncte Period that was either pinched or nail-marked. The markings either were confined to a band around the upper walls or covered the entire vessel. While

this type was originally described and named from the Red River Area, its greatest frequency of 2 per cent occurs in the Lower Yazoo Basin. In the Red River column its frequency on this time level is  $\frac{1}{2}$  per cent. There is no evidence of the occurrence of this or a similar treatment in either Florida or Texas, but this may be due to lack of data of comparable age. Northward from the Lower Yazoo Basin the frequency decreases markedly—approximately 1/10 per cent in the Sunflower and 1/50 per cent in the Memphis Area. Neither the Lower Arkansas nor St. Francis chronology extends far enough back in time to show the conditions in those regions.

In the Sunflower Area there is a 1/10 per cent occurrence of Bluff Creek Punctated,<sup>2</sup> a fiber-tempered ware decorated with carelessly applied all-over punctations. These were usually made with a blunt instrument, and fingernail

<sup>1</sup> Ford and Quimby, 1945, 58-59, Fig. 20 (type description).

<sup>2</sup> Haag, 1939; Phillips, Ford, and Griffin, 1951, 69-70.



impressions were only rarely used. Bluff Creek is an element of the early fiber-tempered pottery horizon that has been described from Gunterville and Wheeler basins in the Tennessee River Valley.<sup>1</sup> Data on the maximum occurrence of this type in that area are not available, but I doubt that the percentages are much higher than in the Sunflower Basin, for decorated pottery is comparatively rare in the early northern Alabama deposits. Similar fiber-tempered punched pottery extends to the Georgia coast and may be more popular there.<sup>2</sup> However, in that region a technique of linear punctation seems to be more common than the simple arrangement under discussion.

At this early date we seem to be dealing with two complementary traditions of simple punctating. Nail-marked and pinched decorations do not form important proportions of the ceramic decorations east of the Mississippi Valley, and punching with a tool is widely scattered but rare, as indicated. The evidence is far from conclusive, but there is a suggestion that the origin of pinched and nail-marked designs lies west of the Mississippi, possibly on the border of the southern Plains, for the later and more popular surge of this technique came from this direction. This, however, is pure speculation, for the clarifying data are not available.

The succeeding time period, F-E, witnessed a diminution of the popularity of nail-marking and pinching in these histories. Evansville Punctated,<sup>3</sup> which combines all three of the techniques, is found in frequencies of about 1/10 per cent from the Yazoo to the Memphis areas in the Mississippi Valley. No finger-nail or pinching treatment occurs in the Red River and Carrabelle areas; tool punching is so rare that it has not been necessary to set up types. Tool punching was retained in very small quantities in the Red River Area, but it was incorporated into more complex designs<sup>4</sup> that are examples of branches rather than of the central stream of cultural concepts we are trying to follow.

It seems desirable to call attention to one of the variations of the punctated design that was initiated in Time F-E. This is first observed as the application of punctations to the pecu-

liar cambered rims that are found on Marksville Incised and Marksville Stamped vessels. This rim treatment has been grouped with the more common practice of placing incised line patterns on these rims in Marksville Rim Incised,<sup>5</sup> a type that is found only in the Red River column and attains a maximum of 2 per cent. This is unfortunate, for it obscures the frequency of the punctated decoration, but it is obviously rare, perhaps less than 1/10 per cent. The origin of this punctated rim is not clear, for examples are found scattered through the Upper Mississippi Valley distribution of Hopewellian ceramics, but are rare everywhere.

This F-E period rim treatment, the marked drift towards confining decoration to upper vessel walls prevalent at this time, and the type Alexander Pinched<sup>6</sup> of northern Alabama, all seem to have contributed to the formation of Carrabelle Punctated<sup>7</sup> of the Northwest Coast of Florida. The punctations used to decorate Carrabelle vary widely—finger-nail impressions, pointed stick, hollow reed, rectangular, triangular, or round-bottomed indentations. They are arranged on the upper vessel walls. Among the limited number of vessel shapes, one, a jar with a cambered neck, bears a close resemblance to the common pot form of the Marksville ceramic complex. Carrabelle Punctated first appears in the Northwest Florida chronologies at Time E. It reaches a maximum popularity of 6 per cent in the Gulf Breeze chronology at D and then decreases to Time C, the end of the record. In the Carrabelle column a maximum of 4 per cent occurs at Time D, but after this date the type disappears abruptly for unknown reasons, probably because of some defect in the sample for this time span.

Tucker Ridge Pinched<sup>8</sup> was an accompanying type in Florida, slightly later in its initial appearance. The distribution of the pinching around the upper vessel walls suggests that this closely related design was also influenced by the tendency towards upper wall decoration. Popularity of the type is less than that of Carrabelle Punctated, and the relative proportions in the

<sup>5</sup> Ford and Willey, 1940, 85-86 (type description).

<sup>6</sup> Haag, 1939. This type is a member of the sand-tempered Alexander complex. Unfortunately its popularity in northern Alabama cannot be measured quantitatively, but it probably falls in the G-F time level.

<sup>7</sup> Willey, 1949, 425.

<sup>8</sup> Willey, 1949, 428-429 (type description).

<sup>1</sup> Haag, 1939; 1942, 514.

<sup>2</sup> Claffin, 1931, Pl. 12; Fairbanks, 1942.

<sup>3</sup> Phillips, Ford, and Griffin, 1951, 90.

<sup>4</sup> Ford and Willey, 1940, Fig. 37g-j.

Florida columns are reversed; Tucker has 1 per cent popularity in the Carrabelle Area and only  $\frac{1}{2}$  per cent in the Gulf Breeze region. Also, if the vertical positions of the graphed occurrences are reliable, it is later in the Gulf Breeze column. Perhaps this example of pinching has developed in the eastern part of the Southeast and is moving west.

It has already been noted that from Time F to Time C there are low frequencies of Evansville Punctated, a commonly punctated all-over decoration, in the Mississippi Valley from the Yazoo to the Memphis Area. During this same time there is a notable absence of anything related to these designs in the Red River column. Shortly before Time D simple punctating on the upper vessel wall appears in the Red River Area and is measured as the type Rhinehart Punctated.<sup>1</sup> It undoubtedly derives from Carrabelle Punctated, for the kinds of punctations (pointed stick, ring, rectangular, and triangular) are identical, as are most of the vessel forms, although they occur in different proportions. As in the Florida type, cambered necks to which the decoration is confined are also occasionally found. As is shown in Fig. 9 the  $\frac{1}{2}$  per cent maximum of Rhinehart is a rather pale reflection of the 6 per cent popularity of Carrabelle, and the time position of the Louisiana type is definitely later than its Florida counterpart.

At this point certain difficulties begin to be introduced by some inconsistencies in typology. Examples of punctate-incised designs are also included in the  $\frac{1}{2}$  per cent maximum frequency of Rhinehart. These are punctate-filled V's bordered by incised lines, occasionally alternating with line-filled V's, and a small proportion of other simple designs. This renders the Red River frequency of Carrabelle Punctated-like designs even smaller than is shown by the frequency bar. These other designs also become of interest at this time because they are the portion of the Rhinehart type that has connections with one of the types at the Davis Site in northeast Texas, Pennington Punctate-Incised.<sup>2</sup> This increases from the bottom to the top in the Davis Site, reaching a maximum of about 1 per cent.<sup>3</sup> The movement of this in-

fluence is from the Red River Area to the Texas Area, but this conclusion cannot be based on the internal evidence presented by these related designs. It derives from the chronological position of the Davis Site, as indicated by several other lines of evidence.

Wilkinson Punctated<sup>4</sup> of the Red River column has an appropriate time position and frequency (1/10 per cent) to be a peripheral manifestation of the pinched design listed as Tucker Ridge Pinched in Florida. Perhaps it is, in part; but the pinched and fingernail decorations often cover the entire surface of the vessels, and the shapes, generally large jars, also suggest connections with similar designs that are particularly abundant at the Davis Site. About 22 per cent of all the pottery from there consisted of pinched and fingernail marked sherds that Krieger concluded came from the lower parts of vessels classified as belonging to the types Weches Fingernail Impressed, Dunkin Incised, and Duren Neck Banded.<sup>5</sup> For this reason these punctated sherds were included in Krieger's "left-over" category and were not listed by provenience, making it impossible to determine the frequency trend.

Between Dates C and B northeastern Texas and an area extending to the north and west for an undetermined distance appears to be the popularity center for the vessel body decoration of pinching and nail punctating. This probably is a later retention of the basic features of the early examples of all-over punctating as represented by Tammany Pinched and Bluff Creek Punctated. Possibly this concept was held somewhere in that region ever since early ceramic times equivalent to our Time G, and the small occurrences of Evansville Punctated noted in the Mississippi flood plain north of the Yazoo Area are a reflection from this western sequence. Beginning at Time C this body treatment rapidly increases in frequency in the Mississippi Valley and occurs on shell-tempered pots of Mississippian shapes. The Memphis and St. Francis areas have a maximum of about 7 per cent and 16 per cent, respectively, as measured by the type Parkin Punctated at Time B. To the southward this frequency

<sup>1</sup> Ford, 1951, 83-85 (type description).

<sup>2</sup> Newell and Krieger, 1949, 104-108.

<sup>3</sup> Pennington Punctate-Incised is not exactly parallel with Rhinehart. It also includes designs related to Beldeau In-

cised (Krieger, 1949, Fig. 39f) and Dupree Incised (Krieger, 1949, Fig. 39h).

<sup>4</sup> Ford, 1951, 88-89.

<sup>5</sup> Newell and Krieger, 1949, 128.

decreases steadily until it reaches a frequency of only  $\frac{3}{4}$  per cent in the Red River Area. This is its southernmost limit. The extent of the tradition up the Mississippi Valley, beyond the limits of the surveyed region, and the location of the popularity center, will remain unknown until measurements have been made in that direction. I do not think that pinching and nail punctating necessarily entered the Memphis

and St. Francis areas directly from the region of the Davis Site in Texas. They are more likely a part of a Mississippian ceramic complex that crystallized farther to the north, after deriving the bulk of this decorative idea from the west, so that when Parkin Punctated entered the region we are able to treat chronologically, the trait was moving down the Mississippi Valley.

## ARRANGEMENTS OF STRAIGHT INCISED LINES

Figures 10, 11

Arrangements of straight lines placed parallel to one another in triangular areas are among the oldest motifs found in the Southeast. In the region under study this and closely related arrangements are first observed in the types Tchefuncte Incised and Lake Borgne Incised<sup>1</sup> (Figs. 10-11). In these types the lines were incised by the peculiar technique of jabbing the tool into the vessel surface so that they appear in effect to be an arrangement of linear punctations. This feature, as well as most of the simple motifs, is shared with the early fiber-tempered wares in Georgia.<sup>2</sup> There are also resemblances in design motif, rather than incising technique, to Alexander Incised of northern Alabama and fiber-tempered pottery, Orange Incised of the St. Johns region of Florida.<sup>3</sup>

Both Lake Borgne Incised and Tchefuncte Incised are a soft, clay-tempered ware; in both types a pot form with short wide neck, slight shoulders, and square base with four feet is common. Decoration usually covers the side walls. Also common to both is a separate panel of decoration on the short neck of the pot. The motifs on this panel are generally distinct from the body design and straight vertical or slanting lines, or line-filled V's, are commonly employed. In other examples the body is decorated and the rim is left plain. These features of shape and the specialized rim treatment appear to be most common in this part of the East on this time level, and both have obvious relationships to the ceramics of the Marksville Horizon that follow in Time E-F.

However, nothing on this horizon gives a clue to the motifs of body decoration of the following period.<sup>4</sup>

Tchefuncte Incised and Lake Borgne Incised are differentiated principally in the execution of their decorations; Lake Borgne is neat and Tchefuncte is quite careless. In geographical distribution they appear to be complementary. Tchefuncte appears first at the bottom of the time scale (G) with a 15 per cent frequency in the Red River Area and with only a 1/10 per cent maximum in the Yazoo Area where it seems to be slightly later. It extends no farther up the Mississippi Valley. Lake Borgne first shows with a 14 per cent frequency in the Lower Yazoo Area at Time G and has only a 1 per cent frequency to the south in the region where it was named. To the north it has a 1/10 per cent frequency in the two chronologies that extend back to Time G: the Sunflower River and Memphis areas. Similar ceramics were possibly made at this time along the northwest coast of Florida, but this is uncertain, for neither of the chronological columns in that region begins this early.

Both of these incised types decrease and disappear by Time F and leave no direct descendants. The punctated incision technique vanishes from the chronologies,<sup>5</sup> and these simple patterns of straight-line decorations cease to be vessel body designs. However, these designs may have been retained in the delicately incised rim decorations found on vessels in Period

<sup>1</sup> For type descriptions, see Ford and Quimby, 1945, 58, 61-62.

<sup>2</sup> Claffin, 1931, Pls. 12-13; Fairbanks, 1942.

<sup>3</sup> Griffin, 1945 (type description of Orange Incised).

<sup>4</sup> The possibility that Alexander Incised may have contributed some of the key-like motifs of these body decorations is discussed below.

<sup>5</sup> A similar technique is later employed in Florida in certain examples of Weeden Island Incised Punctated. The possible connections are discussed below.

E-F. The basic similarity between the pot form of the Tchefuncte (F-G) and Marksville (E-F) periods in the Red River Area has already been noted. All varieties of incising might be traced from motifs already extant in the earlier period, except for delicate cross-hatching, one of the most popular. Nothing earlier in this region, however, suggests an origin for the ideas of cambering the rim or placing a row of hemiconical punctations below the delicate rim incising.<sup>1</sup>

On the basis of a count of these specialized rims broken off vessels with other decoration on the vessel body, the type Marksville Rim Incised reached a maximum of 2 per cent between Times E and F in the Red River Mouth Area. It has not been found in significant quantities in the regions covered by the other chronological columns. This is somewhat surprising, for this characteristic "Hopewellian rim" is widely distributed over the Mississippi Valley drainage, being found at almost every site where the Hopewellian cultural complex has been identified.

In the lower part of the Mississippi Valley, Mazique Incised is numerically the most prominent of the several classes of decoration that followed and developed from these F-E period incised rims which gradually become larger. The classificatory lines that have been drawn in this development are considered to be crossed when the vessel paste becomes harder and more characteristic of Period E-D, when the body decoration disappears, leaving the straight-line incising the only vessel decoration, and when the hemiconical punctations below the incising of the early rims are either replaced by triangular-shaped punctations or abandoned. The decorated area of Mazique vessels is cambered in a small proportion of the examples.

The development from Marksville Rim Incised to Mazique Incised seems to be clearest in the Red River Area where the greatest number of earlier features are retained in Mazique. However, the type has a frequency maximum of only 1 per cent in this region, while

<sup>1</sup> Conceivably the latter idea derived from the practice of decorating the rim with nodes elevated by punching the vessel wall from the inside. This is a common feature of the Alexander complex of ceramics (Haag, 1939). If this was the origin it does not seem likely that the development centered in the Lower Mississippi Valley, for examples of the earlier practice are rare.

to the north in the Sunflower Area, it is more popular, with a peak frequency of 2 per cent. Still farther north, in the Memphis and St. Francis areas, only about 1/10 per cent occurrence is recorded. In the northern chronologies cambering of the decorated portion of the vessel wall and punctations below the decorated zone are not so common as to the south. Some of the decorations extend almost to the vessel base. If the graphed early occurrence of this type between Times E and F in the Sunflower Area is reliable, there is a distinct possibility that a portion of the pottery placed in this class has evolved directly from the G-F Period straight-line patterns found in Lake Borgne and Tchefuncte Incised. Alexander Incised which apparently centers in northern Alabama may also have contributed some influence. However, the tendencies derived from Marksville Rim Incised appear to dominate in the shell-tempered type that follows Mazique in this region.

Carrabelle Incised<sup>2</sup> is the related type found along the northwest coast of Florida. Punctations below the decorative band are not found in Florida, and some of the vessels are decorated to the base. Yet a substantial proportion follows the simple patterns that crystallized in Marksville Rim Incised and are confined to a band about the upper vessel walls. Carrabelle Incised has a 3 per cent frequency in the Florida chronology nearest the Mississippi Valley and 1 per cent maximum in the eastern column. The early chronological position of this type in the Carrabelle Area suggests the possibility that, as in the Sunflower Area, the decoration may have derived in part from preceding local decorations of an earlier time (G-F). This is only a suggestion in both instances, for I have not enough confidence in the sensitivity of the sampling and graphing technique or of the pattern-matching process to place much weight upon these small vertical displacements.

Most of the ceramic decorations belonging to this tradition in the Davis Site of northeastern Texas have been included with several other motifs that are discussed below in the type Dunkin Incised.<sup>3</sup> This increases slightly throughout the history of the site and has a maximum frequency of 4 per cent (Fig. 11). Dunkin is decorated with arrangements of line-filled nested triangles and slanting lines simi-

<sup>2</sup> Willey, 1949, 422-425.

<sup>3</sup> Newell and Krieger, 1949, 110-116.

lar to those occurring in Mazique and Marks-ville Rim Incised, but, in addition, includes more complex arrangements that are reminiscent of Lake Borgne Incised.<sup>1</sup> Some of the decorations form panels around the upper vessel walls, and a single row of punctations below the panel occurs, but is rare. Other designs cover the vessel walls; again there is a suggestion of a direct inheritance of early traits as well as tendencies that were channeled through the peculiar rims of Time F-E. It has already been noted in the foregoing that many of these vessels bear body decoration of fingernail marks and pinching.

In the Red River column Mazique develops into Manchac Incised<sup>2</sup> which has certain resemblances to part of the vessels included in Dunkin in form, paste, firing, and the usual omission of the single row of punctations. Manchac increases towards the end of its history to a frequency of 10 per cent. This family of designs seems to have a general tendency to increase rapidly in popularity after Time C in this part of the Southeast. The 4 per cent frequency of Dunkin Incised has just been mentioned. Prior to this all types have been tempered with clay and grit particles, but now a new shell-tempered type first appears shortly before Time C in all the areas north of Red River and increases rapidly. This is Barton Incised,<sup>3</sup> a member of a typical Mississippian ceramic complex. It reaches a maximum of 4 per cent in the Yazoo;  $\frac{1}{2}$  per cent in the Arkansas; 7 per cent in the Sunflower Area; 5 per cent in Memphis; and 7 per cent in the Lower St. Francis Area (Fig. 10). Barton decoration is usually found on large globular pots with short necks and wide mouths. Two handles are not uncommon. Line-filled nested triangles are usual, but arrangements of slanting lines and cross-hatching are often found. The incising was always placed in a narrow band on the upper vessel wall, and not infrequently it was bordered below by a single row of punctations, or in the northern areas by a row of small raised nodes. Geographically, there is a progressive tendency towards increase in size of vessels and decoration and greater sloppiness of execution from south to north. The Barton of the Yazoo Area most nearly resembles the neater

Mazique and Manchac. In the St. Francis, fingernail or pinching marks cover the body below the incised designs of many vessels of the Barton category. This certainly shows relationship either to the same combination found in Dunkin Incised or some highly similar type closely related to both.

Included in both Dunkin and Barton Incised is a straight-line, cross-hatched motif with the lines placed at 45 degrees to the plane of the vessel mouth, so that they enclose diamond-shaped areas. This motif was a common feature of the Marks-ville Rim Incised in Time E-F, but in the intervening time its history has been measured by special type designations, for its fortunes were not identical with those of Mazique. In Florida this variation is Keith Incised (Fig. 11). If the alignments of the Florida columns are accepted, Keith has a frequency of  $\frac{3}{4}$  per cent in the Gulf Breeze Area, mainly in Period C-D, and appears earlier, but with an occurrence of about 1/10 per cent, in Carrabelle. As is the case with Carrabelle Incised in these columns I am not very certain as to the proper interpretation of their relative time position and how much weight to place upon it. It is obvious that in the Red River column there is an interval between Times E and D when the cross-hatched design disappears from the sequence and reappears as Beldeau Incised (Fig. 10). The latter achieves a popularity of 1 per cent and frequently has the single row of triangular punctations that are a mark of inheritance from Marks-ville Rim Incised. These punctations are lacking in Keith; nevertheless, there is a possibility that these Florida occurrences form the connecting link absent in Louisiana, or are, at least, a reflection of a near-by center where this motif was being used during this time.

The developments from the Hopewell-Marks-ville rim that have been outlined appear to be a local instance of similar trends that were occurring in other parts of the Mississippi Valley. It has been suggested several times that it is probable that Upper Republican straight-line incised patterns in Nebraska and Iroquois ceramics on the eastern periphery of the Mississippi Valley were the end results of parallel developments from these rims that occurred in their respective regions.<sup>4</sup>

<sup>1</sup> Newell and Krieger, 1949, Fig. 41H.

<sup>2</sup> Quimby, 1951, 111-113 (type description).

<sup>3</sup> Phillips, Ford, and Griffin, 1951, 114-118.

<sup>4</sup> Ford and Willey, 1941; Griffin, 1946, 67.

A second significant influence was introduced by this rim decoration after Time E in nearly all parts of the Southeast. This is the tendency towards confining decoration to a band around the upper wall. In the preceding periods, as far back as the first appearance of pottery, designs were occasionally found only on the upper vessel walls, but these were rare; most designs covered the side walls of the vessels to the base. The decoration of the early stamped

wares of the eastern part of the South and the Upper Mississippi Valley covered the entire exterior of the vessel. Following Time E, with the development of a group of rim decoration-derived designs as described, the tendency towards upper vessel wall decoration becomes pronounced. This tendency also affects designs evolved from earlier body decorations and even the Southeastern stamped wares, notably Swift Creek Stamped.<sup>1</sup>

### CURVILINEAR INCISED TRADITION

Figures 12, 13

No curvilinear incised decorations occur in the region being studied during the early part of Period G-F. All of the designs are fairly simple arrangements of straight lines, punctations, and rocker stamping. The first curvilinear patterns, so common in later times, occur shortly before Time F and are components of the Marksville complex. Marksville Stamped and Crooks Stamped, both of which employed such motifs, are discussed below. The objective of this section is to focus attention on the portion of the curvilinear incising tradition that was not complicated by the employment of zones of stamping, punctations, or other techniques.

I am not prepared to settle the question of the origin of the sophisticated curvilinear designs of the F-E Period. Griffin has suggested that Tick Island fiber-tempered ceramics and possibly the types of the Alexander complex have contributed certain elements.<sup>2</sup> Willey and I have pointed to the possibility that traits may have come from Meso-America, having in mind the highly similar pottery of the Mexican Archaic, the Bay Islands of Honduras, and the Chavín and Cupisnique cultural manifestations of northern Peru. Possibly there are elements of truth in both hypotheses, but more research is necessary before more definite conclusions can be drawn.

Marksville Incised<sup>3</sup> is the earliest known example of curvilinear incised body decoration in the region we are studying. There is considerable freedom of motif in this type. Not only

do designs vary from vessel to vessel, but there is also very little repetition of the same motif on different sides of the same vessel. Motifs range from concentric circles and squares to realistic but stylized drawings of birds. Meander patterns are rare. The lines are cleanly incised and are wide and round-bottomed, as though drawn with a small cane or reed; evidently the same instrument was used to make the punctations that often border the lower part of the rim decoration. The incising is applied to the bodies of vessels and always covers the vessel to the base. On some examples the pattern extends under the base, covering the entire exterior, except the rim area which is decorated with the characteristic fine-line incising described in the preceding section, or is left plain.

Marksville Incised may be conveniently divided into two broad classes which, in the Red River Area at least, seem to be about of equal numerical occurrence. In one group the incised lines are placed close together; often the intervening space is no wider than the lines themselves,<sup>4</sup> producing a "fluted" decoration. In the other variation the incised lines are farther apart, and the spacing is the same as that for the similar incised lines of the accompanying type, Marksville Stamped. However, the rocker stamping that is a feature of the latter is not present.

Marksville Incised occurs between Time F and E, in all but one of the Mississippi Valley chronologies (Fig. 12). It has a  $\frac{3}{4}$  per cent fre-

<sup>1</sup> Willey, 1949, 429-435, description of late variety of Swift Creek Stamped.

<sup>2</sup> Griffin, 1945, 220-222; 1946, 63.

<sup>3</sup> Ford and Willey, 1940, 78-79 (type description).

