

BULLETIN NO. 13

SOUTHEASTERN ARCHAEOLOGICAL CONFERENCE

Proceedings of the
Twenty-Seventh
Southeastern Archaeological Conference

Edited by

Bettye J. Broyles

Morgantown, West Virginia

1971

EDITOR'S NOTE:

The Twenty-Seventh Southeastern Archaeological Conference was held on October 30-31, 1970, at the Wade Hampton Hotel in Columbia, South Carolina. Dr. Robert L. Stephenson, Director of the Institute of Archeology and Anthropology, University of South Carolina, served as Chairman of the meeting.

The Conference opened Friday morning with Reports of Current Field Work. This session is not included in this Bulletin since the reports were printed in the 1970 Newsletter (Volume 14). Two of the papers presented on Saturday morning are also being omitted so that they can be combined with one paper from the Twenty-Sixth Conference into a single Bulletin dealing with the Poverty Point Culture. A few of the papers on the program were not presented at the meeting and are therefore not included in these Proceedings.

At the Annual Business Meeting held on Saturday, Richard Faust was elected Chairman for the 1971 meeting which will be held in Macon, Georgia. A request was made to the Editor to investigate reprinting Volumes 1 through 9 of the Conference Newsletters which have long been out-of-print. This project will be completed (hopefully) before the end of 1971. All of the Bulletins (1 through 12) and Newsletters, Volumes 10 through 14, are available from the Editor.

This is the longest Bulletin thus far published by the Southeastern Archaeological Conference, but has not been the most difficult, since most of the speakers responded to the call for copies of their papers and it was not necessary to transcribe the tapes made at the meeting. Your Editor thanks everyone for being prompt and especially Bob Stephenson who wrote letters to everyone reminding them to get their papers in as soon as possible.

One point of Editorial "license" was taken and that was to place the REFERENCES CITED from all of the papers at the end of the Bulletin. This was done because several authors were citing the same references and it did shorten the publication by several pages.

One more Bulletin (14) is planned for distribution in 1971 dealing with the excavation of the Slone Site in Kentucky (that is, if the treasury will hold out after this lengthy Bulletin). Anyone who has a manuscript dealing with the Southeast that he would like to have considered for publication in a Bulletin should submit it either to the Editor or a member of the Editorial Committee (William G. Haag, John W. Griffin, Joffre L. Coe, Howard A. MacCord, or Stephen Williams).

Bettye J. Broyles
Editor/Treasurer SEAC
West Virginia Geological Survey
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PROGRAM

TWENTY-SEVENTH SOUTHEASTERN ARCHAEOLOGICAL CONFERENCE

Session I: Friday Morning, October 30, 1970

REPORTS OF CURRENT FIELD WORK-- Chairman: Bettye J. Broyles

Georgia	Joseph R. Caldwell	Missouri	Alden Redfield
South Carolina ..	Robert L. Stephenson	Alabama	Jerry Nielson
North Carolina ..	Joffre L. Coe	Mississippi	Richard Marshall
Virginia	Howard A. MacCord	Louisiana	Robert Neuman
Florida	Ripley P. Bullen	Kentucky	Lathel Duffield
Tennessee	Alfred K. Guthe	West Virginia	Bettye J. Broyles
Arkansas	Hester A. Davis		

Session II: Friday Afternoon, October 30, 1970

SOME VARIATIONS IN SETTLEMENT PATTERNS IN INDIAN CULTURE--

Chairman: Ripley P. Bullen

Recent Indications of Dalton Settlement Pattern in Northeast Arkansas.....
..... Dan F. Morse

Some Settlement Patterns of the Poverty Point Culture Clarence H. Webb

Some Variations in Settlement Patterns in Peninsular Florida
..... Ripley P. Bullen

Settlement Distribution During the Mississippi Period Lewis H. Larson

Prehistoric Subsistence and Settlement on the Upper Savannah River
..... E. Thomas Hemmings

Late Woodland Palisaded Villages in Virginia Howard A. MacCord, Sr.

Settlement Pattern of the Plaquemine Culture Along Bayou Bartholomew
..... Martha Rolingson

Settlement Distribution of the Chakchiuma Houma Indian Group, ca. 1540-1800 .
..... Gentry W. Yeatman

Session III: Friday Evening, October 30, 1970

Social Hour and Banquet

WHAT DO WE KNOW NOW THAT WE DID NOT KNOW IN 1938? A symposium led by Charles H. Fairbanks, University of Florida, and Joffre L. Coe, University of North Carolina at Chapel Hill

Session IV: Saturday Morning, October 31, 1970

ARCHAIC-TRANSITION-EARLY WOODLAND IN THE SOUTHEAST--

Chairman: E. Thomas Hemmings

- The Taylor Site: An Early Archaic-Paleo Indian Site James J. Michie
- A Late Archaic Site with Attendant Blade Industry in North Central Florida ..
..... Carl Clawson
- Evidence of Archaic Influence in the Bayou La Batre Phase on the Tombigbee
River David W. Chase
- Intersite Comparisons at the Poverty Point Site: Culinary Objects and
Methods Clarence H. Webb
- Intersite Variability at the Poverty Point Site: Preliminary Considerations
..... Jon L. Gibson
- Emergence of Formative Life on the Atlantic Coast of the Southeast
..... E. Thomas Hemmings
- Conclusions from Two Transitional Early Formative Sites in Georgia
..... Jerald T. Milanich
- The Transitional Period of Florida and its Relationship to Other Parts of
the Southeast Ripley P. Bullen
- Palmetto Tempered Pottery Jeffrey P. Brain and Drexel A. Peterson, Jr.
- The Refuge Phase in the Savannah River Region Drexel A. Peterson, Jr.
- Iva Annua var. Macrocarpa: An Extinct American Cultigen?
..... Richard A. Yarnell

Session V:

ANNUAL BUSINESS MEETING-- Saturday Afternoon, October 31, 1970

Chairman: Robert L. Stephenson

Session VI: Saturday Afternoon, October 31, 1970

CONTRIBUTED PAPERS--

Chairman: Richard D. Faust

- Site Analysis with a Mobile Laboratory: Micro-Sample Extraction and
Radiocarbon Dating Kent A. Schneider and John E. Noakes
- The Mobile Carbon Dating Laboratory and the Archaeologist.....
..... Betty Lee Brandau
- Chronology of the Georgia Coast Joseph R. Caldwell
- The Latest Word from the Calico Hills Robert L. Stephenson
- The Dalton Project 1961-1962 Alden Redfield
- The Tunica TreasureRobert S. Neitzel and Jeffrey P. Brain
- Several Unusual Artifacts from Southern Louisiana Robert W. Neuman
- The Missing Half: Analysis of the Ceramic Fabric Don Crusoe
- Observations on the Lum-Moss Site, Calhoun, GeorgiaSteven Baker
- Excavations at the Bellfield Mound, Carter's Dam: 1970 Season
..... Arthur R. Kelly
- High School Archaeology in Cobb County, Georgia Lawrence Meier
- The Cattail Creek Fluting TraditionFloyd Painter
- Ecology of the Waring Site Gordon Midgett
- A Comparative Study of Some Late Creek Ceramics Frank Schnell
- A Comparative Analysis of the Ceramics from the Potts Mound, Troup
County, Georgia Gail S. Schnell

SESSION II

SOME VARIATIONS IN SETTLEMENT PATTERNS IN INDIAN CULTURE

RECENT INDICATIONS OF DALTON SETTLEMENT PATTERN IN NORTHEAST ARKANSAS

Dan F. Morse

Arkansas Archeological Survey

ABSTRACT

Until very recently, Dalton meant little more than an early projectile point style which is found throughout the southeastern United States. Three years of intensive site mapping and surface collecting by the Arkansas Archeological Survey indicated the possibility of a settlement pattern consisting of base camp settlements and hunting camps. The Brand Site was selected as a test for the hunting camp. The selection was based upon its small size, relative abundance of Dalton points on the surface, and the fact it was only recently cleared. Several hundred tools and at least 150 Dalton points were excavated. Most were found in apparent individual and group working areas between water-laid and wind-blown sediments at a shallow depth. The tools clearly indicated butchering activities and verified our basic settlement pattern hypothesis for Dalton. We have now with some authority begun to identify the major base camp settlement or area of settlements associated with a major drainage and hundreds of small camps similar to the Brand Site.

ACKNOWLEDGEMENTS

First and foremost we must thank the "Ford and Redfield Survey" (Redfield, M.S. on file at the Arkansas Archeological Survey, Fayetteville) which with help from many people provided the initial emphasis on the Dalton remains in northeast Arkansas in the early 1960's. Second, we must thank Roger Saucier (1968) whose new hypothesis concerning the recent history of geological events in the concerned area allowed the Dalton remains to be dated in the same time period as those in Missouri and Alabama. Thirdly, we must thank the amateurs, land owners, students, and others who reported sites and helped collect samples. No one can really be singled out because the combined help is what is important.

INTRODUCTION

The "Dalton point" is present over almost the whole of the Southeast (Coe 1964: 66; Rolingson 1964: 44; Wauchope 1966: Fig. 235; Bullen 1968: 44; DeJarnette et. al 1962: 84; Brain 1970: 105; Perino 1967: 13; Logan 1952: 31; Webb, Ford, and Gagliano, M.S. on file; Lewis and Lewis 1961: 41). In the Plains, the type is called Meserve (Bell 1958: 52-54) although it appears to be of rare occurrence relative to the Southeast. There may be some Dalton points north of the Ohio River, but they also seem to be very rare.

Preliminary studies have indicated that Dalton points are most numerous in the north Delta of Arkansas west of an early stage of the Mississippi River a few miles east of Crowley's Ridge than anywhere else in the Southeast. This is an area of approximately 5,000 square miles. To date we have recorded 250 sites producing early lanceolate points, mostly Daltons, and have leads to many more.

Until recently, these early points were dated according to the 1939 Fisk Chronology as later than those points found in Alabama (M-1152: 9640 ± 450 ; M-1153: 8920 ± 400 ; M-1346: 9440 ± 400 ; M-1347: 9340 ± 400 ; M-1348: 9040 ± 400) and Missouri (M-1497: 9130 ± 300 ; M-1496: 8190 ± 400 ; M-1889: 9290 ± 300 ; M-1928: 9470 ± 400). These Carbon-14 dates range between about 9,900 and 7,800 years ago. The Fisk Chronology indicated a date no older than 6,000 years ago. The new Saucier (1968) hypothesis does much more than merely re-date these deposits. It involves a new sequence of river development as well. Equally important, we now have a clearer picture of the basic kind of environment (Morse 1969).

Verification of much of the Saucier hypothesis has been accomplished by the loci of early projectile points, particularly fluted points, and of paleontological remains (Morse n.d.). At the time of the Dalton occupation in northeast Arkansas, we seem to have had an area of braided streams and developing hardwood forest or parkland. An expected basic game is deer although undoubtedly the area was rich in other animal and vegetable resources as well. The large number of Dalton artifacts and sites must be explicable in terms of a rich and varied environment.

FREE WANDERING

In Seminars in Archaeology: 1955 (Beardsley et al 1956: 135), "free wandering" is defined as:

a community that moves frequently and without restriction, the direction and continuousness of wandering and the amount of territory covered being conditioned only by the movement of large game and the local abundance of food resources.

Further on (ibid.: 136) "the distribution of Clovis points over the greater part of North America" is indicated as a possible example of such a settlement pattern. It is perhaps unfair to characterize much archaeological thought as seriously considering "free wandering", at least for North America, anymore; but the expressed thought seems to be prevalent at enough archaeological meetings to merit some brief discussion.

First, no group can wander free anywhere as long as there is one or more neighboring groups. From the first migration into North America, this is the situation. Second, it is difficult to view our upper Paleolithic relatives as so unsophisticated that they would not take advantage of our terminal and post Pleistocene environments and exploit them in a more regular and predictable way. In the eastern United States there are rich environments with predictable resources. No doubt the basic settlement pattern will be found to be different from region to region, but it is very doubtful that "free wandering" will be one of them.

Restricted wandering (*ibid.*: 136) may be a type of settlement pattern found at the Holcombe Site in Michigan (Fitting *et al* 1966: 76,81). Very possibly this may prove to be the basic settlement plan during the terminal Pleistocene and in many areas even during the first few thousand years after the Pleistocene ends. However, the 1955 seminars indicated that yet a third type of settlement pattern is possible for hunters and gatherers: "Central-Based Wandering" (Beardsley *et al* 1956: 138). We wish to propose a settlement pattern which is related to both of these concepts.

THE MODEL

We feel that the settlement pattern as indicated for the Tuluqmiut of Alaska by Campbell (1968: Fig. 2, pp. 15-17) more closely parallels that at 10,000-8,000 years ago in northeast Arkansas than any other ethnographic situation we know. Campbell's description is admittedly "salvage anthropology" at its worst (1968: 15), but as a model it suits our purpose admirably.

The Tuluqmiut in A.D. 1870-1875 lived in a varied environment consisting of Archaic prairie and deep mountainous valleys. Within the two largest valleys are numerous lakes and streams, a condition roughly paralleling northeastern Arkansas 10,000 to 8,000 years ago. However, the cold climate does not parallel the situation in Arkansas. Campbell describes the plant and animal variety as "small" (*ibid.*: 7), but the 32 mammal, 142 bird, and 11 fish species available do not seem small compared with eastern United States faunal lists. In addition, the presence of 149 edible flowering plants is not apparently a small figure either (Yarnell 1964: 44,142). What is involved is that plants and most animals do not constitute a very large percentage of the diet which is in contrast to the eastern United States. "... the caribu (*Rangifer arcticus*) in addition to being the mainstay of Tuluqmiut subsistence, provided the bulk of the raw materials necessary for the manufacture of clothes, bedding, houses, household utensils, fishing tackle, weapons, and other categories of artifacts" (Campbell 1968: 12). One of the basic ingredients involved in hunting is teamwork. The Tuluqmiut settlement pattern was keyed to the interception of migrating herds of caribu rather than pursuit of these herds (*ibid.*: 15). Their territory included one or more migration routes. In northeast Arkansas there were no migrating herds of deer; rather, they were probably clustered according to stream edges and there was only minor movement together as groups during the rutting season and extreme winter conditions (a situation approaching the northern winter yarding). The typical white-taildeer family consists of a doe, her fawns, and often yearlings from the previous years (Severinghaus and Cheatum 1956: 117). A more loose knit social group with a territory can number 20 to 30 or more. The territory of the whitetail is extremely small and could well equate with an area measuring a few square miles as defined by the braided stream channels as shown on aerial photographs (*ibid.*: 152,156-157).

The Tuluqmiut band is made up of about 50 inhabitants within a territory of about 3,200 square miles. It was one of 20 Nunamiut bands held together as a loose unit by a common language and culture and by marriage ties. Within the territory was the base settlement or large headquarter encampment and a series of smaller settlements including winter camps, hunting camps, fishing camps, quarry camps, and courting, visiting, and trading camps as well as overnight camps used while going from one camp to another.

The northern winter camps are not expected in northeast Arkansas since the two basic reasons for such settlements are absent. There are as abundant natural resources at this time as during much of the year and the climate does not get nearly as severe in Arkansas.

Our model for northeast Arkansas is as follows. There should be a base settlement where most or all members of a single band should live over part or most of the year. The base settlement may be a single site or a contiguous series of sites. Through time the base settlement may shift, but at least concise areas of base settlements should be recognizable. The base settlement should be placed so as to easily take advantage of the band's territory as well as offer maximum comfort from the immediate environment. The base settlement should be characterized by tool manufacture and by evidence of whole kin activity. It should be the largest site around as well as the rarest.

Another major settlement should be the hunting or butchering camp. Evidence of the butchering of deer and of almost completely male-oriented activity should be present. These sites should be small and numerous. The only evidence of tool manufacture should relate to those tools specifically made for butchering (cortex backed flake knives similar to those mentioned by White 1963: 5) or tools or blanks for tools made from parts of the butchered animal. There should be no evidence or at least not extensive evidence of skin preparation (end scrapers), wood working (adzes and chisels), or tool manufacture (preforms, newly made tools, and preform debitage).

The other expected sites are going to be a problem. Not expected is the use or loss of Dalton points at fishing, courting, visiting, trading, or quarry camps. At the present time we do not know enough to predict what should be the expected artifacts at such sites. In fact, the quarry sites, if not destroyed by later aborigines, have been destroyed by modern gravel quarrying. We know the approximate locus of two types of preferred chert (near Batesville, Arkansas) and that good chert cobbles can be found with hard work at the heads of small stream valleys entering the lowlands from Crowley's Ridge. Besides this a minor amount of exotic chert seems to be moving down from Missouri and perhaps Illinois.

THE TEST

We wished to test the basic model that base settlements and butchering camps were integral parts of the northeast Arkansas Dalton settlement pattern. Of the 250 mapped sites, we chose five for excavation. One (3P0139 or the Brand Site) was selected as the best known test for a butchering camp based on the observations that it was newly cleared and had only been disked rather than plowed, that it was small ($\frac{1}{4}$ acre) and there was a chance to obtain a complete sample, and that Dalton points had been found on the surface and little else that could not be logically referred to a Dalton complex.

A total of 120 square meters was excavated, mainly by trowel. Chert debitage was collected mostly in 50 cm. squares within natural levels. All recognized artifacts were plotted exactly and many were photographed in situ. The site consists of four soil zones. Zone A is the cultivation zone which intrudes Zone B, a dark wind-blown silt. Zone C contained the A and B horizons and Zone D the C horizon of an underlying light waterlaid clayey soil.

Artifacts recognized as belonging to the Dalton complex occurred on the surface of Zone C, just beneath the surface of Zone C, and just within the base of Zone B. Artifacts recognized as late Archaic and late Woodland clustered in the upper part of Zone B and within the cultivation zone with very few exceptions. The surface of Zone C in much of the site is a fairly level plane with a higher calcium content than in the rest of the site profile. Two deer teeth and part of an antler as well as occasional minute bone meal fragments occurred on this surface but were so rare that intrusion from above is not definitely ruled out. Tools and debitage occurred in clusters, usually around cobble features, and indicated perhaps a dozen one-time small working areas. The lithic analysis is being done by Al Goodyear as a M.A. Thesis in Anthropology at the University of Arkansas. He is also involved in an attempt to localize the artifact clusters. He has completed a preliminary analysis which will be summarized here.

Most of the 125 Dalton points are worn-out denticulate knives. There are two broken preforms used as scrapers. Only a few unresharpened points are present; most discarded points had been resharpened once. A few had been resharpened twice into a drill-shaped scraper or knife which was not denticulated. Point debitage seems to be a result of resharpening rather than manufacturing points. Some points have had multiple burin flakes removed from the tip. These do not appear to be fracture blows but do seem intentional and exhibit usage as if used to groove bone preparatory to splitting it. Only a very few end scrapers were found and none seems to have been used specifically for skin preparation. Adz fragments were fairly numerous but in most cases either were being used as cores or had been remade into crude choppers. Some, mainly polls, were not modified. True blades used as knives were present but the major flake knife seems to be a flake of secondary decortication with a natural backing and thin working edge suitable for skinning. These are very common and seem to have been produced at the site. Most of the cobbles found appear to be anvils similar to those found at Graham Cave and Debert. Another very common tool also made at the site are pieces esquilees. Following MacDonald's interpretation (1968: 89-90), they probably are wedges for splitting deer bone and antler in the preparation of artifact blanks. A very few graters were found and some eyed needles may have been made at the site (*ibid.*: 112).

The Dalton activity at the Brand Site seems to have been male-oriented and concerned with butchering deer plus some manufacture of bone blanks for artifacts. Brand seems typical of hundreds of sites producing Dalton points in the north Arkansas Delta lowlands. Until now, however, we could only guess at the butchering camp as an integral part of Dalton life.

Five and one-half miles away is the Lace Site (3P017) which has produced a large number of Dalton points, end scrapers, graters, and adzes as well as preforms, true blade tools and abraders. We no longer need to speculate that these tools belong together because a tool kit cache was recently discovered at a base settlement near Jonesboro, Arkansas. Known as the Hawkins Cache after its discoverer, it consists of 18 Dalton points in varying stages of resharpening (twelve exhibit no use), 11 preforms for points and adzes, three adzes, a chisel, two abraders, an end scraper, a backed true blade knife, and three slightly utilized flakes. A detailed description is in process and will be published shortly.

FUTURE PLANS

The Lace Site, like the major base settlements, is situated on a very high ridge and is perhaps the largest site for the area. Unfortunately for us, it was among the first land cleared in this area and only contains Dalton debris within deep animal disturbances and the cultivation zone. This fall, it was chisel plowed preparatory to being completely leveled and by spring will no longer exist. It appears to have been the major base settlement for the L'Anguille River. The major base settlement for the Cache River likewise appears to be badly eroded and destined for complete leveling in the near future. An area of major base settlements exists east of Crawley's Ridge and may have served as headquarters for much of the then available eastern lowlands. The deposit of the major site long ago eroded away and the secondmost major site is badly disturbed, although part may be excavatable. Apparently a site near Corning was the major base settlement for the Black River, but it too has been badly disturbed by erosion and many of the artifacts scattered. We feel we are getting a pattern for each major river or drainage of a major base settlement and hundreds of butchering camps. Each of these areas involves from 1,000 to 3,000 square miles.

We hope to find the major base settlement, if it exists, along the upper reaches of the Bayou de View which is now being cleared of tree growth. However, if it follows the pattern of the major base settlements along the other rivers, it has already been exposed and badly eroded. We now are concentrating on the location of a minor base settlement which, like Brand, can provide information from a tight excavation.

#

SOME VARIATIONS IN SETTLEMENT PATTERNS IN PENINSULAR FLORIDA

Ripley P. Bullen

Florida State Museum, University of Florida

Indian settlement patterns in Florida vary with both time and space. During the Paleo-Indian and Early Pre-ceramic Archaic periods, only roving bands of hunters and collectors are suggested by concentrations of lithic materials in various places, mostly high sandy locations. In the Late Pre-ceramic Archaic period (4000-1000 B.C.), shellfish exploitation-- both fresh and salt water-- resulted in extremely large shell midden villages, particularly in the St. Johns River Valley, but also on the Gulf coast of peninsular Florida.

At Tick Island, one of the large multicomponent sites of this and later periods, flexed burials arranged in groups, and associated with a double row of post holes and a 6- by 14-foot charcoal and sand lens, suggested a charnel house. These burials were in a 3-foot thick sand deposit overlying and underlying thick shell midden deposits which contained no pottery. Four radio-carbon dates, four charcoal and one shell, indicate 3300 B.C. for these fea-

tures and, hence, for the beginnings of burial ceremonialism and of specific burial areas. Upper levels of these middens contain fiber-tempered pottery (C-14 dated from 1750 to 1000 B.C.), but give no additional knowledge regarding settlement patterns except that small overlying satellite settlements are found along small streams at the very close of this period around and a little before 1000 B.C.

After the introduction of horticulture-- which may have first occurred during the Transitional period, 1000 to 500 B.C.-- small scattered settlements resembling farms and producing Deptford (and later Swift Creek) pottery are found in west, north, and north-central Florida. Sometimes small burial mounds, producing the same kinds of pottery, are associated. Slightly later, small burial mounds were also added to shell midden villages along the east and west coasts of peninsular Florida.

An example of such a village along the east coast is the Ross Hammock Site as shown in Figure 1 (Bullen, Bullen, and Bryant 1967: 3). From radio-carbon dates in the midden, it had a life span from before A.D. 270 to A.D. 995. In this area burial mounds become rather large. The earlier one at Ross Hammock attained a height of over 20 feet and covered an ovate area some 85 by 200 feet in size. Both it and the later one are surrounded by wide moats or borrow pits, the source of the material with which the mounds were constructed. Other burial mounds in the area are similar in size and in the presence of surrounding oval borrow pits.