<sup>4</sup> The upper of the two vessels used to illustrate Marksville Incised in the Red River column of Fig. 13 will serve as an example. The lower vessel illustrates the wide-spaced line variation.

quency in the St. Francis; 1 per cent in Sunflower;  $\frac{3}{4}$  per cent in Lower Yazoo; and 5 per cent in the Red River Area. Our present data include no comparable material on this time level on the northwest coast of Florida. At the mouth of the Red River Marksville Incised develops into Yokena Incised<sup>1</sup> after Time E. The unfortunate method of classification of material from the Peck Site has obscured the curves representing the termination of the earlier and the beginning of the later types, as explained in the foregoing. Yokena appears with a frequency of  $2\frac{1}{2}$  per cent and gradually decreases to approximate zero at Time D (Fig. 12). It has not been possible to make a typological distinction between Yokena and Marksville in the other areas, but in the Red River region it is quite clear. Yokena Incised has a harder paste than Marksville. The earlier thin, cambered, delicately incised rim decoration is replaced by a plain rim that is often folded to form a massive rim, triangular or rectangular in section. Sometimes four ears are placed on rims; the vessels become larger in Yokena Incised and decoration is frequently confined to a band around the upper wall. The design motifs also change. Bird designs are abandoned, and, while there is occasionally freedom of layout, most of the patterns are stylized and repetitive. Punctations are frequently placed at line termination. The curvilinear meander formed by one or more incised lines is very common and is repeated around the vessel with a monotony foreign to the ancestral type. A few examples of straight-line motifs are included in this group. Also counted as Yokena Incised are a small proportion of closely spaced linear designs composed of fairly narrow lines which are the Mississippi Valley counterparts of the Florida type Indian Pass Incised described below. Unfortunately I do not know whether these are as late in the time range of Yokena as the Florida situation would suggest.

In the Mississippi Valley chronologies north of the Red River Area a comparable type is absent between Times E and D. Development out of the ancestral Marksville Incised appears to center in the lower part of the valley and eastward along the Florida coast. In the Gulf Breeze column Basin Bayou Incised<sup>2</sup> reaches a maximum of 3 per cent at this time, approxi-

imating the frequency of Yokena Incised. Farther to the east in the Carrabelle Area this style decreases sharply and shows a popularity of only about 1/20 per cent.

In the type description Willey has equated Basin Bayou Incised with both Marksville Incised and Yokena Incised. I have already discussed this relationship and suggested that the resemblance is closer to the latter. The typical rim decoration is also missing in Basin Bayou; naturalistic bird motifs are absent, but designs remain much freer and varied than in the later Louisiana type; punctations are often placed at the ends of lines; thick folded rims are fairly common; and four ears are occasionally found on the rim. All these features distinguish Basin Bayou from Marksville Incised and are tendencies shared with the later Louisiana type Yokena. However, Basin Bayou contrasts with Yokena in having retained two characteristics not found in the latter; the freedom of design motif from vessel to vessel and on different sides of the same vessel has already been mentioned. The second characteristic is a tendency for the decoration to cover the vessel body from below the rim to the base. Upper wall zoning of decorations appears to have had a more pronounced effect on Mississippi Valley ceramics than on those along the Gulf Coast and probably appears slightly earlier in the former region.

Indian Pass Incised<sup>3</sup> follows Basin Bayou in both of the Florida columns. This is decorated with very fine and very closely placed incised lines. The motifs consist of curvilinear and straight-line herringbone arrangements. Willey does not indicate the proportion of straight-line designs included in this class, but I have the impression that the curvilinear arrangements are the more common. We are here concerned with this proportion of the type group. The meander like that illustrated in Fig. 13 seems to be common and this, together with the occasional meander patterns found in Basin Bayou, demonstrates that, while not so pronounced as in the Mississippi Valley, the same trend towards formalized, repetitive meander patterns existed in Florida.

Frequencies of Indian Pass in the two Florida chronologies are the reverse of those of Basin Bayou Incised. The maximum of the later type lies in the eastern Carrabelle Area, and, though

<sup>1</sup> Ford, 1951, 50-52 (type description).

<sup>2</sup> Willey, 1949, 375-376 (type description).

<sup>3</sup> Willey, 1949, 425-427 (type description).



it reaches only about 1 per cent, that is considerably more than the estimated 1/10 per cent found in the Gulf Breeze Area. I am undecided as to how much dependence to place upon the rather considerable vertical disparity between the type in these two areas. As the relative quantities suggest, this variation of incised designs was probably moving from east to west along the coast, but part of the apparent lag may be due to some uncontrolled malformation of the graphs.

In none of the chronologies does this tradition of curvilinear incised lines carry through Time D-C in the quantities found preceding and following those dates. The tradition must have been continued in some adjacent region in a comparable quantity, for it seems unlikely that it almost vanished and was suddenly revived. The nearest approach to quantitative continuity through this time is in the Mouth of Red River Area and the Lower Yazoo Basin (Fig. 12). This and other evidence leads me to think that such a continuity exists in the intervening region. If we had a chronological column for the portion of the Mississippi Valley around Vicksburg, Mississippi, it not only would in all probability show the suggested condition but would also provide a needed typological bridge between Yokena Incised and the highly stylized scroll and meander pattern of the later types.

Leland Incised,<sup>1</sup> with a maximum of 7 per cent, centering in the Yazoo Area, appears earlier than the other late curvilinear incised types. This is a widely spaced incised decoration composed of narrow lines forming whorls and meander motifs. This design occurs on shell-tempered bowls, pots, and bottles of the Mississippian ceramic complex and usually covers most of the exterior walls of the vessel. It should be noted that this is the first appearance of the whorl, or "scroll" as it is often called. After Time C this motif, frequently observed with a small central circle from which the lines radiate, is fairly common in the ceramics of this part of the Southeast and seems to have been used interchangeably with the earlier meander.

Leland does not extend very far north in the Mississippi Valley. It has a frequency of

1/10 per cent in the Lower Arkansas Area, 1 per cent in the Sunflower Basin Area, and is found no farther north. To the southward, in the Red River Area, Leland does not show in the chronology, but shortly after its first appearance in the Yazoo, Fatherland Incised<sup>2</sup> begins its life cycle. This is a very similar type probably derived either from Leland or from the unnamed and slightly earlier incised ware that I have assumed will center somewhere in the vicinity of Vicksburg. Fatherland Incised measures the major decoration used by the Natchez Indians when they were first described by French explorers about 1700 A.D.<sup>3</sup> The decoration is highly stylized. In the great majority of examples it consists of a narrow band of three parallel lines incised with a pointed instrument. This band of lines usually forms whorls, less often scrolls, and the units are always repeated around the vessel. Small circles are used at the centers of motif elements, and spaces on the vessel surface that otherwise remain plain are filled with triangles, also composed of the three-line band. The latter device is first observed in the Lower Mississippi on occasional examples of Yokena Incised.<sup>4</sup> Bottles and bowls are characteristic forms for Fatherland. The decoration covers most of the side walls of the vessels. Neither this nor accompanying types are shell-tempered.

Fatherland Incised increases steadily in popularity from its initial appearance in the middle of Period C-B to the end of the Red River chronology, when it had a frequency of about 5 per cent. In the latter half of its time span it is accompanied by Natchez Incised,<sup>5</sup> a very similar design in which only two spaced lines are generally used. Natchez Incised reaches a maximum of 1 per cent. Several closely related types occur in this part of the Mississippi Valley on this same time horizon, but these are not shown in the graphs. Chickachae Combed<sup>6</sup> is the principal type of the historic Choctaw of southeastern Mississippi. Bayougoula Incised was made by the Bayougoula group who, in 1700, lived a short distance below Baton Rouge, Louisiana, on the west

<sup>2</sup> Quimby, 1942, 263-264 (type description).

<sup>3</sup> Ford, 1936, 59-71.

<sup>4</sup> Ford, 1951, Pl. 8a, e, i.

<sup>5</sup> Quimby, 1942, 265 (type description).

<sup>6</sup> Collins, 1927. (The type is described and illustrated, but not named.)

<sup>1</sup> Phillips, Ford, and Griffin, 1951, 137-139 (type description).

bank of the Mississippi. Also there are close resemblances to approximately coeval types in Florida. Point Washington Incised<sup>1</sup> exhibits the parallel-line curving patterns of these late Mississippi Valley types, but in a fashion characteristic of Florida ceramic history the potters retained a freedom of choice in arranging the motifs that certainly would have offended the taste of the Indians to the west. The Florida chronologies do not cover the late periods, so we cannot be certain as to the relative popularity of Point Washington.

In the Mississippi Valley, northward from the Lower Yazoo Basin, is Rhodes Incised,<sup>2</sup> a type related to this general group. This ware is tempered with shell and is generally considered a Mississippian ceramic. The characteristic wide, closely spaced, incised lines usually form large whorls completely covering the body of the pot or bottle. Apparently on most vessels the motif is repeated four times; in a few instances there seem to have been separate rim decorations consisting of punctations. This design centers in the Sunflower and Memphis areas, where it has a frequency of 1 per cent. Except for minor occurrences in the chronologies immediately to the north and south it is not found elsewhere in the region we are studying. In several ways Rhodes Incised more nearly resembles Marksville Incised than the intervening types in the history of the Lower Mississippi. The breadth of the incised lines, the completely decorated vessel body, and the occasional use of a separate rim decoration are traits in common. This suggests that Rhodes was introduced into the valley from another region where the evolution of this sequence of decorative ideas pursued a different course and retained more features of the ancestral form. The regional source was probably to the westward near the Ouachita River in southern Arkansas, for Rhodes Incised has many features in common with Keno Trailed and Foster Trailed-Incised,<sup>3</sup> two types of the later Fulton Aspect of the Caddoan Area. I have illustrated both types in the East Texas column of Fig. 13, but actually neither is found as far west as the Davis Site. The shell-tempered Keno Trailed occurs in the Glendora Focus of

northern Louisiana and southern Arkansas in the drainage of the Ouachita River. This region lies immediately west of the Yazoo, Lower Arkansas River, and Sunflower areas. Foster Trailed-Incised is found farther to the west in the Belcher and Texarkana foci in the region where the states of Arkansas, Texas, and Oklahoma almost meet.

The bodies of both Keno and Foster are completely decorated with wide curvilinear designs. The concentric circle decorated example of Foster which is illustrated is a fairly common representative of the type. A variety of Marksville Incised that demonstrates the remarkable similarity has been inserted in the same chart (Fig. 13). The Foster vessel has small nodes at the center of the circles, and the incised treatment of the rim area has been altered, but there is virtually no difference in the plan of the decorations. An inheritance from Marksville Period vessel rims of a slightly different order is shown on the Keno vessel. This is the marked swelling on the neck of the bottle illustrating the type in Fig. 13. This seems to have been derived from the peculiar cambered rims that were so common on the earlier wares. Similar swelled necks, sometimes decorated with straight-line designs that contrast with the curvilinear body designs, or with punctations, are commonly found in Caddoan ceramics of the Fulton horizon.<sup>4</sup>

When quantitative chronological information is available from northern and western Louisiana it will be very interesting to analyze the steps by which a number of ceramic features of the Marksville time period were retained until a rather late date. Until this information is available we can only point out the resemblances, but cannot demonstrate precisely how the features came to be retained.

In the tracing of the changes that occurred in this stream of curvilinear, incised-line decorations, it has been interesting to note that there has been a definite consistency and strong retention of tradition in handling the problem of decorating vessel bodies. This series has its inception in Time F-E as an all-over body decoration. For a short time (E-D), particularly in the Red River Area, it is affected by the trend towards the restriction of decoration to a zone

<sup>1</sup> Willey, 1949, 463.

<sup>2</sup> Phillips, Ford, and Griffin, 1951, 127 (type description).

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

<sup>4</sup> For examples, see Moore, 1912, Figs. 61, 70, 112; 1909, Figs. 16, 69.

around the upper vessel walls that developed as a result of the emphasis on the rim-derived designs described in a preceding section. This trend apparently weakened considerably by

Time C and is retained only in some examples of Fatherland Incised. In the late types of other areas the decoration is again applied to the entire side walls of the vessels.

## DESIGN MOTIFS WITH ROUGHENED BACKGROUNDS

Figures 14, 15

A considerable portion of the ceramics from the western part of the Southeast is decorated with designs in which roughened and smooth areas of the vessel surface are contrasted. Incised lines, engraved lines, or rows of punctations fill the spaces between the contrasted areas and serve to emphasize the motifs. This stream of concepts is now considered.

This general scheme of decoration was employed in the Southeast very soon after the initial appearance of ceramics (Time G). It is found in the Tennessee Valley region of northern Alabama and on the northwest coast of Florida on such types as Alexander Incised which has parallel line roughing of areas, and Smithsonian Zone Stamped.<sup>1</sup> The latter exhibits line-bordered areas filled with either punctations or dentate stamping, usually consisting of parallel stamp impressions that are not rocked back and forth. The design layout of these two types varies considerably and includes "key-like" elements that resemble and are probably ancestral to similar features of the stamped background designs of the subsequent period. Alexander Incised and Smithsonian Zone Stamped have undoubtedly contributed to the "classic Hopewell" rocker-stamped decorations, represented in the Lower Mississippi Area by Marksville Stamped, but the available data do not permit us to deal with the quantitative or exact chronological phases of the problem. The only early decoration of this general class found in the chronological columns under discussion is Orleans Punctated.<sup>2</sup> This is a clay-tempered ware in which the body of the vessel is completely covered with angular and curved bands of punctations bordered by incised lines. The curved designs in particular contain the "key-like" elements already noted for Alexander Incised and Smithsonian Zone Stamped and are obviously related to these types. This material is known only from

sherds on most of which so small a portion of the design is shown that it is impossible to determine whether the primary motifs are expressed by the smoothed or the roughened areas of the vessel surface. It is obvious, however, that, like the designs of both Alexander Incised and Smithsonian Zone Stamped, considerable freedom in layout existed, and repetition of design from vessel to vessel and on different sides of the same vessel was by no means as common as at a later date.

Orleans Punctated has a frequency of about  $\frac{2}{3}$  per cent when it first appears at the bottom of the Red River chronological column, and it vanishes before Time F. It is not found in any of the other columns.

Crooks Stamped<sup>3</sup> and, slightly later, Marksville Stamped<sup>4</sup> are the next types to exhibit contrasting smoothed with roughened zones. The types are quite similar, differing principally in the tools used. While the edge of a crinkled pecten shell was used to roughen areas in Crooks, the background of Marksville Stamped is roughened with a narrow notched tool that was rocked back and forth, as it was moved sideways through the line-bordered zones. Wide incised lines outlined design motifs in both types, and the designs in each are expressed by the smooth, unroughened vessel surface. Bisected circles, contrasting vertical panels, curvilinear unidentifiable motifs, and, rarely, all-over stamping not bordered by incised lines are included in the counts of both types. However, by far the most popular design is a long-necked bird with a rapacious beak. This is a naturalistic representation hitherto unknown in the ceramic history of the eastern United States and virtually identical figures are found on the "classic Hopewell" pottery of Ohio, Michigan, Illinois, and Wisconsin. Such elements as wide incised lines, rocker stamping, and possibly the concept of negative

<sup>1</sup> Haag, 1939 (type descriptions).

<sup>2</sup> Ford and Quimby, 1945, 62-63 (type description).

<sup>3</sup> Ford and Willey, 1940, 81-82 (type description).

<sup>4</sup> Ford and Willey, 1940, 65-74 (type description).

designs occur at an earlier time, but this particular crystallization of traits constitutes something unique. Towards the terminal end of the time span of Marksville Stamped particular emphasis was placed on the straight-line incised rims underlined by a single row of hemiconical punctations. Early examples had a smaller proportion of these peculiar rims, and the rims were small.<sup>1</sup> Late vessels of the type had large rims, with a marked camber, and such rims are found on almost every vessel. In retrospect, it is easy to see that this was a trend towards the rims' becoming separate and primary vessel decorations as in Mazique Incised. This branch of development has already been treated in a foregoing section and need not concern us further here, for after Time E the separation of these two designs was almost complete. The designs that evolved from the Marksville Stamped body design rarely or never had additional rim designs, except in the Caddoan region.

Crooks Stamped reached a maximum of about 2 per cent soon after Time F in the Mouth of Red River Area. Marksville Stamped started at about the same time as Crooks Stamped, but reached its maximum frequency of about 10 per cent only in the latter part of the F-E Period.

The effect of the inconsistency in typing on the frequency curves at the transition between Marksville Stamped and its immediate descendant in the Red River Area, Troyville Stamped, has already been discussed. In the Mississippi Valley areas to the north Phillips, Griffin, and I were not able to make the same distinction between earlier and later phases of the rocker-stamped pottery of this group, so all were lumped together as Marksville Stamped.<sup>2</sup> Occurrences are shown in Fig. 14.<sup>3</sup>

<sup>1</sup> Ford and Willey, 1940, 65-74.

<sup>2</sup> Phillips, Ford and Griffin, 1951, 91-93.

<sup>3</sup> It is rather certain that the Marksville Stamped from the Lower Yazoo Basin Area to the north includes sherds with features that conform to both Marksville and Troyville of the Red River Area. This introduces the question as to whether these columns have been aligned correctly or not. Perhaps the portions of the Yazoo, Arkansas, Sunflower, and Memphis columns that now lie immediately about Time E should have been raised in relation to the Red River column until the maximum frequencies of "Marksville Stamped" occurrences were aligned with the Red River Marksville-Troyville maximum. This would not only have given the Marksville in these columns about the same overall span of time as is shown for the Red River Area, but

Marksville Stamped reaches a maximum of approximately 2 per cent in the Yazoo, 1 per cent in the Lower Arkansas, 1 per cent in the Sunflower, and 1/10 per cent in the Memphis Area. This suggests a gradual fading out of this design from south to north, but it is well known that very closely related pottery is fairly common on sites in the Upper Mississippi drainage. Griffin states that recent work by the University of Michigan at the Snyder Site in southern Illinois has shown a larger proportion of this decoration than is found in any of the refuse deposits of the South. Unfortunately, the exact figures are not yet available.

In the Red River Area Marksville Stamped is followed immediately by Troyville Stamped<sup>4</sup> which has been compared with Marksville Stamped and with Alligator Bayou Stamped of the northwest coast of Florida in a preceding section (p. 334). Briefly, the ware is better fired, the vessels are larger and tend towards large cauldron and barrel shapes, the cross-hatched rims are lacking, the rocker stamp is rarely notched, the design execution is more careless, and motifs are no longer naturalistic. They tend to be expressed positively as well as in a negative fashion, and repetitive meander and other curvilinear patterns are usual. The freedom and variety of the Marksville Stamped designs are lost in a trend towards conventionalized designs. Elaborate folded rims become common. Troyville decreases in popularity and disappears by Time D.

Although Alligator Bayou Stamped on the Florida northwest coast seems to be the equivalent of Troyville, as has already been argued (p. 336), it retains the freedom of design layout of the earlier type Marksville and avoids the trend towards repetition of design units that is taking place in the west. Nevertheless in this type, as in Troyville Incised, the realistic representation of the long-necked birds of the earlier ceramics has been abandoned.

a much better fit for the accompanying types Churupa Punctated and French Fork Incised. Other accompanying types would also have to be considered, of course. This again illustrates the subjective nature of this entire alignment procedure. Perhaps Griffin's criticisms that I have tried to make Louisiana the "Garden of Eden" for Mississippi Valley cultures is responsible for a too conservative handling of the exact alignment of this portion of these chronologies.

<sup>4</sup> Ford, 1951, 49-50 (type description).

Occasionally, allowing free play to imagination, highly conventionalized parts of birds (head, wings, etc.) can be recognized. On rare vessels bird heads modeled in full round are attached. This is the beginning of a trend away from pictorial representation to modeling of bird figures that reaches its peak in Florida in the types Weeden Island Punctated and Weeden Island Incised.

If my chronological alignment is correct, Alligator Bayou Stamped begins its cycle in the Gulf Breeze Area with a 5 per cent maximum just before Time E and decreases steadily until Time D (Fig. 15). It does not appear to the east in the Carrabelle Area graph, but has been found in burial mounds as far to the southeast as Tampa Bay. There seems to be little doubt but that this design diffused eastward from the Lower Mississippi region. Quantity, relative time position, and internal characteristics of the type all appear to confirm this suggestion.<sup>1</sup> However, I am by no means certain that the type Alligator Bayou Stamped did not appear on the coast of Florida until almost Time E. Very likely it occurred there earlier than is shown by Willey's strata cuts, and the earlier forms will be more closely related to Marks-ville Stamped. We do not now have the data to solve this problem. Willey's quantitative information begins in the lower levels of the Fort Walton and the Gulf Breeze sites (Fig. 4), and the evidence necessary for the sort of comparisons that are made here are not available for western Florida before this time.

In the Florida areas Alligator Bayou Stamped in the early half of its time span is accompanied by the type Santa Rosa Punctated.<sup>2</sup> This pottery is decorated with contrasting plain zones and areas filled with hemiconical punctations. These zones are both curvilinear and rectilinear and are separated by round-bottomed incised lines, the type of incising that is characteristic of this general time horizon in the Southeast. The fragments that have been collected are so small that little can be said as to design motifs.

Santa Rosa Punctated shows relationship to the earlier punctated varieties included in the types Alexander Zoned Stamped<sup>3</sup> of northern Alabama, and perhaps the fiber-tempered Tick

Island Incised<sup>4</sup> of the St. Johns region of north-eastern Florida. It also is apparently related to Orleans Punctated which dates early in the G-F Period of the Mouth of the Red River Area. In the immediate region of the Gulf Breeze Area of the Florida Coast no earlier ceramic decoration can be connected to Santa Rosa Punctated, probably because the chronological evidence does not extend far enough back in time to have revealed a local variety of the line-bordered punctated types just cited for the neighboring regions. Santa Rosa Punctated, with a maximum frequency of about 2 per cent at the beginning of the Gulf Breeze chronology, is probably the primary channel through which this older decorative concept was modified and transmitted to later similar types in this part of the South.

Between Time F and E, the Marks-ville Period in the Mouth of the Red River chronology, none of the pottery bore the characteristics of this branch of the family of zoned decorations. Churupa Punctated appears slightly after Time E, with an initial frequency of 1 per cent, which decreases to the end of the Troyville Period, Time D. Except for paste, shape, features, and probably more conventionalized design motifs, it is identical with Santa Rosa Punctated. Apparently the zoned punctation concept vanished from this chronology at the end of Orleans Punctated and was re-introduced from the Florida Coast. Churupa Punctated is found in the Lower Yazoo Basin with a maximum frequency of about 1/10 per cent, and it has about the same frequency in the lower Arkansas. It does not appear in the other columns to the north, and I doubt that it will be found farther up the Mississippi Valley.

Santa Rosa and Churupa Punctated, with their distinctive wide incised lines and bold hemiconical punctations, measure one of the strains of concepts that immediately after Time E enters into the formation of the group of designs classed as Weeden Island Punctated-Incised and French Fork Incised.

In his type description, but not in his strata excavation data, Willey has defined two types in the Florida pottery of this tradition. These are Weeden Island Punctated<sup>5</sup> and Weeden

<sup>1</sup> Willey, 1949, 562 ff.

<sup>2</sup> Willey, 1949, 378 (type description).

<sup>3</sup> Haag, 1939 (type description).

<sup>4</sup> Griffin, 1945.

<sup>5</sup> Willey, 1949, 419-422.

Island Incised.<sup>1</sup> Both employ contrasting roughened and smoothed areas, triangular and ring punctations at the ends of lines, and conventionalized birds are also frequently depicted. Bird heads modeled in full round often project, and vessel designs delineate wings and other parts of birds. Weeden Island Punctated can be distinguished by the rows of delicate pointed or triangular-shaped punctations that outline the designs instead of incised lines, as well as by the roughening of the background with similar delicate punctations. This variation centers at the eastern end of the northwest coast and the central west coast of Florida and, according to Willey, is found mainly in the Weeden Island II Period, slightly later than the corresponding type Weeden Island Incised.<sup>2</sup> The linear punctating trait possibly stems from similar treatments in early fiber-tempered types resembling those found at Stallings Island.<sup>3</sup>

In Weeden Island Incised the designs are outlined with incised lines. The background roughening consists of hatched lines, cross-hatched lines, large circular punctations very similar in total effect to Santa Rosa Punctated, or small punctations, either triangular in shape or made with a pointed instrument. Willey has noted that the incised and punctated elements of these designs tend to be bolder and heavier in the earlier part of the time range.<sup>4</sup> In other words, earlier examples have a greater similarity to the wide-line and large punctated wares of the Santa Rosa complex, and this type exhibits a trend towards the more delicate designs found in Weeden Island Punctated.

Willey has described the typological and temporal variations of these types in Florida, but since the two divisions are combined in his stratigraphic data I am forced to present them as a single type that has been called Weeden Island Punctated-Incised. This is not too unfortunate, for corresponding divisions have not been made in the highly similar material from the Lower Mississippi Valley. This pottery is called French Fork Incised. It is interesting to note that the majority of examples of French Fork Incised are similar to the western Florida type Weeden Island Incised,

and only a few designs are outlined by stippled lines, as in the eastern variation. French Fork Incised resembles the Florida types in that it employs smoothed bands to express the decoration motifs that contrast with roughened backgrounds. However, these motifs do not usually have the freedom typical of the Florida material. Conventionalized bird figures are never recognizable, and there is a strong tendency towards formalization and repetition of the design elements around the vessel walls. Meanders, which sometimes occur as single elements on the Florida specimens, are the commonest motif for French Fork. Triangular or ring punctations as line terminals, a single line centered in the negative band, and background roughening of hatched lines, cross-hatched lines, and large and small punctations are found in both regions.

On some of the Florida examples of Weeden Island Punctated-Incised, decoration is confined to the upper vessel walls and does not extend to the base as did the earlier Santa Rosa complex designs. Even more common in French Fork, this trend, as has already been suggested, attended the development in Time E-D of rim-derived designs. Both the foregoing typological considerations and relative popularity suggest that the Gulf Breeze Area of the Florida northwest coast was the major region of crystallization for this group of decorations.<sup>5</sup> Transitions from the earlier Santa Rosa complex types are much more striking there, and Weeden Island Punctated-Incised has a maximum frequency of about 5 per cent. In the Red River Area the maximum of French Fork is 2 per cent, also at about Time D. Northward up the Mississippi Valley, frequencies decrease to only  $\frac{1}{2}$  per cent in the Lower Yazoo and to about the same amount, but with a more spotty occurrence, in the Sunflower Area. I am inclined to discount the early position of the latter.<sup>6</sup>

Mr. Harry J. Lemley has reported on excavations at the Crenshaw Site on Red River in the southwestern corner of Arkansas.<sup>7</sup> This site, 150 miles north of the Davis Site in east-

<sup>1</sup> Willey, 1949, 411-419.

<sup>2</sup> Willey, 1949, 421.

<sup>3</sup> Claffin, 1931; Fairbanks, 1942, 223-231, Fig. 22.

<sup>4</sup> Willey, 1949, 419.

<sup>5</sup> Willey, 1949, 568.

<sup>6</sup> As has been noted above, I am not pleased with the time position of these Mississippi Valley columns at Time E in relation to the Red River. I suspect that this portion of all is placed too early.

<sup>7</sup> Lemley, 1936.

ern Texas, yielded burials accompanied by a complex of pottery vessels that compares closely with the complex in the Red River Area between Times C and D. Included are several examples of late forms of French Fork Incised. I have argued elsewhere that this pottery pre-dates the material discovered at the Davis Site, the type site for the Alto Focus.<sup>1</sup> Despite the geographic displacement, illustrations of several of these vessels are given in their approximate time position in the East Texas column (Fig. 15). Unfortunately, for present purposes, these grave deposits are not suitable for frequency studies.

In the Gulf Breeze Area of the Florida Coast, Weeden Island Punctated-Incised evolves into Fort Walton Incised after Time D. I am not certain that this type begins its life cycle as early as is shown in Fig. 15. Its position is based on the evidence presented in Fig. 4, the graph of the Gulf Breeze Area, and the configuration is given in strata cuts only from the Fort Walton Site. It is possible that this deposit is "telescoped" in its upper levels and that this type actually occurs slightly later than it seems to. Evidence from other middens covering this time span is necessary before the question can be settled. As graphed, Fort Walton Incised has reached a 4 per cent popularity at the end of the Gulf Breeze chronology at Time C. It is rather certain that the type is even more representative of Time C-B in both this and the Carrabelle Area. Evidence to this effect from surface collections and grave goods is available in quantity, but detailed stratigraphic data such as are needed here are lacking.

The principal design of Fort Walton Incised is a variation of the meander—a variation that tends towards the scroll or whorl that becomes very popular in other parts of the Southeast after Time C. Other design motifs are crescent forms, S figures, rectilinear stepped figures, and pendent loops. Small circles generally form design element nuclei for scroll designs. The design is composed of smoothed bands outlined by wide lines, rectangular in cross-section; the backgrounds are roughened either by parallel hatched lines or dot punctations, the latter treatment being by far the more frequent. The repetition of motifs, observed as a strong tendency in French Fork to the west

at a slightly earlier date, now becomes an important feature of this tradition in Florida. The scrolls of Fort Walton Incised are usually repeated and generally confined to a line-bordered band around the upper walls of the vessel. Vessel shapes have changed somewhat from the preceding Weeden Island Punctated-Incised and tend to become standardized, and the bottle form first appears.

Remarkably enough, a striking parallel development has taken place on the western edge of the area under study. This is measured as the type Crockett Curvilinear Incised of the East Texas Area.<sup>2</sup> Although the vessel shapes differ, this type features highly similar negative patterns tending towards scrolls instead of the earlier meander, circles as nuclei for the design units, and punctations and parallel lines as the roughening element for the backgrounds. Incised lines are sometimes centered in the negative band as in the earlier types of Time D-C. In addition to these scroll designs, Crockett includes patterns in which the scroll has become even more conventionalized. Line-bordered circles filled with punctations or incised lines are connected by crossed lines forming triangles that are contrasted, in turn, by punctating or incising alternate areas.<sup>3</sup> The formalized repetition of design elements which first developed in the French Fork of the Red River Area is here carried to its logical culmination. Identical motifs are repeated a number of times around each vessel as well as from vessel to vessel. The undulating bands with roughened backgrounds that are included in the Red River Mouth French Fork type<sup>4</sup> are very similar to those listed by Krieger as "Crockett-Pennington Hybrid Designs." These are excluded from the count of Crockett at the Davis Site. Crockett has a maximum frequency of about 2 per cent and changes very slightly through the time represented by the Davis Site deposits.

Krieger has noted that in the lowest level of the Davis Site there are no scroll designs on engraved pottery, but that Crockett with its incised scrolls was already present.<sup>5</sup> In the two later phases the engraved wares begin to exhibit scrolls that generally have circle nuclei similar to those on Crockett. This is hardly surprising,

<sup>1</sup> Newell and Krieger, 1949, 98-101, Fig. 36.

<sup>2</sup> Newell and Krieger, 1949, Fig. 36e-f.

<sup>3</sup> See Ford, 1951, Fig. 22a, d, Pl. 12j.

<sup>4</sup> Newell and Krieger, 1949, 98.

<sup>5</sup> Ford, 1951, 125-129.



for the group of negative meander decorations just discussed had a profound influence on the late Fulton Aspect engraved ceramics. Engraved meanders and scrolls are common over all the Arkansas-Louisiana-Texas-Oklahoma region occupied by the historic and protohistoric Caddoan Indians. Nor did all these designs develop through such attenuated examples of this influence as Crockett Incised, for many of them exhibit earlier features not found in that type. Among these are true meander motifs, spurred lines derived from punctated lines, and cross-hatched as well as parallel line background roughening. A selection of three late Caddoan engraved vessels shown in Fig. 15 will illustrate this discussion. Many illustrations in the literature show that this portion of late Caddoan ceramics, far from being a degenerate peripheral manifestation, represents a vigorous refocalization formed of the tradition that has just been traced and the imported engraving technique. The combination produced some of the handsomest pottery of the East.

The engraved wares with delicately cross-hatched background areas seem to be concentrated in the lower valleys of the Ouachita and Red rivers. The historic type Natchitoches Engraved serves as an example.<sup>1</sup> It is hardly surprising then that the prominent engraved type that intruded into the Red River Mouth Area featured zones of delicate cross-hatched engraving bordered by polished-over incised lines. This type is Maddox Engraved.<sup>2</sup> It begins shortly after Time C and by the end of the chronology, about 1700 A.D., reaches a frequency of  $1\frac{1}{2}$  per cent. Maddox features curvilinear designs, whorls, and scrolls, and with other related types of this same period it shares a tendency to have the design motif expressed in the roughened zones rather than the smoothed areas of the vessel surface. This is a reversal of the earlier practice in this tradition.

The closely related type farther north up the Mississippi Valley is Walls Engraved.<sup>3</sup> This seems to have developed from the eastern Caddoan engraved wares and like them features whorl or scroll motifs expressed by bands roughened with delicate cross-hatching. Walls En-

graved has a very late time position and is found in the following frequencies: Lower Yazoo, 1/50 per cent; Lower Arkansas,  $\frac{3}{4}$  per cent; Sunflower River,  $\frac{1}{2}$  per cent; Memphis Area, 1 per cent at the end of the chronology; and St. Francis, 1/50 per cent. The type is closely related to Moundville Engraved and undoubtedly spread to central Alabama from northern Mississippi.

Owens Punctated, a shell-tempered type found at the end of the Mississippi Valley chronologies, is known from the Yazoo to the Memphis Area. It derives from this same general tradition and features punctations zoned by curvilinear as well as rectilinear incised lines. The percentages of occurrence are very low, and no ancestral forms have been found in the areas where the type has been recorded. Apparently this is another instance of a tradition that continued in the Caddoan Area to the west and diffused into the Mississippi Valley at a late date. Its greatest frequency, only  $\frac{3}{4}$  per cent, occurs on the western side of the flood plain in the Lower Arkansas River chronology. Moore<sup>4</sup> illustrates highly similar wares from the Ouachita Valley in Arkansas, where they undoubtedly date in the later Fulton Focus.

Although some rectilinear designs are found in the early Orleans Punctated and related coeval types, the majority of the line-bordered punctated zones form curvilinear patterns. The dominantly curvilinear negative tradition, the subject of the foregoing pages, first crystallized after Time F in the form of Marksville Stamped. However, the tradition of rectangular bands of punctations that formed positive decorative motifs must have been continued in some near-by region for which we have no data, for it reappears in the chronologies of these areas shortly before Time D. In most areas occurrences are so minor that these patterns have been treated as variations of similar material, and the sherds showing these designs have not been segregated. Consequently, the full history of this variation cannot be presented.

Positive, rectilinear, banded, punctated decorations form a small proportion of Rhinehart Punctated in the Red River Area and Fort Walton Incised<sup>5</sup> in Florida. Englewood Incised and Sarasota Incised,<sup>6</sup> late types in peninsular

<sup>1</sup> Walker, 1935.

<sup>2</sup> Quimby, 1942, 266 (type description). Incorrectly described as incised.

<sup>3</sup> Phillips, Ford, and Griffin, 1951, 127-129.

<sup>4</sup> Moore, 1909, Figs. 61, 64, 68, 139.

<sup>5</sup> Willey, 1949, 460.

<sup>6</sup> Willey, 1949, 472-474.

Florida, not illustrated here, fit into this group. Dupree Incised,<sup>1</sup> a type in the Red River column, entirely composed of the rectilinear bands (Fig. 15), follows immediately after Rhinehart at Time C and has a maximum frequency of  $\frac{1}{2}$  per cent. In east Texas the corresponding material forms the majority of the type Pennington Punctate-Incised<sup>2</sup> which has a frequency of about 1 per cent and also dates at about Time C. A small portion of Owens Punctated of

the Yazoo Basin and other Mississippi Valley chronologies to the north is also of this same style of design as is shown in the drawing in the Lower Arkansas River column of Fig. 14. As the variation is merged with curvilinear designs in the sherds counts, it is not possible to give the exact frequencies in these areas, but it cannot be very large; everywhere the total of Owens is less than 1 per cent.

## ROCKER STAMPING

Figures 16, 17

In the preceding section I have traced the history of a method of expressing designs by contrasting areas of the vessel surface. The following pages present the history of a specific technique, rocker stamping. This technique has a wide distribution over the eastern United States, and there is little reason to doubt but that all the examples are historically connected. However, attention is here confined to the areas for which quantitative chronologies are available. Here this technique was first used to produce an all-over vessel decoration, later as roughening for line-bordered zones, and, finally, as a rim-derived decoration.

Tchefuncte Stamped<sup>3</sup> is the earliest type marked by rocker stamping found in these nine chronologies. The ware is clay-tempered, coiled, crudely manufactured, and fired at a not very high temperature. The jar is the usual form, and many of the vessels had four legs. Decoration consists of carelessly applied rocked stamping made with a smooth, or more often a two-pronged, tool rocked back and forth as it was moved sidewise to produce a single row of stamped impressions. The rows were always arranged parallel to one another and extended horizontally around the vessel, vertically, or at an angle to the rim. The exterior vessel wall was covered with this decoration; occasionally a separate decoration on the rim area consisted of similar stamping placed at a different angle, or of the peculiar punctated incising that was also current at this time.

Tchefuncte Stamped appears at the bottom of several of the chronologies; Time G (Fig. 16). It reached a maximum frequency of 15 per cent in the Red River Area; 5 per cent in

the Yazoo; and only about 1/100 per cent in both the Sunflower and Memphis areas. Very possibly the same or a closely related type of equivalent age will be found along the northwest coast of Florida, but the two chronologies available do not extend far enough back in time to bear upon this possibility. As far as is known at present, the center for Tchefuncte Stamped is in the southern part of the Mississippi Valley, and its 15 per cent maximum in the Red River Area is its greatest frequency. It disappears by Time F.

The two principal immediately succeeding types, Crooks Stamped and Marksville Stamped, have been briefly described in the preceding section where the generally negative line-bordered designs were emphasized. Rocker stamping, here our particular interest, was used to roughen the background and to contrast it with the smoothed areas that expressed the design motifs. The rocker stamping on Marksville Stamped is usually delicately executed; the tool used was almost always provided with fine teeth, so that, unless examined closely, many specimens can be mistaken for delicate check stamping. However, the stamping technique was the same as that employed in the much coarser Tchefuncte Stamped; the tool was rocked back and forth as it was moved sidewise across the areas to be roughened. The zoning of most of the examples of Marksville and Crooks Stamped represents a marked departure from the simple lack of complexity in the earlier Tchefuncte Stamped. Rare examples, however, of the vessels that have been counted in the two later types also show the same simple parallel arrangement of stamped rows.<sup>4</sup>

<sup>1</sup> Quimby, 1951, 122-123 (type description).

<sup>2</sup> Newell and Krieger, 1949, 104-108.

<sup>3</sup> Ford and Quimby, 1945, 56-57 (type description).

<sup>4</sup> Ford and Willey, 1940, Figs. 31b, 39d.

Marksville Stamped, dated principally between Time E and F, reaches a frequency of 10 per cent in the Red River Area, 2 per cent in the Lower Yazoo, 1 per cent in the Lower Arkansas, 1 per cent in the Sunflower, and about 1/10 per cent in the Memphis Area.

Between Times E and D the use of zoned rocker stamping is continued in the Mouth of the Red River and the western Gulf Breeze Area of the Florida Gulf Coast. Troyville Stamped, the Red River type, begins with a frequency of 9 per cent and disappears near Time D.<sup>1</sup> The design motifs tend to become conventionalized, but for present purposes of more interest is the fact that the rocker stamp is most frequently smoothed rather than dentated as in the preceding type and the stamping is more carelessly applied. Not only better firing but shape and other features tend to differentiate Marksville Stamped and Troyville Stamped. The parallel type in the Florida Gulf Breeze Area is Alligator Bayou Stamped. In this too the design motifs have tended to become conventionalized rather than realistic. The stamping tools that were rocked to roughen areas in these designs were either smoothed or dentated. Apparently dentation is slightly more frequent than in Troyville Stamped. Alligator Bayou first appears at the bottom of the Gulf Breeze chronology with a frequency of 6 per cent and decreases to zero by Time D.

This, in brief, is the history of zoning of rocker stamping in these areas, except for a curious survival in the Caddoan Area of the adjacent parts of the states of Arkansas, Louisiana, and Texas. In this region not only the technique of stamping, but also the other essential features of this zoned decoration survive into the late or Fulton Aspect as the type Cowhide Stamped.<sup>2</sup> This is found in the Bossier Focus recently defined by C. H. Webb and is also illustrated from southwestern Arkansas by Harrington<sup>3</sup> and Moore.<sup>4</sup> Other examples are in the collection of Mr. Harry J. Lemley of Hope, Arkansas. Although Cowhide Stamped has not been found in the exact part of eastern Texas where the Davis Site is located, I have placed a couple of drawings in that column in approximate temporal position.

The stamping, either zig-zag or impressions placed parallel, is used to roughen either the design area or the background. There is considerable use of scroll-like design motifs; some of the vessels have a separate rim decoration, undoubtedly a retention of the feature so common in the F-E Period ceramics. These vessels are usually round-bottomed and shell-tempered. Despite the fact that a substantial number can be produced to illustrate the type, there is little doubt but that its frequency is low, for really large quantities of Caddoan pottery have been recovered from graves. Unfortunately, refuse deposit data are not available. This is not an isolated phenomenon, for a number of other ceramic traits, old in the Mississippi Valley, have been preserved in this region. These are summarized below.

It has already been mentioned that a small proportion of the type Marksville Stamped consisted of vessels on which the rocker stamping was not zoned by incised lines and contrasted with plain areas but was arranged in parallel rows and covered the vessel body. These rare examples, highly similar to the earlier Tchefuncte Stamped, appear to have been early in the history of the type. Nothing exactly similar is found in the Red River Area towards the end of Period F-E or in the succeeding Period E-D. However, in the western end of Florida this pattern, originating in Tchefuncte Stamped, survived with considerable vitality. Santa Rosa Stamped,<sup>5</sup> a similar arrangement of rocker stamping, has a frequency of 6 per cent at the beginning of the Gulf Breeze chronology shortly before Time E and diminishes to zero before Time D. It differs from Tchefuncte in that the stamping tool was usually smooth, but sometimes dentated, and the vessel paste was harder and better fired. This type probably is earlier in the western Florida area than is indicated by the stratigraphic data now available in the Gulf Breeze Area, for some of the vessel forms illustrated for burials by Moore are very similar to those of the Tchefuncte Period. Relative frequencies also indicate a close kinship to the early Lower Mississippi type, for Santa Rosa Stamped decreases rapidly to the east. The Carrabelle column shows an occurrence of only about 1 per cent (Fig. 17).

In the Mississippi Valley, north of the Red River Area, there is a clay-tempered type dating

<sup>1</sup> The reason for the peculiar shape of the Troyville Stamped frequency curve has been discussed on p. 326.

<sup>2</sup> Krieger, 1946, Fig. 18.

<sup>3</sup> Harrington, 1920, Pl. 53.

<sup>4</sup> Moore, 1912, Figs. 112, 118.

<sup>5</sup> Willey, 1949, 376-378 (type description).

between Times D and F which is also highly similar to Tchefuncte Stamped in the arrangement of the rocker impressions. The paste is harder, and the rocker is generally smooth, in contrast to the rough notching of the earlier type. This is Indian Bay Stamped<sup>1</sup> which has a frequency of about 1/10 per cent in the Yazoo, 1/10 per cent in the Lower Arkansas, 1 per cent in the Sunflower, and 1/10 per cent in the Lower St. Francis (Fig. 16). These frequencies are not inconsistent with those of Tchefuncte Stamped, where it has been measured in this general region, notably the Sunflower and Memphis areas.

The latest variety of rocker stamped decoration in the Lower Mississippi Valley is Chevalier Stamped.<sup>2</sup> This dates between Times E and C, and the maximums fall about Time D. There is a 1 per cent maximum in the Red River Area, and it is found in only two other of the chronologies, Lower Yazoo and Sun-

flower, where occurrences are not over 1/10 per cent (Fig. 16). Chevalier Stamped is a well-fired ware with the vessel shapes of this period of Lower Mississippi Valley ceramic history. The decoration consists of parallel rocked impressions of a smooth stamp arranged vertically in a band around the upper vessel wall. Occasionally a single row of triangular punctations is below the stamped band, a feature which, together with the placement of the decoration, tends to identify the type with the group of decorations current at this time derived from the Marksville incised rim. This may very well also have been the origin of Chevalier, for in Period E-F a small proportion of the vessels with the characteristic cambered rims had vertical rows of rocker stamping on the rims instead of the more popular incised lines. This variation of the "Hopewellian Rim" is also found in Illinois and Missouri.

### PADDLE-STAMPED TRADITION

Figures 18, 19

There appear to be two major contrasting ceramic traditions in eastern North America. The pottery discussed in the foregoing pages belongs to a predominantly smoothed, incised, punctated, and painted group with a southern orientation. The contrasting tradition is quite distinctive in both shape and surface finish. Typically it consists of conoidal-based jars or rounded bowls with surfaces malleated with a paddle. This process served not only to consolidate the paste, but to produce impressed decorations by the use of various textured surfaces. This is the well-known "Woodland" pottery which seems to center in the Northeast, and as McKern and Spaulding have suggested, it may well have diffused across Bering Strait and have an origin in the Old World Mesolithic.<sup>3</sup>

The earliest form of paddle-marked pottery in these southern chronologies bears impressions of plain-plaited fabric. This type, measured as Withers Fabric Marked, here centers in the Sunflower Area, with an initial frequency of about 31 per cent at Time G (Fig. 18). Its

only other occurrence in substantial quantity is in the Memphis Area, immediately to the north, where it has a frequency of about 15 per cent at the beginning of the chronology. In both areas the percentage decreases steadily through Period G-F, and the type disappears shortly after Time F. To the north and south occurrences of Withers are very minor and appear to center about Time F. The Red River Area has a frequency of approximately 1/100 per cent. The type is missing from the Texas and Florida chronologies.

Unfortunately Withers Fabric Marked is known only from sherds from which we have very few suggestions as to vessel shapes and sizes. However, both deep jars with slightly constricted mouths and simple bowls are indicated. Vessel bases were probably rounded. Withers is closely related to the group of similar types that form an important element of the early ceramics in the central part of the East.<sup>4</sup> It seems quite certain that the type was diffused into this portion of the Mississippi alluvial valley region from the northeast rather than directly down the valley. The principal surge seems to have come from northeastern Missis-

<sup>1</sup> Phillips, Ford, and Griffin, 1951, 88-90.

<sup>2</sup> Ford, 1951, 81 (type description).

<sup>3</sup> McKern, 1937; Spaulding, 1946.

<sup>4</sup> Phillips, Ford, and Griffin, 1951, 73-75.

issippi, where Jennings has recorded a frequency of 66 per cent for the directly comparable Saltillo Fabric Marked from Site MLe 53.<sup>1</sup> The valleys of the Tallahatchie and Coldwater rivers may very well have been the principal route by which this influence entered the flood plain, for they lead from the Mississippi hill country directly into the Sunflower and Memphis areas where it was most pronounced. The Withers in the flood plain near the mouth of these rivers is heavily sand-tempered, like Saltillo Fabric Marked, but in other parts of the alluvial valley clay-tempering is found.<sup>2</sup> It is interesting to note that the later paddle-stamped wares found in this part of the Mississippi Valley appear to have come from the same direction and to have followed the same route.

Mulberry Creek Cord-marked is the type that measures the cord-wrapped paddle treatment that succeeded and replaced Withers. This is a clay-tempered ware which has bowl, jar, and barrel forms. In the northern areas of the type distribution the bases are rounded, but towards the south they tend to be flattened and sometimes square. Folded rims are common, in contrast to the absence of this feature in the earlier Withers. The impressions of the cord-wrapped paddle are applied to the vessel exterior and cover the sides in a haphazard fashion. The bottoms of the round-based forms were also paddled.

Mulberry Creek spread into the alluvial valley before Time F, attained a somewhat greater frequency than Withers, and thus played a more important part in the ceramic history of the several chronologies. It is related to all the northeastern cord-marked wares in general, but is particularly close to the clay-tempered material used as a basis for the original type description in northern Alabama.<sup>3</sup> Also closely related are two types set up by Jennings in northeastern Mississippi, the earlier sand-tempered Furrs Cord-marked that bears impressions of large cords, and the slightly

later Tishomingo Cord-marked, distinguished by a proportion of clay tempering and medium- to small-sized cords.<sup>4</sup> In Mulberry Creek there is also some suggestion that delicate cord impressions are later than larger cords, but as both have been included in the counts of Mulberry Creek it seems appropriate to group the two northeast Mississippi types for comparative purposes. When this is done Jennings' data indicate a frequency of 67 per cent for cord-marking at the Lee County Site No. 62, and 78 per cent at Site Le 56. This is higher than the maximum of 62 per cent that is recorded shortly after Time E in the Sunflower Area. These proportions substantiate the conclusion that this trait was moving from the northeast.<sup>5</sup>

Mulberry Creek appears earliest and reaches its highest frequency (62 per cent) in the Sunflower Area, where it seems to continue from Time G to shortly after Time C. If the alignment of the graphs is correct it seems to lag both to the north and south and frequencies decrease in both directions. Memphis has a maximum of 48 per cent and in the St. Francis, farther to the west, it has a frequency of 35 per cent at Time E. Southward, the Arkansas Area on the western side of the alluvial valley has a maximum of 14 per cent; Lower Yazoo Basin, 28 per cent; and the Red River Area, only 2 per cent. This pottery is not found south of the mouth of the Red River, nor do substantial percentages occur in sites south of the mouth of the Yazoo River.

Some of the cord-marked pottery included in this group in the Red River Area has been modified considerably from the standards that prevailed farther north. In a number of examples delicate cord impressions have been carefully applied to the lower walls of vessels which bear other typical decorations of the time and area on the upper walls. Evidently the cord-wrapped paddle impressions were not in-

<sup>1</sup> Jennings, 1941, 199-201 (type descriptions).

<sup>2</sup> This percentage is calculated from the type frequencies given in Jennings, 1941, 205, Table 4.