As is evident from the plan, the first burial mound (Fig. 1, mound 1) was very close to the village midden while the midden was growing southward along the shore. In at least two cases, further north near Jacksonville,

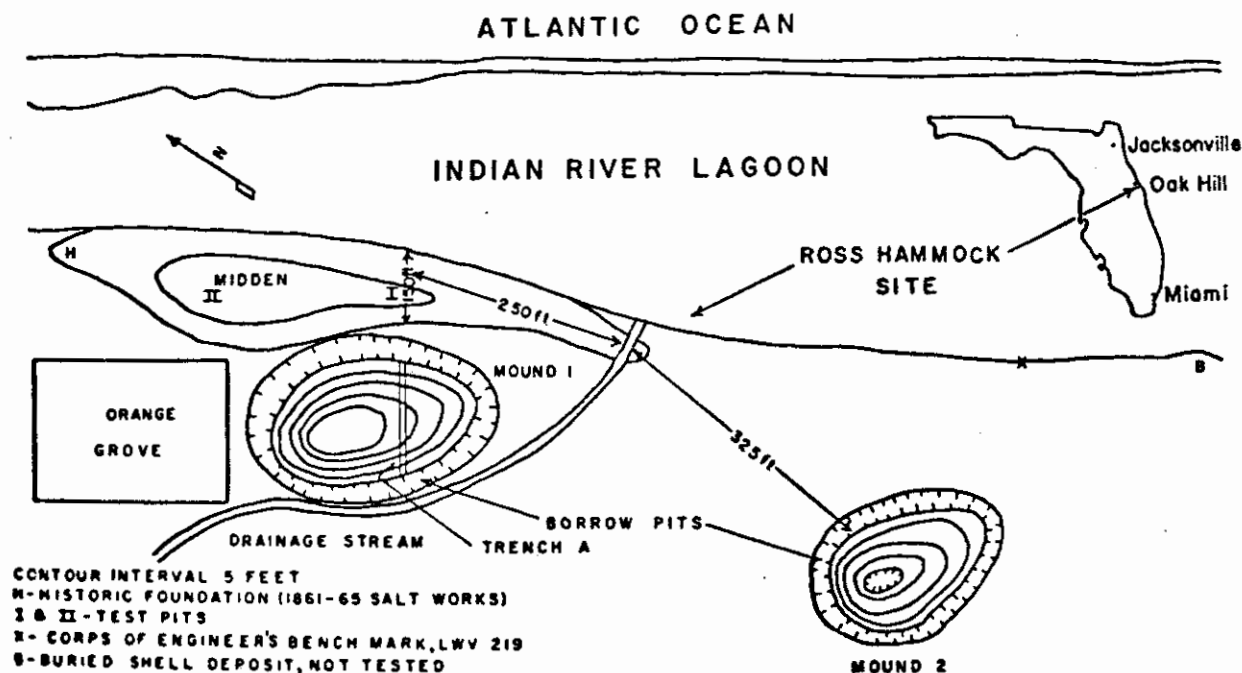


FIGURE 1

Sketch Map of Ross Hammock Site.

Florida (Jordan 1963; Wilson 1965), midden accumulations grew over similarly located but smaller burial mounds. Here, at Ross Hammock, the village elders or the medicine man must have anticipated similar substantial growth; because after the first burial mound became crowded, a second burial mound (Fig. 1, mound 2) was built a good 400 feet further south, well beyond current civic growth. The village was abandoned before this growth was realized and only one or two burials were interred in the second burial mound.

In the central part of the peninsula, many small burial mounds are known but they do not seem to have reached the size of those along the east coast of Florida. One feature of this central area is the fact that sometimes burial mounds are surrounded by low oval or horseshoe-shaped ridges (Bullen 1952: 42). With time, neither these sites nor those like Ross Hammock seem to have developed into major centers with temple mounds and a well defined civic plan. Indeed, this concept does not seem to have diffused into east Florida while temple mounds to the east are limited to extreme northeast Florida--near Jacksonville-- the part of this area exposed to Middle Mississippian influences.

Before taking up the settlement patterns of the Gulf coast of Florida, brief mention should be made of the unique and rather tremendous developments found around Lake Okeechobee in south Florida. There are at least four large ceremonial centers in that area of which two, Big Mound City and Big Circle Mound, are illustrated in Figures 2 and 3 (Willey 1949: 74, Fig. 8; Allen

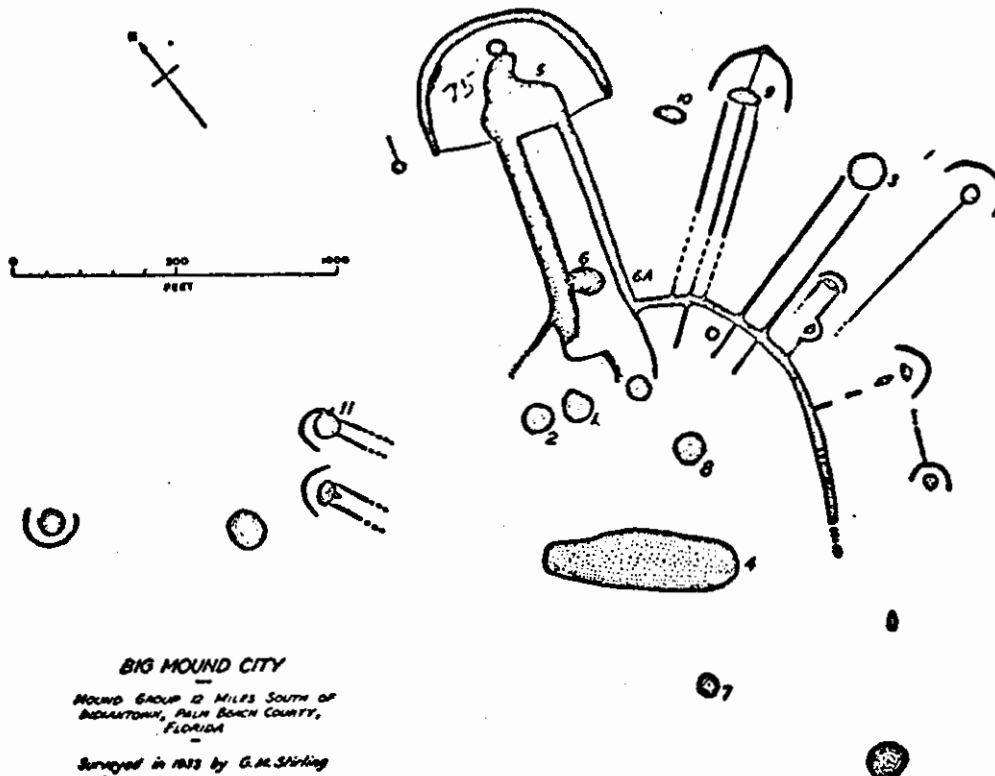


FIGURE 2

Map of Big Mound City, Florida

1948). These sites are composed of many mounds and ditches connected by radiating causeways. Typically some mounds are located at one end of a roadway formed by two low, long, ridges of dirt. Sometimes these mounds are backed by semi-circular ridges or borrow pits. Sometimes the roadways are connected to form large semi-circles, with a radiating spoke-like appearance. Usually, there is one, more or less centrally located, very large mound. These sites exhibit much evidence of rebuilding or changes in their apparent overall construction plan.

This civic arrangement bears no obvious relationship to those to be described shortly for the Gulf coast or Tampa Bay region, nor are they known elsewhere in Florida or southeastern United States. They are, however, some-

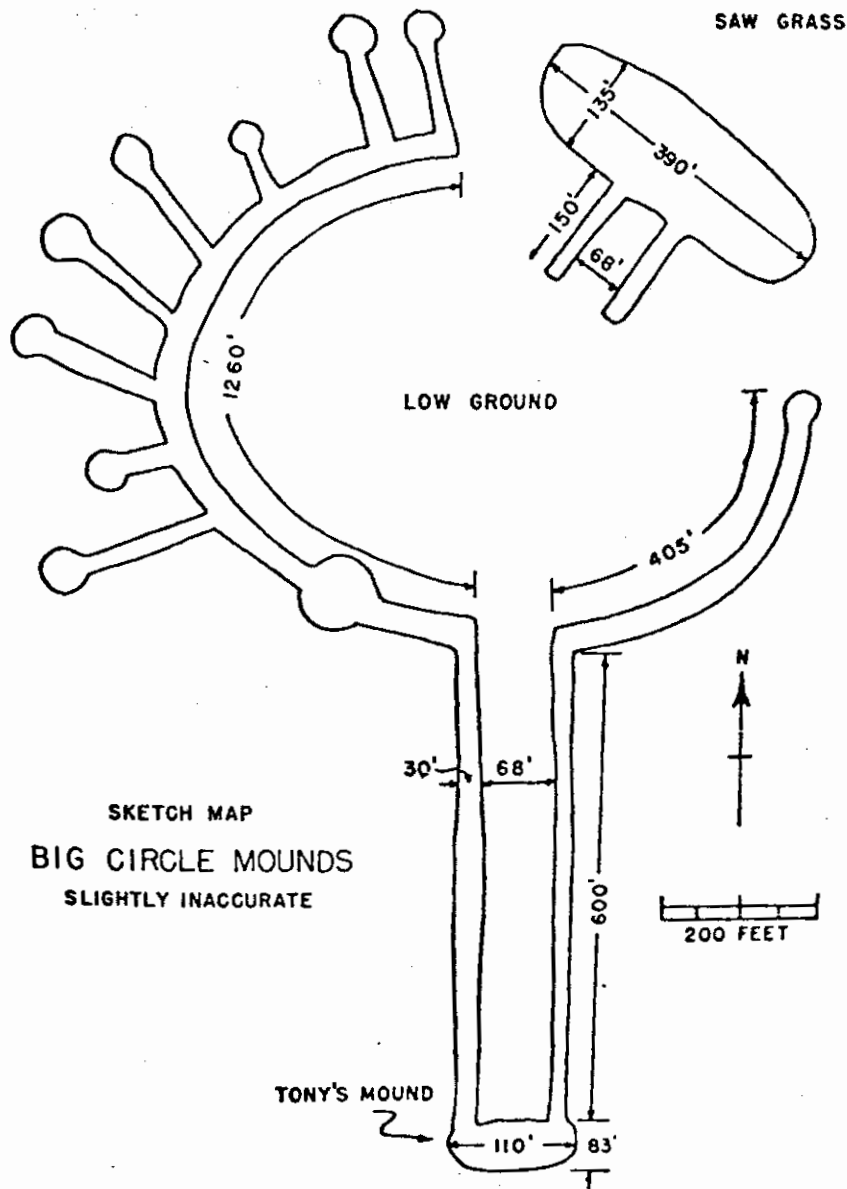


FIGURE 3

Sketch map of Big Circle Mounds

what suggestive of Adena-Hopewell earthworks found north of the Ohio River. By trade sherds, the Lake Okeechobee sites may be presumed to have been first occupied around 750 B.C.; and, to judge from Spanish-derived metal found in some of them, to have still been in use after the Spanish plate fleet wreck of 1715.

As has been mentioned, small burial mounds are found as additions to small shell middens on the Gulf coast of Florida. These sites are small and frequently the burial mounds are in actual contact with one side of the midden. Usually, however, when sites are a little larger, the burial mounds are located a little distance behind the village as at the Thomas Mound (Bullen 1952: 8, Fig. 2). If these sites are occupied over a long enough period of time they are supplied with two burial mounds as at Terra Ceia (Bullen 1951: 8) or Bayshore Homes (Sears 1960: 2).

Before examining them further, let us look at the instructive sequential settlement pattern at the Palmer Site between Osprey and Sarasota on the central Gulf coast of peninsular Florida. Occupation here consisted first of a large, horseshoe-shaped, pre-ceramic and Orange period Archaic midden (Fig. 4, A-D) which eventually attained a height of nearly 20 feet. The shape of

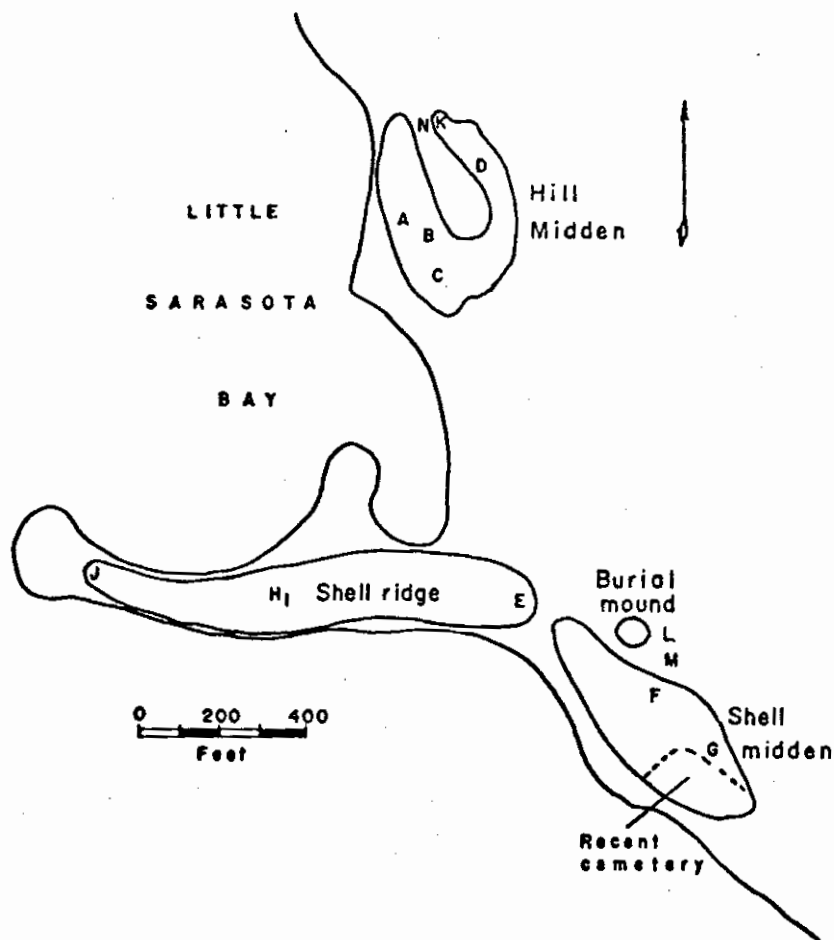


FIGURE 4

Plan of the Palmer Site.

this village was not planned in advance. It resulted from the fact that Indians lived around a freshwater spring and were careful not to fill up this source of drinking water with their debris nor to dam up its small outflowing spring run.

This part of the Palmer Site was occupied from before 2150 B.C. to after 1275 B.C. according to radiocarbon dating. Orange Plain and Incised pottery was found in the upper levels and in the highest foot Norwood Plain and sand-tempered plain pottery of the Transitional period. Next, Indians lived on and built up a narrow ridge extending out into little Sarasota Bay (Fig. 4, E, H, J). C-14 dates for this ridge extend from 300 B.C. for a depth of 15 feet, to A.D. 150 for a depth of 9 feet. A date is not available for the highest level. All sherds from our tests at this part of the site were undecorated and sand-tempered.

Analyses of the shell content of the Archaic midden by depths, as well as their comparison with that from the shell ridge, indicate changes in the microenvironment of Little Sarasota Bay. It is believed that the bay silted while the rise in sea level covered the marsh in front of the Archaic site. Occupation shifted to the location of the shell ridge which bordered deeper water to the south.

As the population increased the ridge became too crowded and the center of occupation moved to the larger shell midden area a little further south (Fig. 4, F-G). Dates from this third occupation area run from A.D. 150 to A.D. 1000. Burials from this last occupation were found in the nearby burial mound (Fig. 4, L) which has produced a C-14 date of A.D. 850 and Weeden Island pottery. Burials were tightly flexed and in clusters, implying a charnel house.

At Terra Ceia, 30 miles to the north and just inside the mouth of Tampa Bay, occupation started at Boots Point with its associated burial mound (Fig. 5, J) containing early-middle Weeden Island period pottery and burials. The pathway, made of shell midden material, shown between the village and the burial mound, was needed because of the low terrain which permitted high tides to inundate the area between the occupational and burial areas. Over many years, the village grew to the southwest producing a midden some 13 feet thick, and a new burial mound (Fig. 5, P) was constructed near the new center of habitation. It contained late Weeden Island and early Safety Harbor pottery and burials (Bullen 1951: 20-34). Finally, a 20-foot high, flat-topped, temple mound (Fig. 5, B) was constructed whose ramp pointed towards the new center of occupation. The area between that mound and the village, devoid of sherds, chips, or other evidence of occupation, formed a plaza from which ceremonies held on the top of the temple mound could be viewed by those in the plaza.

The famous Crystal River Site, situated well to the north of Tampa Bay, a few miles up the river from the Gulf of Mexico, probably covers nearly the entire Tampa Bay settlement pattern sequence. As shown in Figure 6, it consists of a good sized shell midden (B), a large burial mound (E) surrounded by a circular embankment (C), a large temple mound (A) with ramp pointing to the northeast and a separate second temple mound (H) and second burial mound (G) connected by a walkway, as well as the only free standing stelae known for southeastern United States.

The site was started during the Deptford period before the time of Christ as evidenced by pottery from the lowest levels of the midden (Bullen

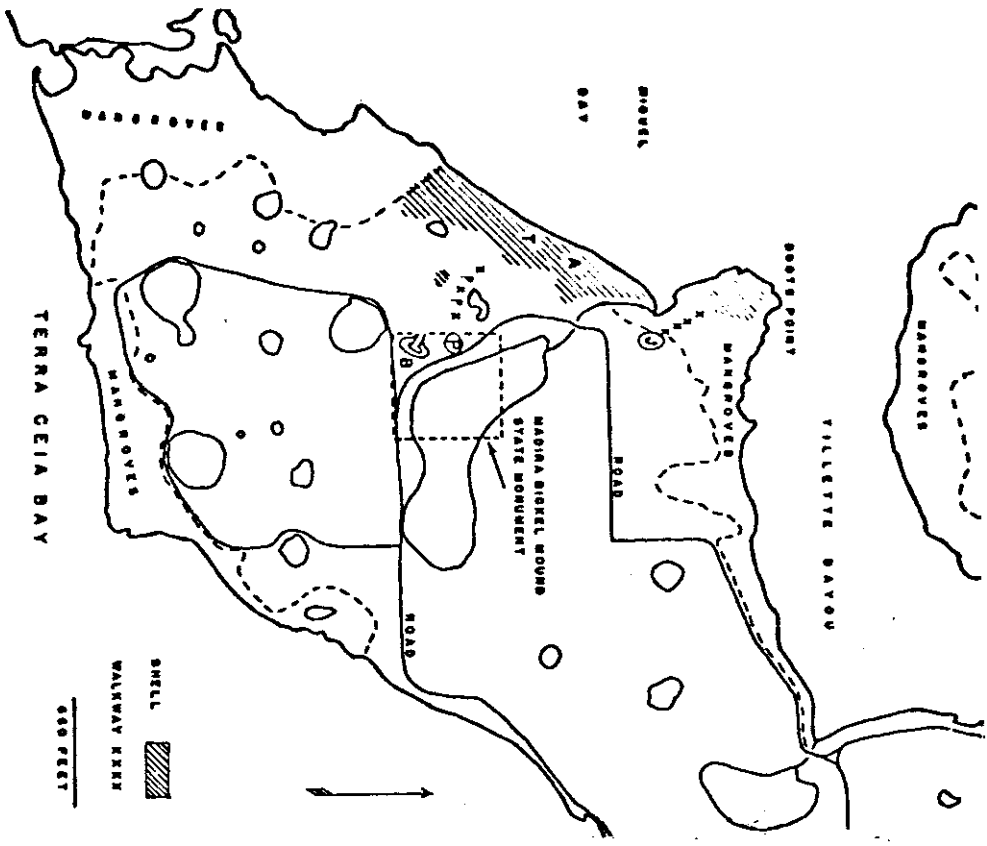


FIGURE 5

Sketch map of Terra Ceia Site.

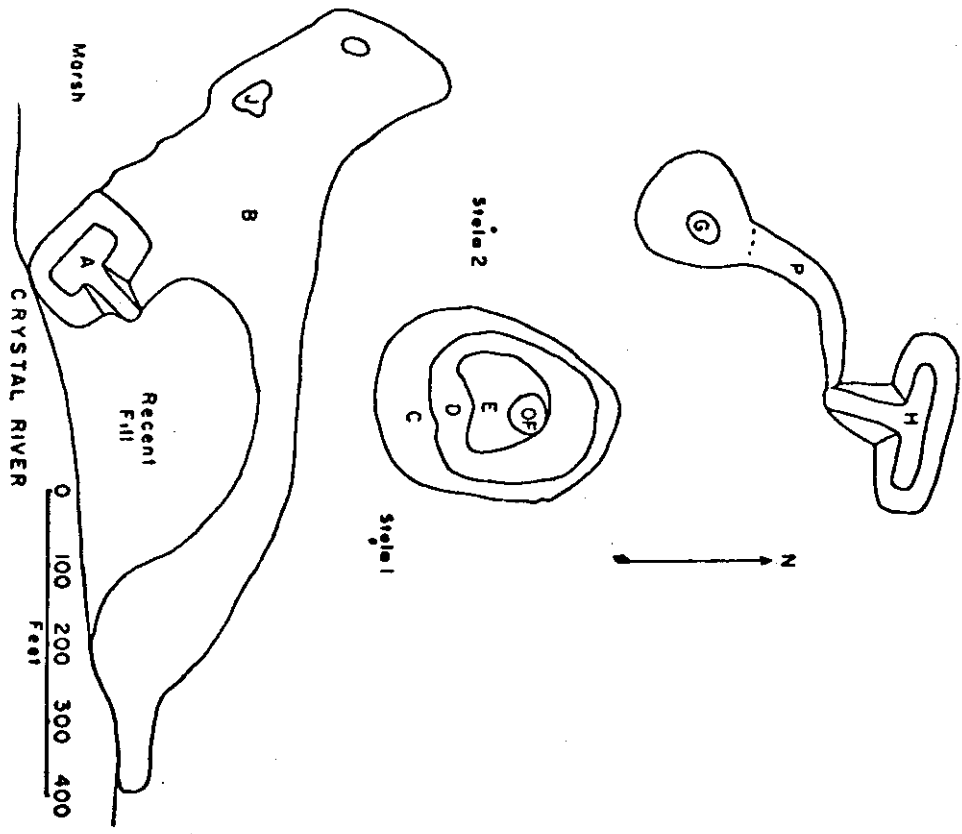


FIGURE 6

Plan of Crystal River Site

1953) and extended burials with miniature Deptford tetrapodal vessels and oyster shell earrings from below the base of the encircling embankment immediately northeast of C (Florida State Museum records). As the site grew, the main burial mound (E) was constructed with a base of charcoal impregnated sand. A C-14 determination on this charcoal (Sample I-1916) gives a date of $1,980 \pm 100$ years B.P. or around 30 B.C. for the original construction of this burial mound. Subsequently, the top tip (F) of this mound was added and the encircling embankment constructed.

Next, according to radiocarbon dates (Sample I-1464), Stela I was added around A.D. 440 (Bullen 1966a) and probably the lower part of the first temple mound (A). We have a radiocarbon date on the first temple mound (A), based on charcoal from below the top of the ramp at a depth of 19 feet, of A.D. 640 ± 100 years (Sample I-1365). It is probable that at that time the mound was enlarged. Originally the space between this temple mound and the eastern part of the midden (Fig. 6, recent fill) was probably dry land. As time passed, the water of the Gulf of Mexico rose in respect to the land (as is evident in many sites) and inundated this area. Not shown in Figure 6 is an underground pathway of shell built from the end of the ramp below the "Recent Fill" to the southeastern part of the midden (towards Stela 1). This was probably constructed because of the backing up of river water caused by the rise of water in the Gulf. It was only discovered recently when slit trenches were dug across this area in connection with a real estate development. During these times, Crystal River functioned as a ceremonial and burial center for a substantial area to judge from the different pottery types found there (Bullen 1966b:23-25).

As time passed, the burial mound became crowded and the inadequacy of the "plaza" area in front of the first temple mound became quite marked. Some burials were added to the encircling embankment at C and others intruded into the southwest corner of the main burial mound (southwest of E), but it was evident that a change was essential. The result was a new civic development involving a second burial and second temple mound (Fig. 6, G and H). Their arrangement resulted in a new and much enlarged plaza from which ceremonies on the mound could be viewed and which might also have served as a market place for the exchange of various products. Tests proved the plaza area to be archaeologically sterile. Unfortunately for this plan, it was delayed too long, as only one group of burials was interred in the new burial mound. Over them were sprinkled sherds of a St. Johns Check Stamped vessel.

During the millennium just outlined, cultural emphasis shifted from burial mound ceremonialism and concern for the dead to temple mound sites oriented, presumably, to an agricultural calendar. Crystal River was abandoned, probably around A.D. 1300, because of (1) the continued rise in sea level made worse by the scraping of sand from the surface of the site for use as building material, (2) the absence of good agricultural land, and (3) the shift in ceremonial emphasis. The day of a few large ceremonial centers had passed in peninsular Florida.

In their place were a large number of medium-sized centers each with their temple mound, plaza, burial mound and charnel house, and living areas. Ten such centers are known for the Tampa Bay area (Bullen 1955) and undoubtedly each had their group of satellite villages. To the north, in west Florida, some of the villages became very large as at the Lake Jackson Site near Tallahassee where five flat-topped temple mounds and one lower rounded burial (?)