<sup>3</sup> In a previous publication this sand-tempered pottery, obviously transitional between Withers and Saltillo, was described as a "tentative" type, at Griffin's insistence, and called "Twin Lakes Fabric Impressed" (Phillips, Ford, and Griffin, 1951, 144). Here, however, this group has been included with Withers Fabric Marked.

<sup>4</sup> Haag, 1939 (type description).

<sup>5</sup> In the region near where the Tallahatchie and Coldwater rivers leave the hills for the flood plain the cord-marked pottery on flood plain sites was distinctly sandy. Again at Griffin's insistence, this variation was distinguished by a separate name, Blue Lake Cord-marked (Phillips, Ford, and Griffin, 1951, 142). However, in the present graphs it has been included in the counts of Mulberry Creek. This suggestion of a transition towards the sand-tempered early pottery of the hill country to the east is identical with that noted above for Withers Fabric Impressed.

tended to serve their original function of compacting the paste and shaping the vessel but were considered purely decorative.<sup>1</sup>

Cord-marked pottery does not occur in the region about the mouth of the Mississippi River or along the adjacent parts of the Gulf Coast. The West Florida Cord-marked<sup>2</sup> which Willey has recorded in both the Gulf Breeze and Carrabelle areas is, as he has noted, undoubtedly derived from a similar ware found in the central part of Georgia and probably also in Alabama. Because it represents a separate line of diffusion of these ideas, the occurrence cannot be used as an argument in aligning the Florida and Mississippi Valley columns. When these columns, however, have been aligned on other bases it is interesting to observe that the Florida cord-marking is on roughly the same time horizon as that in the Mississippi Valley. Evidently there was a general southward movement of the cord-marking technique all over the Southeast at about the same time.

Ceramics paddled with an implement, presumably of wood, carved with a grid that imparted a checkered, waffle-like surface to the vessel exterior, form a branch of the paddled pottery tradition that has a distinctive history. The earliest known type of check-stamped pottery found on the coast of Georgia was named Deptford Linear Check Stamped.<sup>3</sup> Its exact frequency in the Georgia coastal region is not known, but in the Carrabelle Area of the Gulf Coast of Florida it appears at the beginning of the chronology with a strength of over 40 per cent. It decreases rapidly and disappears soon after Time E (Fig. 5). This early form of check stamping has not been included in the Carrabelle column of Fig. 19 solely for lack of space in the illustration. This is the only chronology being studied in which the type does occur, so it was decided that illustrations of other types with counterparts in neighboring areas would better utilize the available space. Deptford Linear Check Stamped is characterized by a design in which the lands or ridges between the small square impressions are larger and more prominent in one direction than in

the other. The tempering is mainly sand. The vessel forms are primarily the deep conoidal-based jars that are the hallmark of the Woodland ceramic tradition.

Deptford Bold Check Stamped<sup>4</sup> lasted slightly longer than Deptford Linear Check Stamped in the Carrabelle Area. It is characterized by large, square-checked impressions, and the lands running in both directions are the same size, sometimes as wide as the check impressions. This decoration occurs on wide-mouthed vessels with thickened bases that sometimes have four small, teat-like legs. At Time F the initial frequency of the type is 14 per cent in the Carrabelle Area, and it gradually decreases and disappears about the middle of Period E. At the beginning of the Gulf Breeze column it has a 6 per cent frequency and disappears at the same time as in the Carrabelle Area (Fig. 19).

Willey has suggested that a third type, Gulf Check Stamped,<sup>5</sup> may be a continuation of the early Deptford types. The former is a very neatly executed stamped design in which the lands running in one direction tend to be higher and wider than in the other, a feature which seems to relate it directly to Deptford Linear Check Stamped. Gulf Check Stamped has the same time placement and a similar configuration as the two Deptford types, but the earliest frequency is lower, about 5 per cent (Fig. 5). This type has also been omitted from the Carrabelle column in Fig. 19 for lack of space. It does not occur in the Gulf Breeze column, indicating an eastern distribution.

For most of Period E-D there is a distinct gap in these two Florida chronologies between the substantial proportions of the early check stamps of Time F-E and the even more abundant Wakulla Check Stamped of Willey's Weeden Island II Period (D-C). There must certainly be a continuation between the early and late check-stamped types; very likely in a region not too distant from these two Florida areas there exists a continuity in quantity as well as a slight evolution of form. The quantitative evidence in these graphs suggests that this center lies to the east. It is quite probable that the marked diminution of the occurrence of this technique between Times E and D was caused by the strong surge of plain and incised

<sup>1</sup> Ford, 1951, 55, Pl. 9k.

<sup>2</sup> Willey, 1949, 388-389, 440. Early and late varieties described by Willey are not differentiated in his stratigraphic data, so the graphs given here include both varieties.

<sup>3</sup> Haag, 1939 (type description).

<sup>4</sup> Haag, 1939; Willey, 1949, 357.

<sup>5</sup> Willey, 1949, 387-388.



wares that pushed into the northwest coast from the Lower Mississippi Valley during Santa Rosa-Swift Creek and Weeden Island I times.<sup>1</sup>

The westward resurgence of check stamping in Period D-C was proportionately stronger than the earlier Deptford group and quite understandably affected the ceramic complexes farther to the west. Along the Gulf Coast Wakulla Check Stamped has a maximum of 38 per cent in the Carrabelle Area; 7 per cent in Gulf Breeze; and the derived type, Pontchartrain Check Stamped, occurs with a 1 per cent frequency in the Red River Area. This Red River measurement is from the Greenhouse Site, quite near the mouth of Red River. If data from the Gulf Coast region of Louisiana were available the frequency would be higher, probably as high as that for the western part of Florida.

Wheeler Check Stamped,<sup>2</sup> found at about Time D in the Memphis, Sunflower, and St. Francis areas, represents the westward extension of a diffusion of this decoration which came from the east through the interior Southeast (Fig. 18). This clay-tempered type seems to have passed through the Tennessee Valley region of northern Alabama. Its exact frequency there is not known, but it must have been high, for in the Memphis Area it achieves a maximum frequency of about 21 per cent. The frequency in the Sunflower Area to the south and the St. Francis to the northeast is very low, only about 1/10 per cent. After Time C check stamping ceases to be an element of any of the chronologies given here. The tradition apparently persisted farther to the east, for it forms an element of the Spanish contact Leon-Jefferson occupation described by H. G. Smith in the form called Leon Check Stamped.<sup>3</sup> However, this persistence centers to the east of the Carrabelle Area, and data are not yet available to measure it.

The southern piedmont seems to be the frequency center of another branch of the widespread paddle-stamped ceramic group. This is the complicated stamped ware described by Holmes over 60 years ago. While a gross chronology has been developed for this pottery, its exact source is still obscure. Several varieties of this pottery decorated with elaborate designs

probably carved on wooden paddles intruded into the two Florida chronologies and are listed on the graphs (Figs. 4 and 5).<sup>4</sup> Only the most abundant type has been illustrated in Fig. 19. This is Swift Creek Stamped, which bears a curvilinear complicated stamped design that has been recognized from northern Georgia to the Gulf Coast with little local variation.<sup>5</sup> Willey has described early and late varieties of the Swift Creek Stamped he collected from the Florida coast.<sup>6</sup> The trends observed within the class correspond very well with parallel trends noted by Kelly in central Georgia sites. The early phase of Swift Creek Complicated Stamped is marked by intricate, usually curvilinear, motifs. The carved paddle was rather carefully applied all over the vessel exteriors, including the base. Conoidal-based jars are the usual early form; some have four small, teat-shaped legs. Late Swift Creek designs are not so complex as the earlier variety; they are larger, more carelessly applied, and the paddling is usually confined to a band around the upper part of the vessel wall. The jar forms have rounded or flat, often square bases. This distinction comes principally from the Carrabelle Site and is illustrated by drawings in the Carrabelle column of Fig. 19.

It is interesting to note that the tendency towards confining decoration to a band around the upper walls so pronounced in the incised types of all the columns after Time E is reflected in Late Swift Creek. This trend has been described in other ceramic traditions and has been attributed to the example of the designs derived from the decorated rims of the Marks-ville Period vessels. This seems to be an equally valid explanation for the change in Swift Creek.

Along the Gulf Coast this type obviously was diffused from east to west. In the Carrabelle Area its maximum at about Time E was 22 per cent; in the Gulf Breeze Area, 12 per cent. It does not occur in any of the other columns. Neither does this type nor any derivative persist after Time D. Farther to the east, in Florida, and northward, in Georgia, related complicated stamped types continued to be made until the beginning of the historic period.

<sup>1</sup> Willey, 1949, 579.

<sup>2</sup> Haag, 1939; Phillips, Ford, and Griffin, 1951, 87-88 (type descriptions).

<sup>3</sup> Smith, 1948.

<sup>4</sup> Willey (1949) describes these types.

<sup>5</sup> Kelly, 1938, 25-31, Pl. 11a.

<sup>6</sup> Willey, 1949, Swift Creek early variety type description, 378-383; late variety, 429-435.

## RED-SLIPPED AND PAINTED WARES

Figure 20

Setting aside the rather specialized technique of negative painted or lost color decorated pottery, which is too rare to handle statistically, at least three separate traditions of painted wares appear to have been factors in the prehistory of this part of the Southeast. The earlier two of these wares are an all-over red filming, and similar red coloring applied in zones bounded by incised lines. At a late date, after Time C, more complex decorations composed of two or more colors appear, in which the motifs are frequently not of Eastern origin. These traditions are measured in the Mississippi Valley profile (Fig. 20). The two styles of earlier origin are also found along the northwest coast of Florida. Unfortunately, however, Willey's stratigraphic data for some unknown reason do not give sufficiently adequate details of the quantities and time positions of the pertinent types to make possible a compilation of a west-to-east profile. Moore secured the comparable vessels from burials and illustrates them in his reports. The types are defined by Willey and are discussed here in their apparent time positions.

All-over red slipping is the numerically dominant tradition in this history. Most difficult to assess is the evidence of fugitive, or unfired, red coating noted in the cracks of some of the sherds classified as Tchefuncte Plain.<sup>1</sup> It was impossible to determine the number of vessels to which this treatment had been applied; therefore its popularity must remain unknown. Fired red-slipped vessels, classified as Tchefuncte Red Filmed,<sup>2</sup> were rare in Tchefuncte deposits. In form these all seem to have been bowls. This type did not appear in the analysis units used to form the summary graph for the Red River Area (Fig. 2) and therefore has not been transferred as a frequency curve to the graph presenting the painted traditions (Fig. 20). The other excavations in Tchefuncte sites show that its frequency was below 1 per cent.<sup>3</sup>

While our data show this trait of red slipping only in the Red River Area at this early time, it is extremely improbable that it was confined to this region. Incomplete data for

this time level probably obscure the popularity of the treatment in other regions. One reason for this conclusion is that red slipping is not found in the Red River column in the succeeding Time F-E. After Time E it is found again as the clay-tempered type Larto Red Filmed<sup>4</sup>; it reaches a maximum of 2 per cent about midway between Times E and D. This occurrence may have been introduced from the north, for in the Yazoo Area the type has a maximum of 4 per cent. If the graphs can be trusted as to the initial appearance of the type, Larto began in small percentages at about Time F. The same time span is suggested by the data from the Sunflower Area still farther up the Mississippi Valley, but there the maximum frequency of the type was again 2 per cent. In the Arkansas and Memphis regions the type maximums were  $\frac{1}{2}$  and 1 per cent, respectively; it was not found in the St. Francis region. In all these areas the dull reddish brown slip that marks the type Larto was, for the most part, applied to simple bowls,<sup>5</sup> the form of the earlier Tchefuncte Red Filmed. In the still later type, Old Town Red Filmed, the bowl continued to be the most popular shape. Included in the definition of Larto are occasional bowls on which the slip had been applied in areas, in a band below the rim around the vessel interior, or, more rarely still, in simple patterns. These painted areas were not bordered by incised lines. While this is undoubtedly painting that may foreshadow some of the later shell-tempered red-on-buff wares, it is not possible to separate these for measurement because of the method of typing the sherds.

Old Town Red Filmed, the over-all slipped ware that follows, is shell-tempered and predominantly of bowl forms. The red coloring tends to be somewhat brighter than that of Larto. Its greatest frequency occurs at about Time B in the northern areas: St. Francis, 12 per cent; Memphis, 5 per cent; Sunflower, 2 per cent; Arkansas,  $2\frac{1}{2}$  per cent; Yazoo, 1/10 per cent; and Red River Mouth, none. The last figure is not quite accurate. Shell-tempered, red-filmed vessels have been found in the Red

<sup>1</sup> Ford and Quimby, 1945, 52.

<sup>2</sup> Ford and Quimby, 1945, 54-56 (type description).

<sup>3</sup> Ford and Quimby, 1945, Tables 4, 8, 13.

<sup>4</sup> Ford, 1951, 59-61 (type description).

<sup>5</sup> Phillips, Ford, and Griffin, 1951, 102-104 (type description).

River Area as grave goods, but they are extremely rare, so that it is quite understandable that this trait was not recorded in the refuse deposit samples used in this analysis. It seems obvious that Old Town developed from Larto. Possibly the center for this evolution is covered by the data given in Fig. 20. There was a slight northward shift from the earlier Larto frequency center in the Yazoo and Sunflower to the later Old Town center in the Memphis and St. Francis areas. This would be more convincing if the greater frequencies carried over the time span D to C, but an inspection of the graph shows that they do not. For this reason it may well be that the frequency center for the development is still farther to the north of the Memphis and St. Francis, in areas where the chronologies have not yet been measured.

Red slip ware is rather common on the Florida northwest coast, but its history is difficult to measure. For one thing, the variations of slip and painting comparable to Larto, and apparently on about the same time horizon, have been included by Willey in the larger class Weeden Island Plain.<sup>1</sup> He notes that this feature is virtually confined to the bowl form, a characteristic that further demonstrates relationship to Larto in the Mississippi Valley. Willey places the sherds from the strata cuts in both the Carrabelle and Gulf Breeze areas in a Plain Red category.<sup>2</sup> In view of the type description of Weeden Island Plain referred to above, I am uncertain as to the content of this category. Apparently all the red-slipped sherds have been selected to form this group. "Plain Red" occurs infrequently in the Gulf Breeze data at a maximum of less than 1 per cent and seems to center about Time D. In the Carrabelle Area it occurs between Times E and D where it reaches a maximum of about 2 per cent. Other red-slipped types to the eastward in Florida occur at about the same time level, as well as several that appear to date later. However, because of the lack of more complete data it is not possible to align these at this time.

Red-painted areas bordered by incised lines present a more distinctive decoration, and consequently the setting up of types in this tradition has been relatively easy. Marksville Red Filmed,<sup>3</sup> earliest in the present data, consists

of small simple bowls with exterior decoration composed of red-painted zones confined by broad incised lines. The motifs are similar to those in the accompanying Marksville Period decorations, the red-painted areas substituting for rocker stamp roughening. Marksville Red Filmed is rare, with a frequency of about 1/10 per cent, and is confined to Period F-E in the Red River Mouth column.

The succeeding zoned, red-painted type, Woodville, is also largely restricted to bowls, but the vessels are decorated on the interior rather than the exterior. Woodville decorations are related to French Fork Incised, and in this case the red paint appears to substitute for the stippling, incised lines, and other forms of roughening the vessel surface that distinguish that type. Woodville is largely confined to Time E-D and has  $\frac{1}{2}$  per cent frequency in Red River, 1/10 per cent in the Lower Yazoo, and about  $\frac{1}{2}$  per cent in the Sunflower Area.

The comparable type on the Florida northwest coast is Weeden Island Zoned Red.<sup>4</sup> It is unfortunate that this type does not appear in Willey's stratigraphic data, because a number of these vessels occur in C. B. Moore's burial collections and it seems probable that the frequency center for this class of decoration on the E-D time level is somewhere on the northwest coast of Florida. Willey thinks that Weeden Island Zoned Red probably derives from Pierce Zoned Red of the Crystal River Area. That may be, but I must confess some uncertainty as to the dating of the Crystal River and related sites. This question cannot be solved until more accurate data are available.

Incised line-zoned red filming virtually disappears between Times D and C. Later occurrences are not recorded in the available stratigraphic data, but a few rare examples have been secured from grave deposits in the Lower Mississippi.<sup>5</sup>

Painted ware of two or more colors is shown in Fig. 20 as Avenue Polychrome. This is how I analyzed and charted the material in the study of the Mississippi Valley areas described by Phillips, Ford, and Griffin (1951). However, the type descriptions are somewhat more detailed, and Griffin has set up four types in this publication. Avenue Polychrome as here

<sup>1</sup> Willey, 1949, 409-411 (type description)

<sup>2</sup> Brief description in Willey, 1949, 448.

<sup>3</sup> Ford and Willey, 1940, 82-85 (type description).

<sup>4</sup> Willey, 1949, 422 (type description).

<sup>5</sup> Ford, 1936, Fig. 9L.

presented is described as Carson Red-on-Buff,<sup>1</sup> Nodena Red and White,<sup>2</sup> Hollywood White Filmed,<sup>3</sup> and Avenue Polychrome.<sup>4</sup> The type descriptions are based on entire vessels secured by Moore and many others from graves, and in these some areal segregations can be seen, a justification for the type groups outlined above. However, it is not easy to sort sherds into these groupings.

The comprehensive class, Avenue, seems to fall between Time C and B. It has a frequency of about 1/50 per cent in the Yazoo,  $\frac{3}{4}$  per cent in the Memphis, and  $\frac{1}{2}$  per cent in the St. Francis Area. Scrolls and whorls featured in some of the designs are also shared with the

incised types of this time, but other motifs, such as vertical and horizontal panels, terraced figures reminiscent of Southwestern cloud symbols, and the numerous effigy forms, have no relationship to anything earlier in the Mississippi Valley. Bottle as well as bowl forms are common. Of painting techniques, the class described as Carson Red-on-Buff, that is, red paint on the natural colored surface of the vessel, is the only one that can be related to earlier local techniques, the minor painted variety of Larto Red Filmed described above. However, this is very uncertain, and the tradition as a whole seems to have been introduced from outside the East, probably the Southwest.

## ENGRAVED DECORATIONS

Figure 21

In the East pottery decorated by incising with a pointed tool, after the clay was quite hard, either before or after firing, is designated as "engraved." Such engraved decorations are found throughout the western portion of the Southeast, are particularly abundant in the Caddoan Area of the adjacent portions of the states of Texas, Louisiana, Arkansas, and Oklahoma, and characterize both the later Fulton Aspect and the earlier Gibson Aspect of Caddoan cultures.<sup>5</sup> It is to the earlier of these aspects that particular attention is here directed. The Alto Focus defined in Newell and Krieger's report on the Davis Site probably represents the time of earliest appearance of this technique in the East. Davis is also the only excavation in the Caddoan region from which complete refuse deposit data are available.

The prominent Davis Site engraved types and their smoothed frequencies are represented in Fig. 21. Above the time span of the Davis Site are shown selections of the later Fulton Aspect engraved wares. These examples do not come from the immediate vicinity of Davis, but have been selected from all over the Caddoan Area to show both the relationship to the earlier Davis Site types and something of the range of variation that is found on the

later time level. To the right in this figure are the Mississippi Valley chronological columns in which engraved types have been recorded. It is unnecessary to illustrate the Northwest Coast of Florida columns in this connection, for engraved types are not found in either.

If we are correct in assuming that the Davis Site records the introduction of engraved designs from Meso-America into Southeastern United States, then the earliest types at the site, or at least those that increase in frequency towards the lower levels, should be most closely related to the ancestral forms. The type Holly Engraved, the most abundant of the engraved wares at the site, appears in the bottom levels at a frequency of about 4 per cent and decreases throughout the history of the deposit. This is a beautifully polished pottery engraved with designs composed of parallel straight lines and concentric circles and arcs. Corners of the design units and centers of circles are etched in a characteristic fashion, and the engraved areas are filled with red paint. This technique, and the carinated bowls and bottles on which the decoration occurs, is not found anywhere in the Southeast at an earlier date; it is a fair assumption, therefore, that these features were introduced.

Although this is one of the early engraved decorations of the Alto Focus, I suspect that it was not introduced into Texas a fully developed cultural complex, the result of some such event as a direct migration, such as

<sup>1</sup> Phillips, Ford, and Griffin, 1951, 132.

<sup>2</sup> Phillips, Ford, and Griffin, 1951, 133.

<sup>3</sup> Phillips, Ford, and Griffin, 1951, 134.

<sup>4</sup> Phillips, Ford, and Griffin, 1951, 134.

<sup>5</sup> Krieger, 1946; Newell and Krieger, 1949.

Krieger has hypothesized.<sup>1</sup> The design elements resemble Meso-American engraved wares, but a design motif consisting of large concentric circles plays an important part in Holly decoration. As far as I can discover, this is not found to the south. The same arrangement does, however, occur in a rare variation of the early decoration in the Mississippi Valley classified as Marksville Incised (see Fig. 13).<sup>2</sup> This is an incised decoration formed of wide, round-bottomed lines. Since the chronological links that might bridge the time between this earlier occurrence and Holly are missing, I would be inclined to ignore the resemblance, except that this same variation has produced an unmistakable effect on the near-by and even later Belcher Focus ceramics in the form of certain decorations included in the type Foster Trailed-Incised. Lacking any other explanation and in consideration of the pronounced effect that Mississippi Valley ceramic history has had on the recent Caddoan wares, I am inclined to give this resemblance some weight. (See pp. 374-379.)

This concentric circle variation of Holly Engraved appears to have affected later Caddoan ceramics directly in the form of certain variations in the type Belcher Engraved.<sup>3</sup> An example of this type has been drawn immediately above the illustrations for Holly (Fig. 21), but its popularity is not known. Apparently either the direct or indirect influence of Holly Engraved did not extend far enough to the east to be recorded in any of the chronological columns located in the Mississippi Valley.

"Engraved Stepped Designs," a group to which Krieger did not give a formal type name, are another story. This type also increases towards the bottom of the Davis Site deposits, but on its initial appearance it has a popularity of only about  $\frac{1}{2}$  per cent. In the top levels it has almost vanished from this fragment of history. "Stepped Designs" show the most promise of being directly imported from the south. Nothing in the earlier ceramic history of the East at all resembles these motifs. The designs have, however, a generalized resemblance to Zaque Black Incised of Period IV in the

Huasteca.<sup>4</sup> But a cursory search through the literature on Mexican archaeology has not revealed anything similar enough to suggest a direct ancestry for this motif. The type was possibly imported into the Southeast in this form, or, more likely, there are still older sites in either Texas or northeastern Mexico where this variation of engraving may be more abundant and where they were in the process of evolving from the engraved wares of the generalized Teotihuacán time horizon.

"Engraved Stepped Designs" produced an effect on the ceramic complex of the Red River Mouth Area that has been measured as the type L'Eau Noir Incised.<sup>5</sup> Incised lines are more common than engraving in L'Eau Noir, but the motifs clearly reveal the relationship of the decoration. Elongated rectangles, arranged like stacked bricks, with an incised line centered in each rectangle, are common. The horizontal lines generally terminated in punctations. Krieger commented on the resemblance of this type to a specimen illustrated by Clarence B. Moore from L'Eau Noir Bayou, implying that this may be an old motif in the Mississippi Valley and may have been adapted to engraving in eastern Texas.<sup>6</sup> However, the reverse seems to be the case. The pot shown by Moore is a typical sample of L'Eau Noir Incised. There is no earlier comparable design motif in the Southeast. Apparently this is an example of a complex of stylistic influences that changed from engraving to incising techniques as it moved east. L'Eau Noir dates early in the Plaquemine Period of the Red River column and has a frequency of about  $\frac{3}{4}$  per cent. The type does not have a long history and is not found farther to the east. The frequencies of isolated samples found farther north on the Mississippi are not large enough to justify graphing, but are on the same time level, immediately after Time C.

"Engraved Stepped Designs" also seem to have affected the later ceramics of the Fulton Aspect of the Caddoan Area. As quantitative data are lacking, this influence cannot be measured, but two of the resultant late motifs are illustrated in Fig. 21 above the drawing repre-

<sup>1</sup> Newell and Krieger, 1949, 231-232.

<sup>2</sup> Ford and Willey, 1940, Fig. 35d.

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

<sup>4</sup> Ekholm, 1944, Fig. 9; Du Solier, Krieger, and Griffin, 1947, Pl. 4.

<sup>5</sup> Quimby, 1951, 119-121; Cotter, 1951, Fig. 19, sherd 14.

<sup>6</sup> Newell and Krieger, 1949, 93, footnote; see Moore, 1912, Fig. 2.

senting this earlier treatment. Both the vessels shown here are classified as Natchitoches Engraved.<sup>1</sup> On the bottle to the left, the motif serves as the principal design. On the bowl to the right the design forms a rim area decoration, while the engraved design on the body of the vessel has been derived from French Fork Incised (see Fig. 15). Both of these later examples bear delicate cross-hatched engraving.

Hickory Fine Engraved<sup>2</sup> is another type found in the low frequency of  $\frac{3}{4}$  per cent at the base of the deposits which may decrease slightly during the history of the Davis Site. The engraving technique is new to the Southeast, but there is no difficulty in determining the source of the motifs in the older Mississippi Valley ceramic horizons. The horizontal line arrangements are shared with Davis Incised,<sup>3</sup> and both these and the cross-hatched designs are found in Dunkin Incised,<sup>4</sup> both coeval types. Similar horizontal incising first appears in the Mississippi Valley as Coles Creek Incised at Time E (Fig. 2). There is probably a common ancestral form to the west that will explain not only these two types but a similar use of incised lines in Ekholm's Periods III and IV at Tampico.<sup>5</sup> Until this linkage has been discovered, we can only point to the relatively abundant earlier type in the Mississippi Valley. The cross-hatched variety of Hickory Engraved, as well as this same arrangement of straight lines in Dunkin Incised, probably stems from the Mississippi Valley types Harrison Bayou Incised and Beldeau Incised (Fig. 11). That these are, in turn, derivatives from the cross-hatched rims of Time F-E has already been suggested (pp. 347 ff.).

"Engraved zigzag" is a late ceramic group at the Davis Site that never attains a frequency of more than about 1/10 per cent. This is another decoration that does not closely resemble anything earlier to the east and, like the design of "engraved stepped designs," there is a somewhat generalized suggestion of connections with Zaquil Black Incised of the Huasteca chronology.<sup>6</sup> Again it is impossible to point

to identical resemblances, and the validity of this comparison must remain doubtful.

"Engraved, Tendency toward Scroll Designs" is another of Krieger's unformalized groups from the Davis Site. These designs are generally single-line whorls, ranging from classic convoluted figures to obvious conventionalizations of this motif. I am as much in the dark as to the origin of these figures in east Texas as in other portions of the Southeast. They may have developed from the earlier meander motifs so common in Time E-C (Figs. 12-13), or they may have been introduced from beyond the boundaries of the area and been readily accepted because of the similar cultural base provided by the earlier decorative motif. It is instructive to note that these whorls tend to have round excised pits at the center that correspond to the small incised circles found in Crockett of the same area, Fatherland Incised of the Red River Mouth Area (Figs. 13, 15), and sometimes in Leland Incised. Apparently, the smoothed, round, large dimples that often occur at the center of the whorls in Walls Engraved are also related. In some of these "Tendency toward Scroll Designs" four whorls are enclosed in rectangles separated by undecorated vertical bands. An example of this type is shown at the right in Fig. 20. This is a fairly common tendency in decoration in the Caddoan Area and appears to owe its origin to similar treatment of designs in earlier times in the Mississippi Valley. This point is discussed and illustrated below. This type dates in the later two-thirds of the time range of the Davis Site and does not rise to over  $\frac{1}{4}$  per cent frequency.

Another division of the Davis Site pottery with about the same quantitative aspects and time range as the preceding has been designated by Krieger as "Molcayete-like bowls."<sup>7</sup> These are simple bowls with engraved designs on the interior, consisting of uncomplicated arrangements of straight lines and straight lines combined with concentric arcs. The rims of some of the bowls are widened and have flat lips, with straight lines drawn across them at an angle. The latter feature is the only element of the type that is missing in Anna Interior Engraved, the corresponding type of the Red River Mouth Area. There are paste differences,

<sup>1</sup> Krieger, 1946, Fig. 18.

<sup>2</sup> Newell and Krieger, 1949, 90-91.

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

<sup>4</sup> Newell and Krieger, 1949, 110-116.

<sup>5</sup> Ekholm, 1944, Table 1, 351, Fig. 7u-v. This is referred to as "Red ware with horizontally grooved sides."

<sup>6</sup> Ekholm, 1944, Fig. 9a-g.

<sup>7</sup> Newell and Krieger, 1949, 123-126.

of course, but the close resemblance of the two types is reinforced by the lack of any similar earlier form in the East. Doubtless these imitation molcajetes (if that is what they are) were derived from the south. Krieger remarks on the similarity of the class to interior engraved bowls found by MacNeish in his "Pueblito Culture" which equates with Ekholm's Huasteca Periods III-V.<sup>1</sup> I have not seen this material, but a direct relationship does not seem improbable. The quantitative comparison between Krieger's "Molcajete-like bowls" and Anna is, however, somewhat unexpected. Anna appears just after Time C in the Red River column, with an initial frequency of about 3 per cent, and decreases to the vanishing point after Time B. "Molcajete-like bowls" are late at the Davis Site and never exceed about  $\frac{1}{2}$  per cent in popularity. The interior engraving of bowls does continue into the later Fulton Aspect of Caddoan culture, but the designs become curvilinear and more complex and frequencies are not known (see Fig. 21). This situation offers the possibility that the interior engraved bowls were introduced into the Southeast through the Lower Mississippi Valley rather than through Texas. However, I am not inclined to take this seriously.

Designs with delicately engraved cross-hatched areas that are absent in Davis and other Gibson Aspect sites, but are rather common on the later time horizon, the Fulton (Fig. 20), are particularly characteristic of the Glendora Focus of eastern Louisiana, where most of the pottery with this decoration has

been included in the type Natchitoches Engraved.<sup>2</sup> This type was extant until the historic period,<sup>3</sup> but there are no data available revealing either the life span or frequency of these designs. Cross-hatched engraved decorations with either roughened or smooth areas expressing the design motif have a late position to the east. In the Red River Mouth Area this trend is recorded as Maddox Engraved which appears initially in Period C-B and reaches a maximum of about  $1\frac{1}{2}$  per cent at the end of the column. Walls Engraved, the corresponding type farther up the valley, usually features whorls expressed by areas of cross-hatching, but not so delicately executed as to the south or west. It appears in fractional percentages near the ends of the columns in the Yazoo, Sunflower, and St. Francis areas and reaches a maximum of about 1 per cent at the end of the Memphis column. The latter chronology seems to record a slightly later time than the adjacent columns, and this will explain why a larger percentage of the late engraved cross-hatching occurs there.

Accompanying Walls Engraved in time is the type Hull Engraved.<sup>4</sup> This type measures the features of festooned concentric arcs engraved on the interior of shallow bowls and plates. A source for the practice of engraving the interiors of bowls appears obvious, but I am at a loss for an explanation of these festooned lines that appear at this time in incised designs as well. The motif is most common in the Memphis Area where Hull reaches a 1 per cent popularity by the end of the chronology.

## HORIZONTAL INCISED LINES

Several other streams of decorative concepts might have been abstracted from the data used here and presented in diagrammatic form, but I believe it suffices to describe the more interesting of these, and perhaps the preceding examples will enable the reader to visualize this history. Horizontal parallel lines are the only group treated. This simple arrangement everywhere dates after Time E. The earliest and certainly the most numerous occurrence is in the Red River Area, where the design is

classified as Coles Creek Incised.<sup>5</sup> Coles Creek typically has "overhanging" lines, incised with a flat-pointed instrument held at an angle. The design, confined to the upper walls of vessels, frequently has a lower border formed by large triangular punctations, both features suggesting derivation from the earlier incised rims of the Marksville ceramics. This, however, cannot be their origin, for there is nothing on an earlier time horizon in this part of the East which appears to be ancestral to this arrangement. It seems likely that the design was an importation into the Mississippi Valley shortly

<sup>1</sup> Newell and Krieger, 1949, 124, footnote.

<sup>2</sup> Krieger, 1946, Fig. 18.

<sup>3</sup> Walker, 1934.

<sup>4</sup> Phillips, Ford, and Griffin, 1951, 129 (type description).

<sup>5</sup> Ford, 1951, 74-76 (type description).



after Time E, and it probably came from the west together with traits new at this time, such as rectangular temple mounds, small projectile points that may indicate the introduction of the bow, polished pottery, and a few new vessel forms. Coles Creek Incised has a superficial resemblance to the neck-banded pottery of the Southwest but probably parallels more closely the type Ekholm has named "Redware with horizontally grooved sides." This occurs in small percentages principally in Huasteca Period III.<sup>1</sup>

In the early part of its time range Coles Creek is accompanied by Chase Incised,<sup>2</sup> a variation that customarily has small folded rims. The horizontal overhanging lines are few in number and are confined to the surface of the rim strap. Lines incised in the lip are common on this type and are also found frequently on Coles Creek Incised. I am not very confident of the validity of the large percentages of Chase from the Peck Site as shown in Fig. 2. Possibly a reclassification of that material would result in a frequency of only about 1 per cent, as at the Greenhouse Site.

Coles Creek Incised begins at Time E and rises to a frequency of about 4 per cent at Time C, about the end of its time span. In the chronological columns to the north up the Mississippi Valley it occupies the same time, but occurs in smaller percentages. The Yazoo has a maximum of about  $1\frac{1}{2}$  per cent; the Arkansas about  $\frac{2}{3}$  per cent; Sunflower, 1 per cent; Memphis has a very scattered occurrence of less than  $\frac{1}{2}$  per cent; and St. Francis has none.<sup>3</sup> Eastward along the Florida Gulf Coast the corresponding type St. Petersburg Incised<sup>4</sup> is rare but consistently found. It appears only once in the Carrabelle chronological column (Fig. 5) at Time D, but from other associations Willey concludes that it dates in his Weeden Island II Period. The Florida type has neither the row of punctations below the decorated band nor the lines in the lip found in Louisiana. Everywhere in Florida the percentages seem to be very low.

The tendency towards reducing this design complex to a simple arrangement of horizontal lines is also observable chronologically. Green-

house Incised,<sup>5</sup> a polished version of this tradition, occurs at a maximum of about 1 per cent between Times D and C. Lines are found in the lips of vessels classed as Greenhouse, but the single row of large punctations below the decoration is absent.

Coles Creek Incised develops into Hardy Incised<sup>6</sup> in the Red River Area. The paste becomes softer, tending towards brown and black rather than the earlier hard gray; the lines are more widely separated and more carelessly incised, often with a pointed rather than a flat tool; lines in the vessel lip are rare; and when the single row of punctations below the incised lines is present it was made with a pointed tool rather than the wedge-pointed spatula of the earlier Coles Creek. Hardy begins at Time D, has a maximum of about 1 per cent between Times C and B in the Plaquemine Period, and continues until the historic period in decreasing quantities (Fig. 2).

In the East Texas Area Davis Incised<sup>7</sup> is the type comparable to Hardy. This ware is slightly sandier than that found in the Mississippi Valley, and both punctations and lines in the rim are lacking. Only occasionally are the lines incised at an "overhanging" angle. While the ware is characterized as "polished" in the original type description, it is actually smoothed only to about the same degree as Hardy. It is not so polished as the Mississippi Valley type Greenhouse Incised. Davis Incised appears at the bottom of the Davis Site deposits, with a frequency of about 1 per cent, and decreases to about  $\frac{2}{3}$  per cent in the top levels. This decrease parallels the loss of popularity suffered by this tradition in the Lower Mississippi between Times C and A. However, the type Davis Incised does not measure all the occurrences of horizontal incised lines similar to the Mississippi Valley types cited above. This motif forms a proportion of Hickory Fine Engraved,<sup>8</sup> Dunkin Incised,<sup>9</sup> and Weches Fingernail Impressed.<sup>10</sup> Evidently the total effect of this stream of decoration concepts in the

<sup>1</sup> Ekholm, 1944, Table 1, 351, Fig. 7u-v.

<sup>2</sup> Ford, 1951, 76-77 (type description).

<sup>3</sup> Phillips, Ford, and Griffin, 1951, Figs. 17-21.

<sup>4</sup> Willey, 1949, 442 (type description).

<sup>5</sup> This type is not shown in the Red River chronology graph, Fig. 2. For time position and quantity, see Ford, 1951, Figs. 35-41; type description, pp. 77-79.

<sup>6</sup> Quimby, 1951, 113-114; Ford, 1951, 87-88.

<sup>7</sup> Newell and Krieger, 1949, 116-118, Fig. 45.

<sup>8</sup> Newell and Krieger, 1949, Fig. 33a-b, d-e.

<sup>9</sup> Newell and Krieger, 1949, Figs. 42b, d, 43a-e.

<sup>10</sup> Newell and Krieger, 1949, Fig. 46a-c, e, g-i.

Alto Focus was considerable, but unfortunately it cannot be measured exactly. That this is true is not surprising, for, as is shown below, the earlier decoration concepts of the Mississippi Valley had a profound effect on the relatively later ceramics of the entire Caddoan Area.

The late comparable type, northward from the Red River Mouth, has been classified as Mound Place Incised.<sup>1</sup> This shell-tempered pottery of the Mississippian complex, usually in bowl forms, is decorated with horizontal

incised lines. Occurrences date between Times B and C in all the chronologies except the Arkansas, but the type is present in only fractional percentages.<sup>2</sup>

<sup>2</sup> Griffin, who wrote the type descriptions in Phillips, Ford, and Griffin, 1951, described this type as though all sherds came from shallow simple bowls with effigy heads jutting above the rim. Several horizontal incised lines are commonly found on this type of effigy. It is certain that a proportion of these effigy bowl fragments are included in Mound Place frequencies, but this seems to be principally in the Memphis Area. Southward the majority of examples are simple bowls similar to the shapes found in Hardy Incised and Davis Incised.

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

## THE INFLUENCE OF EARLY MISSISSIPPI VALLEY CERAMICS ON LATE DECORATIONS IN THE CADDOAN AREA

UP TO THIS POINT I have considered ceramic decorations over which there has been a degree of control in relative time, area of distribution, and frequency in both time and space. The following discussion of the pottery found in the four states Caddoan region must operate without these stimulants and checks to the imagination. The necessary data from refuse deposits showing the stages of these developments are not available, for, with the notable exception of the excellent Davis Site report describing the type site of the Alto Focus, the pottery of the Caddoan Area (both the earlier Gibson and the later Fulton aspects) is known almost entirely from grave deposits. Large collections are to be found in museums and in the hands of private owners. The material is also well represented in the reports of Clarence B. Moore<sup>1</sup> and M. R. Harrington.<sup>2</sup> The present discussion refers principally to the work of these two investigators.

Alex Krieger<sup>3</sup> has published a preliminary organization of Caddoan cultures and ceramic typology and is now engaged in preparing a more detailed analysis. I do not here attempt to modify or add to Krieger's organization of the data, for his superior command of the material assures a much better conclusion than I could achieve. The goal of this section is to point to the techniques and decoration motifs that may partially be interpreted as having been derived from earlier cultural complex that may have existed in the Caddoan Area but are at present best known in the Lower Mississippi. At a conservative estimate, about 70 per cent of the vessels illustrated by Moore and Harrington are susceptible of such an explanation.<sup>4</sup> F. M. Setzler called attention to some of these resemblances in 1933.<sup>5</sup>

The essence of this thesis is presented in two

illustrations, actually two halves of the same diagram (Figs. 22 and 23). The two upper rows of vessels are principally Caddoan examples taken from a number of different sites in Arkansas and northwestern Louisiana. A few historic Natchez vessels have also been included. No attempt has been made to arrange these illustrations by age or classificatory relationship. I am well convinced by Krieger's evidence in favor of the priority of the Gibson Aspect in relation to the Fulton but, as is outlined in the foregoing text, I believe a comparatively short span of time was involved. It seems unnecessary to differentiate, for this rather general discussion, but most of the vessels illustrated fall into the later or Fulton division. There is, however, an areal basis for placing the Caddoan vessel illustrations in two rows. The examples shown in the lower row are from sites closer to the mouths of the Red and Ouachita rivers than are those in the upper row. In other words, these vessels were found nearer to the known Marksville complex area, and the upper row vessels were more distant. We have no exact knowledge of the geographical distribution of these types, so that this arrangement cannot be considered as doing more than suggest that the vessels with the earlier Lower Mississippi cultural resemblances are farther up the drainage of these two principal rivers of the Caddoan Area. The actual provenience of the vessels is given in Table 3.

The three lower rows of illustrations represent ceramics from the Mouth of Red River chronology. They are examples of types briefly referred to in preceding pages (see particularly Fig. 2). These vessels have been placed in approximate time position with the Marksville (F-E) dated vessels in the lowest row; Troyville (E-D) next; and Coles Creek Period (D-C) pottery above the Troyville. In the selection and arrangement of these vessels only general consideration has been given to the formal typological systems that have been set up in both the Red River Mouth and the Caddoan areas. In some cases these artificial constructs define and bound the particular features to which attention is to be directed, and in others they include two or more features which it is convenient to separate here. Again the same trait

<sup>1</sup> Moore, 1909, 1912.

<sup>2</sup> Harrington, 1920.

<sup>3</sup> Krieger, 1946.

<sup>4</sup> About the same proportion can be seen in the Caddoan Area vessels in the large collection of the Hon. Harry J. Lemley of Hope, Arkansas. In 1939 Judge Lemley generously permitted me to photograph his collection. While the file of photographs has been most valuable in assessing Caddoan ceramics, it was more feasible to use examples already published for the drawings in Figs. 22 and 23.

<sup>5</sup> Setzler, 1933.

TABLE 3  
PROVENIENCE OF VESSELS ILLUSTRATED IN FIGURES 22 AND 23

Vessel No.	Site Name	Site Location	Citation
FIGURE 22			
1	Sanson	Rapides Parish, La.	
2	Greenhouse	Avoyelles Parish, La.	
3	Marksville	Avoyelles Parish, La.	
4	Greenhouse	Avoyelles Parish, La.	
5	Marksville	Avoyelles Parish, La.	
6	Ozan 5	Hempstead County, Ark.	Harrington, 1920, Pl. 59b
7	Sanson	Rapides Parish, La.	
8	Sanson	Rapides Parish, La.	
9	Sanson	Rapides Parish, La.	
10	Greenhouse	Avoyelles Parish, La.	
11	Marksville	Avoyelles Parish, La.	
12	Greenhouse	Avoyelles Parish, La.	
13	Marksville	Avoyelles Parish, La.	
14	Sanson	Rapides Parish, La.	
15	Sanson	Rapides Parish, La.	
16	Marksville	Avoyelles Parish, La.	
17	Ozan 11	Hempstead County, Ark.	Harrington, 1920, Pl. 41b
18	Ozan 1	Hempstead County, Ark.	Harrington, 1920, Pl. 92a
19	Sanson	Rapides Parish, La.	
20	Greenhouse	Avoyelles Parish, La.	
21	Cedar Glades	Garland County, Ark.	Harrington, 1920, Pl. 44a
22	Battle Place	Lafayette County, Ark.	Moore, 1912, Fig. 61
23	Glendora	Ouachita Parish, La.	Moore, 1909, Fig. 67
24	Glendora	Ouachita Parish, La.	Moore, 1909, Fig. 19
25	Fatherland	Adams County, Miss.	
26	Greenhouse	Avoyelles Parish, La.	Ford, 1950, Fig. 14c, h
27	Crooks	La Salle Parish, La.	Ford and Willey, 1940, Fig. 35d
28	Boytt's Field	Union County, Ark.	Moore, 1909, Fig. 87
29	Crooks	La Salle Parish, La.	Ford and Willey, 1940, Fig. 35e
30	Ozan 5	Hempstead County, Ark.	Harrington, 1920, Pl. 78b
31	Fatherland	Adams County, Miss.	Ford, 1936, Fig. 9e
32	Glendora	Ouachita Parish, La.	Moore, 1909, Fig. 80
33	Greenhouse	Avoyelles Parish, La.	Ford, 1951, 14e
34	Crooks	La Salle Parish, La.	Ford and Willey, 1940, Fig. 36e
FIGURE 23			
35	Washington	Hempstead County, Ark.	Harrington, 1920, Pl. 51b
36	Ozan 1	Hempstead County, Ark.	Harrington, 1920, Pl. 22b
37	Anderson Landing	Sharkey County, Miss.	Moore, 1908, Fig. 3
38	Fatherland	Adams County, Miss.	Ford, 1936, Fig. 9f
39	Greenhouse	Avoyelles Parish, La.	Haag, 1939
40	Crooks	La Salle Parish, La.	Ford and Willey, 1940, Fig. 40
41	Washington	Hempstead County, Ark.	Harrington, 1920, Pl. 52b
42	Friday Place	Lafayette County, Ark.	Moore, 1912, Fig. 28
43	Ozan 1	Hempstead County, Ark.	Harrington, 1920, Pl. 51a
44	Greenhouse	Avoyelles Parish, La.	
45	Marksville	Avoyelles Parish, La.	
46	Ozan 5	Hempstead County, Ark.	Harrington, 1920, Pl. 43b
47	Ozan 1	Hempstead County, Ark.	Harrington, 1920, 27b
48	Washington	Hempstead County, Ark.	Harrington, 1920, 72b
49	Glendora	Ouachita Parish, La.	Moore, 1909, Pl. 2

TABLE 3—Continued

Vessel No.	Site Name	Site Location	Citation
FIGURE 23			
50	Greenhouse	Avoyelles Parish, La.	
51	Haley Place	Miller County, Ark.	Moore, 1912, Fig. 48
52	Haley Place	Miller County, Ark.	Moore, 1912, Fig. 53
53	Greenhouse	Avoyelles Parish, La.	
54	Keno Place	Morehouse Parish, La.	Moore, 1909, Fig. 139
55	Glendora	Ouachita Parish, La.	Moore, 1909, Fig. 68
56	Greenhouse	Avoyelles Parish, La.	Ford, 1950, Fig. 21d
57	Mineral Springs	Howard County, Ark.	Harrington, 1920, Pl. 26a
58	Greenhouse	Avoyelles Parish, La.	Ford, 1951, Fig. 22d
59	Washington	Hempstead County, Ark.	Harrington, 1920, Pl. 35b
60	Washington	Hempstead County, Ark.	Harrington, 1920, Pl. 40
61	Glendora	Ouachita Parish, La.	Moore, 1909, Pl. 5
62	Keno Place	Morehouse Parish, La.	Moore, 1909, Fig. 156
63	Greenhouse	Avoyelles Parish, La.	

is shared by several types that are differentiated on an entirely different basis. In view of the lack of chronological and quantitative data there is little hope of making much use of these cultural measuring tools, the typological divisions, so that they receive only secondary consideration in the following discussion. Instead the vessels are cited as individual examples and referred to by the numbers assigned to them in the illustrations. However, even a cursory review of Caddoan ceramics will show that these examples represent a substantial proportion of the more ornate grave goods.<sup>1</sup>

On the left-hand side of Fig. 22 are shown the variations of the cambered rim decorations found on Marksville Period vessels (Vessels 3, 5, 11, 13, 16). The effects of these rims in the succeeding ceramic history of the Mississippi Valley areas and the Florida northwest coast have been measured in foregoing sections. A similar result seems to have been produced in the Caddoan Area. This is illustrated by Vessels 1, 6, 7, 8, 9, and 14. The same decorations that occur in the type Dunkin Incised at the Davis Site might have been added to these examples, but they have already been discussed (pp. 347 ff.). On these Caddoan vessels note the tendency to confine the band of straight line decoration to the upper part of the vessel wall, also the rare use of a single row of punctations

below the design. These two features seem to have been transmitted from the Marksville Rim variations through Troyville and Coles Creek Period ceramics (Vessels, 2, 4, 10, 12, 15).

The next group of Caddoan vessels (Nos. 17, 18, 19) are decorated with encircling incised lines confined to the upper part of the vessel walls. These, as well as the numerous similar decorations in the region, are derived from the earlier Coles Creek Incised (No. 20). The relation of the similar Davis Incised of the Alto Focus has already been discussed (pp. 371 ff.).

The Marksville Period type, Marksville Incised, may be conveniently divided into two classes, both of which feature wide incised lines, semicircular in section, and predominantly curvilinear patterns. The difference lies in that the incised lines forming one group of decorations are placed close together (Vessels 27, 29, for examples) and those forming the other are more widely spaced (Vessel 34).<sup>2</sup> This contrasting treatment not only can be followed into the succeeding Troyville Period, but also shows in a pronounced fashion in the late ceramics of this region.

Vessels 21 and 22 bear four groups of concentric circles formed by wide, incised, closely spaced lines on the body. A small node projects from the center of each set of circles. Except for the nodes, this body decoration is identical with a rather uncommon variation of the type

<sup>1</sup> It must be emphasized that these comparisons are made with selected burial furniture. I am fully aware that the majority of sherds in the refuse from the Caddoan village sites, both Gibson and Fulton aspects, consists of simple nail-marked, brushed, finger-wiped, and plain wares.