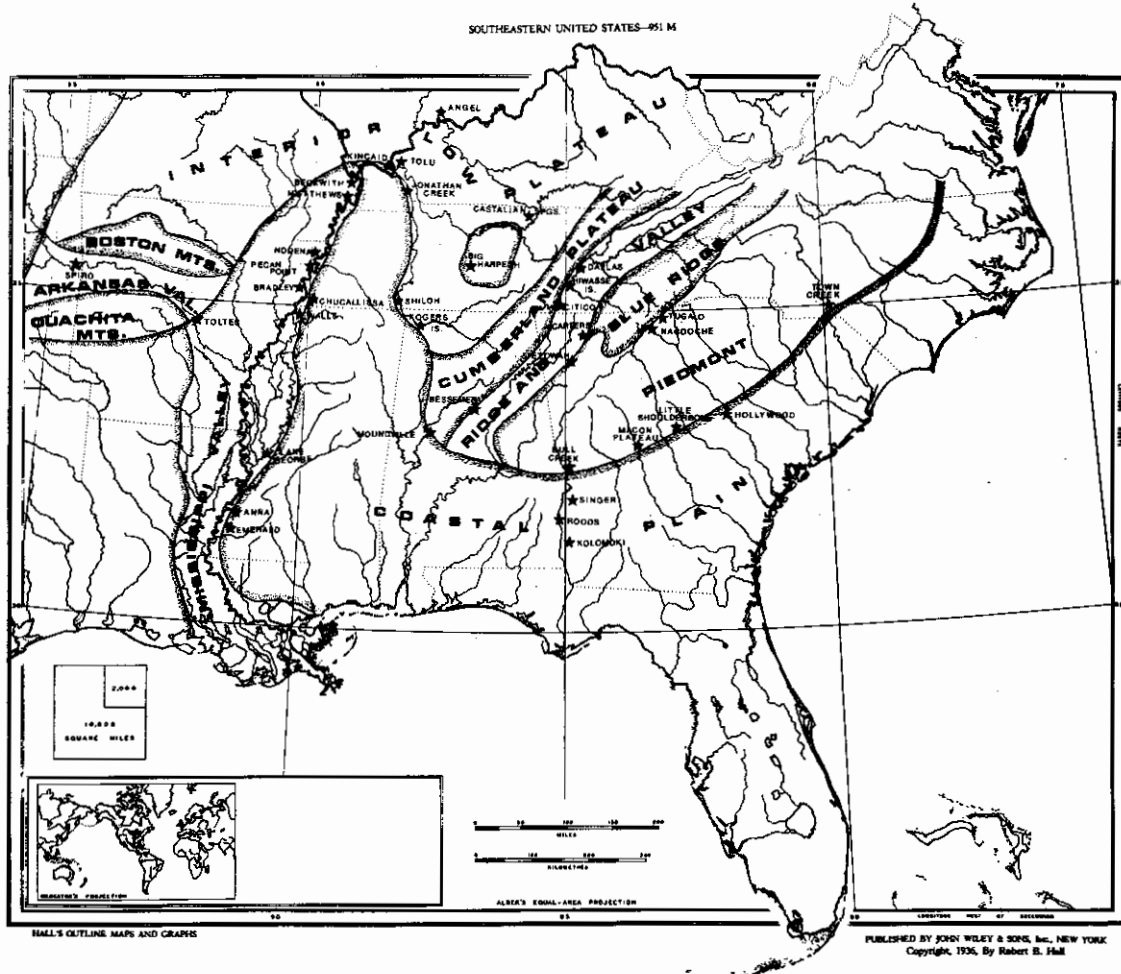


FIGURE 1

The locations of selected Mississippi Period sites in the interior of the Southeast with respect to the boundaries of the physiographic provinces and sections defined by Fenneman (1938).

mound are present. At Chattahoochee Landing on the upper Apalachicola River are, or were, four or five low temple mounds, while satellite villages stretched along the natural river terraces for considerable distances with approximately one mile spacing.

These northern centers, however, are not built according to a standard civic layout plan as are those of the Gulf coast of peninsular Florida. The latter, with their plazas-- particularly Crystal River with its stelae to which the temple mound ramps seem to point (Fig. 6)-- resemble middle America to a surprising degree.

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SETTLEMENT DISTRIBUTION DURING THE MISSISSIPPI PERIOD

Lewis H. Larson

Eastern Kentucky University

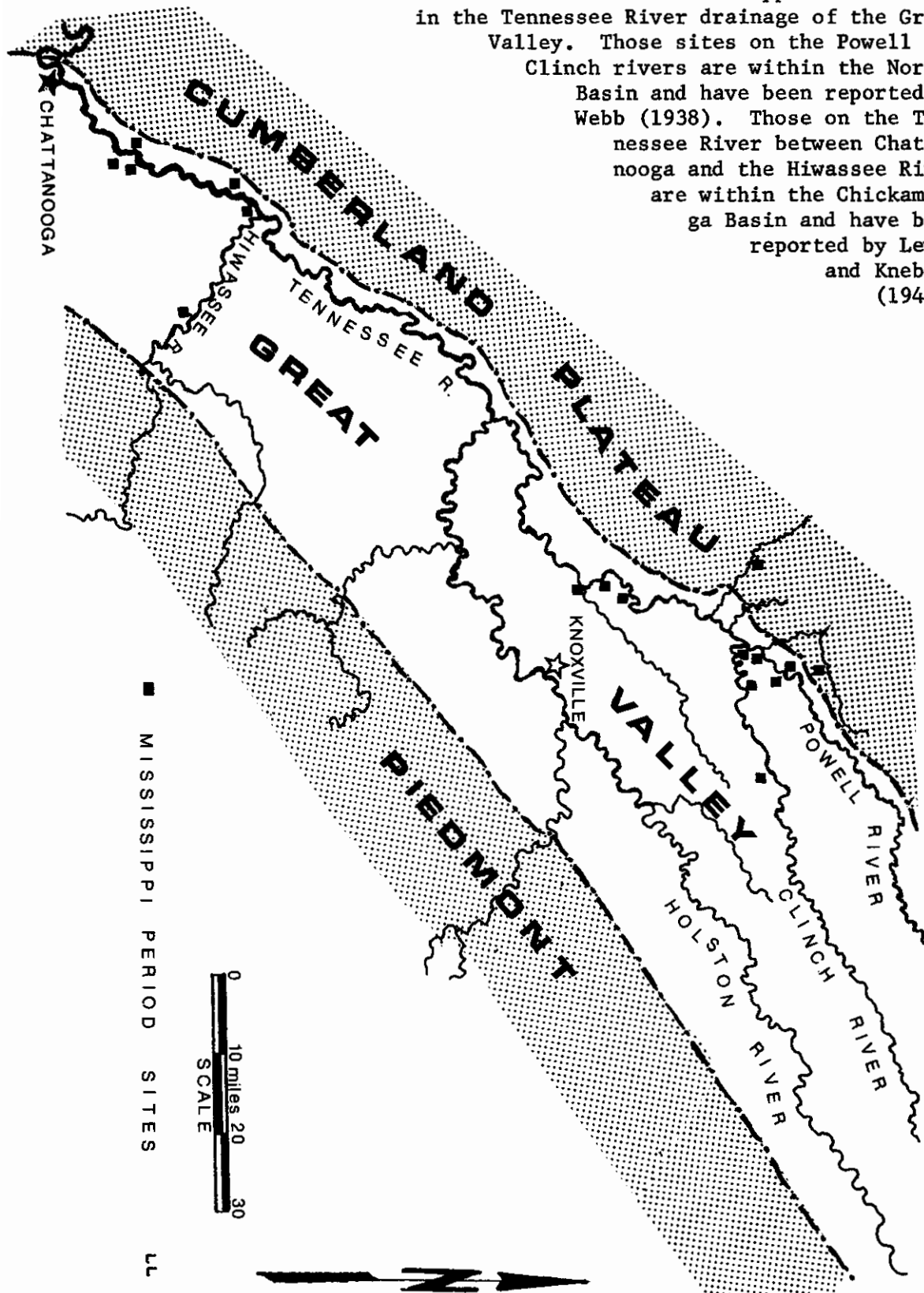
Few would argue that the locations of human settlements occur in an entirely random fashion in space. On the contrary, it is generally held that these locations are largely the function of factors related to environmental adaptations by the technological systems of the cultures of which these settlements are a part. It is this generalization that constitutes the basic assumption of this paper.

Other investigations of, and commentaries on, the settlement distribution of the Mississippi Period in the Southeast are not new or rare. They have, in fact, rather convincingly demonstrated that most of these settlements are to be found within alluvial valleys of the river draining the region (cf. Griffin 1967: 190). Even more particularly, it has been shown that these sites are usually situated on sandy loam or silt loam soils (Ward 1965: 42-48). Accordingly, the locations of these settlements seemingly selected to exploit the well-drained, though moist, rich, and easily cultivated alluvial soils, are cited as indicative of the intensity of Mississippi Period agricultural activity. I can find no error in this data nor do I disagree with the conclusion drawn from it. However, I will attempt to argue here, that in addition to the agricultural considerations, there were other factors that bore heavily on the aboriginal selection of a settlement location in the Southeast during this time period. Indeed, these other factors may have been given even more weight by the Indians than were the agricultural requirements.

The Southeastern region is characterized by considerable variation in the natural environment. This variety is reflected in the number of major divisions that appear within the region when parts of the environment are subjected to classification and analysis, no matter whether it is the forest cover, physiography, or soils. Because of the interrelationships of each of the several facets of the natural environment, it follows that there is regular correspondence in the division boundaries of the different units. Thus the boundary between two physiographic provinces is very likely to be coterminous with the boundary between two forest regions as well as with the divide between two drainage basins. For this reason, the environmental differences tend to be pervasive as one moves from one part of the Southeast to another.

FIGURE 2

The distribution of Mississippi Period sites in the Tennessee River drainage of the Great Valley. Those sites on the Powell and Clinch rivers are within the Norris Basin and have been reported by Webb (1938). Those on the Tennessee River between Chattanooga and the Hiwassee River are within the Chickamauga Basin and have been reported by Lewis and Kneberg (1941).



Between some environmental divisions the boundaries are quite distinct (e.g. between physiographic provinces) while between others the transition is more gradual and therefore not as immediately perceptible (e.g. between forest regions).

If the major sites of the Mississippi Period are plotted on maps whereon there are also plotted physiographic provinces, forest regions, climatic areas, or other environmental distribution data, the sites, almost without exception, are found only on the boundaries of natural areas (Fig. 1). Thus they come to occupy positions that allowed access to two or more significantly contrasting ecological zones. Apparently, as a consequence of this patterned distribution of Mississippi Period sites, a factor other than agriculture was considered in the selection of the locations of these sites. While they were all located on rivers, they were located only at those points where rivers flow out of one ecological zone and into another. If the technological requirements of agriculture were the sole limitation on site location, one would normally expect that the towns would have been found wherever agriculture was feasible, along the entire course of the river. This was not the case. There were almost no major sites, and apparently few minor ones, situated along those stretches of rivers where the course is across the interior sections of an ecological zone even though these portions of the valleys would have been suitable for agriculture. On the other hand, where a river course is coincident with a boundary between natural zones sites may be found successively along the river within a relatively short distance of each other. Both situations, the lack of sites in the interior of a zone boundary, occur in the northern portion of the Great Valley section of the Ridge and Valley Province (Fig. 2). The various limitations on the range of alternatives for town locations accordingly resulted in vast areas within the Southeast without any resident population, or at best, only a relatively low population density.

It is difficult, with the data we now have available, to explain the reason or reasons for the very particular locations of the Mississippi Period sites. On the basis of burial data we can be reasonably sure that the major towns were typically organized within a social framework distinguished by hereditary ranks. In such societies the superordinate individuals were set apart by the fact that they had access to a considerable range of exotic goods. These goods seem to have functioned in a ceremonial context and to have been used as the paraphernalia of office.

Societies such as these that are characterized by hereditary ranking have been classed by Elmer Service as chiefdoms.

A chiefdom occupies a level of social integration which transcends tribal society in two important respects. First, a chiefdom is usually a denser society than is a tribe, a gain made possible by greater productivity. But second, and more indicative of the evolutionary stage, the society is also more complex and more organized, being particularly distinguished from tribes by the presence of centers which coordinate economic, social, and religious activities (Service 1962: 142).

A characteristic feature of chiefdoms is their location coincident to

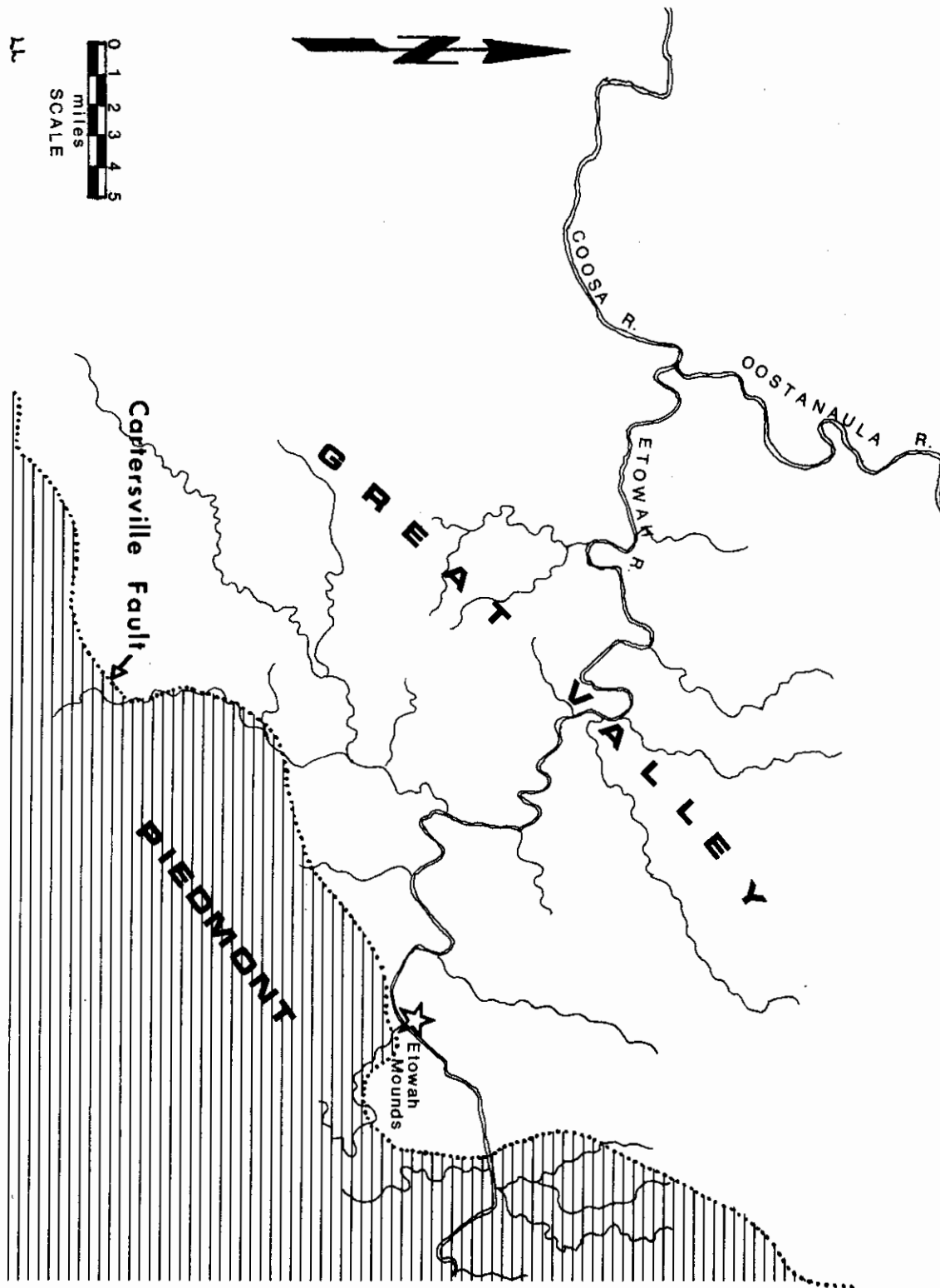


FIGURE 3

The location of the Etowah Site with respect to the Piedmont and the Great Valley section of the Ridge and Valley Province. In the vicinity of the site, the boundary between these two physiographic areas is coincident with the Cartersville Fault.

the development of specialized production by localized sectors of the society. These groups exploited different facets of the environment.

A great many of the ethnologically known chiefdoms exist in habitats that consist of several ecological zones differentiated by climate, soil, rainfall, and natural products... Frequently these habitats are mountainous, so that differences in altitude, sunny and shady slope, alluvial valleys, forests and open lands, rainfall differences and the like promote a local differentiation in the kinds of crops grown as well as in the distribution of natural products like wood, fish, game, fruit, nuts, roots, and so on. Without agriculture, people would take advantage of that variation by moving themselves around with respect to the products. With agriculture and permanent settlements, the local specialization is most advantageous to the inhabitants when the products are moved (ibid.: 145).

We can use the Etowah Site as an example of a settlement located on an ecological boundary. Moundville, Spiro, Macon Plateau, Anna, Emerald, Hiwassee Island, Hixon, Kincaid, Angel, Nacoochee, Big Harpeth, Shiloh, or almost any other known Mississippi Period site would serve as well to illustrate this feature of settlement distribution and its ramifications. My own detailed familiarity with the Etowah Site has led to its selection. The Etowah Site is located on the Etowah River where this stream crosses the boundary between the Piedmont Province and the Great Valley section of the Ridge and Valley Province (Fig. 3). In the vicinity of the site the boundary is very distinct, marked by an abrupt difference in elevation between the floor of the Great Valley and the summits of the Piedmont hills. This difference amounts to four to six hundred feet in a distance of only one to two miles. The Etowah River crosses the boundary at a right angle as it flows westward out of the Piedmont onto the floor of the Great Valley. The boundary between the two physiographic provinces runs north and south at this point and passes about two miles to the east of the site. To the south of the Etowah River the boundary turns quite sharply to the west and for a short distance runs parallel to the Etowah River. The point at which the Etowah River flows out of the Piedmont is marked by several short stretches of shoal water. These portions of the river are normally quite fertile and therefore are rich habitats for shellfish and fish under natural conditions.

The Piedmont is essentially a highland area composed of strongly dissected peneplain surfaces. Generally there is a gently slope toward the Coastal Plain, but the drainage is controlled by the rocks of the province rather than by its structure. These rocks are all metamorphic and are frequently crystalline and quite resistant. The area is generally hilly with steep slopes and narrow valleys. The Piedmont soils are high in mineral nutrients, although the levels of nitrogen and phosphorus are low. There is a poor development of alluvial soils throughout most of the province because of the restricted areas for deposition and the steep gradient of the stream beds (Fenneman 1938: 121-162).

The forest cover of the Piedmont represents a transition between the longleaf pine forest of the Coastal Plain and the oak-chestnut forest of the

Blue Ridge. Lucy Braun has classified the Piedmont as the Oak-Pine Forest (Braun 1950: 259-279). Kuchler offers essentially the same classification, referring to it as Oak-Hickory-Pine (Kuchler 1964, Vegetation Type III). The dominants include hickory, shortleaf and loblolly pine, and white and post oak species. It should be noted, however, that Kuchler extends a finger of his Appalachian Oak Forest southward from the Blue Ridge to a terminus at the Etowah River where it leaves the Piedmont. The dominants in this forest are white oak and northern red oak.

The Ridge and Valley Province is a lowland. Structurally it is quite complex, but for our purposes it may be viewed simply as an anticline composed of metamorphosed Paleozoic rocks. In the western part of the Georgia section of this province, the underlying rock is the Fort Payne cherty limestone (the Duck River Flint is derived from this formation). The eastern portion of the valley surface is underlain by limestone, the Knox dolomite (source of the Knoxville chert), and soft shale. The Georgia section of the Province is separated from the Tennessee River Valley by a low drainage divide some twenty miles south of Chattanooga. South of this ridge the streams flow into the Gulf via the Coosa-Alabama-Mobile system. North of the ridge the drainage is into the Tennessee-Ohio system.

The area is crossed by two major streams, the Etowah flowing west across the southern part of the valley and the Oostanaula-Coosawattee flowing southwestward across the valley until it joins the Etowah to form the Coosa. It is the Coosawattee that passes through a gap in the Piedmont and enters the Ridge and Valley Province at the place where the Carters Quarters Site is located.

Both Braun and Kuchler include the Georgia section of the Ridge and Valley Province within the area of the Oak-Pine Forest.

Climatically, the boundary between the Piedmont and the Ridge and Valley Provinces is also the approximate line separating those northern and eastern areas with less than 210 frost-free days, from the southern and western areas with more than 210 frost-free days. The longer period of time without frost is a consequence of the open character of the Ridge and Valley Province with its freer circulation of air, in contrast to the Piedmont area with its narrow valleys and lack of air circulation.

The contrasts in the two environments, to which the Etowah Site gave access, seem rather clear. The Ridge and Valley Province with its low gradient relative to the Piedmont received rich alluvial soils dumped onto the flood plain of the Etowah River with every flood. Agriculture benefited not only from the periodic soil removal, but also from the longer growing season. Cultivation, if carried on at all in much of the Piedmont, certainly never reached the productive levels possible in the Ridge and Valley Province. This latter province was also an important source of chert, a material that was not present in the Piedmont. The presence of shoals just below the Etowah water gap provided another resource possibility for any group desiring to settle at the Etowah Site. The abundant supply of fish and mussels characteristic of rivers immediately below shoals certainly had subsistence value.

On the other hand, Piedmont resources with potential value to the Indians included minerals and rocks that were extensively used at Etowah which seems very likely to have been distributed throughout the Southeast,

also. These resources include graphite, galena, "greenstone" and ochre. The rocks of the Piedmont include those normally used in the manufacture of ground stone tools. This contrasted with the chipped stone tools that could have been produced from the Ridge and Valley rocks.

While agriculture was impractical in much of the Piedmont, the forest was undoubtedly an important source of plant food. If Kuchler has correctly delineated the extent of the Appalachian Oak Forest, the strategic location of the Etowah Site provided ready access to this potentially important area of resources. The identification of the white oak as a dominant species suggests that an important resource, sweet acorns, probably occurred in abundance. Such a forest would also have been the prime area for hunting deer and turkey in the fall.

It is impossible here to detail all the ecologically significant features of both provinces discussed. Hopefully I have given a convincing indication that the location of a Mississippi Period site on the boundary between two such provinces is of critical importance to the subsistence of the people living at the site. Here, I will repeat my earlier statement to the effect that almost all Mississippi sites were found in these locations. This suggests that agriculture was not necessarily the overriding factor selecting the location for a settlement. It further seems evident that the complex cultural development that so obviously took place during the Mississippi Period in the Southeast probably was not due to the cultivation of maize, as is so often stated. On the contrary, it appears more likely to have resulted from the appearance of social mechanisms that permitted the development of large sedentary communities that could carry out the production and distribution of resources from several rich ecological zones. Service indicated that this is indeed the case for many chiefdoms.

The increased productivity and greater population density of chiefdoms are not necessarily due to any particular technological development, although in some instances it is apparent that such developments did take place. Most frequently, and in all cases importantly, the rise of chiefdoms seem to have been related to a total environmental situation which was selective for specialization in production and redistribution of produce from a controlling center. The resulting organic basis of social integration made possible a more integrated society, and the increased efficiency in production and distribution made possible a denser society (Service 1962: 143-144).

It follows then that on the basis of our present data the Mississippi Period in the Southeast is not necessarily a time of any major technological innovation. On the contrary, it appears more likely to have been a period of increasing sociological complexity. Herein perhaps, lies the real difference between the Middle Woodland and the Mississippi periods.

PREHISTORIC SUBSISTENCE AND SETTLEMENT
ON THE UPPER SAVANNAH RIVER

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INTRODUCTION

During recent archaeological surveys in the Trotters Shoals Reservoir basin on the upper Savannah River, 70 prehistoric sites were recorded (Hemmings 1970; Hutto 1970). Prior surveys of the Hartwell and Clark Hill basins, above and below Trotters Shoals, as well as a few excavations, provide some basis for inferring a sequence of subsistence and settlement patterns in the upper valley (Claflin 1931; Miller 1948, 1949; Caldwell 1953a, 1953b; Kelly and Neitzel 1961; Wauchope 1966). Specifically, relatively large numbers of sites in this area are assignable to a Middle Archaic Period, dating approximately 6500-1800 B.C., and to a late prehistoric-early protohistoric period, ca. A.D. 1300-1600. The former group of sites is dominated by small campsites with Old Quartz-Morrow Mountain stone tool assemblages, and the latter by larger mound and village sites with Savannah-Lamar ceramic assemblages. In addition, there is the group of transitional Stallings Island sites in the immediate vicinity of Augusta. Although there is some evidence for 10,000 years of occupation in the upper Savannah Valley, other periods are not well represented.

In this analysis I shall rely primarily on results obtained from survey of the South Carolina portion of the Trotters Shoals Reservoir area, where 32 prehistoric sites were recorded, and secondarily on the Georgia survey results (Hutto 1970). The reservoir pool will extend about 26 miles up the Savannah River from the head of Clark Hill Reservoir to Hartwell Dam, with major branches 12 miles long on the Rocky River and 9 miles long on Beaverdam Creek. This area includes portions of Hart and Elbert counties in northeast Georgia and Abbeville and Anderson counties in western South Carolina (U. S. Army Corps of Engineers 1968).

The survey technique employed in the South Carolina work was intended to provide preliminary subsistence and settlement data. Since Piedmont landforms are old and stable with respect to human occupation, we would expect modern site location characteristics to directly reflect past site selection and use. The types and frequencies of tools in sample surface collections should further reflect the nature of site use. It will be shown later that particular kinds of tool assemblages recurred on particular kinds of site location within the survey area. These observations suggest hypothetical patterns of subsistence and settlement, which can be tested by a program of excavation and detailed analyses of larger site collections.

ENVIRONMENTAL SETTING

The Savannah River is one of the major drainages of the Atlantic Slope. Below the fall line at Augusta, the river flows over unconsolidated

coastal plain sediments; meandering slowly over a broad, swampy floodplain, it falls 130 feet in the 125-mile lower valley. In contrast, the river is fast-moving in its straight, narrow, upper valley, falling 370 feet in 85 miles from the Seneca-Tugaloo confluence (flooded by Hartwell Reservoir) to Augusta. The upper Savannah River flows entirely within the Piedmont Upland province (Fenneman 1938). The Piedmont Upland surface, extending from the Blue Ridge Mountains to the inner edge of the coastal plain, has a characteristic level skyline, although the rivers and their larger tributaries are deeply entrenched. In the Trotters Shoals Reservoir area the Savannah River has cut about 200 feet from the upland surface, through a deep residual clay mantle, to underlying crystalline rocks (Overstreet and Bell 1965).

Another salient character of the upper Savannah River, and of other Piedmont rivers, is the occurrence of hard rock outcrops and rough water at intervals along its course. These shoals exerted some influence on the prehistoric use of the river since they provided excellent conditions for shallow-water fishing and facilitated crossings on foot. However, shoals were not suitable habitat for mollusks, such as occur near Stallings Island, and they may have impeded boat travel to some extent. An engineering survey of the upper Savannah early in this century shows that about half the length and three quarters of the fall of the river within the reservoir basin is accounted for by five major shoals (Hall and Hoyt 1905). The Georgia and South Carolina survey results suggest that prehistoric occupation was somewhat concentrated at these points, especially at Gregg, Cherokee, and Trotters Shoals.

For the purpose of analysis of site locations, four distinct geomorphic and microenvironmental zones can be identified in the upper Savannah Valley. The first is the river channel itself, where abundant, highly seasonal, food resources, including runs of shad, migrating waterfowl, and so on, were available. The second is alluvial floodplain, which was definitely restricted in occurrence on the river and its tributaries, but provided some suitable terrain for grazing and browsing mammals, game birds, and predators, and for agricultural land. The third zone is the valley slopes, extensive, highly dissected bands of terrain bordering the river and larger tributaries, where small drainages have cut a series of deep gullies and high interfluves at right angles to the entrenched main stream. Travel by men and animals on the valley slopes parallel to the river is hardly possible. Today the zone is heavily forested. The last microenvironmental zone is the upland surface, a rolling plain meeting the valley slopes along an irregular rim. Here was extensive drier habitat for a variety of mammals and birds, and relatively easy conditions for travel.

The character of Piedmont vegetation in prehistoric times is poorly known (Whitehead 1965). Botanist William Bartram, crossing the Savannah River at Trotters Shoals in May, 1776, described vegetation much like that occurring today in the area, but omitting short-leaf pines which have come into dominance through historic activities (Luginbill 1926; Van Doren 1928: 266).

LITHIC SITES

Sites whose surface collections included only stone materials were most numerous throughout the reservoir basin. Sixteen were recorded in South Carolina and 21 in Georgia (Hutto 1970). Nearly all the lithic site collections included Morrow Mountain, Guilford, or Savannah River projectile points

(Coe 1964), Old Quartz bifaces and unifacial flake tools (Caldwell 1954), and quartz chipping debris. Among the South Carolina lithic sites all were located on elevated terrain within the dissected valley slopes. Furthermore, the site situations were of recurrent types, the most common being promontories, or convergent ends of interfluves nearest major streams, and ridge crests located on interfluves more distant from streams. Lithic sites generally shared these characteristics:

- (1) an occupation area of one to six acres, as measured by artifact scatter,
- (2) a commanding view of extensive lower terrain, at least if modern forests were thinned or removed, and
- (3) tabular masses of white quartz outcropping locally in residual clay, and evidence of quartz knapping (Table 1).

These lithic site location characteristics and artifact assemblages suggest a dependence on hunting, and perhaps a forest nomadism pattern as postulated by Caldwell (1958). The promontory sites of limited size and tool inventory may be vantage points, occupied by single hunters or small hunting parties, who were knapping quartz on a limited scale. Larger promontory and ridge crest sites with diverse tool inventories probably represent campsites, occupied by small groups of men, women, and children who performed a variety of domestic tasks. Three of these sites produced handstones and grinding slabs, presumably for processing plant foods, as well as the common flaked tool types.

Morrow Mountain projectile points and Old Quartz bifaces and unifacial flake tools were frequently associated on lithic sites in the reservoir basin. On the basis of technology, as well as association in surface collections, these tool types may represent a single complex. I seriously doubt that small site collections of Old Quartz tools are evidence of non-projectile point or pre-projectile point complexes, but analyses of larger excavated collections are needed.

In addition to Old Quartz-Morrow Mountain sites, a number of lithic site collections from the reservoir basin were characterized by Savannah River projectile points and a preference for chert, argillite, and other non-quartz knapping materials. These sites are few for initially formulating a subsistence-settlement system, but at least some are located particularly favorably for fishing. It is possible that the subsistence base was significantly broadened during this pre-ceramic phase of the Savannah River Archaic, or approximately 3000-1800 B.C., by new emphasis on the resources of the river channel microenvironment, perhaps including aquatic mammals and birds as well as fish.

CERAMIC SITES

Seven ceramic sites without significant evidence of pre-ceramic components were recorded in the South Carolina survey and 10 in the Gorgia portion of the reservoir basin (Hutto 1970). Among the South Carolina ceramic sites, three were small camps in the valley slopes zone, probably representing hunting, fishing, and collecting stations, while four were villages on

TABLE 1- SUMMARY OF LITHIC SITE TYPES AND CHARACTERISTICS

SITE DESIGNATION	DISTANCE TO RIVER (miles)*	AREA OF OCCUPATION (acres)	TOPOGRAPHIC LOCATION	SITE TYPES**	PROJECTILE POINT TYPES
38AB11	.05	1+	bluff near shoal	fishing camp	-----
38AB17	.25	2	ridge crest	vantage point	-----
38AB18	.19	2	promontory	vantage point	-----
38AB19	.33	6	ridge crest	camp/vantage point	Morrow Mountain I
38AB25	.28	2	promontory	vantage point	-----
38AB27	.13	1	ridge crest (saddle)	quarry ?	Palmer
38AB28	.02	1	promontory	vantage point	Morrow Mountain I
38AB29	.01	5+	ridge crest	camp	Guilford
38AB30	.08	1	promontory	camp/vantage point	-----
38AB31	.28	1+	ridge crest	camp	Morrow Mountain I
38AB32	.09	2	promontory	camp	Palmer, Morrow Mountain I
38AB33	1.25	1	hillslope	camp/workshop?	Morrow Mountain I
38AB35	1.25	1	knoll	camp/workshop?	Guilford
38AB37	.15	2	promontory	camp/vantage point	Guilford, Savannah River
38AN5	.06	--	hillslope near shoal	fishing camp	Savannah River
38AN6	.10	3	promontory	camp/vantage point	Guilford

* Represents approximate map distance; actual walking distance is somewhat greater.
 ** Inferred from site size, location, artifact content, and other characteristics.

alluvial floodplain, 4 to 8 or more acres in extent, reflecting primary dependence on farming (Table 2). In Georgia, two mound and village sites of less imposing size than the Rempert Mound Group downstream (flooded by Clark Hill Reservoir) were located on Beaverdam Creek (Caldwell 1953b; Hutto 1970). Most ceramic sites in the Trotters Shoals Reservoir area produced stamped Savannah and Lamar pottery types, and presumably were occupied in the Mississippian and Protohistoric periods, or between about A.D. 1300 and 1600. Earlier Woodland pottery types were uncommon among surface collections, and Woodland occupation seems to have consisted of small hunting, fishing, and collecting camps in the Archaic tradition.

Fiber-tempered pottery was introduced about 1800 B.C. at Stallings Island, and is found in several freshwater shellfish midden sites nearby, but apparently was never utilized farther upstream. No fiber-tempered sherds were present in Trotters Shoals survey collections.

Perhaps because of the dearth of floodplain farmlands, late prehistoric full dependence on agriculture and the spread of complex ceremonialism, so characteristic of other Southeastern regions, largely bypassed the upper Savannah Valley. Continuing this trend in early historic times, the Cherokee Lower Settlements were located above the upper valley, which served as hunting territory and a buffer zone against the Creeks (Mooney 1900).

MULTICOMPONENT SITES

Six sites in the South Carolina portion of the reservoir basin and seven in Georgia produced evidence of both pre-ceramic and ceramic components in the form of identifiable Archaic projectile point types and pottery sherds. The South Carolina sites are small camps on the dissected valley slopes, which were probably concerned with hunting, fishing, and collecting (Table 3). Generally, no tillable land was available in the immediate vicinity. These sites were characterized by pre-ceramic and ceramic components common elsewhere in the basin, i.e., Morrow Mountain, Savannah River, and Savannah-Lamar, while the Georgia sites produced some evidence of Woodland occupation (Hutto 1970). The nature of multicomponent sites strengthens the supposition that exploitation of natural food resources was basic to subsistence, even after floodplain farming was practiced in the upper valley.

FISH TRAPS

One group of sites is entirely confined to the river channel. These consist of boulder alignments placed across the current at strategic locations. Similar structures have been reported on many of the larger rivers of the eastern United States (Strandberg and Tomlinson 1969). The common type consists of one or more V-shaped rock structures; the apex of the V pointed downstream and terminated in an open chute where the fish were collected in basketry traps. The use of these traps by historic Indians is well described by Adair (1775; 432) and other early traders and travelers.

Three fish traps were located on the Savannah River within the reservoir area, but others may be undetected because of high water and poor preservation. One trap, consisting of a 300-foot alignment and two V's, extends from the South Carolina bank to the north end of Carter Island at Cherokee

TABLE 2- SUMMARY OF CERAMIC SITE TYPES AND CHARACTERISTICS

SITE DESIGNATION	DISTANCE TO RIVER (miles)*	AREA OF OCCUPATION (acres)	TOPOGRAPHIC LOCATION	SITE TYPE**	POTTERY TYPES
38AB12	.02	1+	bluff	farming/fishing camp	-----
38AB13	.02	--	Floodplain	agricultural village	-----
38AB14	.06	1	bluff near shoal	fishing camp	-----
38AB22	.00	--	Floodplain	agricultural village	-----
38AB26	.02	4+	Floodplain	farming/fishing camp	-----
38AB34	1.00	4+	hill crest	seasonal hunting/ collecting village ?	Lamar
38AN8	.08	8+	Floodplain	agricultural village	Lamar ?

* Represents approximate map distance; actual walking distance is somewhat greater.

** Inferred from site size, location, artifact content, and other characteristics.

TABLE 3-- SUMMARY OF MULTICOMPONENT SITE TYPES AND CHARACTERISTICS

SITE DESIGNATION	DISTANCE TO RIVER (miles)*	AREA OF OCCUPATION (acres)	TOPOGRAPHIC LOCATION	SITE TYPE**	PROJECTILE POINT TYPES
38AB10	.04	2+	bluff near shoal	fishing camp	-----
38AB20	.50	4+	ridge crest	hunting/collecting camp	Savannah River
38AB23	2.00	1	hillslope	hunting/collecting and farming (?) camp	Morrow Mountain I
38AB24	2.00	1	hillslope	hunting/collecting and farming (?) camp	Yadkin, Morrow Mountain I
38AB36	.75	1	knoll	hunting/fishing camp	Caraway, Yadkin, Savannah River
38AN7	.04	2+	bluff	Fishing camp	-----

* Represents approximate map distance; actual walking distance is somewhat greater.

** Inferred from size, location, artifact content, and other characteristics.

Shoals. This structure has the interesting possibility of being datable by radiocarbon; two logs, incorporated in the alignment during construction or repair, should give some idea of its age. A second, more irregular, 200-foot alignment is located just downstream. No artifacts were associated with these traps, but a ceramic site, believed to be a fishing camp, was recorded one-quarter mile upstream, and may be associated with their use. The third trap, only observed on air photos, contains two V's and extends about 400 feet from the Georgia bank to Goat Island at Trotters Shoals. It appears to be well preserved. All of these structures should be studied, mapped, and photographed in detail before inundation by Trotters Shoals Reservoir.

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LATE WOODLAND PALISADED VILLAGES IN VIRGINIA

Howard A. MacCord, Sr.

Virginia State Library

ABSTRACT

One of John White's watercolors depicts a palisaded village on a branch of Albemarle Sound in North Carolina, and Captain John Smith describes similar villages in tidewater Virginia and Maryland. Two of Smith's villages (Patawomeck and Moyaone) have been excavated and reported. Other circular palisaded villages have been completely or partially excavated in the western areas of Virginia, and considerable data have been accumulated on the cultures represented. The excavated sites are:

The Miley Site, Shenandoah County	300 feet diameter (est)
The Shannon Site, Montgomery County	210 by 322 feet
The Quicksburg Site, Shenandoah County	300 feet diameter (est)
The Brown Johnson Site, Bland County	130 by 140 feet
The Snidow Site, Giles County	250 feet diameter (est)
The Lurich Site, Giles County	300 feet diameter (est)
The Belmont Site, Henry County	300 feet diameter
The Koehler Site, Henry County	250 feet diameter (est)

At each site where house patterns were found, almost all were circular, ranging from 15 to 30 feet across. Gates in the palisade were usually made by overlapping a section of the wall, although at the Shannon Site, a funnel-shaped gateway was found. Burials are usually found inside the village but outside the house outlines, with few exceptions. In several instances, burials were found to pre-date the palisade construction. Pottery and other artifacts are datable to the late prehistoric, and in no case thus far studied have Contact Period artifacts been found in western Virginia.

Numerous other circular midden deposits known in western Virginia are probably palisaded village sites, although many of these have been severely vandalized by relic-hunters. These include the following sites:

Cornett Site, Wythe County	300 feet diameter
Raper Site, Wythe County	300 feet diameter
White Gate Site, Giles County	600 feet diameter
Keywood Site, Washington County	300 feet diameter
Mendota Site, Washington County	300 feet diameter
Kinderhook Site, Washington County	300 feet diameter
Brickey Site, Smyth County	200 feet diameter
Fox Site, Smyth County	200 feet diameter
Sander Site, Smyth County	200 feet diameter
Gwynn Site, Smyth County	300 feet diameter
Saltville Site, Smyth County	300 feet diameter
Rich Valley Site, Smyth County	200 feet diameter
Buchanon Site, Smyth County	200 feet diameter
Elk Garden Site, Russell County	two interlocking circular patterns
Lee Site # 14	200 feet diameter
Montgomery Site # 3	200 feet diameter
Montgomery Site # 11	180 feet diameter

Others are suspected to exist in the above counties, but surveys have not been completed on them as yet.

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SETTLEMENT PATTERN OF THE PLAQUEMINE CULTURE

ALONG BAYOU BARTHOLOMEW

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ABSTRACT

Bayou Bartholomew, on the western edge of the lower Mississippi River alluvial valley in southeastern Arkansas, is a tributary of the Ouachita River, although it was once the main channel of the Arkansas River. Late prehistoric sites, probably dating between A.D. 1200 and 1500, are common on the natural levees of the active streams in the area. The cultural pattern indicates closest relationships with the Plaquemine Culture to the south and a Bartholomew Phase is defined. Ceremonial centers have single mounds and small occupation areas. A significant segment of the population was scattered out in small farming hamlets of two to three houses. Other sites are present in the backswamp

and the hills west of the bayou, suggesting that a variety of microenvironments were being utilized.

Bayou Bartholomew is a rather slow-moving stream that originates near Pine Bluff, Arkansas, and flows generally southward along the western edge of the Mississippi Alluvial Valley at the base of the Pleistocene terrace to a confluence with the Ouachita River roughly 3 miles north of Monroe, Louisiana. The archaeological research has so far been concentrated along the bayou and surrounding land in eastern Ashley and western Chicot counties. The area involved thus begins at the Arkansas-Louisiana state line and extends north 25 miles to the Ashley-Drew County line and is roughly 12 miles wide.

Today, the distinction between the flat delta land and the Pleistocene terrace is sharply defined topographically and ecologically. The escarpment is steep with a drop of 50 feet and the terrace is locally referred to as the "hills." The hill area was settled beginning about 1830, but neither cotton nor subsistence farming has survived, and today the hills are forested with southern pine. The early surveyors reported red oak, hickory, elm, and post oak in these highlands with pine on the ridgetops.

The early historic records indicate that the delta portion of southeastern Arkansas was a wilderness of mosquito-infested swamps with cypress, tupelo-gum, and alligators. This description also applies to the Bayou Bartholomew area. The general opinion of the present residents is that the Indians lived in the hills but not in the delta because it was too wet and the mosquitoes were so bad. Today, the swamps have been drained and the land planted in cotton and soybeans.

Clarence B. Moore made a trip up Bayou Bartholomew in 1901 and worked on eight sites in Louisiana and six in Arkansas. Since that time professional archaeological work in southeastern Arkansas has been limited to surveys, none of which have included the Bartholomew area. When the Arkansas Archeological Survey began work in 1967, the major problem was to find out what the archaeological situation was in the entire southeastern corner of the State. The Bayou Bartholomew project, therefore, has a number of objectives. One of these is to use this localized area to identify prehistoric cultures and establish a chronological sequence which can then be used as a guide for other parts of southeastern Arkansas. This area is interesting, also, because the bayou was once the main channel of the Arkansas River although it is now part of the Ouachita River drainage system. The bayou has been used as an eastern boundary for the Caddoan area despite the fact that the archaeology is relatively unknown. Additionally, it is roughly centered between three major cultural climaxes-- the Caddoan Culture on the central Red River, Plaquemine along the southern portions of the Lower Mississippi and Mississippian in the northern portions of the Lower Mississippi Valley.

Most of the delta portion of southeast Arkansas is in the Boeuf Basin. The most prominent surface features are the abandoned Arkansas River meander belts now occupied by smaller streams. The drainage system has always been by way of the Arkansas River and there are no abandoned Mississippi River channels present. The drainage parallels the Mississippi River system and flows into the Ouachita River Valley.

A sequence of Arkansas River channels was established by H. N. Fisk as part of his geological investigation of the Mississippi alluvial valley. Some of these are especially pertinent to this study. Fisk's Plate 15 places a remnant of the B3 land surface along the base of the terrace. The stage 4 channel is now occupied by an unconnected series of shallow streams that drain the backslope to the east of Bayou Bartholomew. The present Bayou Bartholomew is in the stage 11 channel and the shift to the present Arkansas River meander belt is placed at stage 12. Roger Saucier, geologist at the Waterways Experiment Station in Vicksburg, has recently undertaken a geological study of the Boeuf Basin. He estimates that the top stratum deposits in the area are sediments laid down during the past 5,000 years.

Bayou Bartholomew flows in an entrenched meander belt and the channel is lined with abandoned channels and oxbow lakes, some of which are almost completely filled in while others still have open water. The bayou is bordered by sandy natural levees built up to an elevation of 130 feet mean sea level at Boydell and 110 feet at Wilmot. The crest of the levee is generally 30 feet above the water. The distance from the bayou to the base of the terrace varies with a maximum of 5 miles, although it is generally only 2 to 3 miles and at some points the bayou abuts directly against the base. The land between the meander belt and the terrace is a backswamp with a drainage system distinct from the bayou. The surface elevation is 5 to 10 feet lower than the crest of the levee. Today the backswamp is being cleared and put into either soybeans or pasture. It is inaccessible when wet, it dries to a cement-like consistency and is not good farmland.

The backslope drainage east of the bayou consists of a number of shallow streams that empty into Big Bayou. These streams occasionally make use of the abandoned channel of the stage 4 Arkansas but they also cut across this old channel. The crest of the Big Bayou levee is at an elevation of 115 feet near Boydell and 95 feet near Parkdale. The distance between Big Bayou and the Bartholomew varies from 4 to 8 miles. The backswamp land between the two bayous is roughly 5 feet lower than the crests of the levees.

Eighty-five sites are now recorded in the area and are falling into a distinct pattern. The distribution of sites on the map is, however, not an accurate reflection of the settlement patterns. The search has concentrated along the meander belt of Bayou Bartholomew between Portland and Parkdale. This area has been covered thoroughly, on foot, and areas where no sites are indicated are either in pasture or else do not have sites. In other areas, site locations are known only because they have been reported to me. Unfortunately it is now almost impossible to locate sites in the heavy timber and brush cover on the terrace and utilization of this different environment by the prehistoric Indians cannot yet be determined.

The site information for some of the time periods is quite good but for others is almost a complete blank. The earliest materials yet uncovered are late Archaic and characterized by large Gary Stemmed points often made of novaculite. The sites are invariably on the partially filled abandoned channels. Site material is scattered and is generally below the crest of the levee, apparently eroding out of the underlying red clay. These channels are lined with scattered material which has little tendency to cluster so that separation into distinct sites on any individual channel is quite arbitrary. Occasional Gary Stemmed points have been picked up along Big Bayou.

Only one site, 3AS84, has Lake Borgne Incised and Tchefuncte Stamped pottery and amorphous baked clay objects on it. It is not, however, a single component site. Withers Fabric Impressed, Marksville Incised, and Marksville Stamped pottery is present, in minor amounts, on five sites (AS77, AS84, AS85, AS104, CH20) on the abandoned channels of the Bartholomew and on Dry Bayou southeast of Portland. These, also, are multiple component sites.

What happened in the succeeding Baytown and Coles Creek periods is an even greater problem. One site on Big Bayou (CH20) where Marksville pottery is present also has Mulberry Creek Cord-marked, Larto Red Filmed, and Woodville Zoned Red types, suggesting that the occupation may have continued over a longer period of time. A second site on Big Bayou, CH32, has a few sherds of French Fork Incised and on one site, AS141, in the Overflow Creek swamp has some Coles Creek Incised. Eight sites, scattered on both the Bartholomew and the smaller streams, have only Baytown Plain pottery present. These sites may also belong in the Baytown Period. On the other hand, it is possible that the environmental situation along the Bartholomew was not particularly desirable at this time. Coles Creek sites are known along the Ouachita River, Bayou Macon, and are in the area south of the conjunction of the Arkansas and Mississippi rivers.

This pattern along Bayou Bartholomew is in marked contrast to the succeeding Mississippi Period. Forty-five sites (53%) have components in this period. The Bartholomew Phase is defined on the basis of the consistent occurrence of a limited range of pottery types on these sites. The closest relationships are with the Plaquemine Culture to the south although the cultural pattern is not identical to it. One of the characteristics that is not Plaquemine is bone tempering in the pottery, which ranges up to 11 per cent of the Baytown Plain sample from a site. This would seem to relate the pottery of the Bartholomew area to the Caddoan region, but equally striking is the absence of engraving technique on the Bartholomew. Vessel forms include bowls with either vertical or carinated walls and sub-globular jars with a slightly constricted neck and flaring rim. The most popular decorative motif is a band on the upper one-third of the jar with alternating zones of line-filled triangles. The incising technique, placement of the decorative band and the vessel form is similar to the Manchac Incised type defined by George Quimby at the Medora Site, but the paste is not of the quality usually identified as Plaquemine. Evansville Punctated is also common. Minor types include Plaquemine Brushed, Hollyknowe Ridge-pinched, Harrison Bayou Incised, Depree Incised, and Hardy Incised. Half of the Bartholomew Phase sites have a scattering of shell-tempered pottery. The most characteristic projectile point somewhat resembles the Alba but has a bulbous stem and is being called the Ashley point.

Four Bartholomew Phase sites are villages with associated mounds (AS110, AS11, AS80, AS79). The mounds have suffered badly and one has been leveled, but apparently they were once flat-topped and roughly 12 to 15 feet in height. They are located close to the bank of the bayou and none have a mound complex or distinct plaza area. The occupation is a midden concentration along the highest ridge in the vicinity of the mound and is usually not over 500 feet long and 150 feet wide. The Henderson Site mound was tested this summer and the clay cap was exposed in the test trench on the west side of the mound. Midden deposits are present to the east, north, and west of the mound, but not to the south between the mound and the bayou. The farmer reports leveling a low mound 300 feet to the northwest and turning up a lot

of material. The present road goes between the mound and the bayou bank and skeletons were uncovered during its construction. The most distinctive artifact is the head of a baked clay figurine.