<sup>2</sup> Attention has been called to this in the type description; see Ford and Willey, 1940, 78, Fig. 35, 36.

group Marksville Incised (Vessel 27). The resemblance is even more extended. Vessel 21 has an incised rim decoration of carelessly applied, straight, slanting lines, essentially like the variety of Marksville Incised Rim of Vessel 13. Vessel 22 also has a distinctive rim decoration above the incised circles. From the illustration this appears to have been made with a dentate stamp, a rim decorative treatment not found in Marksville but known from upper Mississippi Valley Hopewellian. Separate rim decorations do not occur on the similar Troyville Period vessels, Yokena Incised, so this development probably occurred through pottery that has not been described.

Vessels 23, 24, and 25 appear to be related to the general curvilinear, closely spaced, incised-line division of the type Marksville Incised. The negative band in the decoration of Vessel 23 may be the result of influence from French Fork Incised of the Troyville Period (see Vessel 50, Fig. 23). This was not necessarily a direct influence, however, for similar undecorated bands are found in Yokena Incised<sup>1</sup> of the same time period.

Vessel 24 belongs to the type Keno Trailed.<sup>2</sup> The wide, incised, closely spaced, curvilinear decoration obviously related it to the similar variety of Marksville Incised. In addition, a straight-line decoration on the neck of this bottle corresponds to a rim decoration often found associated with Marksville Incised (see Vessel 11). The swelling in the neck of this bottle, immediately below the straight-line decoration, is a feature that is frequently found. The best explanation for this peculiar neck seems to be that it derived from the cambered rims that characterize the jars of the Marksville Period, but the intervening forms are not known. Vessel 25 is from a historic Natchez site near Natchez, Mississippi. It is on the same general time level as most of the Fulton Aspect Caddoan pottery and serves to illustrate another effect of the early incised designs.

Another example of the retention of a specific design from the Marksville time level is illustrated in the bottle numbered 28. The motifs are the same, but the incising of the later vessel is narrower than on the earlier piece. This particular motif is rare in both early and late periods.

The next group of vessels (Nos. 30-32) refers to the widely spaced line variety of Marksville Incised (Vessel 34), the early incised decoration that seems to have had the most influence in the immediately succeeding Yokena Incised and was probably transmitted to more recent cultures through that channel. Separate rim decorations are unusual for this variation, and, on the whole, the related vessels on the late time horizon seem to be concentrated nearer the Lower Mississippi Valley than are the closely spaced line-decorated vessels discussed above. Fatherland Incised, the dominant decorated type of the historic Natchez (Vessel 31), seems to belong to this line of development, as is noted in a preceding section (pp. 350-354).

Marksville Stamped is characterized by a body decoration consisting of rocker stamping confined to bands bordered by wide incised lines that are identical with the incising described for Marksville Incised. The design motifs are usually curvilinear, depicting both geometrical figures and naturalistic birds. The motifs are always expressed by smoothed areas of the vessel surface with the background roughened by rocker stamping. The effects of this class of decoration on later ceramics in the Mississippi Valley and eastward along the Gulf Coast are described above. Through parallel developments that probably center somewhere to the west of the Mississippi Valley a similar result was produced in late Caddoan pottery. As a matter of fact, the original features of the design were much less changed in many instances than they were to the east.

Vessels 35 and 36 (Fig. 23) illustrate the retention of a design motif stemming directly from the Marksville time horizon (Vessel 37). As far as I am aware, this division of concentric circles is not found in subsequent Mississippi Valley ceramics, and it is not known how this concept was preserved until the date of the Caddoan examples. Vessel 35 has wide incised lines; the surface is roughened with fingernail markings, and no smooth bands are left in the decoration. The vertical division of the circles is a raised ridge. Vessel 36 has contrasting smoothed and roughened areas. The decorative technique is engraving, and the roughening is effected by parallel lines. Vessel 35 seems to have a separate rim decoration, also consisting of nail markings, but there is no suggestion of these on Vessel 36. This divided

<sup>1</sup> Type description, see Ford, 1951, 50-52, Pl. 8.

<sup>2</sup> Krieger, 1946, Fig. 18.

circle, as well as concentric circles in general, is rather rare on Marksville Period ceramics, but seems to be more common in the "Caddoan Area."<sup>1</sup> Perhaps yet undiscovered ceramics made on the general Marksville-Hopewellian time horizon to the west of the Mississippi Valley placed greater emphasis on this motif.

The more common motif of the Marksville Stamped ceramic type is illustrated as Vessel 45 (Fig. 23). I have already described (pp. 354 ff.) how this realistic motif became conventionalized in the Mississippi Valley and eastward. Again, the comparable Caddoan vessels seem to have retained more of the Marksville Period features and different features than did the Troyville Stamped type (Vessel 44) that followed immediately in the Lower Mississippi. The motifs become curvilinear conventionalizations typical of late ceramics in the Southeast, the whorl (Vessel 42) and the guilloche (Vessel 43), and like most other examples have yielded to the late trend of roughening the area of the motif rather than the background (Vessels 42, 43). Brushing as a roughening device is also frequently substituted for stamping. Other features, however, were not modified as they were to the eastward. Separate rim decorations, stamping, punctating, or straight-line incising, dropped down to the vessel neck are often found on a swelled area that corresponds exactly to the cambered rims of Marksville Stamped. The body decoration extends to the base and is not confined to the upper vessel walls, as was the later tendency in the Mississippi Valley. Dentate stamping, parallel or sometimes rocked, is found on many vessels.<sup>2</sup> The fact that this group of late decorations is most commonly found on small pot forms is an additional suggestion of connection with the early stamped designs on the Hopewellian-Marksville horizon. Pot forms, somewhat different in profile, are most characteristic of Marksville Stamped. However, these late Caddoan examples, with their globular bodies and rounded bases, most nearly resemble Hopewellian vessels found in the upper part

of the Mississippi Valley. The comparisons already cited definitely suggest that the development of this cultural strain from the early period certainly did not take place through the medium of the later types, such as Troyville Stamped, found in the lower part of the Mississippi Valley. Perhaps the center of the sequence lies to the north and west of the Mississippi River.<sup>3</sup>

The retention into late times of the trait of bounding painted areas by incised lines is shown by Vessels 38, 39, and 40. This is not a common feature at Caddoan sites, and the late illustrated example (Vessel 38) is from a historic Natchez site. The paint on these vessels is a dull red that contrasts with the unpainted brown of the vessel surface. In this sequence two trends may be observed: the tendency towards expressing design motifs in a positive rather than a negative fashion, and towards replacing naturalistic or irregular motifs with a repetitive whorl.

The remaining Caddoan vessels at the right of Fig. 23 appear to be related to variations of the decoration that has been classified in the Red River Mouth sequence as the type French Fork Incised (Vessels 50, 53, 56, 58, 63). In another place (pp. 357 ff.) I have already noted how the development of this type centered on the northwest coast of Florida and how the spread of the group of concepts can be traced into the Lower Mississippi Valley and westward up the Red River into the early Alto Focus of eastern Texas where the resultant pottery has been measured by Krieger as Crockett Curvilinear Incised. It is unnecessary to repeat this portion of the argument. Vessel 47 illustrated in Fig. 23 belongs to the incised-line background variety of Crockett. Vessel 46 bears an engraved decoration in which the earlier curving design has been changed to a rectangular pattern. The motif is expressed by smooth bands of vessel surface, and delicate engraved parallel lines roughen the background. The bottle shown as Vessel 48 also has an engraved decoration. It is basically a contrasting zone decoration, but the motif, following the late tenden-

<sup>1</sup> For example, see Krieger, 1946, Fig. 18, Texarkana Focus Barkman Engraved Vessel a; Fig. 19, Spiro Fine Engraved Vessel d.

<sup>2</sup> Particularly on the type Cowhide Stamped of the Belcher Focus on Red River near Shreveport, Louisiana. See Krieger, 1946, Fig. 18; Webb and Dodd, 1941.

<sup>3</sup> Compare this vessel form particularly with the Hopewellian pottery from the Renner and related sites near Kansas City, Missouri. Wedel, 1943, Fig. 4, Pls. 4, 8 (note the similarity of decoration on a of Pl. 8 to Vessel 42), Pl. 37.



cy noted above, is expressed by the roughened area of decoration rather than the reverse. The connected circles found in this design can easily be an extreme illustration of the trend already noted in several design strains towards forming small circles at the junction of the meander elements (see Fig. 23, Vessel 47). Vessel 49 (Fig. 23) is a typical example of Natchitoches Engraved. Its relationship to the earlier French Fork Incised is clear from the consistent use of negative meander motifs. The background is roughened by parallel engraved lines, a trait related to the incised-line background of French Fork (Vessel 50). The line centered in the negative band is also quite usual in the earlier type (Vessels 56, 63). In French Fork the incised lines are frequently punctated; engraved lines in Natchitoches Engraved are generally spurred.

Three vessels (54, 55, 56) illustrate the parallel development from the punctated background variety of the type French Fork Incised. The bottle (Vessel 54) has a negative scroll motif in which an incised line is centered. The background is punctated. On Vessel 55 the treatment of the motif is positive, with punctuation used to roughen the line-bordered decoration. The relationship of this particular design to similar use of cross-hatching (Vessel 62) and brush roughening (Vessel 42) is obvious.

Vessels 59, 60, 61, and 62 are related to the cross-hatched background variety of French Fork. On Vessel 59 the motif is expressed by a plain band that has become angular rather than curvilinear. The quadrature of the rim and the single row of punctations immediately below the decoration are other features inherited from the Troyville and Coles Creek time periods. Vessel 60 seems to owe only its use of delicate cross-hatching to French Fork; the motif is possibly derived from Beldeau Incised,<sup>1</sup> a similar Coles Creek Period design. Vessel 61, another example of Natchitoches Engraved, derives its engraved body design from French Fork. This is virtually identical with the example of Natchitoches discussed above (Vessel 49), except for the use of delicate cross-hatching rather than parallel lines for background roughening. The design around the upper wall of Vessel 61 is another matter.

This had its origin in the earlier Alto Focus decorations which Krieger has called "Stepped Designs"<sup>2</sup> (Fig. 21). Vessel 62 (Fig. 23) illustrates the familiar phenomenon of the late horizons, the change from negative to positive mode of producing a design.

Vessels 51, 52, and 53 are shown to illustrate a continuity in the practice of paneling decorations. Paneled design, usually quadrated, is rare but consistently present in the curvilinear decorations of the Troyville and Coles Creek periods. On the Caddoan horizon it is somewhat more usual. In fact it is typical of Pease Brushed-Incised<sup>3</sup> (Vessel 52).

Another continuity of fairly rare decorations is illustrated by Vessels 57 and 58. Vessel 58 represents a minor variation of the type French Fork Incised in which the unroughened motif forms an undulating band, either angular or curving. The present example happens to be angular. Similar motifs, also expressed by roughened backgrounds, are found in the Caddoan region (Vessel 57).

In the preceding pages the problems of the origin of designs on Caddoan ceramics have been considered by two devices. First, the impingement of Mississippi Valley ceramic traditions on the earlier Alto Focus complex has been measured. Second, other Mississippi Valley influences, found mainly on the later Fulton horizon, have been considered. The data necessary to measure and trace the connecting links that produced these later examples are not available. This treatment does not solve the entire problem of the origin of Caddoan ceramic ideas by any means. It has, however, factored out the block of ceramic traits that need not be explained as originating outside the Southeast and brings into sharp focus the traits that must be explained in this way. I would surmise that these other traits come from two directions: the Plains and the Pueblo areas to the north and west, and from Meso-America, where I am inclined to look specifically towards the Huasteca. It would be possible to make a tentative list of these features at this time, but this is apart from the immediate problem and will be left to some better prepared investigator.

<sup>1</sup>Ford, 1951, 81-83 (type description).

<sup>2</sup>Newell and Krieger, 1949, 91 ff.

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

## CONCLUSIONS

IN THE FIRST SECTION of this paper I arranged portions of ceramic chronologies for the region about the mouth of the Red River, the Gulf Breeze and Carrabelle areas of the northwest coast of Florida, and the Davis Site of eastern Texas, and aligned these in time with the five chronologies set up by Phillips, Griffin, and myself in the Mississippi Valley region of Mississippi and Arkansas. In the second section I attempted to trace selected strains of developing decoration ideas as they diffused through this part of the Southeast and changed

through time. In so far as the typological structure allows, the relative popularities of these streams of concepts have been measured in time and space and are presented by graphic devices.

In addition to the selected and rather specific trains of development that are traced, some more general trends which operated over long spans of time can be discerned. These can conveniently be divided into two classes, the flow of ceramic ideas in space and the qualitative drifts that occurred through time.

### GEOGRAPHIC MOVEMENT OF CERAMIC DECORATION CONCEPTS

A. The most striking contrast found in this ceramic history lies between the predominantly plain, incised, punctated, red-slipped, and otherwise decorated wares that are illustrated by most of the drawings, and the paddle-stamped wares that are detailed in Figs. 18 and 19. This same major ceramic contrast extends over most of eastern North America. The two ceramic families have been called "Mississippian" and "Woodland," but these terms have been so loosely applied that they are of little use. The chronologies examined demonstrate a long period of competition between these two broad classes of ceramics that may very well reflect a struggle between two contrasting cultural patterns. Of course such assumptions are not warranted from an analysis of ceramics alone. In general in the East it seems that the predominantly smooth pottery tradition was carried by cultures that placed more emphasis on agriculture, while the paddle-stamped ceramics were related to a simpler hunting and gathering economy. The latter probably diffused from the north and the former certainly had its roots in the southern part of the Mississippi Valley, when first observed, and may have originated farther to the south in Meso-America. Throughout this history the lower alluvial valley of the Mississippi was the stronghold of the smoothed pottery tradition. At an early date (F-E) a fabric-marked variety of paddle stamping pushed into the Sunflower River Basin, and weaker reflections are found to the south. The major intrusion of this pottery came in the same area between Times E and D in the form

of cord-marked pottery which reached a maximum of 62 per cent and exerted a stronger influence southward down the valley. The last effect of this tradition in this part of the valley was weaker. This was a check-stamped ware.

At the same time other varieties of this paddle-stamped tradition were approaching the Lower Mississippi Valley from the direction of Florida into which they had diffused from the north. The complicated stamped wares did not reach so far west as the Mississippi River. It was somewhat later, at Period D-C, that the thrust of this tradition from Florida reached the Red River Area in minor proportions as a check-stamped pottery. Throughout this history a substantial majority of plain and incised wares was maintained in the lower part of the Mississippi Valley, and after Time C, the beginning of the shell-tempered Mississippian pottery, this complex rapidly replaced the stamped ceramics over the western and central part of of the Southeast and continued to historic times. Gordon Willey and I have already suggested elsewhere that this southern and westward movement of "Woodland" stamped wares may have resulted from the vitalizing effect of introduced agricultural practices on indigenous cultures in which stamped pottery was already an element.<sup>1</sup> The diffusion of stamped wares does not necessarily indicate that a population movement coincided exactly. Rather the fact that the various forms of this complex were passing through ceramic complexes of the contrasting tradition, such as Weeden Island,

<sup>1</sup> Ford and Willey, 1941.

suggests that this was at least in part a simple diffusion, a reflection from vigorous centers that for most of this history existed in central Georgia, northern Alabama, and northeastern Mississippi.

The central theme of the fragment of prehistory that has been traced is the development that took place within the plain and incised complex of ceramics and eventually led to the formation of the widespread shell-tempered complex called "Mississippian." On early time levels (G-D) this tradition seems to be centered in the Lower Mississippi Valley. However, later, at D-C, the approximate time of crystallization of the Mississippian shell-tempered ceramics, the process obviously was occurring in parallel but different fashion much farther up the alluvial valley of the Mississippi than our data extend. We have examined only the southern part of the region where Mississippian ceramics were formed.

B. Within the plain-incised ceramic complex several significant geographical movements are apparent. The earliest of these was a diffusion of the Period E-F (Marksville) ceramic types from the Mississippi Valley into the northwest coast of Florida at about Time E.<sup>1</sup> They probably reached the Florida Coast at an earlier date, but the data for that region do not extend far enough back in time to clarify this question. This may have been an actual movement of people who met and merged with local populations to form the Santa Rosa-Swift Creek culture and provided a base out of which developed the vigorous Weeden Island cultural phase with its highly characteristic decorated ceramics.

### QUALITATIVE TRENDS IN THE PLAIN-INCISED CERAMIC HISTORY

A. The most striking trend in this history was the strong tendency, which appeared immediately after Time E, for the confining of a large proportion of the decorations to the upper part of the vessel wall, leaving the greater part of the body surface plain. This seems to have been due to the influence of the decorations that were derived from the peculiar cambered rims that characterized Marksville Period ceramics. Designs with this origin were most common in the Red River Area, and it was in this region also that the greatest proportion of decorations of other origins yielded to this

C. The Weeden Island pottery complex had a frequency center in western Florida in the Gulf Breeze Area between Times E and C. From here it exerted a strong influence on the Mouth of Red River Area, and transmitted reflections can be traced up the Red River to the Texas border and up the Mississippi into the Sunflower Area. Sporadic discoveries suggest that it went even farther up the Mississippi.

D. The horizontal incised-line design that has been labeled Coles Creek Incised first appeared in the lower part of the Mississippi Valley at Time E. This increased in frequency in that region until Time C and produced several variations but did not diffuse to any great distance, to either the east or north. As there is no possible ancestral form, this seems to have been an introduced decoration concept. Undoubtedly it derived from the west, and its possible ancestry may be found in the neck-banded pottery of the Southwest or similar incised vessels in the Huasteca. The trait of polishing pottery was introduced at the same time (see Fig. 2), and it may be significant that the first appearance of these types coincides with the first examples of rectangular mounds built as substructures for temples.<sup>2</sup>

E. The last important block of ceramic traits was diffused across the western part of the region under consideration after Time C. This included several varieties of engraving, and, although it has not been demonstrated here, these decorations were accompanied or slightly preceded by the carinated bowl form and the bottle.

influence. After Time E a smaller proportion of vessels on the Florida northwest coast have their decoration confined to the upper vessel wall, but the tendency is consistently found there and extended even to the paddle-stamped wares, diffusing as far as central Georgia.

B. Realistic design motifs are found at only one period in this history, between Times F and E. The simple figures of birds, outlined by incised lines, with the background roughened, are probably part of a ceramic complex that was introduced suddenly from outside the region. The designs conform to a well-

<sup>1</sup> Willey, 1949, 562 ff.

<sup>2</sup> Ford, 1951.

marked style, but there is considerable latitude in the application of the design elements to each vessel. After Time E this motif breaks down into geometric patterns. The meander formed by a smoothed band, bordered by incised lines, and with roughened background is the immediate product. In the Florida area this derived design retains the freedom of arrangement that characterized the earlier patterns, but to the west the meander quickly formalizes into a repetitive motif. Not only are the elements carefully repeated around vessels, but there is little variation in design from one vessel to another. The same tendency shows in Florida, but later and to a less extent. After Time C decorations of this family are often positive, with the area of the motif roughened rather than the background. The whorl appears. Whether the latter developed from the meander or was introduced from outside the region is not clear. Another trend that is virtually confined to the Florida northwest coast is towards the transformation of the pictorial representations of birds of the Marksville ceramics to modeled bird effigies in Weeden Island.

C. Within the plain-incised tradition the proportion of plain to decorated vessels remained approximately the same throughout the history, except in the areas where there were momentary intrusions of the paddle-stamped wares. The proportion of sherds is about 10 per cent decorated and 90 per cent plain. These are straight sherd counts and, of course, do not accurately measure the actual number of

vessels. However, these counts should faithfully reflect any changes in proportions, and they indicate that there were little or none.

It would be possible to describe several other strains of ceramic decoration traits that have operated in this culture history, and at least a partial history of vessel shapes might be outlined. However, perhaps I have done enough to make the principal point, that in the pre-history of this region there has been a clear and measurable evolution of ceramics. In most cases it has been shown that what at first glance might be called "new designs" resulted from a combination of features that were already available in the cultural background. Others have been interpreted as intrusions into the region from exterior sources, some of which can be identified and some of which cannot. Another possibility, even more difficult to assess, is that a few minor techniques may have been transferred from perishable materials. Fortunately it has not been necessary to invoke this explanation in this fragment of history.

I am well aware that this entire discussion can be cited as a nice example of circular reasoning. Tacitly or consciously present-day archaeologists operate on the assumption that culture is a continuum that can, and in their work must, be studied without references to the human carriers of the phenomena. The present work is based upon that assumption. If the techniques have operated successfully there is no other conclusion that it can demonstrate. I wish to present it then not as an argument, but as an illustration.

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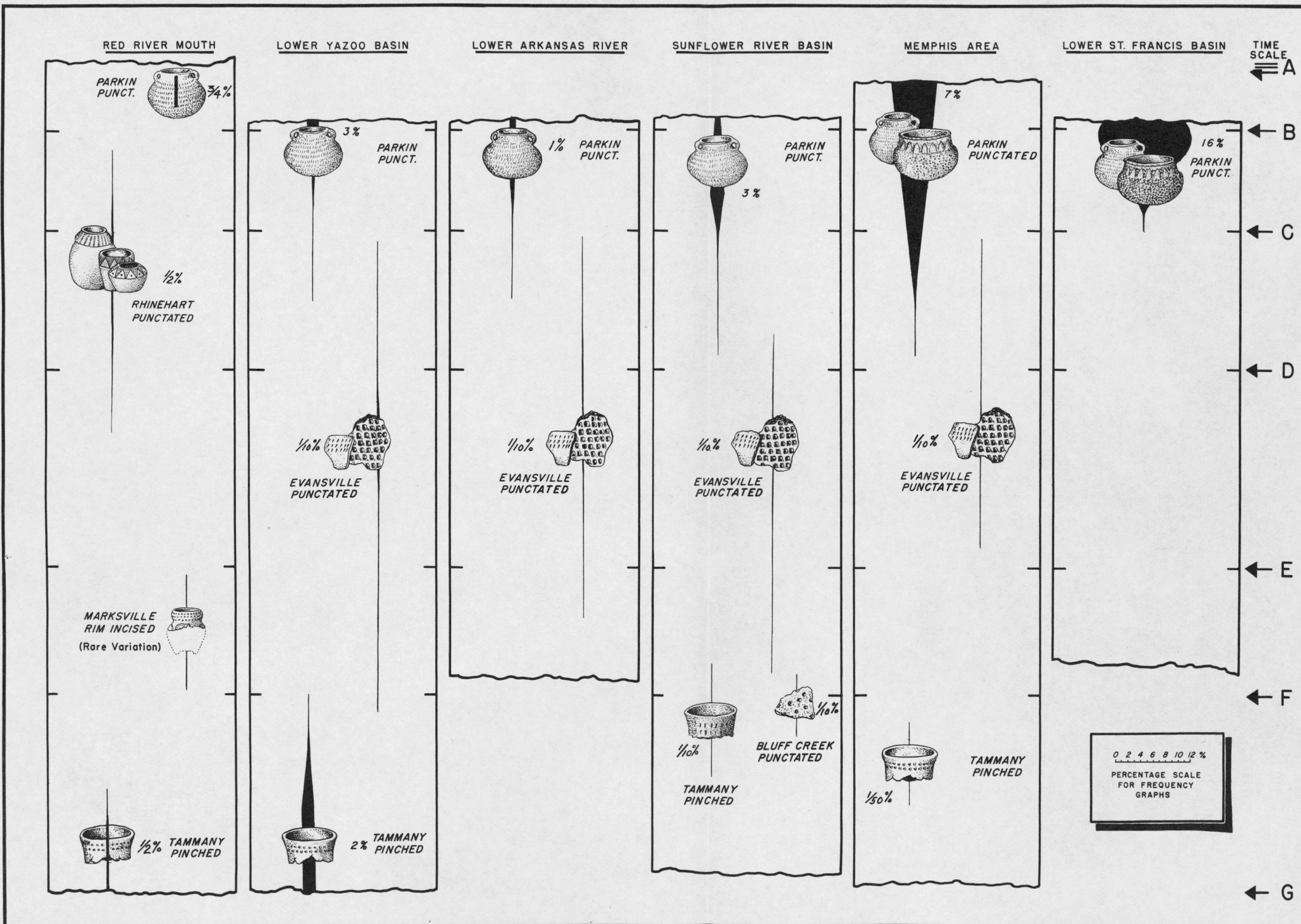


FIG. 8. South-to-north profile of the history of random punctated and fingernail marked pottery decorations.