The eight sites defined as villages (AS8 on bayou, AS132 in bayou neck, ASL33, AS85, AS81, AS92 on oxbows, and CH20-23 on Dry Bayou) have midden scattered over an area several hundred feet in diameter that is always on the highest ridge of land in the area. They are also usually distinguished by a slightly darker color of soil than the surrounding soil, but this is visible only under the right moisture conditions. Four of these are on oxbow lakes that have standing water, while two are on the bank of the Bartholomew and two are on Dry Bayou. One of these has been tested (AS85) primarily because of the Marksville pottery present. All of the Bartholomew Phase midden is in the plowzone at this site, but further work will be undertaken to recover the earlier, partially undisturbed component.

Most striking is the distribution of hamlets. These are small sites, with a dark-colored soil that is generally not over 100 feet in diameter. The midden area is quite distinct, the surface littered with sherds and some flint, bone, and shell but the surrounding soil is nearly sterile. These are generally on the bank of the active channel of the Bartholomew or on Big Bayou and its tributaries. Two of these were excavated this summer. The Currie Site (AS141) is still being processed.

The McArthur Site (3CH49) is located on the east bank of Big Bayou, 5 miles east of Portland. The land was first put into cultivation four years ago although timber had been logged off much earlier. The only surface indication was a dark patch of soil, about the same in appearance as the spots left from burning brush which are still visible scattered over the field. This one was distinguished by a few sherds of pottery on the surface. Mr. McArthur uncovered two burials, notified the Survey and offered not to plant if we wanted to excavate. The actual area of occupation was only 8 meters in diameter with the outer limits clearly defined. We did not excavate the entire site, due to time limits and work already scheduled at other sites. The midden was a concentrated zone 10 cm. thick, below the plowzone. Beneath this, the artifact content rapidly decreased.

House floors could not be defined and I suspect that the disc had cut through them. The two separate house patterns were defined in the lab, on paper, not in the field. Apparently, two circular structures are present, both 5 to 5.5 meters in diameter with posts set one to 1.5 meters apart. There were several concentrated ash and midden areas scattered around inside of the houses as well as outside, but no prepared fire basins. Two adult males, one adult female, and at least three infants burials were within the houses. A Baytown Plain vessel with a carapace cup inside of it had been placed at the feet of the adult female. One infant had a small carinated Mississippi Plain bowl and another infant had portions of a Manchac Incised jar buried with it. Shell-tempered pottery is not common and only two of these sherds are incised, probably a variety of Leland Incised.

The animal bone includes three immature deer, which were butchered elsewhere with the quarters and mandibles brought back to the house, and minor amounts of rabbit, squirrel, raccoon, opossum, turtle, and gar. The quantity of bone suggests that while the family utilized local fauna, this was only part of the subsistence pattern, probably with an emphasis on farm-

ing. Pottery at the McArthur Site is predominately Manchac Incised and Evansville Punctated.

It is likely that there is an as yet undefined phase following this Bartholomew Phase. The Glendora Phase has already been defined in Louisiana at the mouth of Bayou Bartholomew on the basis of Moore's work at Glendora and Keno. Only two sites in the Arkansas sample (AS140 and AS150) have a predominance of shell-tempered sherds. Most of the decorated sherds are roughly similar to the Leland Incised and Keno Trailed types and probably tie in with the Glendora Phase.

In summary, the settlement pattern for the Bartholomew Phase is one of scattered household settlements with somewhat larger sites more widely spaced along the bayous. Ceremonial centers with mounds did not have a large population, apparently no more than the village sites. Some of C.B. Moore's sites on the Bartholomew in Louisiana can probably be included in the Bartholomew Phase. This, however, will take further research. Although field work has not yet been systematic in the area north of Boydell, I know that there are no other mounds along Bayou Bartholomew for thirty miles. In northeastern Drew County, another series of mounds are present but the cultural material is quite different from the Bartholomew Phase and probably ties in with the developments on the Arkansas River. I do not yet have radiocarbon dates on the Bartholomew Phase, but I estimate that it is roughly around A.D. 1200 to 1400.

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SESSION III

SYMPOSIUM:

WHAT DO WE KNOW NOW THAT WE DID NOT KNOW IN 1938?

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University of Florida

It is probably a feature of each science, as it approaches a position where new syntheses and theoretical stances are possible, to produce a rash of traditional summaries of the factual data already current. The recent twin symposia at the Athens Meeting of the Southern Anthropological Society is perhaps a case in point, as is this symposium. I do not see these efforts as the flogging of a nearly dead beast of burden, but as a necessary time-out before the final scoring play. Certainly we need to know where we have been if we realistically want to assess where we are going. Before we turn to the questions of what we have learned in thirty-two years, I would like to briefly outline what we did know (or thought that we knew) in 1939. I hope then to discuss the general advances in Southeastern archaeology before turning to other speakers who will discuss specific areas.

The "Old Salvage Archaeology" of WPA and TVA had actually begun in 1933 or 1934 but had so far been largely concerned with data gathering. At the organization meeting of the Southeastern Archaeological Conference at Ann Arbor in 1937 I, at least, felt I knew an awful lot of facts. I now realize that I had little understanding of what these facts meant.

The University of Chicago field sessions in Fulton County and at Kincaid had gone far toward developing the techniques of excavation and had begun to hint at problems of methodology. Many of us were convinced that our excavation left little to be further developed. We had established some stratigraphic sequences, some settlement plans, and acquired tons of artifacts. Unfortunately it was mostly new, largely unrelated to anything else, and seemingly impossible of early assimilation. The catalogue of what we know, for certain, is pretty short.

Webb and Funkhouses had begun a fairly systematic, quite detailed survey of Kentucky (Webb and Funkhouser 1928). Clarence B. Moore had elaborately published his field notes of excavations conducted along the navigable rivers of the Southeast (1892-1922). Harrington had published one on some Tennessee Valley sites, Claflin on Stalling's Island (1931), Warren K. Moorehead on Etowah (1932), but systematic, anthropological reports were conspicuously missing. James A. Ford's "Analysis of Indian Village Site Collections from Louisiana and Mississippi", published in 1936, was certainly the only systematic attempt at classification which had appeared. Unfortunately, the results of his perceptive analysis were not immediately applicable to the greater Southeast. W. H. Holmes' encyclopedic "Pottery of the Eastern United States" (1903) represented whatever background information we may have had. It seemed that the more we consulted it, the more we realized that it was badly out of date.

There were, of course, some glimmers of hope if not of actual daybreak. Thousands of WPA or CCC workers were digging in the Tennessee Valley, at Macon, Savannah, Moundville, and many forgotten way stations. James B. Griffin had begun the influential Ceramic Repository at Michigan and was always ready by letter or visit to set the wayward field worker straight on relationships or descriptions. What we didn't have would make an embarrassingly long list.

We didn't have a single regional chronology (except possibly Ford's in Louisiana) that was known beyond the confines of its own state. There were no firm absolute dates, and very few relative ones. If a site had trade goods we were pretty sure it was Post-Columbian. And that was about as far as most were willing to go. A complex was the trait list found at one site and cross-dating was largely a matter of comparing modes, or more likely "diagnostic" artifacts. Finally, only at Kentucky was there any semblance of a permanent research base for archaeology. It was particularly for the problems of intra-area correlation, coordination, and information that the Southeastern Archaeological Conference was so enthusiastically welcomed by workers in the region. The results of this effort, and others, have been spectacular. To answer the question as to what we know now that we didn't in 1938 is complex and a measure of how much has been learned.

Firstly we can list the active research institutions that have come into existence during 30 years. Kentucky, Tennessee, Georgia, North Carolina, Florida, Alabama, and Louisiana each have at least one major active museum. Teaching departments of anthropology exist in everyone of the Southeastern states, totaling 16 (I think) departments as listed in the "Guide to Graduate Departments of Anthropology." There are an unknown number of smaller schools and community colleges which offer at least some courses. Seven states have archaeological societies which publish journals with some sort of periodicity, if not of regularity. Last year 57 graduate degrees were granted in the Southeast, probably the majority in archaeology. If we ever had any doubts, we now know that anthropology and archaeology are popular academic subjects in the Southeast.

In the matter of chronology, while radiocarbon dating looms large, of equal importance is the establishment of local chronologies for every southern state, with the possible exception of South Carolina. Even there we can extrapolate from adjacent areas and publication is surely just a matter of a comparatively brief span. The early S.E.A.C. meetings established these regional sequences so that when we were handed the Pandora's Box of radiocarbon dates, precision and absolute chronology could be interlaced with established sequences. The work of Ford in these seriations needs no emphasis from me and stands as a major memorial to his genius. In the geographically larger or more diverse states several chronological sequences are generally available. Florida has at least eight interdigitated sub-regional chronologies, Georgia three or four, North Carolina several, and so it goes. While new phases will certainly be defined, I feel quite certain that we now have a fairly precise temporal framework for cultural evolution in the Southeast.

The amount of detail known about the various phases naturally varies considerably. For the Big Game Hunting Tradition we have a fairly firm relative chronology but as far as I know only one rather unsatisfactory radiocarbon date (Darby Springs, Florida, 7930 \pm 270 B.C.). For the Early Archaic we have good sequences for the Carolina Piedmont (Coe, 1964), Louisiana, Northern Alabama (DeJarnette, Kurjack, and Cambron 1962) and at Russell Cave, with West

Virginia rapidly filling in the periphery. For the Late Archaic, however it may be defined, we have a plethora of cross-dates and a highly satisfactory sprinkling of radiocarbon dates. While some problems remain concerning the Archaic, I feel that we are now in a position to consider the cultural processes involved in the increasingly precise adaptation of the Archaic peoples to the riverine and coastal environments.

Wyman (1875), Holmes (1903), and Moore had mentioned the fiber-tempered pottery of the Southeastern shell mounds and Claflin had published on Stalling's Island, but we seem not to have understood the significance of this fabric or of the complex as a whole. Certainly the intercontinental ramifications of stab-and-drag decoration or of cross-hatched lips were unknown and undreamed. In retrospect it seems to me that the far reaching implications of the fiber-tempered horizon are one of the major accretions of our knowledge over the past thirty years. I am also convinced that this knowledge was facilitated by the Southeastern Archaeological Conference and the ceramic type descriptions arising out of it.

The Midwest Taxonomic Method, or the McKern System as we called it, was just about the only analytic tool available in 1938. Ford, of course, was constantly stressing the need for rigorous descriptive typology, regional cross-dating, and the evolutionary development of what came to be called traditions. Kroeber's trait element comparisons became a strong influence, for some of us at least, and helped lead up to detailed comparisons of trait lists. I believe it significant that many of the people who developed basic methodological systems had experienced the Southeastern cyclic crisis rites: Ford, Phillips, and Willey are excellent examples. The point needs repeating that while spectacular growth has been found in our artifactual data, it has also been accompanied by significant advances in method and theory.

To look at regional chronologies will give some idea of our enrichment over thirty years. I will confine my discussion to the coastal plain areas as Joffre Coe is discussing the Piedmont and interior region.

Haag has demonstrated an entirely adequate chronology for the Carolina Coast (1958), although it is in a number of respects peripheral to the core Southeastern area. South Carolina for long was more interested in ancestors than in artifacts and not too much is readily available. It seems to represent, in some respects, a northward extension and modification of the well known Georgia sequence.

The Georgia Coastal sequence is well known from the work of Caldwell and others at Irene (1941), Waring in the same area (Williams, ed., 1968), and unpublished work by Holder on St. Simons. More recently Larson has made a number of surveys, while Caldwell and Milanich are currently at work. The sequence of Stalling's Island (Bilbo), Refuge, Deptford, Wilmington, Savannah, Irene, MacIntosh, Darien Bluff is well established with at least fifteen radiocarbon dates available and more appearing currently. Not only is the chronology and content (at least for ceramics) well established but we can see intrusions from the north and from the interior as well as inter-areal relationships to the southward. Ford (1969) postulates the Stalling's Island Phase as one of his Colonial Formative loci and discusses relationships at some length. In spite of the fact that relatively few papers have been published the archaeology is sufficiently well known that we can now begin to treat special problems, refine cultural inven-

tories, and deal with external relationships. For the Georgia Coastal Plain back from the sea marshes and islands we have almost no information and are virtually as ignorant as we were in 1938.

Central Georgia is well known from the major excavations around Macon. While the Archaic is present but poorly known, the rest of the sequence is well established; Mossy Oak, Napier, Swift Creek, Macon Plateau, Lamar, and Ocmulgee Fields. As much of the work at Ocmulgee was done before World War II, we have few radiocarbon dates, although those available very neatly fit into our established chronology. Again, publication is relatively scanty, although the Southeastern Conference pottery type descriptions do much to establish a ceramic framework.¹ Cross ties are established to the Gulf Coast, Georgia Coast, and Piedmont areas, to Eastern Tennessee, and to Northern Alabama. It is largely in central Georgia that the status of the Early Mississippian intrusion into the Southeast has become known and partly understood. The excavations at Etowah, although largely unpublished, have thrown a great deal of light on the whole problem of the acculturation of Mississippian Phases in the far southeast when these had come in contact with the indigenous people making complicated stamped ceramics.

The Gulf Coastal Plain, comprising southern Georgia, western Florida, the southern part of Alabama, and perhaps parts of Mississippi and Louisiana relates strongly to the well known Louisiana, Lower Mississippi Valley sequences. The major source is the epochal study by Phillips, Ford, and Griffin (1951) although major work was done before and since (Ford 1936, 1951, 1952, 1963; Ford and Quimby 1945; Ford and Webb 1956; Ford, Phillips, and Haag 1955; Ford and Willey 1940; Gagliano and Saucier 1963). It is especially difficult to summarize the major mileposts of our knowledge of the Lower Valley. Certainly the elaboration of the rise and persistence of the Marksville-Hopewell phases in the area is a significant accomplishment that perhaps only Ford suspected in 1938. Equally the early appearance, complexity, and relationships of the Poverty Point Phase is another noteworthy accomplishment which still presents puzzling questions (Ford, Phillips, and Haag 1955; Ford and Webb 1956; Ford 1969). Gordon Willey's study of the ceramic chronologies of the Florida Gulf Coast (1949) has remained the solid framework for much of this large area. Sears (1962, 1964, 1968) has argued that the climax part of the region constituted a class-stratified primitive political state which he has labeled the "Priest State". Internal organization, external relationships, and especially the cultural processes involved in the formation and persistence of this elaborate place, still remain largely problems to be solved in the future.

The Florida peninsula has been intensively studied, especially the Indian River region (Rouse 1951) and the St. John's Basin (Goggin 1952). At present Sears is engaged in a meticulous study of the large earthworks of the Okeechobee Basin in an attempt to define cultural relationships, subsistence economy, and social structure. In the north Florida area we are engaged in a continuing study of the cultural factors of persistence and change in this internally marginal area. In the whole southeastern area we seem to be concerned with questions of settlement pattern, community pattern, and cultural process which were rather foreign to our thinking a generation and a half ago.

It has been claimed, usually by enthusiastic graduate students, that the Southeast has been deficient in theoretical interest and development. I believe that this has been true and may still be characteristic of the archaeologists working in the area. I suspect that this is in large part due to the

relatively large amount of field work which has always been going on in the region. I might point out that neither Noah or Columbus are noted as especially notable contributors to the theory of navigation and seamanship. Certainly the tremendous number of archaeological sites in the southeast, the long "digging" season, and the urgency of salvage excavations in many areas has lured up to descriptive studies rather than theoretical innovations. I would like to point out, however, that Southeastern archaeological data has often served as the stimulus for theoretical constructs.

In 1938 we did not know for certain the archaeological complexes associated with any Southeastern tribal group. The direct historical approach was only just being discussed and ethnohistory was a new and unfamiliar word. Southern historians had very largely ignored the Indians in their writings, even when discussing the Colonial period. Today we know, with some degree of precision, the material culture of the Creek-Appalachee, Calusa, Potano, Guale, Cherokee, Seminole, Natchez, and Chickasaw. In most cases we can say something as well about cultural changes which took place during the protohistoric and historic periods as well. While culture history is regarded by some as the antithesis of processual archaeology, certainly we can, and frequently are, using the factual data of historic tribal archaeology to provide the information for the testing of hypotheses about cultural processes during the historic period.

Colonial archaeology of Spanish and English settlements is fairly well along in many Southeastern areas and the conference on Historic Site Archaeology has been meeting with the Southeastern Archaeological Conference for a number of years. So far this relatively new field seems to have been largely concerned with descriptive matters. There is some indication that the historic site archaeologists are beginning to turn their attention to such questions as the process of acculturation during the various stages of exploration, deerskin trade, settlement, and removal. There has yet to be any general assessment of the varying effects of Spanish, English, and French colonial situations on the Indian cultures of the area.

Many other interesting problems await attention. For instance, we still know very little about the relationship of the Adena-Hopewell complex with the Gulf Complex, much less with such specific sites as Crystal River or the Big Circle sites around Lake Okeechobee. While we rather clearly understand that Mississippian culture moved into the Southeast, just what were the cultural mechanisms by which this was accomplished still remains largely unexplored. The complex relationship of coastal to inland or piedmont phases, which often share many specific traits such as pottery styles, but seem to differ in ecological orientation, remains to be defined. I believe our awareness of these problems is quite accurately a measure of what we have learned in the last generation and a half.

In 1938 we saw our primary objectives as the definition of complexes, establishment of regional chronologies, and the tracing of inter-areal relationships. While many of these goals have been obtained in thirty-one years, the measure of our growth and greater sophistication is that we would define our aims as:

1. An understanding of the internal, functional relationships within communities and regions. How are we to regard the evidences for class structures as at Moundville or Etowah?
2. A better understanding of the functional basis of Adena-

Hopewell-Marksville-Yent funerary ritual. Are these burials those of shamen or of lineage heads.

3. By what process did the Southern Cult arise? While it seems to be the familiar revitalization movement, what processes brought it into prominence? Does it represent an attempt to stabilize an expanding population with resultant cycles of warfare? Or does it represent an attempt at synthesis of elements of the older Southern Appalachian Tradition and the impinging Mississippian agricultural economy?
4. What are the origins and the processes of diffusion of Mesoamerican traits into the Southeast? James A. Ford raised the questions about the appearance of ceramics at widely separated points in the Southeast. The Mesoamerican influences are evidently older and deeper than the Mississippian horizon that we used to consider as the level of diffusion.
5. What is the economic base of the earlier phases in the Southeast. How did the lagoon-strand subsistence of Deptford arise out of the Archaic or out of a related piedmont forest economy? Does the presence of a primitive stage with ramage organization among the 16th century Calusa represent a parallel specific evolutionary to the Puget Sound area? By what processes over how long, was horticulture introduced into the Southeast?

It seems to me that these questions, rather than an inventory of sites, complexes, and dates are the true measure of what we know now that we didn't thirty years ago at the founding of this conference.

SESSION IV

ARCHAIC-TRANSITION-EARLY WOODLAND IN THE SOUTHEAST

EXCAVATIONS AT THE TAYLOR SITE

James L. Michie

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The Taylor Site is a low-lying clay ridge that lies parallel with the Congaree River swamp for a distance of some 800 yards. The site is elevated 20 feet above the swamp floor and generally is flat, except for a few knolls that rise gradually and attain a height of four to eight feet.

Although the geology of the site is unknown at the present, it has been suggested that the matrix is residual clay and that this clay has slumped considerably covering the lower edges of the site with a veneer that is some 12 to 14 inches thick. Within this slump, early aboriginal material has been found virtually undisturbed. This undisturbed material is in the form of cobble clusters, knapping sites, tools, projectile points, and fire hearths.

For the most part, the site is cultivated and has been surface collected for more than a century. Early material observed in surface collections has been represented by Clovis, Suwanee, Quad, and Dalton points. The site also contains early archaic material that is represented by Palmer and Big Sandy type points, which are referred to locally as Taylor Points.

Through periodical visits to the site, we observed that a concentration of early material began to appear in the southeast area. Plans were made to excavate a portion of this area. The excavation began in January, 1970, and was originally intended to be a trench 10 feet wide and 50 feet long, but with the recovery of Dalton Points, plans were made to extend the project. The first trench was extended to 70 feet and two additional trenches were opened to the dimensions of the former.

The work of the past nine months has not provided us with a quantity of material, but we have been able to completely isolate many features. If the material had been in quantity perhaps isolation would not have been possible. Our efforts have provided us with three distinct Palmer hearths and two distinct Dalton hearths. Charcoal has been obtained from the hearths and will be submitted for dating at the termination of the project.

The plow zone was completely removed as a unit and the underlying context removed in levels of 3 inches. The removal of soil in 3-inch levels has not given us a clear pattern of segregation of projectile points, but we have been able to arrive at a segregation of chipped stone. It is now apparent that the Palmer people made extensive use of quartz and quartzite and that the people of the Dalton era made use of chert and silicified slate. A

likely hypothesis for this is that the pre-Archaic people had a greater range of travel and were not as settled as the Palmer people.

Knapping sites were observed throughout the project and were usually associated with clusters of cobbles that were used as hammerstones and anvils. These knapping sites occurred at or near fire hearths and were 3 to 4 feet in area. The sites included projectile points, unfinished blanks, tools, and re-sharpened projectile points.

The Taylor Site is very large and quite unique. It has been inhabited, off and on, since it was first visited by the people who made fluted points. Later the site was visited and lived upon by people who were about to witness their termination.

Our project, the Taylor Site, is still in the process of being excavated and plans to abandon it will not be discussed until evidence of earlier occupations is found. The evidence is there and time will certainly provide us with more information concerning the early cultures.

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ARCHAIC INFLUENCE SEEN IN AN OTHERWISE PURE
BAYOU LA BATRE PHASE SITE IN CLARKE COUNTY, ALABAMA

David W. Chase

Montgomery Museum of Fine Arts

In the spring of 1970, Mr. Ralph Allen of the Alabama Fish and Game Department brought in an artifact sample to the Montgomery Museum of Fine Arts for the writer's inspection and evaluation. The material contained ceramics, bone, and stone objects. The pottery was identified as being of the Bayou La Batre type (Wimberly 1960). No other ceramic types were noted in the sample which Allen had recovered in the talus below an exposed midden on the north bank of the Tombigbee River several miles north of Jackson, Alabama. As this site appeared to be a possible pure Bayou La Batre unit, plans were made at the time to pay a visit to it and conduct further exploration.

During the month of August, 1970, the discoverer of the site, Mr. Ben Griffin, very kindly permitted the writer to examine his collection from the site. The collection had been recovered from the midden which had been partially exposed below the second river terrace. Again, all pottery in the Griffin collection was of the Bayou La Batre type. Non-ceramic artifacts consisted of bone tools (mostly awls), chipped stone, and one polished stone ornament (a two-hole, bi-pennate, tabular gorget of hematite). Among the chipped stone artifacts, 28 large stemmed projectile points of Tallahatta Quartzite were counted. In terms of the general appearance and configuration, these points seemed to relate to types already described as definitive for the Late Archaic in northern Alabama (Cambron and Hulse 1964). Griffin insisted that these points were recovered in constant association with the Bayou La Batre pottery.

The site was reached by boat. Landing just below a somewhat steep but low second river terrace bank, we found a scattering of shell in the upper slopes of the sandy first terrace beach. The actual exposure was largely concealed from view by a heavy growth of vegetation which overhung the bank. This was chopped away and a 15-foot exposure and wall facing project was begun.

Analysis of the vertical profile exposed in the bank showed the following sequence: the first zone, extending from the surface to a depth of .6 to .8 feet, consisted of a brown colored loose loam which was devoid of artifacts. A harder packed sand-clay, known to southeastern archaeologists as "gumbo", constituted the second zone which was from 1.1 to 1.5 feet thick. This zone was also found to be sterile of cultural material. The third zone, a band of very hard packed dark gray to almost black sand, varied from .8 to 1.4 feet thick at different points and marked the upper midden zone. This level contained chips (mostly Tallahatta Quartzite), pottery, and occasional shell and animal bone. Beneath this zone, a tightly packed lens of shell (.9 to 1.4 feet thick) was exposed. This matrix contained the bulk of the artifacts, including ceramics and bone and stone implements. It also contained all of the stemmed projectile points recovered in the facing phase which were observed to be in direct association with the Bayou La Batre pottery. Other stone artifacts consisted of small ovate scrapers and much larger pointed blades, probably knives. Several splinter bone awls and antler flaking tools also came from this level. Under the shell zone was a thin (.3 to .4 feet) band of dark stained sand which contained an occasional sherd, chip, or bone fragment. One band of gray wood ash was exposed in this level, indicating a possible hearth or fire pit.

Of greatest interest was the persistent association of large stemmed projectile points, several of which bore a strong resemblance to types found elsewhere in the State and ascribed to Late Archaic levels, with the pottery, most of which was either Bayou La Batre Plain or Bayou La Batre Stamped. Two sherds of rocker-stamped ware were considered to be Bayou La Batre Stamped as well. It was not determined whether or not the stamping had been done with a scalloped shell as in Bayou La Batre Scallop Impressed (Wimberly 1960: 64-74).

Specifically, the projectile points looked most like three types previously described by Cambron and Hulse (1964): Pickwick, Ledbetter, and Little Bear Creek, all having their beginnings in the Late Archaic of Alabama. Only the Ledbetter and Little Bear Creek points are suspected of persisting into Early Woodland times. Thus far, no Woodland provenience is known for Pickwick points.

In view of this resemblance and the implied Bayou La Batre-Archaic association at this site in southwestern Alabama, a limited comparative study was made by contrasting the dimensional data of the three known Archaic types with that attributable to those recovered at the Tombigbee River site. Ten sample projectiles were used in this study, and all were confirmed as having been recovered from the shell midden at the site. Five of the points were found during the wall facing project which, in the process, involved cutting 3 feet into the bank and resulted in a total horizontally exposed section of 7 feet. Five other points came from the Griffin collection. These had been trowelled out of the shell midden by the collector earlier in the year. The Ck-45 projectiles were identified by alphabetical designation. Dimensional data used for comparison were: length, shoulder width, stem length, and stem width. Although certain of the sample points had serrated blade edges

(a Pickwick trait), this factor was not considered.

TABLE 1
COMPARISON OF PROJECTILE POINTS

Known Archaic Point Types	Projectiles from the Ck-45 Site sharing traits			
	Length	Shoulder width	Stem width	Stem length
PICKWICK	A,B,D,F,I	H	A,B,C,D,F,H	E,I
LEDBETTER		C,D,E,F	A,B,D,F,H	F,I
LITTLE BEAR CREEK	A,C,D,E,H,I,J	I,J	A,D,F,G,H	A,B,C,D,F,H

TABLE 2
TRAITS SHARED BY CK-45 POINTS

Point Types	A	B	C	D	E	F	G	H	I	J	Total Traits
PICKWICK	2	2	1	2	1	2		2	2		14
LEDBETTER	1	1	1	2	1	3		1	1		11
LITTLE BEAR CREEK	3	1	2	3	1	2	1	3	2	2	20

The Ck-45 projectile points appear to be most like Little Bear Creek points in detail. Ledbetter type points are unilaterally excurvate suggesting their use more as a small tool or knife than as projectiles.

In analyzing the tables, one of two possibilities could be entertained: (a) Trade affiliations between resident Archaic peoples and northward moving (from Mobile Bay) Bayou La Batre people resulted in the acquisition of projectile points. Minor differences in dimensional traits or configuration in the points from Ck-45 and those described mainly from the Tennessee Valley area would be based upon regional variation factors as yet undefined; or (b) An attempt being made by Bayou La Batre peoples to duplicate projectiles then being made by indigenous hunters. This would account for visible differences or departures from the definitive dimensional ranges.

Some might raise an argument against these possibilities on the grounds of chronology. In this writer's opinion, a Carbon-14 date of 1200 B.C. should not be unreasonably beyond the range of such an association (Ford 1969).

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EMERGENCE OF FORMATIVE LIFE ON THE ATLANTIC COAST OF THE SOUTHEAST

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INTRODUCTION

The purpose of this paper is two-fold: first, to present new information regarding an important group of archaeological sites-- the coastal shell rings of Georgia and South Carolina-- which are known at present primarily from Waring's work (Williams 1968); and second, to comment on Ford's (1966, 1969) "Colonial Formative" theory, insofar as it deals with this part of the New World. The background for this discussion is a long, but sporadic, span of archaeology on the Atlantic coast of the Southeast, in part summarized by Caldwell (1952) and Williams (1968). Time will permit me only to outline these major conclusions of earlier workers, especially Waring:

- (1) The earliest pottery in North America north of Mexico is apparently the fiber-tempered Stallings Island complex, dating at least to 2000 B.C., and perhaps to 2500 B.C. (Bullen 1961; Stoltman 1966).
- (2) The distribution of early ceramic Stallings Island sites is the coastal strand from south Georgia to Port Royal, South Carolina, and the Savannah River from its mouth to just above Augusta. Stallings Island sherds occur in small numbers in the coastal plain beyond this zone (Williams 1968).
- (3) At least nine, ring-shaped, shell middens survive on the coast, those in Georgia associated with Stallings Island pottery and those in South Carolina with less well-known Awendaw and Horse Island pottery, apparently partially contemporary with Stallings Island (Waddell 1965; Williams 1968).
- (4) The shell rings are primary deposits of habitation refuse, but appear to be structures planned and constructed for communal or ceremonial purposes, a development unknown elsewhere in the United States at this early time (Waring and Larson 1968).
- (5) The shell ring dwellers were coastal hunters and gatherers, especially mollusk collectors, without knowledge of agriculture (Waring and Larson 1968).

- (6) Finally, it has been suggested that the entire complex of earliest ceramics, coastal subsistence, and shell ring structures was imported by seaborne colonists from South America, and that fiber-tempering and riparian existence were soon introduced to other areas of the Southeast (Ford 1966, 1969).

SHELL RING SURVEY

During late winter and early spring this year Gene Waddell of the Florence Museum and I surveyed a 150-mile section of coast from Bull Bay, South Carolina, to Sapelo Island, Georgia. We located remains of 18 shell rings on 14 sites in this area, and suspect that four or more remain to be visited. The environmental settings were analyzed and recorded, and tape-and-compass maps of the rings were produced so that intersite variation might be evaluated. Surface samples of sherds, shell, and bone were collected to provide an approximate idea of site content. In the time available we were able to visit only a few early ceramic middens without ring structures, but such sites, usually relatively small, do occur near some rings. The results of earlier test excavations in shell rings by Edwards (1965), Calmes (1968), and Waring and Larson (1968), as well as our survey data, indicate an important role for these sites in the emergence of Southeastern Formative life.

All known shell ring sites are located on estuaries or tidal creeks within the Sea Island section of the Atlantic coastal plain. They occupy high ground immediately adjoining salt marsh or, occasionally, are isolated in high marsh a few hundred feet offshore. The interiors are reasonably level, devoid of shell, and elevated 3 to 13 feet above mean sea level. Interiors of low-lying sites are marshy, while the higher sites are usually heavily forested. The shell rims range from about 130 to 300 feet in outside diameter, 2 to 10 feet in maximum height, and 25 to 70 feet in basal width. The rings are by no means all well preserved, as a number have been affected by the lateral cutting of tidal streams, or historic shell removal, or both. However, in five nearly intact rings the rims closely approach uniform width, level summits, and circular symmetry. Rim heights vary considerably between sites, probably due to length of occupation, but not within sites. Other rings, preserved only as segments, tend to corroborate these observations. Thus Waring was probably justified in emphasizing the monumental size and deliberate building of the ring structures.

It is also interesting to note that rings occur in complexes as well as isolated structures. The largest known ring at Sapelo Island is associated with two smaller rings nearby. The next largest ring (in diameter), at Fig Island on the North Edisto River, is situated in marsh 75 feet from a smaller, eroded, ring segment. Small aprons of shell on each ring suggest that a causeway linked them at the nearest point of approach. At Skull Creek on Hilton Head Island, the rims of two rings are superposed at one point. Because of extensive erosion in the Sea Island area, both isolated rings and ring complexes may have been destroyed during the last 4,000 years, but ring-building was assuredly widespread from the remaining evidence.

The rim stratigraphy is known both from excavation and from eroded faces or borrow pits. Hearths, crushed shell floors, and heavily concentrated organic lenses have been interpreted as evidence of habitation on the rim summits, but these features are not always apparent or well defined. Dwellings,

if once present on shell rims, must have been flimsy and impermanent. The question of perishable structures in the interior space is intriguing, and no conclusive excavation of this area in a shell ring site has been undertaken.

Bone and shell food remains are well preserved, as in most coastal middens. The bulk of all rings is American oyster, obviously a staple resource. Periwinkles, knobbed whelks, and ribbed mussels are always present in lesser amounts, and clams and several other bivalves and univalves are more rare. Excavations have shown that fish remains are extremely numerous, and that certain species, such as black drum, were taken in large numbers. Mammal remains are less common, white-tailed deer, racoon, and opossum being present in all sizable collections. Crab, turtle, and various bird remains are also usually present. Clearly, the estuaries and nearby land habitats were being exploited, and especially their concentrated high-yield resources. However, significant differences in cultural ecology may exist between sites. For example, the Auld shell ring above Charleston contains an abundance of juvenile knobbed whelks.

The survey sherd collections, not finally analyzed, tend to corroborate and extend Waring's and others' observations for the distribution of earliest coastal ceramics. Stallings Island fiber-tempered types are practically exclusive in Georgia shell rings. From the Savannah River to Port Royal Sound, sand-tempered or untempered Horse Island Punctate is more common and is associated with fiber-tempered wares. Calmes (1968) has presented evidence from Hilton Head shell rings for Stallings Island superposed over Horse Island Punctate. On the North Edisto River shell rings, Horse Island pottery is greatly predominant and Stallings Island and Awendaw present in small amounts. Northward, in Charleston County, Awendaw increases in frequency, Horse Island decreases, and Stallings Island is absent. At this point it should be noted that seven radiocarbon dates from four shell rings in South Carolina and one in Georgia fall between 3,900 and 3,100 years ago (Calmes 1968; Williams 1968). As there exist several conflicting lines of evidence for the relative ages of these ceramic types, much more typological analysis, stratigraphic excavation, and dating need to be done.

A homogeneous group of shell, bone, and antler artifacts appears to characterize all the rings where test excavations have been carried out. These include shell disc beads, shell hoes or picks, antler projectile points, bone awls, and distinctive Bilbo-like bone pins, often intricately engraved. Stone artifacts are relatively rare, but Savannah River Stemmed projectile points are present in most shell rings.

FIG ISLAND EXCAVATION

In late July-early August, the Institute began excavating the largest shell ring on the South Carolina coast, known as Fig Island 2. It is located on high marsh adjacent to the North Edisto River estuary. A number of other shell rings and smaller early ceramic middens are known in this area. Fig Island 2 is about 260 feet in diameter and stands 3 to 5 feet above the marsh. The rim contains an estimated 375,000 bushels of shell, and surrounds a half acre flat central area. The circular symmetry of this well-preserved ring is impressive.

None of the analysis of collections has been completed, nor have dates yet been obtained. However, we expect especially fruitful results from analysis of the large invertebrate and vertebrate collections. Sherds recovered from the rim are predominantly Horse Island Punctate, a type which is not presently well described. Small numbers of Stallings Island fiber-tempered sherds are present throughout the midden. A small sample of bone and shell artifacts recovered from the rim includes the common types from early ceramic sites, such as engraved and plain bone pins. One object of particular interest is an elaborately engraved deer antler tine, possibly an atlatl hook.

Although we carried one 125-foot trench from the center of the ring through its rim, the exploration of the interior for evidence of structures was not successful. The interior area is wet just beneath the surface, and is covered by salt water during highest tides, one of which we experienced while trenching at the center.

The final result of the Fig Island project should be a detailed view of the local environment at the time of occupation and the way Fig Islanders were exploiting it. The kinds of architectural evidence we were seeking will probably need to be ascertained from higher and drier shell rings, of which there are, fortunately, several good candidates.

THE COLONIAL FORMATIVE

In his latest publications dealing with the spread of Formative culture in the Americas, Ford (1966, 1969) states unequivocally that the earliest ceramic sites on the Atlantic coast of the Southeast were established by coastal voyagers from Columbia and Ecuador. The making of pottery and sea-oriented subsistence techniques, which permitted a new degree of sedentism, perhaps true village life, were introduced by small groups of sea-borne colonists, traveling northward along the coasts.

The most striking evidence in support of this theory comes from a shell ring on the north coast of Columbia, South America. Puerto Hormiga, excavated by Reichel-Dolmatoff (1965) in 1961 and 1963, is situated in marsh and has a form closely corresponding with Georgia-South Carolina shell rings. It is 280 feet in outside diameter and stands 4 feet above the surrounding marsh. The rim varies from 52 to 75 feet in width at the base and consists largely of clam shell. The interior is clean and level. The earliest ceramics known from Columbia are Puerto Hormiga fiber-tempered and sand-tempered types which in many respects compare with Stallings Island pottery. An assemblage of stone tools, including grinding equipment, occurs at Puerto Hormiga, but not in our coastal shell rings. A series of five radiocarbon dates places the occupation of Puerto Hormiga between 5,000 and 4,500 years ago (Reichel-Dolmatoff 1965).

Clearly, subsistence and settlement techniques, as well as the early ceramic complex, on the Atlantic coast of the Southeast could have been derived from the Puerto Hormiga phase of coastal Columbia. The chronological relationship is credible, but the intervening distance exceeds 2,500 miles of Caribbean Sea, Gulf of Mexico, and Atlantic waters. Ford suggests the voyage or voyages proceeded from the South American coast near the Isthmus, through the Yucatan and Florida straits west and north of Cuba, then northward to the Savannah River. Northbound currents of the Gulf Stream follow this route.

At the present time no shell rings or fiber-tempered ceramics are known on the Central American or Mexican Gulf coasts and the Caribbean Islands. Furthermore, although they are reported to exist, no published descriptions of Columbian shell rings, other than Puerto Hormiga, are available. In this respect Ford's Colonial Formative theory remains to be proven-- intervening archaeological site-units on the proposed route of migration are undiscovered (Rouse 1958).

The appearance of sedentism and concomitant social changes prior to food producing, and the stimuli and consequences of these changes, are little known aspects of emerging Formative life in the Southeast. Our coastal shell rings deserve special attention in approaching these problems.

#

CONCLUSIONS FROM THE EXCAVATION OF TWO TRANSITIONAL-DEPTFORD
SITES ON CUMBERLAND ISLAND, GEORGIA

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University of Florida

During July and August, 1970, supported by a National Science Foundation Grant (GS-3105), the author and four other students excavated two Transitional-Deptford Period shell midden sites on Cumberland Island, Georgia. The purpose of this paper is to serve as a preliminary report on those excavations, outlining tentative conclusions and describing two rather unique features-- a shell and dirt ring and a Deptford house structure.

The first site excavated, the Table Point Site, is located on the northwest tip of Table Point, a portion of the Island which juts out into the tidal marshes on the inland side of the Island. Stafford North, the second site, lies 4.2 miles south of Table Point, also in a live oak hammock bordering tidal marshes. At both sites the environmental situation is similar to that found throughout the Georgia Sea Islands, enabling exploitation of land, ocean, inland waterway, tidal marsh streams, and marsh. Cumberland also possesses a relatively large fresh water lake. The least disturbed of the Sea Islands, Cumberland provides the archaeologist with an extremely informative glimpse of what the aboriginal environment was like, especially in regard to the quantity of fauna available.

Most noticeable at both sites is the absence of large, deep shell middens. Rather, the pattern of midden deposition is one of separate shell piles 0.5 to 1.0 foot in thickness. Excavation suggests that these piles were associated with individual house sites. It seems plausible that the lack of vertical stratigraphy reflects a small population living at the site for relatively short periods of time. By analogy, if small populations are the rule, the large Deptford sites in the vicinity of Savannah (Caldwell and McCann: m.s.) must have been occupied over a long period of time, as is indicated by vertical ceramic change at those sites. Horizontal stratigraphy and comparisons of what little vertical stratigraphy exists, coupled with knowledge of ceramic changes, suggest that the occupation at Table Point lasted, perhaps intermittently, for about 300 years. At Stafford North, the indicated occupation is

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July 1970

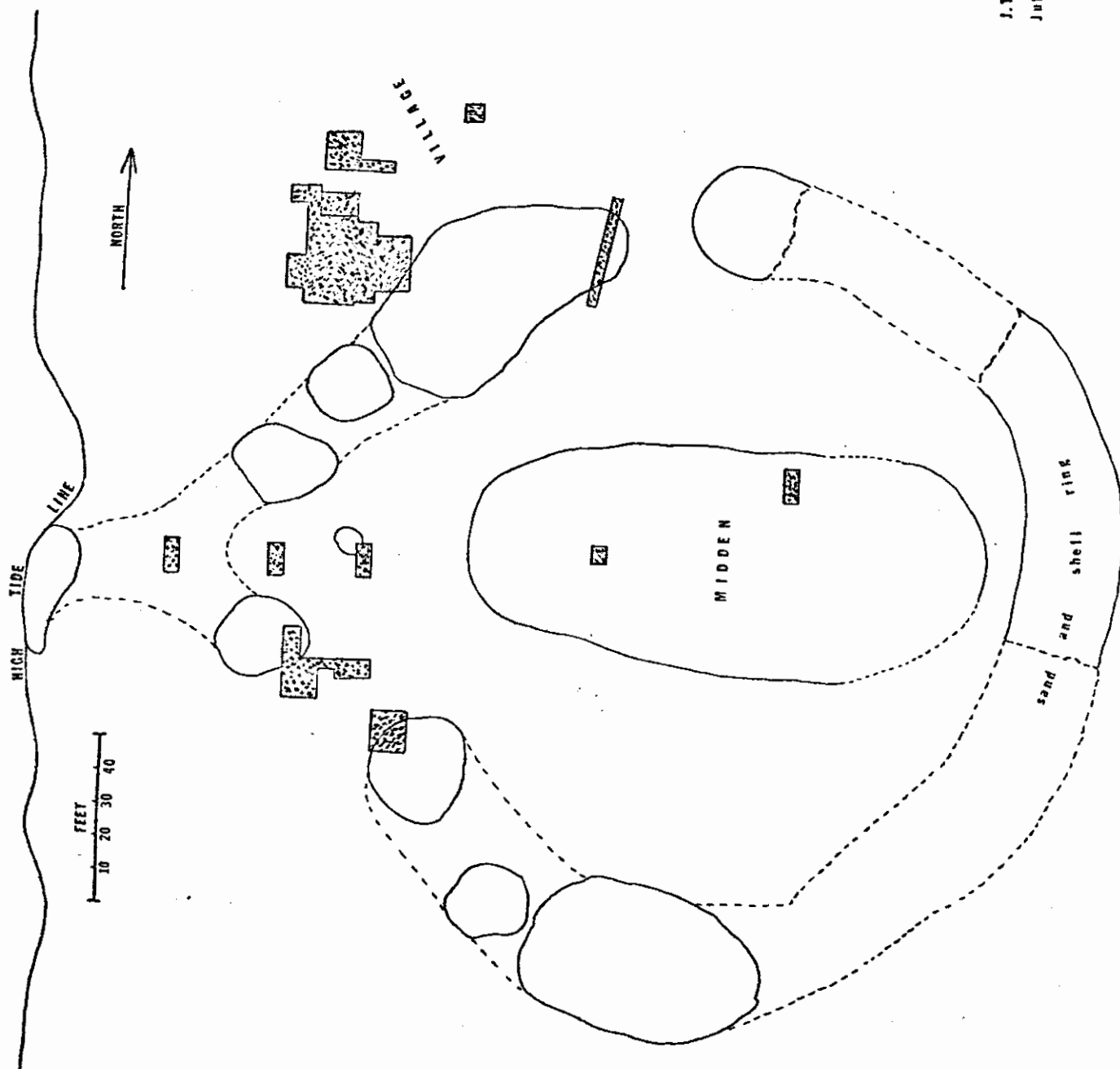


FIGURE 1

Solid lines represent exposed shell, dotted lines are subsurface shell. Shaded areas are excavation units.

shorter, set at 100 years or less. Sheet erosion, especially on those portions of the sites nearest the marshes, has prevented build-up of clearly definable, sterile humus zones. Descriptions of occupational changes at both sites are therefore based on ceramic sequences and horizontal stratigraphy.

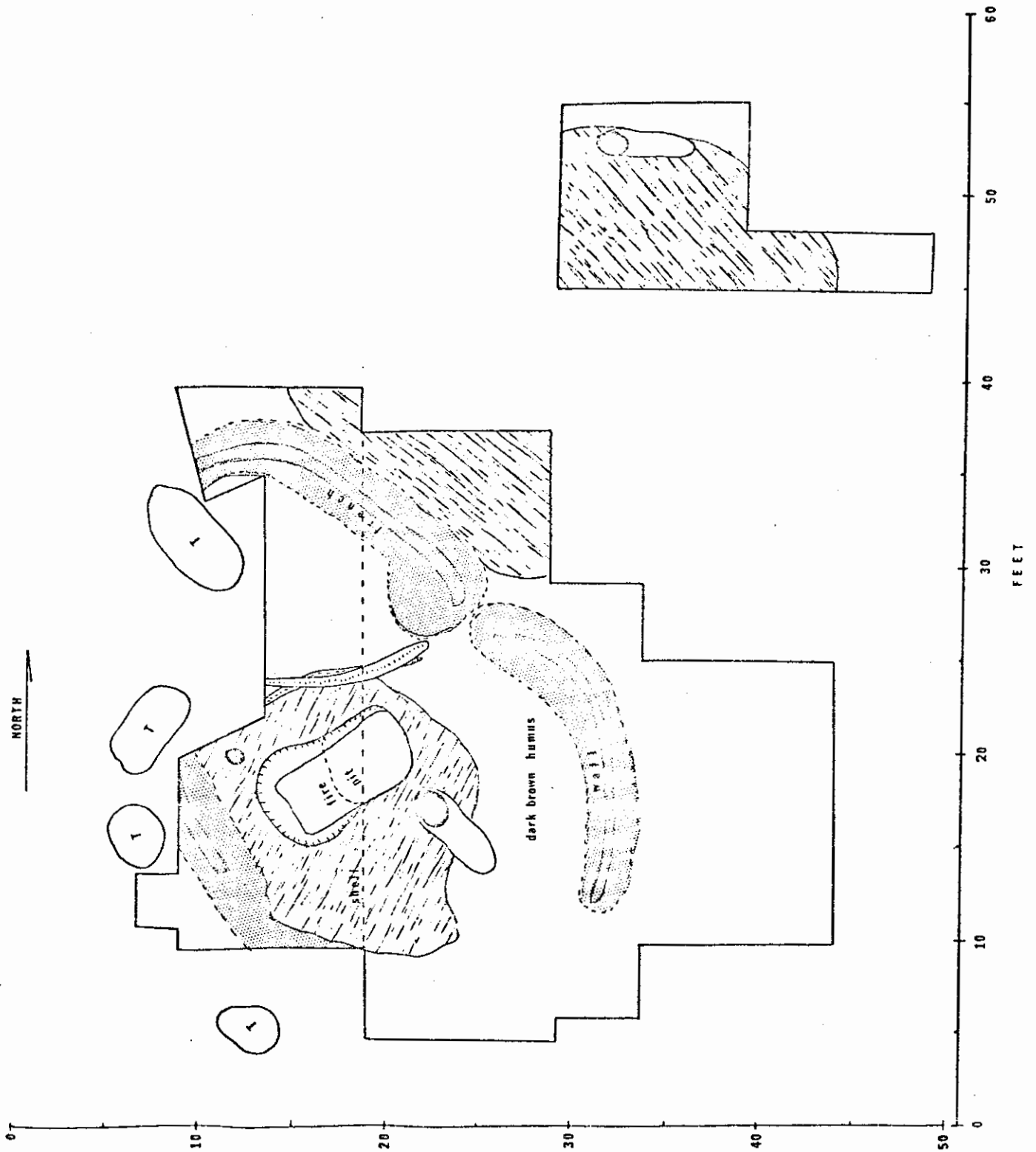
The earliest of three occupations at the Table Point Site was a late Transitional culture which bridged the gap from the Archaic ceramic peoples to the first Woodland pattern peoples-- Deptford. Both the Archaic peoples, makers of fiber-tempered and semi-fiber-tempered pottery (the latter containing large amounts of sand), and the Deptford peoples, makers of grit-tempered (quartz inclusions) check stamped, linear check stamped, simple stamped, and plain pottery, were shell-fish collectors who relied heavily on fishing and hunting for subsistence. Based on information derived from other comparable Southeastern sites, a date of 600 B.C. is suggested for this first occupation (Bullen 1959, 1969: 52-56; Williams 1968:179, 183-185). Fiber-tempered and semi-fiber-tempered sherds from the site, the latter having been documented as continuing well into the Transitional Period (Bullen 1959, 1969: 42-44), displayed check stamping and simple stamping, indicating contact with early Deptford potters. This late Transitional occupation at the site was represented in the old humus underlying and beside subsequent occupations, and in the midden fill scraped up by later peoples and deposited in the ring construction.