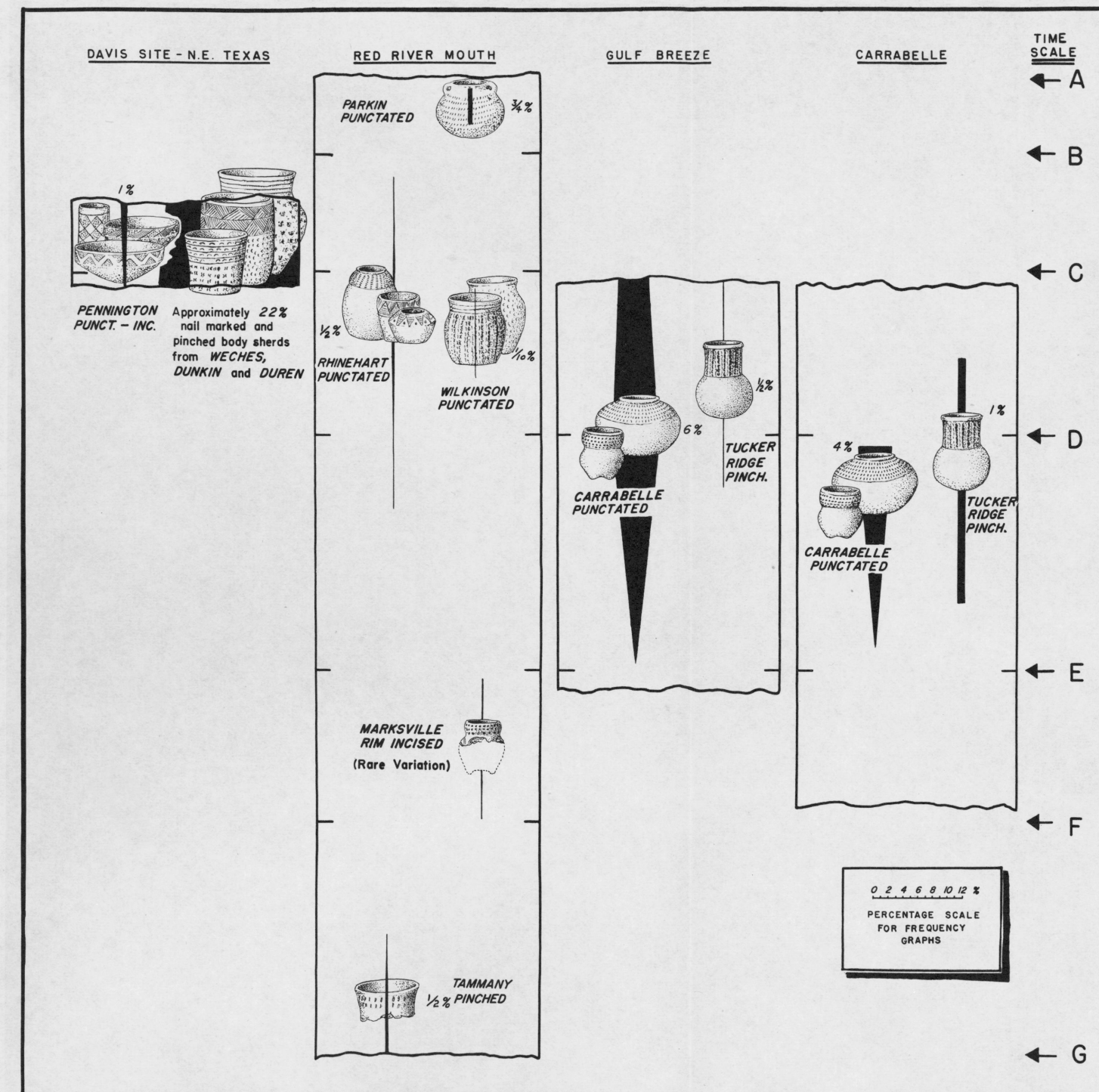


FIG. 9. West-to-east profile of the history of random punctated and fingernail marked pottery decorations.





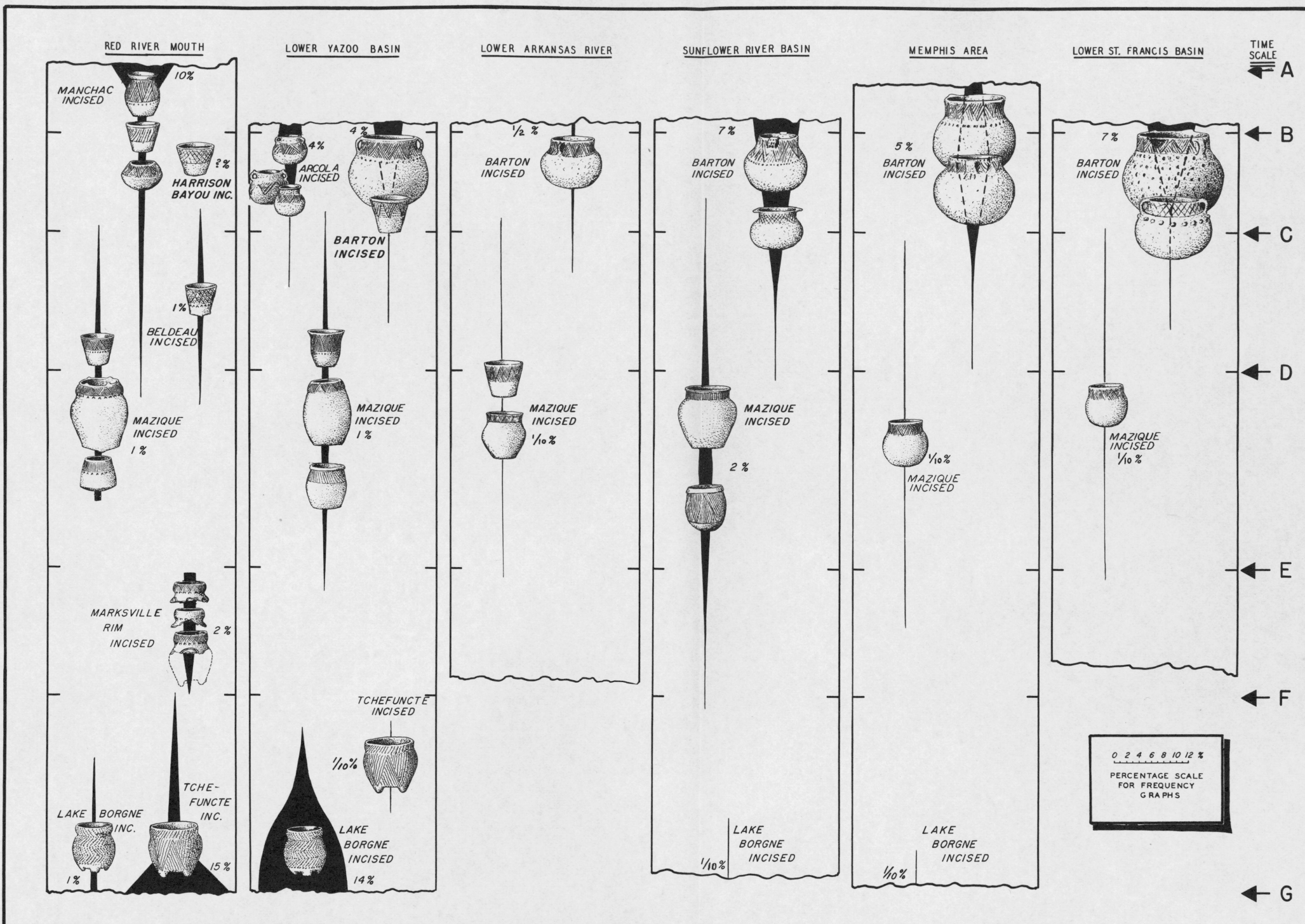


FIG. 10. South-to-north profile of the history of decorations formed by straight incised lines.

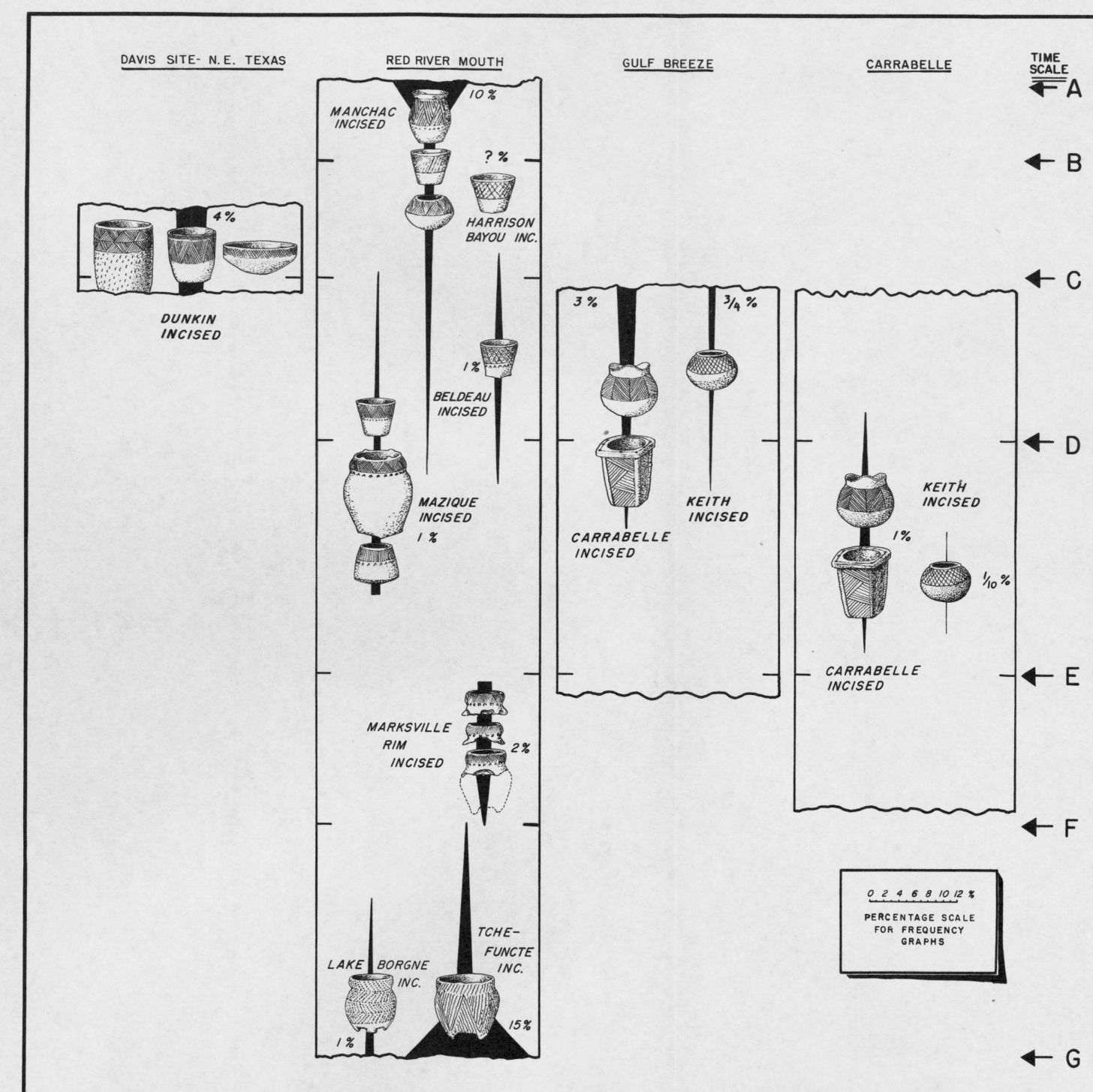


FIG. 11. West-to-east profile of the history of decorations formed by straight incised lines.





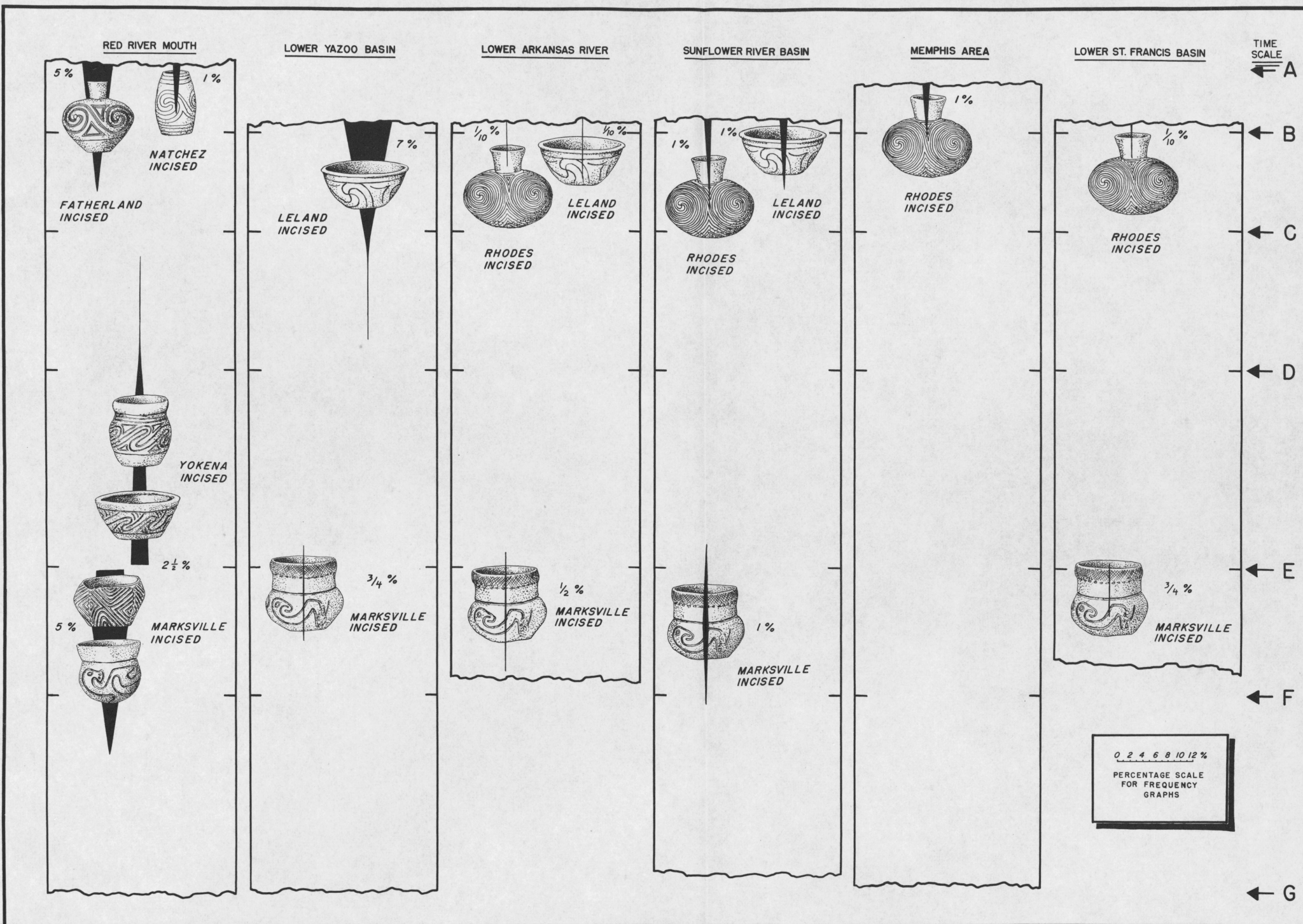


FIG. 12. South-to-north profile of the history of decorations formed by curvilinear incision.

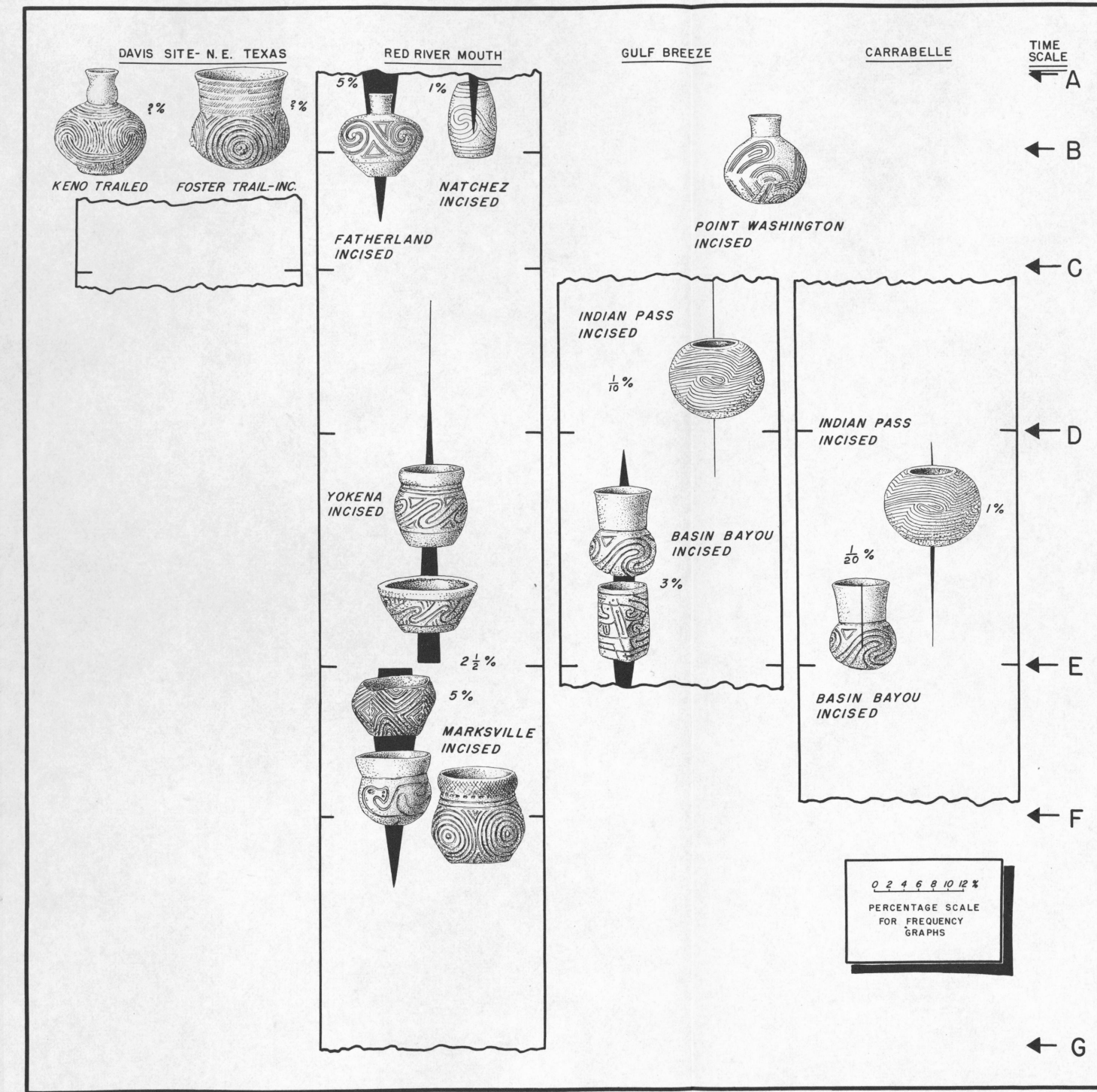


FIG. 13. West-to-east profile of the history of decorations formed by curvilinear incision.





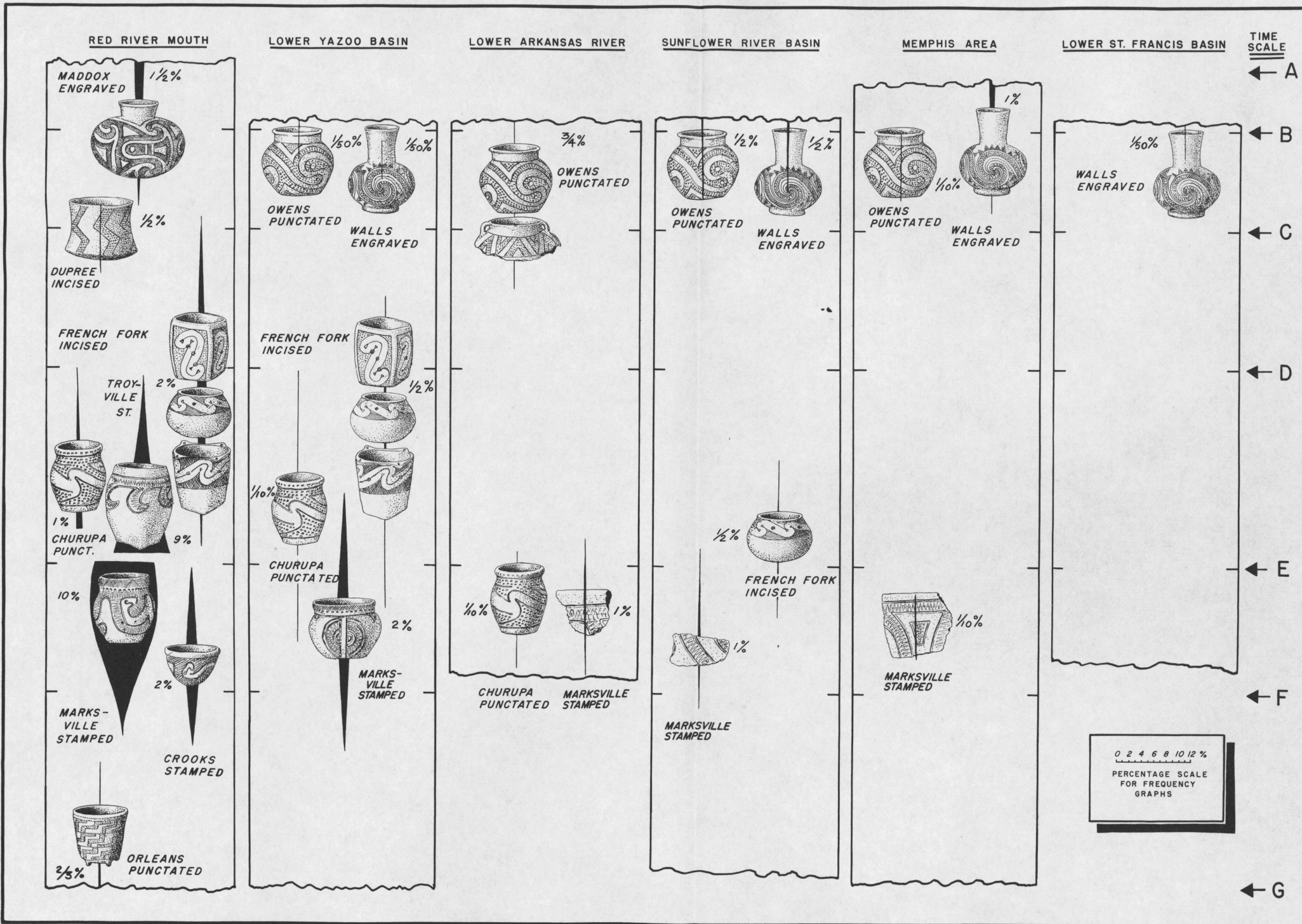


FIG. 14. South-to-north profile of the history of decorations featuring contrasting roughened and smoothed vessel surface.

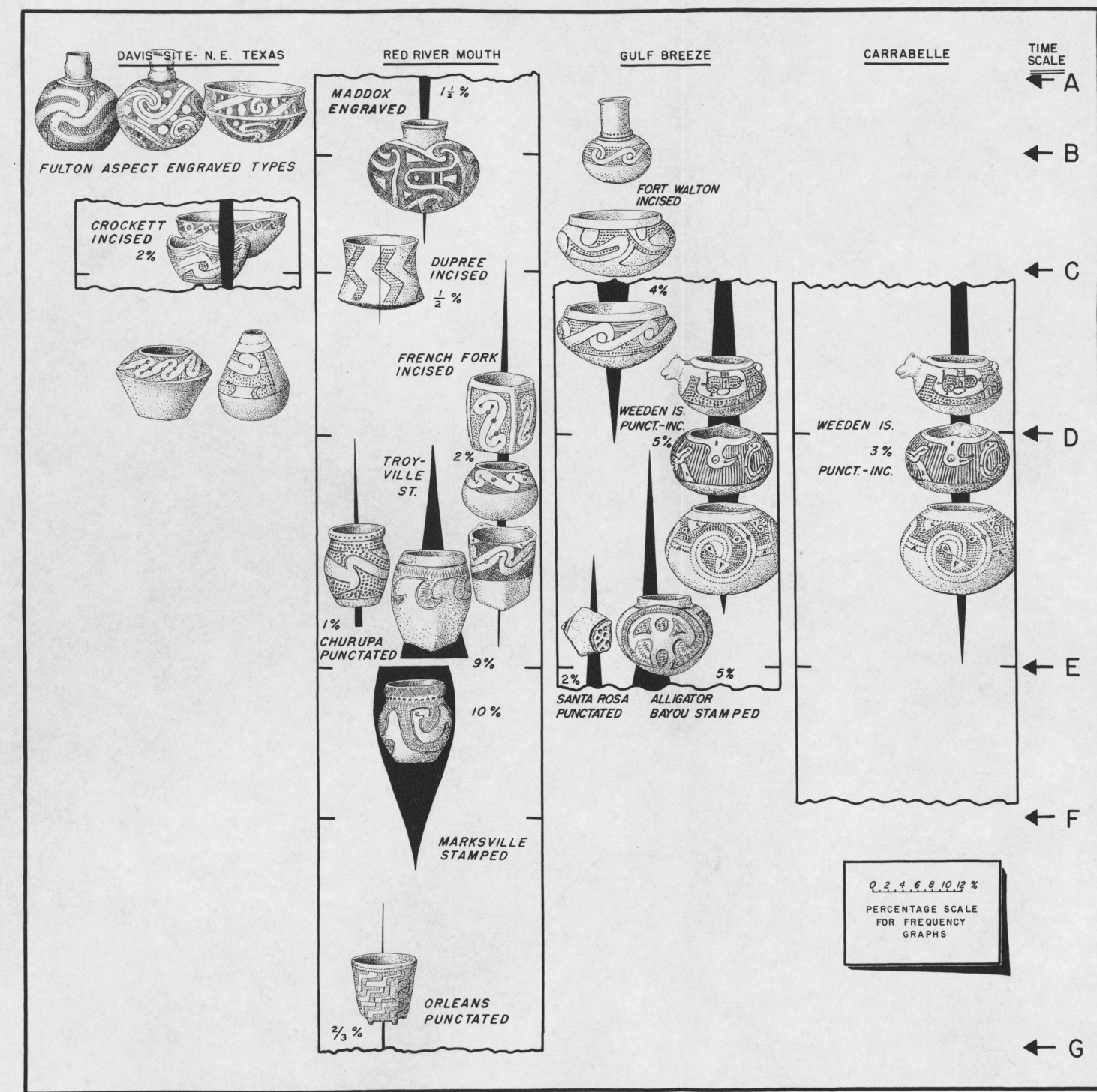


FIG. 15. West-to-east profile of the history of decorations featuring contrasting roughened and smoothed vessel surface.