As the practice of using plant fibers as tempering material disappears, the Deptford ceramics become dominant; however, there is no evidence to indicate any change in settlement pattern or subsistence. The introduction of Deptford pottery may result from diffusion of ceramic technology rather than a population intrusion.

Tentatively dated at 500 B.C., the main feature associated with the Deptford occupation is a house structure constructed of vertical posts set side by side in a trench and anchored with shell and dirt. Figure 1 shows the relation of the house excavation to the excavations in the later shell ring. Figures 2 and 3 show the extent of excavations on the house (which were severely hindered by live oak trees) and the reconstructed floor plan of the house. About 80 percent of the pottery associated with the house is grit-tempered Deptford types. The remaining 20 percent is divided among St. Johns Plain sherds, contorted paste, sherd-tempered plain sherds, and sand-tempered plain sherds with several cord-marked and semi-fiber-tempered sherds also present. One sherd-tempered sherd exhibited corncob-like markings.

The wall trench has a width at the top of 3.0 to 3.8 feet and narrows at the bottom to about 1.0 foot with a depth averaging 1.2 feet. Often circular depressions, 0.5 to 0.8 feet in diameter, extend 0.1 to 0.3 foot below the trench bottom, probably where individual posts were set in place. The shell and dirt placed around the posts must have settled in time and in some places humus collected in this depression on the outside portion of the trench. Length of the oval house along its major axis is 32 feet, and the width is 22 feet. Construction details and a description are as follows:

The trench was dug with the interior wall steeper than the exterior side. Occupational debris (shell, sherds, food bones) which had collected on the dirt floor of the house was swept to the sides against the vertical wall posts, creating a characteristic rise or hump on the interior side of the trench which was rich in artifacts. Two openings were left in the wall, a



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FIGURE 2

Excavated house features at 9 Cam 12. "T" represents live oak trees.

large one in the front to allow smoke from the fire pit to escape, and an entrance way in the east side to allow passage into the house's two partitioned rooms. No charcoal or humic stains (from decayed wood) were present in the ditch fill, and in several places the shell fill appeared to be vertically bedded, both suggesting that at some point in time the wall posts were pulled out, allowing shell to slide down into the post hole.

Inside the house a partition, placed in a shallow slot trench, separated the "kitchen" and fire pit from the hypothesized sleeping area. This partition trench, originally filled with shell in the same manner as the wall trench, was redug with a dark brown humus used as the fill. The fire pit seems to have been dug round at first, but later, through time, was extended to the west, giving it a rectangular shape. This extension brought the pit closer to the original partition and might have been the reason for the partition being rebuilt farther from the fire pit.

The fire pit, originally about 4.5 feet in diameter, was extended to a length of 9.0 feet. Its depth was 2.2 feet. The wall closest to the partition was steeper than the opposite side, suggesting that the pit had been dug from the south (less steep) side, perhaps after the partition was built.

Alternating lenses of shell and ash (nearly all oyster, but with some snail, clams, mussel, and conch) in the fire pit show roasting of small quantities of shellfish at a time-- perhaps 2 or 3 dozen. Many pieces of food bone were recovered from the pit and in the shell refuse scattered around the pit. Adjacent to the pit on the west side was a small posthole which might have been a spit or similar device for cooking. The largest amounts of food bone were on the west and southwest sides of the fire pit. Bone identification is not complete as of this writing, but includes deer, raccoon, fish, drum fish, porpoise, sea turtle, and land turtles, with deer comprising the majority of bone. Shell and soil samples for radiocarbon dating and flora analysis were collected from the fire pit.

A central posthole in the kitchen area, dug into one end of a long, shallow depression, probably helped to support a roof over the house. The wall posts were sufficient to support a roof over the sleeping area. The substantial nature of the house suggests either a sedentary population or perhaps a winter house for a population who moved inland in the summer and returned annually in the winter to Cumberland. This raises the question: What is the relation of the inland Deptford sites to those on the coast? Do they represent seasonal movement?

Tangent to the house was a circular area of shell refuse, 25 feet in diameter and 0.6 foot thick, with at least one posthole along its circumference. As in the house, this post was set in the deep end of a shallow, sloping trench (7.1 feet long and 1.5 feet wide). Probably this slope allowed the post to be butted against the posthole's edge and aided in raising the log which probably was 1.2 feet in diameter, as evidenced by the humic stain. This shell area was rich in artifacts, including several large pieces of deer antler and nearly a third of a Deptford Simple Stamped cylindrical pot. This area might have been covered, providing a chickee-like work place or outside sleeping area.

The third occupational period, tentatively placed at 400 B.C., is characterized by an increase in sand- and sherd-tempered cord marked pottery (13%), an increase in the contorted paste, sherd-tempered plain pottery (8.0%),

and a decrease in Deptford ceramics (from 80% to less than 50%). Brushed sherds of three different paste types-- St. Johns, grit-tempered, and sand-tempered-- are also present. These ceramic changes, especially the increase in cord-marked pottery, and the association with this occupation of the shell and dirt ring, suggest diffusion from inland Adena influenced peoples. Diffusing with cord-marked pottery and the idea of rings for ceremonial or defensive use may have been the knowledge of horticulture. Analysis of soil samples from the site may add information to this hypothesis.

Several of the contorted paste, sherd-tempered plain sherds, present during the Deptford occupation and increasing in frequency during the period of ring construction, exhibit a red slip on the exterior surface. One sand-tempered, red-slipped sherd is semi-circular in shape and appears to be either a pot lug or a piece of an effigy pot. The contorted paste sherds have a buff-orange surface with gray to orange interiors, the latter infrequent. Many of the sherds are indistinguishable from Lower Mississippi Valley types in the type collections of the Florida State Museum, including Thomas Plain, Tchefuncte Plain, and Larto Red Filmed (Thorne and Broyles 1968). Seemingly, trade and cultural contact were occurring at this time between widely separated cultures.

The most enigmatic feature at the site is the ring. Cultivation during the 18th century has spread out some of the shell, and collection of the shell during the 19th and 20th centuries for road paving on the Island has been extensive in some areas. Fortunately, the back half of the ring lies on higher ground back from the edge of the marsh where erosion has not exposed it as a potential shell borrow. Here, a rich forest humus has developed over portions of the ring, both protecting it and making it necessary to verify unexposed sections by probing with metal rods. Figure 1 shows the ring's outline. Wherever the ring was cut into below the present ground surface, its sides were remarkably well-defined. Current thickness of excavated portions of the ring range from 0.7 to 2.0 feet, though the original height may have been greater.

Two gaps, 30 and 20 feet in width, are evident in the ring which is 220 feet across; the shell and dirt forming the border of the ring varies from 20 to 25 feet in width. Interestingly, Webb and Snow (1945: 31) describe the median Adena sacred circle (sample of 74) as 212 feet in diameter with a gap of 30 feet or more in width. A borrow ditch is not evident on either the interior or exterior of the ditch. Rather, the fill seems to consist of re-deposited shell midden mixed with humus which could have been scraped up from anywhere on the site. The manner of deposition of the shell and dirt fill show clearly that the ring is not in-place deposited shell midden. Also, the fill contains pottery from all the periods represented at the site, indicating a mixture of midden materials in the the fill. The old humus under the ring contained cord-marked and Deptford pottery, placing the ring within the site's third occupation.

Within the southwest gap, excavations established an occupation floor at the same level as the base of the ring fill where numerous broken sherds, food bones, and crushed shells indicated a large amount of traffic. A humus layer nearly 0.5 foot in thickness was built up in the gap over this floor, suggesting continual and intense occupation. This occupational debris was not present 25 feet away within the confines of the ring, but was restricted to the gap.

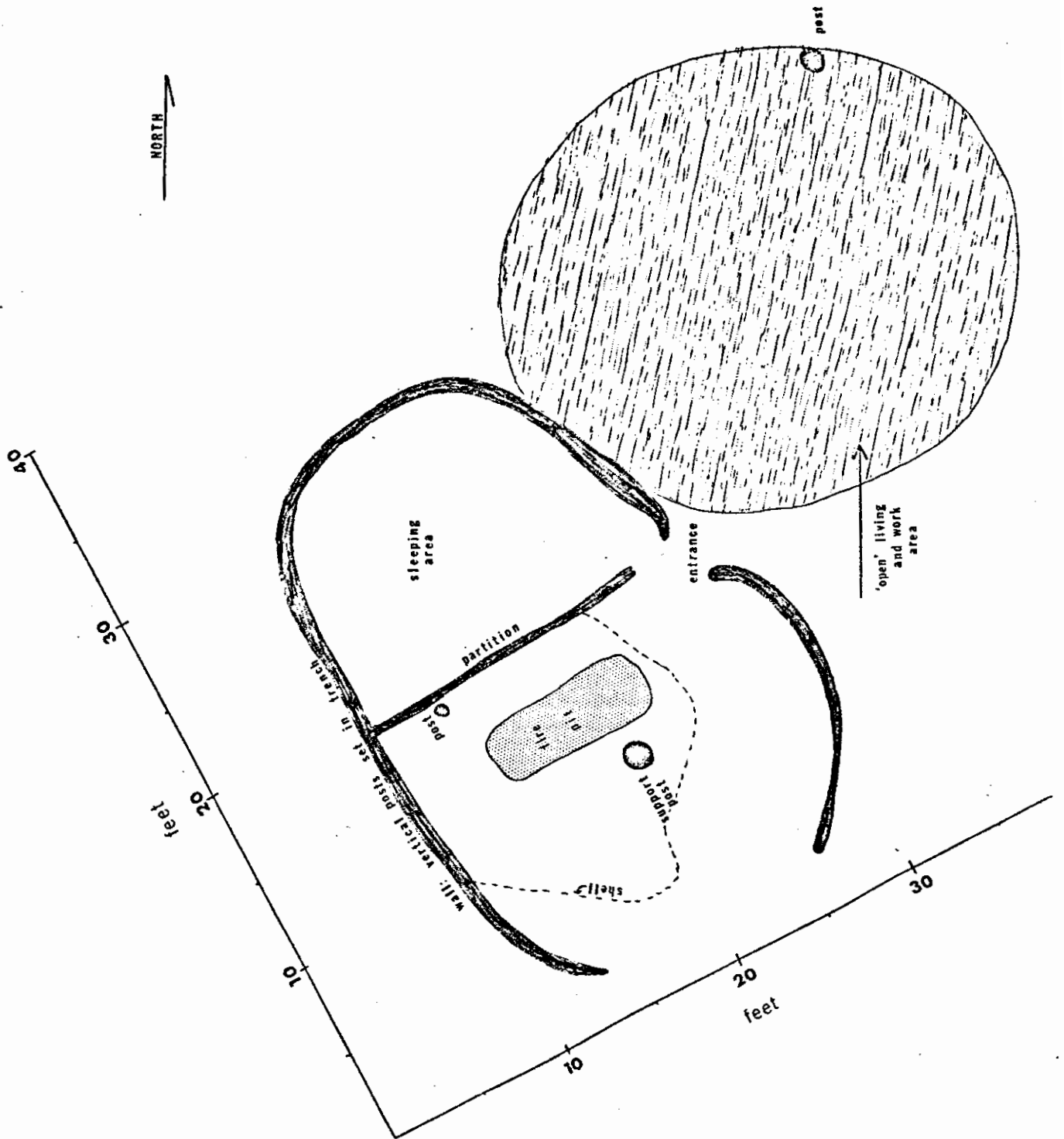


FIGURE 3

Reconstructed house pattern at 9 Cam 12.

Extending down from this midden zone was a large posthole, 2.0 feet in diameter and set in a long depression such as the one described previously for the house. Next to the posthole, which was located adjacent to the shell and dirt fill, was a circular burnt area with charcoal and ash, probably a hearth which was used only once or sparingly. The combination of trampled midden refuse, posthole, and hearth suggests either habitation or ceremonial activity in the gap. This humic zone did not extend under the ring fill.

To further complicate an already muddled situation, the interior of the ring contains a long, narrow shell midden, 150 feet in length and 60 feet in width (Fig. 1). Two tests were made into this midden, but neither revealed any evidence of structures or even a recognizable occupation floor. Deptford cord-marked, sand-tempered plain and brushed, contorted paste sherd-tempered plain, and St. Johns sherds with Deptford decoration were all recovered and indicated an occupation coeval with the ring's construction. The old humus under the test farthest east also contained a large amount of artifacts, all of the same time span as those named above. It is possible that the midden was horizontally deposited to the east. Thus, the second test old humus is contemporary with the first test midden shell. This humus was subsequently covered with shell as the midden moved eastward.

The presence of this midden inside the ring suggests that the ring's function was for defense, perhaps to anchor posts in a palisade. Or, the midden may not be exactly contemporary with the ring, and the ring may have ceremonial significance. When the gap is taken into account, however, neither of these theories seems adequate.

The occupation of the Stafford North Site is restricted to the third Table Point occupational stage, i.e., a Deptford culture exhibiting increased cultural contact. At the Stafford North Site, a living floor lying in an oval depression (0.3 to 0.5 foot deep) was partially uncovered. Associated with this shell-filled depression were postmolds and a bell-shaped pit. The crushed shell within the living floor contained large amounts of food bone and about a quarter of a Deptford Check Stamped vessel, similar in shape to the pot recovered from the Table Point Site. This oval midden represents either an open-constructed house or work area. The depression itself may be natural. An old humus layer was found below the midden, and there are similar depressions visible along the marsh a result of water runoff.

A lack of earlier occupations at the Stafford North Site suggests a population expansion at this point in the chronological range of Deptford. This settling of new sites could be due to the introduction of horticulture.

Surveys of other sites on Cumberland Island show that from the third occupation described above to the proto-historic level, there is only minor occupation of the Island. Only a few sherds of Wilmington, Savannah, or Swift Creek types are present. Perhaps growing regionalism during the Formative Period leaves the Island as a buffer zone between the St. Johns cultures to the south, the Wilmington to the north, and as yet unknown Woodland or Southern Appalachian peoples to the west.

Excavation of these two sites on Cumberland Island has revealed three successive and, more than likely, continuous occupations which are tentatively dated as ranging from 600 B.C. to 400 B.C. The first is characterized by the merging of Deptford peoples or a Deptford pottery style with ceramic Archaic

peoples. From this base Deptford emerges as a recognizable culture form, though one little changed from the Archaic culture. Later, a period of increased culture contact occurs, introducing new ideas and perhaps horticulture to the Deptford peoples. Evidence from the Cumberland Island sites indicates that this contact was strong early in the Deptford period. Comparative materials and data from other Georgia sites need to be examined to further define this three-stage sequence.

Adena influence on the Deptford cultures has been suggested previously on the basis of ceramic similarities (Griffin 1945: 239-240). Bullen has drawn attention to Early Transitional ties between the St. Johns cultures of the Florida Atlantic coast and the Lower Mississippi Valley cultures at a date of about 1000 B.C. (Bullen 1969; Atkins and MacMahan 1967). At a somewhat later date, Gagliano (1967: 20) has suggested Tchefuncte-Deptford contact in the Pontchartrain area of Louisiana. That widespread culture contact and diffusion was occurring during the first millenium B.C. throughout the Eastern United States seems certain. The extent of this contact and its influence on the Deptford peoples awaits further interpretive research. When the radiocarbon dating and ethnobotanical analysis of the Cumberland materials is completed, the needed comparative information on chronological relationships and subsistence may be available.

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THE TRANSITIONAL PERIOD OF SOUTHERN SOUTHEASTERN UNITED STATES
AS VIEWED FROM FLORIDA, OR THE ROOTS OF THE GULF TRADITION

Ripley P. Bullen

Florida State Museum

In 1959, the Newsletter of the Southeastern Archaeological Conference (Vol. 6, pp. 43-53) included an article by me entitled "The Transitional Period of Florida." At that time I defined it as "that period of time which occurred between the close of the Archaic and the beginning of the Woodland period" or "from approximately 1000 B.C. to 500 B.C." I further stated that "The Transitional period in Florida is diagnostically marked by the presence of semi-fiber-tempered pottery, usually simple stamped, sometimes incised; St. Johns Incised, chalky pottery bearing Orange Incised designs; Pasco Incised, limestone-tempered pottery with Orange Incised designs; a similar sand-tempered incised having a Deptford-like paste; Perico Incised; and Perico Linear Punctated. Imprints of woven matting on the flat bottoms of St. Johns, rarely Orange Plain, vessels are only found during the Transitional" (Bullen 1959). Sherds of steatite vessels, commonly found in Transitional period deposits, represent a linked or holdover trait from the previous fiber-tempered or Orange period in which they have been dated (Sample M-1014) to 1380 ± 200 B.C. at the Summer Haven Site (Bullen and Bullen 1961).

I then conceived of the Florida Transitional period as a dynamic one whose origins began during the final stage of the Orange period, as a period having extra territorial connections with Georgia and Alabama to the north

and Louisiana to the west, as a period during which there was a great deal of movement about by people with an expanding interaction sphere and the settlement of new regions, and one which ended with five or six centers of ceramic development in Florida. The most important of these, in respect to the south-east, probably is the Deptford period of northern Florida and Georgia which closes the Transitional period.

At the time these formulations were originally presented, they were supported by a minimum amount of documentation. Recently, a considerable amount of new data has been forthcoming to substantiate these postulations. I am referring chiefly to the Zabski Site on Cape Canaveral reported by Atkins and MacMahan in the Florida Anthropologist (Vol. 20, Nos. 3-4, pp. 133-145), the Sunday Bluff Site published as Contributions No. 15 by the Florida State Museum, and the Colby Site reported by Cumbaa and Gouchnour in Vol. 23, No. 2, of the Florida Anthropologist. These reports document ceramic developments and specific ceramic associations previously derived from minimal clues. There has also been a substantial increase in data from other regions: Georgia, with the publication of the Waring Papers by the Peabody Museum of Harvard University (Williams 1968), additional work at Poverty Point and other sites in Louisiana, work in Alabama, Mississippi, and South Carolina.

As far as I can see, the 1959 postulations have withstood the test of new data. The implications of this are that culture grows by the addition of small increments from various sources-- a combination of independent development, diffusion of discrete traits or parts of traits, and local adaptation. These attributes are put together in different combinations by different groups. The emphasis shifts with geography and, of course, time. Many of these developments occurred during the Transitional period. The following traces some of them.

Our story has to start in the Formative where the roots of the Transitional are to be found. In Florida, we have the introduction or independent development of fiber-tempered pottery, sometime between 2000 and 1750 B.C. to or by Archaic peoples who had been exploiting the freshwater shellfish of the middle St. Johns River Valley and the shellfish producing waters of the Gulf for an extremely long time. The following Orange period has been divided into four sub-periods based on differences in ceramic shapes and decorations (Bullen 1954, 1959). During Orange 3 times, around 1350-1400 B.C., the first definite evidence of "interstate" trade appears with the importation of steatite bowls from the north. Incised designs, but perhaps not the vessels themselves, typical of Orange 4 but also present in the Orange 3 sub-period, are reported for the Stallings Island Site in Georgia (Claflin 1931: Pl. 15). The opposite-- typical Stallings Island punctated sherds found in Florida-- has been reported for three widely separated places in Florida (Goggin 1952: 75) but only one sherd was noted in each place. By 1200 B.C., St. Johns Incised vessels, Orange Plain with an Adena heel, and steatite containers were transported up and down the Chattahoochee-Appalachicola River (Bullen 1958).

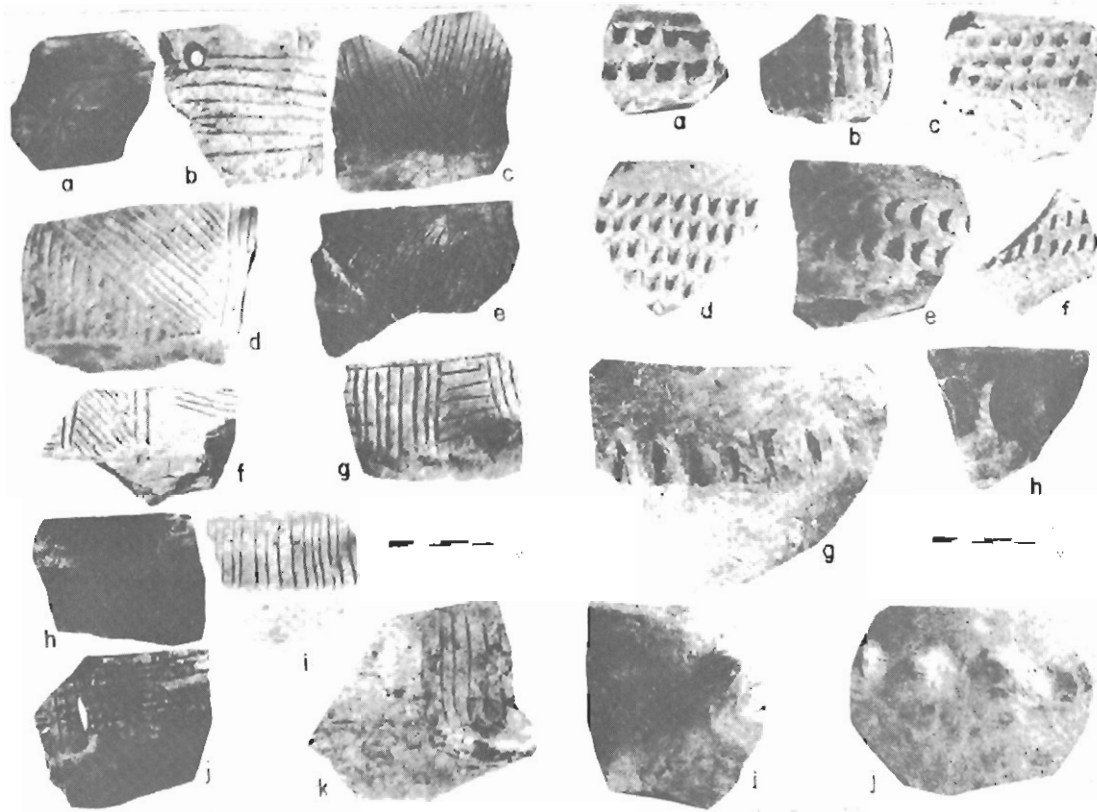
By 1000 B.C., the manufacture of fiber-tempered pottery had ceased but before that happened three new ceramic series (Bullen 1969) were developed: 1) St. Johns, a chalky ware usually devoid of intentionally added temper but sometimes containing crushed sherds; 2) Pasco or Perico, tempered with crushed limestone; and 3) a semi-fiber-tempered ware containing sand and referred to in this paper as Norwood (Phelps 1965). Vessels of the first two pastes were made with flat-bottoms in the Orange style and decorated with

simplified straight line designs as found in the Orange 4 sub-period. The sand-tempering trait of the Norwood series was probably introduced from Georgia or west Florida, but the other pastes represent local Floridian innovations. Clear evidence for the local development of St. Johns ceramics before the close of the fiber-tempered period as shown at the Colby Site is presented in Table 1 (Bullen 1969: 39).

TABLE 1
VERTICAL DISTRIBUTION OF SHERDS, COLBY SITE

Typology	Levels	Test 1										Totals
		1	2	3	4	5	6	7	8	9	10	
Sand-tempered series												
cord-marked		4	4		1							9
cob-marked			1									1
miscellaneous punctated		1	1									2
Deptford Check Stamped		2										2
Deptford Linear Check Stamped												
Deptford Simple Stamped		1		1								2
"Deptford plain"		41	120	24	5	1						191
Limestone-tempered series												
Perico Punctated B				3								3
Pasco Incised				2								2
Pasco Plain		1	3	5	4							13
St. Johns series												
Check Stamped		12	20									32
Simple Stamped				1								1
Incised			12	15	9	2					1	39
Plain		27	74	84	76	20	6	1				288
with fiber tempering				1	3	1	4	1	2	2	1	15
Norwood series												
punctated (Perico Punct. B)											1	1
Incised			2	2	1							5
Plain			3	7	1						1	12
Orange series												
Incised				2	10	24	13	20	4	4	5	82
Plain		1	2	3	28	37	26	42	15	8	10	172
Totals		90	242	150	138	85	49	64	21	14	19	872

It seems likely that shortly before this time, i.e. about 1200 B.C. perhaps earlier, fiber-tempered pottery was carried into West Florida (if it had not been there before) and along the Gulf Coastal Plain to Louisiana,



FIGURES 1 and 2- St. Johns Incised, Pinched, Indented, and Side Lugged sherds.