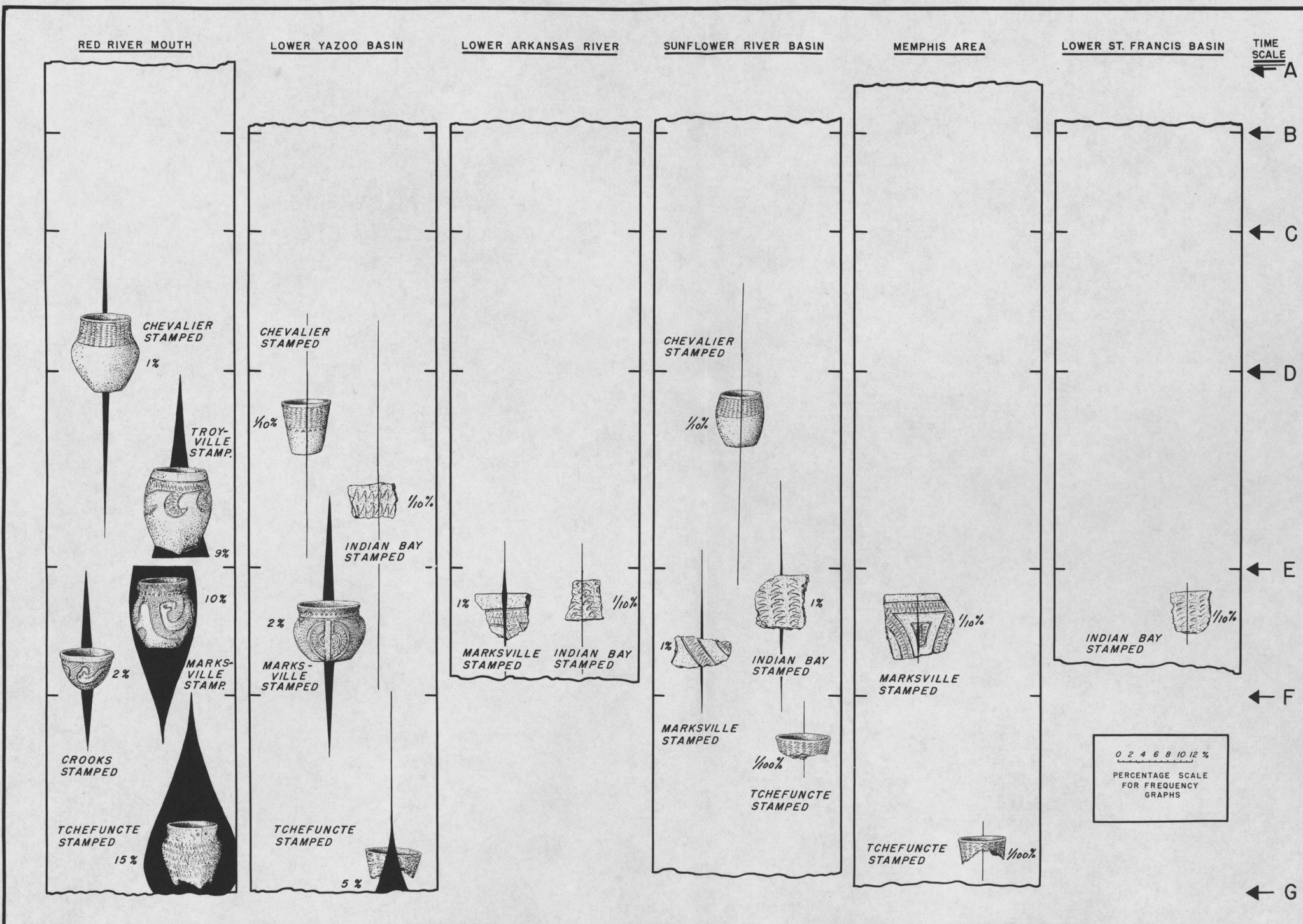


FIG. 16. South-to-north profile of the history of the rocker stamping technique.

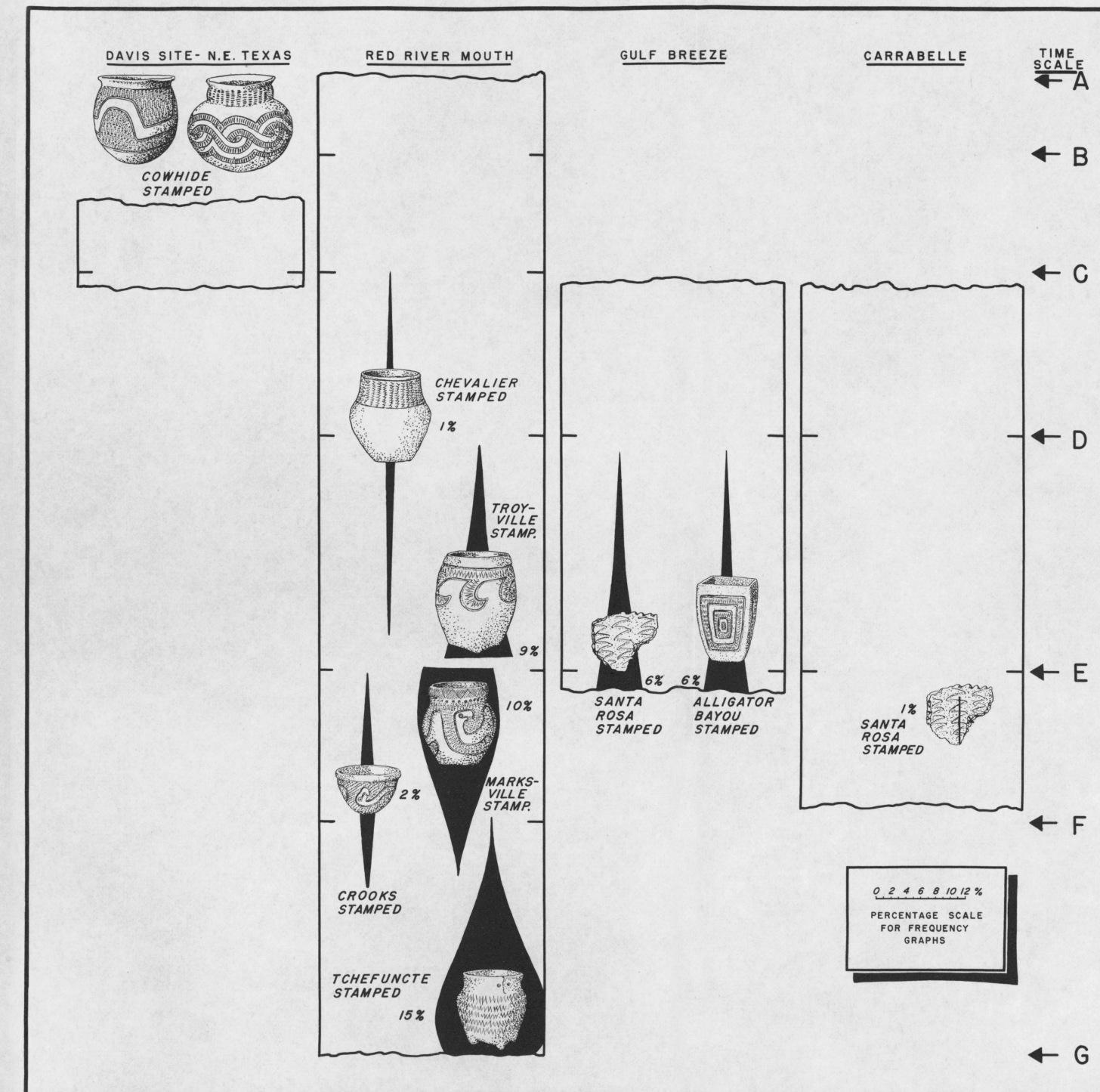


FIG. 17. West-to-east profile of the history of the rocker stamping technique.





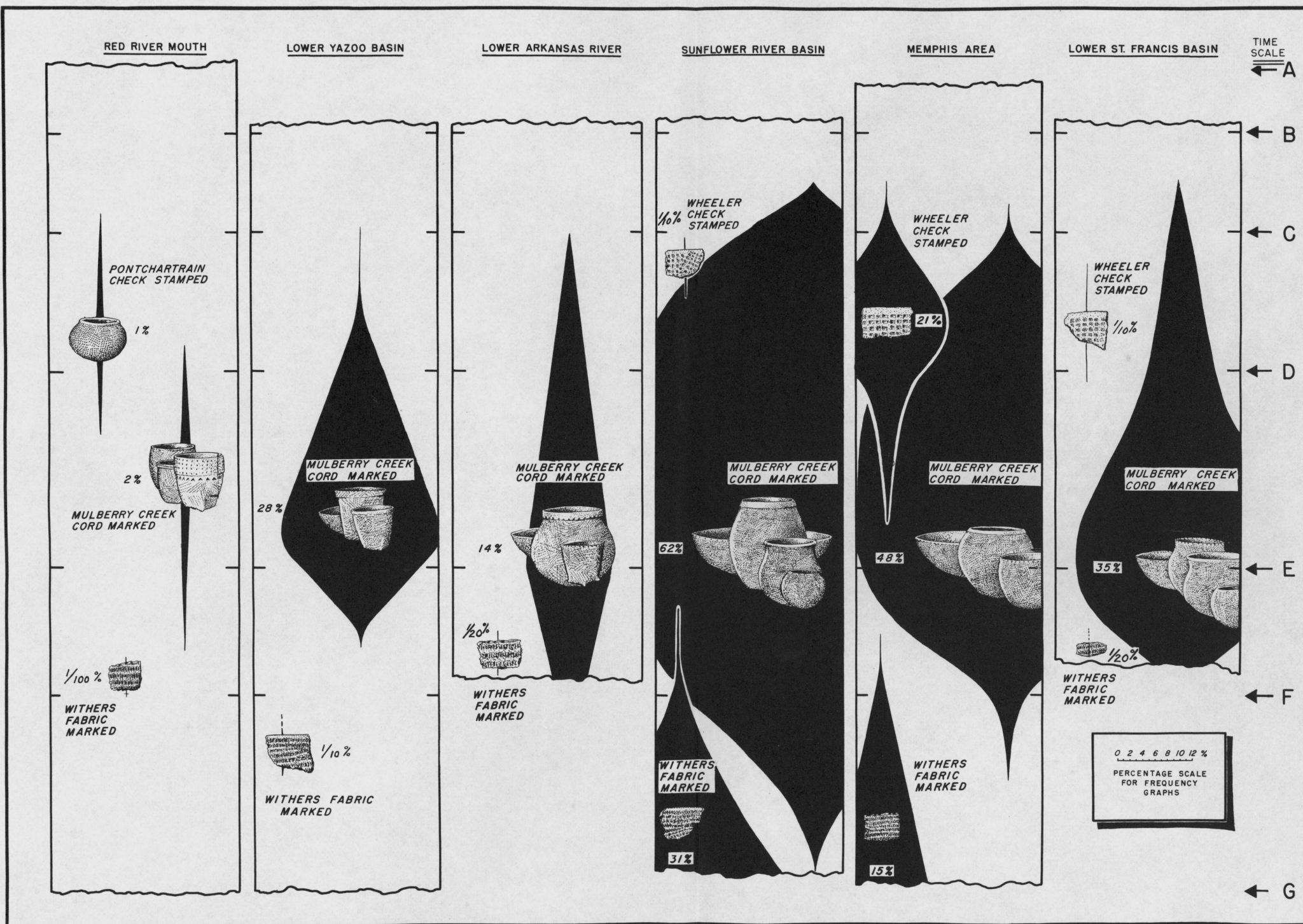


FIG. 18. South-to-north profile of the history of paddle-stamped ceramics.

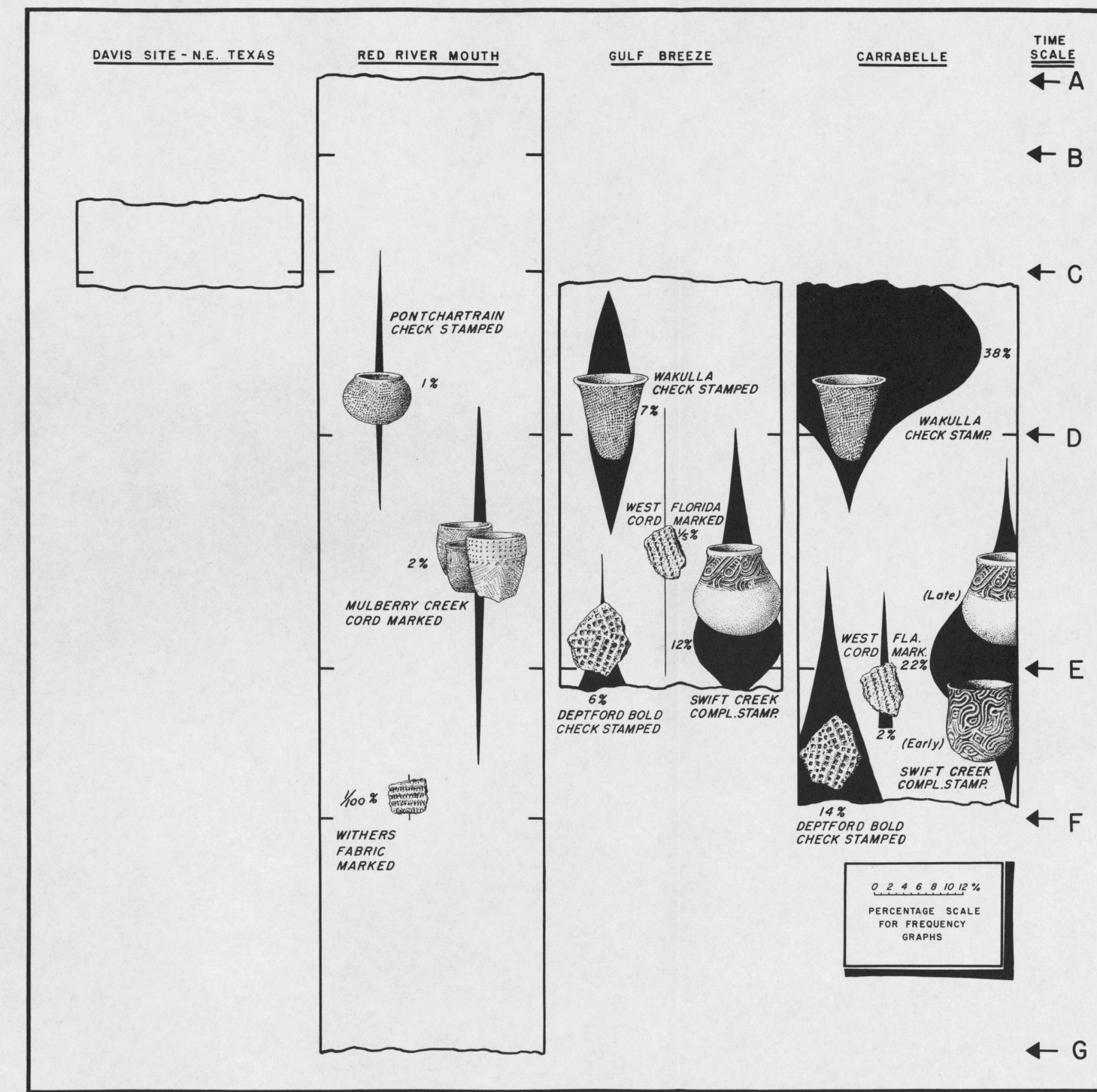


FIG. 19. West-to-east profile of the history of paddle-stamped ceramics.











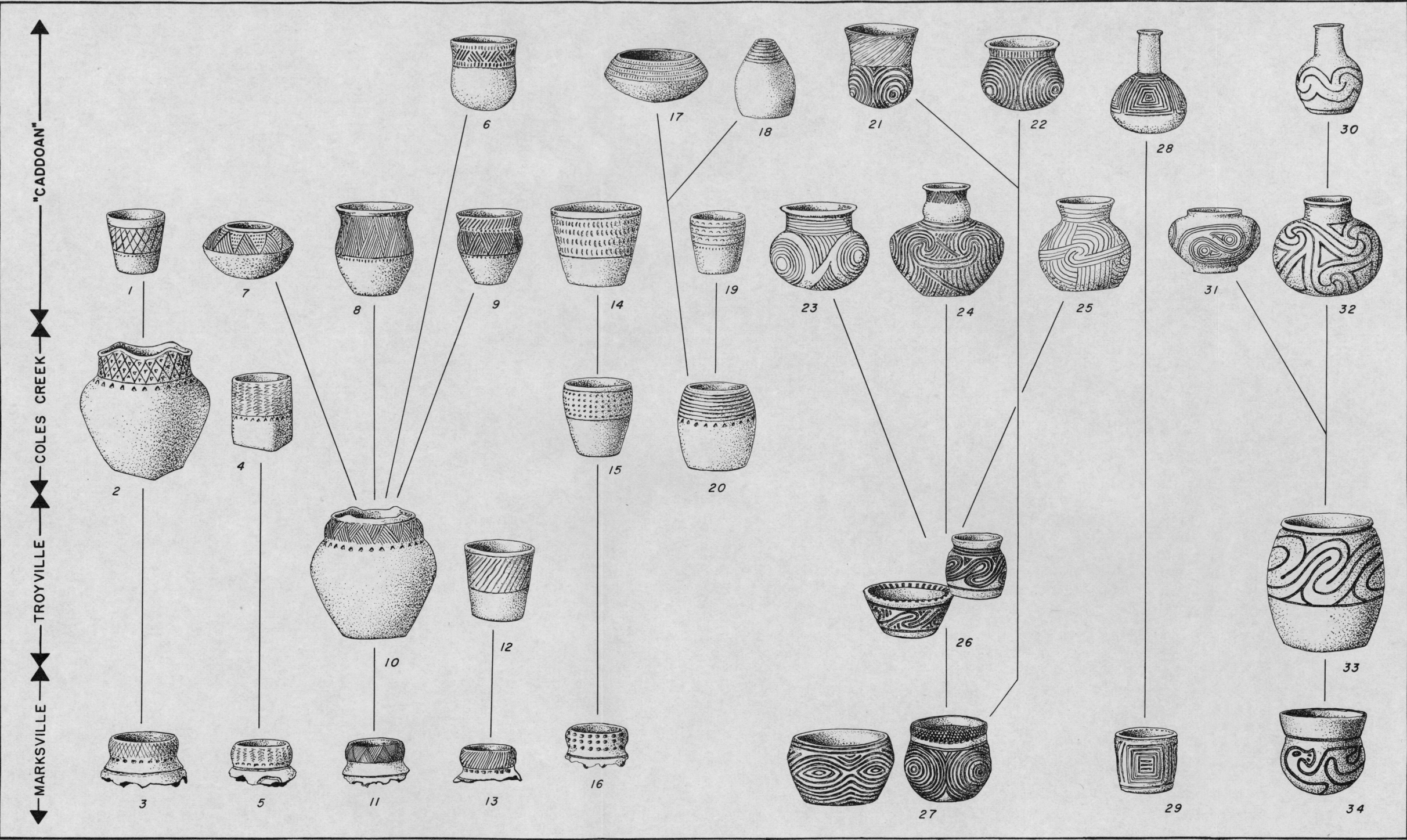


FIG. 22. Some suggested relationships between Caddoan Area ceramic decorations and earlier decorations in the Lower Mississippi Valley. Types 1-20 seem to have derived from the incised rims of the Marksville Period.

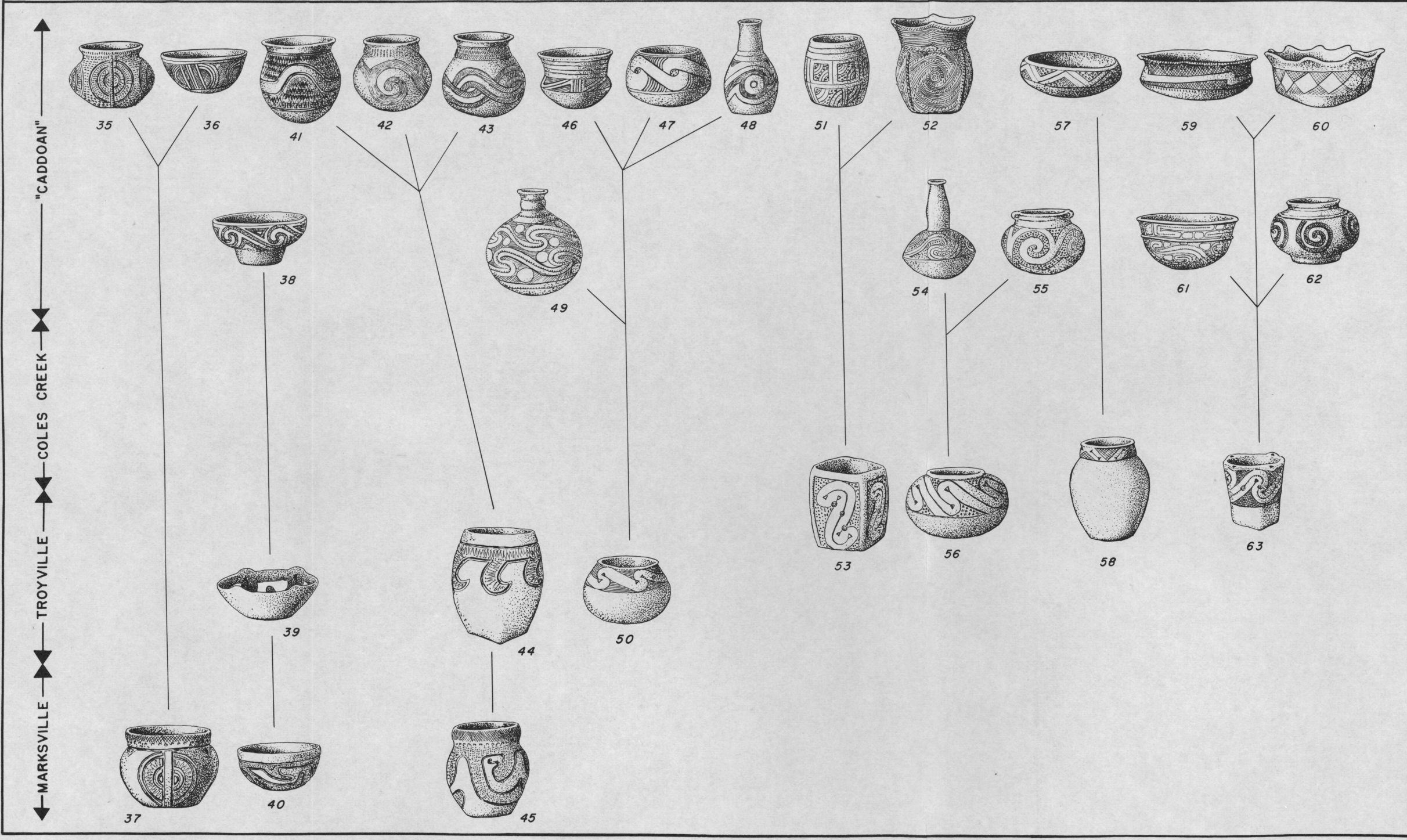


FIG. 23. Some suggested relationships between Caddoan Area ceramic decorations and earlier decorations in the Lower Mississippi Valley. These designs appear to have derived in part from early vessel-body decorations.











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