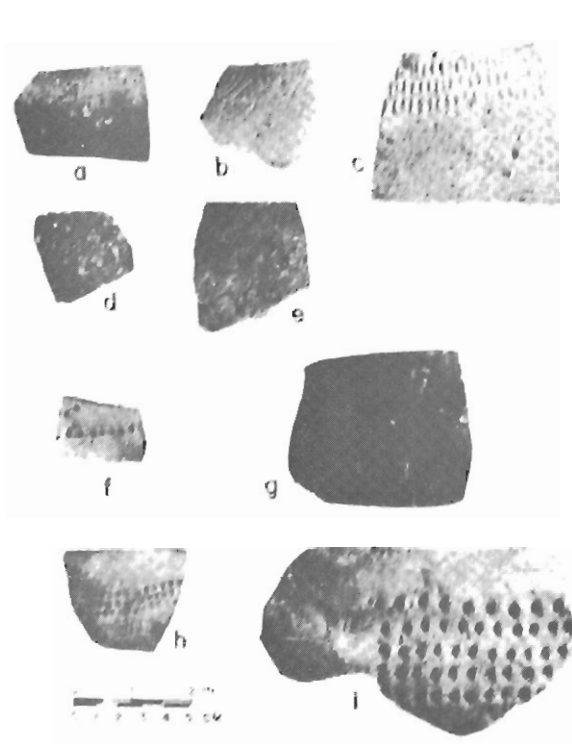


FIGURE 3- Limestone tempered (a-e) and St. Johns Triangular Punctated sherds.

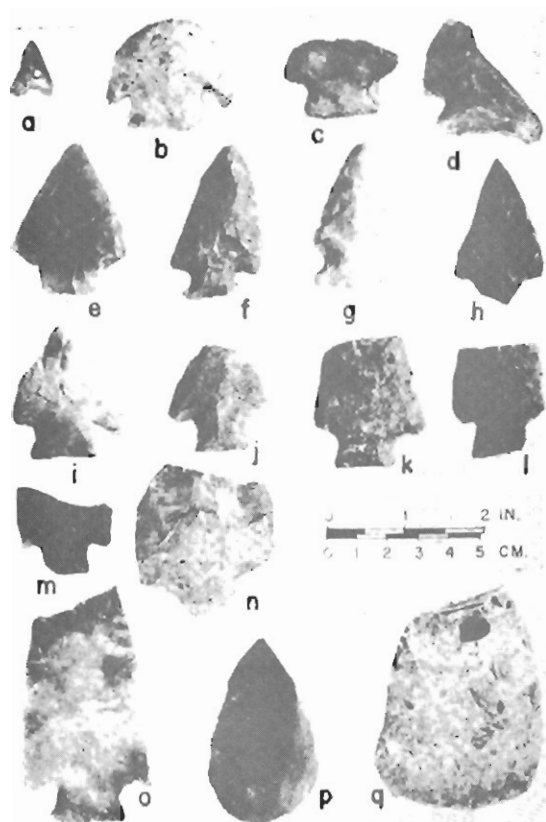


FIGURE 4- Perforated shark's tooth and stone tools.

while Poverty Point clay balls were traded into Florida where they have been found as far east as Tick Island. Jasper beads, another Poverty Point trait, come from sites near St. Augustine (Goggin 1952: 119-120). One radiocarbon date for Bryant's Landing Shell Midden in Alabama (Wimberly 1960: 211) suggests the presence there at 1540 B.C. of plain fiber-tempered pottery associated with Poverty Point clay objects. This zone underlaid one containing Bayou La Batre pottery. Dugout canoes are documented to 1000 B.C. (Bullen and Brooks 1967). For some reason the traders or migrants to the west carried only undecorated vessels-- at least decorated sherds have not been found-- although Orange Incised designs are found on the flat rims of steatite vessels at Poverty Point. Similarly decorated steatite vessel rim sherds are illustrated by Rouse (1951: 223, Pl. 3, M-N) for South Indian Field in extreme eastern Florida.

In the Florida State Museums research collections are 32 fiber-tempered sherds (cat. no. 103301) from Poverty Point. The amount of fiber tempering, as evidenced by molds, varies from a lot to a little. In most instances the quantity by peninsular Florida and eastern Georgia (Stallings Island) standards is not great. One sherd is chalky, like very early St. Johns Plain, several have a "soapy" feel like Tchefuncte Plain; but most have a fine, sandy feel. Examination with a 10-power hand glass fails to disclose any intentionally added sand or grit temper. Only very rarely is a sizeable quartz grain present. Much more frequent are red lumps believed to be crushed sherds. The sandy feel is caused by a large amount of tiny quartz "bits" which must have been natural inclusions in the clay. Sometimes the paste is "lumpy" like that of Tchefuncte Plain.

Rim sherds exhibit simple rounded lips. Some are from large mouthed vessels with straight sides which have parallel sides or taper upwards from 10 to 6 mm. in thickness. One incurving rim varies from 7 to 3 mm. in thickness. Most sherds approach a thickness of 1 cm. Two flat basal sherds, both with unmarked bottoms, are present; one is 1.5 cm., the other .5 cm. thick. Coiling breaks are not present, but evidence of hand modeling is to be found on several rim sherds. These sherds, except for the fibrous inclusions, closely resemble those of the Tchefuncte series. Their inclusion of extremely fine quartz grains sets them off from the Orange series, but I feel they more closely resemble fiber-tempered pottery from Florida than that from Stallings Island in Georgia. Certainly the straight-sided flat bottomed containers resemble Orange Plain or undecorated St. Johns Incised vessels. The inclusion of brown lumps-- crushed sherds-- is another similarity with early St. Johns ceramics.

The above description, except for the lack of decoration, would best fit the Florida chronological scheme around 1000 B.C. when ceramics were changing from Orange to St. Johns paste but straight-sided flat-bottomed containers were still the vogue. However, I am not familiar with other fiber-tempered pottery from around the mouth of the Mississippi which may well suggest an earlier time period.

At or immediately after 1000 B.C., St. Johns Incised and Plain pottery covered Florida from the Chattahoochee River to Miami and left an impression on Tchefuncte Plain and Incised vessels. Indeed, radiocarbon dates suggest that early St. Johns ceramics-- or knowledge of it-- may have reached Louisiana before the crystallization of Tchefuncte culture as recorded at the Tchefuncte Site. Very likely proto-Tchefuncte sites, other than Poverty

Point, will be found. St. Johns and Tchefuncte pastes are very similar. Some early St. Johns vessels show a few casts of fibrous materials as do some examples of Tchefuncte Incised (Ford and Quimby 1945: 58). Tchefuncte Incised designs (*ibid*: Pl. 3, a-j) are simple, like those of Orange 4 times. The beaker form with outward slanting walls and a flat base resembles the usual St. Johns Incised container except for size. However, Tchefuncte punctated and pinched sherds are reminiscent of Georgian fiber-tempered ceramics. Probably, influences from both Georgia and Florida fused with others from Mexico to form the Tchefuncte culture.

Via this mechanism, Orange period decoration was passed on to Alexander Incised and other pottery types. Ford (1966: 794), in this connection, mentions also the Fourche-Maline ceramics of eastern Oklahoma (Griffin 1952: Fig. 131, C-D, I-J). I might suggest that the illustrations of Goose Creek Incised decoration, used by Willey (1966: 334-335) in his Introduction to American Archaeology, are extraordinarily close to those found in Florida on Orange Incised sherds while the paste, in the picture, looks like that of St. Johns Incised. The designs, including the use of ticks, are closer to Orange Incised decoration than they are to those of Coles Creek with which they are sometimes compared. If this decoration cannot be traced back to the Orange period of Florida, it must represent an independent invention in decorative motifs.

The paste (Suhm and Krieger 1945: 378, Pl. 72) of Goose Creek Incised vessels sometimes contains crushed sherds. A neglected pottery type of the St. Johns River Valley is Tomoka Plain (Griffin and Smith 1949: 349; Goggin 1952: 101), a soft St. Johns paste containing fragments of sherds. Originally thought to be late in time, we now know that this paste concentrates in the Florida Transitional and the early part of the St. Johns I period (FSM records). Frequently used in the manufacture of St. Johns Incised vessels and found along the Gulf coast as well as in the St. Johns River Valley, it, together with the decorative features, forms a band across the Gulf Coastal Plain.

I have discussed ceramic events of the Florida Transitional period and their relationships to the Gulf Coastal Plain in some detail in a recent publication (Bullen 1969) and do not propose to go into much detail here. This is the first period exhibiting major extraterritorial communication. The single component Zabski Site-- dated 970 B.C. (Atkins and MacMahan 1967)-- may be considered the type site for Florida. It contained St. Johns Incised, Pasco and Perico Incised and Punctated-- soft paste pottery bearing Tchefuncte and Stallings Island types of decoration-- but no fiber-tempered sherds. Figures 1 through 4 illustrate typical sherds and stone tools.

This period is also well represented at Sunday Bluff (Bullen 1969) beside a small stream flowing into the St. Johns River, at the multicomponent Bluffton and Tick Island sites, at the Johns Island and Battery Point sites on the Gulf Coast of the peninsula (Bullen and Bullen 1950, 1953), at the Ft. Center Site west of Lake Okeechobee (W.H. Sears, personal communication), and at the base of middens in the Hollywood-Hialeah region a little north of Miami. A shell celt immediately below Norwood Plain sherds at the Peace Camp Site near Hollywood has the radiocarbon dated at 1000 B.C. (W. Williams, personal communication, Sample RL-77). It is definitely a period of geographical expansion and of the movement of people and of ideas.

The importation of steatite vessels increased. Tammany Pinched decoration and other Tchefuncte ceramic traits are found at the Zabski Site on Merritt Island and at Tick Island, Bluffton, and other large sites on the St. Johns River. Tchefuncte influences or connections have also been suggested for La Venta punctated designs found near Vera Cruz, Mexico (Griffin 1966: 122). If correct, this would indicate an interaction area extending from that city all the way to Cape Canaveral, recently renamed Cape Kennedy!

Limestone-tempered ceramics were developed at the beginning of the Florida Transitional period along the Gulf coast of Florida north of Tampa Bay. Perico Linear Punctate of that area seem to reflect in its technique Tchefuncte influences. Shortly later, simple-stamped vessels, lacking any suggestion of tetrapods, were introduced in both ends of the Gulf Coastal Plain. In peninsular Florida, this simple stamping shortly took the form of "Cross-Stamped" (Phelps 1966), with wide and deep lands and grooves and was unquestionably introduced from Georgia or northwest Florida.

At about this time, at least before 500 B.C., Tchefuncte or Tchula people diffused rocker-stamped tetrapodal vessels eastward along the coastal plain. They have been found, both zoned and unzoned, as far south as Tarpon Springs (Bullen, Partridge, and Harris 1970). Somewhat simultaneously, linear- and check-stamping were developed in Georgia. Deptford potters rejected rocker stamping but accepted the tetrapod in their development of Deptford period pottery which in a short time covered much of the Gulf Coastal Plain and north and northeast Florida. This consolidation probably coincided with the adoption of a stable form of horticulture.

After the full development of the Deptford period, culture dynamics slowed down for a while and Indians in Florida-- as well as their cousins to the west and north-- enjoyed the blessings of agriculture, village life, and burial mound ceremonialism. Apparently, the latter had been around, at least in an incipient form, for a long time to judge from the groupings of bundle burials and rows of postholes found at Tick Island in apparently pre-ceramic deposits with four radiocarbon dates before 3000 B.C. (Bullen 1962: Samples M-1264, 1265, 1268, 1270, letters of June 10, 1963, and March 2, 1964, from James B. Griffin and Roscoe Wilmeth).

As outlined above, it is believed that a significant portion of the cultural developments of Florida Indians during the Late Preceramic Archaic, Orange, and Transitional periods were passed on to influence many of the succeeding cultural developments of southeastern United States. For example, Carrabelle Incised, Mazique Incised, and Barton Incised can all be traced back to Orange Incised. The same statement can be made of the proto-historic Florida type Ancilla Incised.

The resultant picture in Florida, after the close of the Florida Transitional period, differs in certain respects from that of the rest of the Gulf Coastal Plain. Deptford culture with sand-tempered pottery clearly held sway over the northern part of the peninsula and west Florida, and was followed later by the Weeden Island and Ft. Walton-Safety Harbor cultures. In the east, large burial mounds were built (Bullen, Bullen, and Bryant 1967), but chalky pottery-- first plain or red-painted, later check-stamped-- and the shell midden-village way of life, supplemented by horticulture, continued until the coming of the Spanish. This probably reflects lack of good agricultural land in that area. People were undoubtedly lineal descendants of those living there during the Orange period.

On the Gulf coast north of Tampa Bay, the manufacture of limestone-tempered vessels continued until Mississippian times, and Weeden Island period pottery may be sand- or limestone-tempered or made of temperless St. Johns paste. Around Lake Okeechobee, the distinctive Belle Glade Plain pottery was developed and made without variation from before the time of Christ until the disappearance of the aborigines. But this drabness in ceramics was overcome by extensive ceremonial centers with mounds, circles, and roadways. Further to the south in the Glades area, which is ringed by shell middens, hard sand-tempered pottery was developed with distinctive incised decoration unique in the southeast. To a surprising extent, pottery decoration, and shell tool types, may be traced back to the Orange period. Shell celts and gouges were present in Florida a long time before pottery.

Similarly, other areas in the southeast also have local variants of pan-Southeastern cultures. Probably most of them developed, in one way or another, from the Transitional Period.

I believe, for example, that it is proper to say the Deptford culture or Deptford pottery types were developed in Georgia, but we must remember that the Deptford paste goes back to Refuge Plain, the check-stamping is a development based on earlier simple or cross-simple stamping, the tetrapods diffused from Louisiana, and worked or notched lips were present on Thom's Creek, as well as Stallings, ceramics. I suspect that other Deptford traits-- such as horticulture and burial ceremonialism-- have a similar complicated history. What is unique about Deptford-- or any other southeastern culture-- is the way they combine ideas and artifacts, their particular combination of traits.

#

PALMETTO TEMPERED POTTERY

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and

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ABSTRACT

The distribution and significance of "fiber-tempered" pottery is a cultural phenomenon not yet fully understood. However, as evidence accumulates, it appears that some sort of vegetational tempering was very widespread on an early pottery horizon. It is suggested that the differences in materials used is nonsignificant culturally, relating instead to natural availability. As an example, it is noted that the so-called "fiber-tempered" pottery of the Atlantic and Gulf coastal plains and Lower Mississippi Valley equates with the original distribution of the palmetto; and laboratory tests show that palmetto fibers

produce a pattern of vesicles identical to that observed in aboriginal pottery from these areas.

BACKGROUND

Holmes, in 1903, was the first to take note of fiber-tempered pottery, and to suggest that palmetto fiber may have been the tempering agent used:

Another, and most noteworthy variety, is characterized by the unusual appearance of the paste, which has been tempered with a large percentage of fibrous matter, probably, palmetto fiber. This tempering substance has been destroyed by fire or decay, leaving the paste vesicular and porous and of low specific gravity (Holmes 1903: 121).

In 1960, Ripley Bullen described a "Southeastern fiber-tempered tradition, ceramics of which are tempered with fairly large amounts of vegetable fibers which become volatilized during firing and leave their casts in vessel walls" (Bullen 1960: 363). He distinguished three areas as the center of this tradition: the St. Johns River in Florida, the Savannah River in Georgia, and the Tennessee River in northern Alabama. He noted that fiber-tempered pottery is stratigraphically the oldest pottery in all three areas, but that there is "considerable variation in temper... In northern Alabama temper seems to be grass, in Georgia Spanish moss, and in Florida shredded palmetto fibers or Spanish moss" (ibid.).

A few years later, Elizabeth Weaver conducted laboratory tests which proved that the agent responsible for the vesicles observable in pottery sherds from Stallings Island was "definitely not Spanish moss [because the vesicles] differ in shape and size of the cross section" (Weaver 1963: 55). For this, and other reasons, she proposed as a working hypothesis that "there is no fiber tempered horizon in the Southeast" (ibid.: 56).

AN ALTERNATIVE HYPOTHESIS

We disagree with Weaver. We do not maintain that there could not have been natural inclusions of vegetable materials in the clays used to make pottery, as Weaver suggests-- in fact, this may be assumed in most cases. However, above and beyond these incidental inclusions it seems certain that selected tempering agents were also purposefully added. In our own controlled laboratory tests at the Peabody Museum, we found that pottery made of "clean" or under-tempered clays literally exploded at temperatures well below firing. Therefore, under primitive conditions, purposeful tempering would have been consciously required.

We further contend that the required tempering which was chosen at this early horizon in much of the Southeastern United States was vegetational, and that the particular agent used as selected according to natural availability. We agree with Weaver that Spanish moss was not favored, but do feel that a substitute was required, and that that substitute was fiber from the palmetto (in most cases probably the sabal palmetto as this species had the greatest distribution).

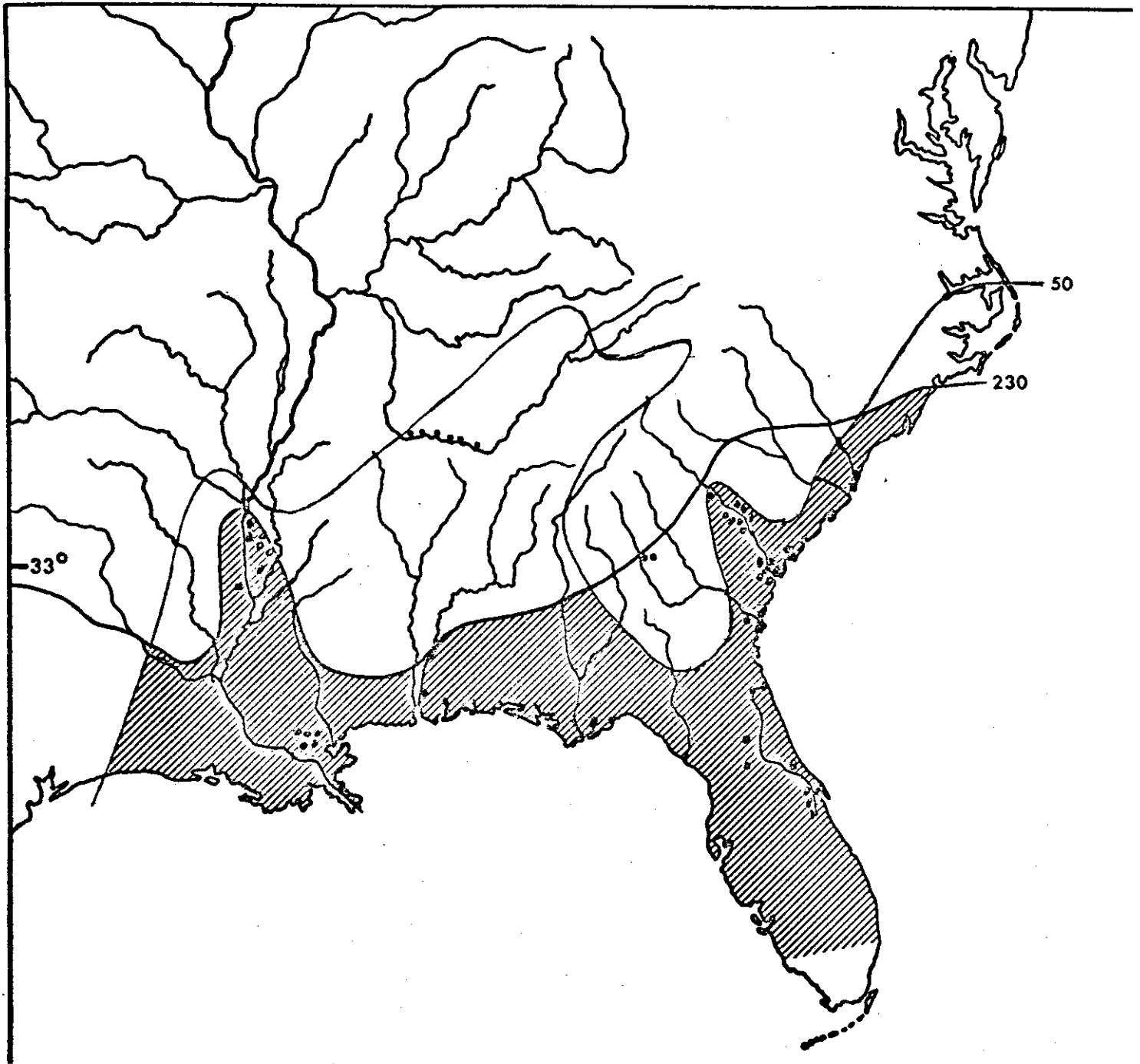


FIGURE 1

A schematic correlation of the distribution of sites producing fiber-tempered pottery (dots; squares indicate grass-tempering) with the original distribution of the sabal palmetto (hatching; note that this distribution seems to have been approximately determined by the natural combination of an annual precipitation of at least 50 inches, and a growing season of at least 230 frost-free days per year).

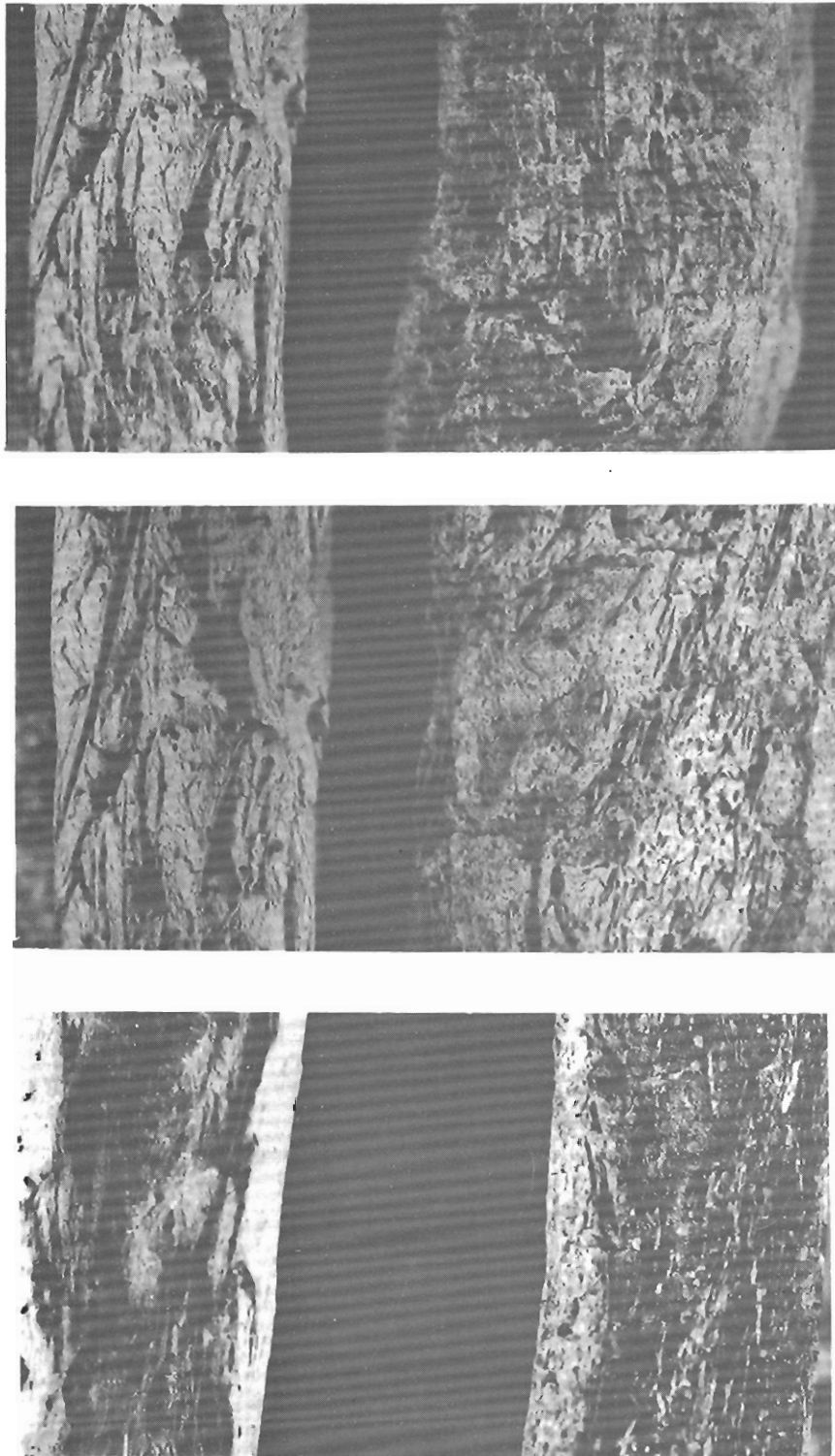


FIGURE 2

Vertical sections-- sherds made in Harvard Peabody Museum during August, 1970 (left), compared with aboriginal sherds from Yazoo Basin (a), Stallings Island (b), and Rabbit Mount (c).



FIGURE 3

Horizontal sections-- sherds made in Harvard Peabody Museum during August, 1970 (left), compared with aboriginal sherds from Yazoo Basin (a), Stallings Island (b), and Rabbit Mount (c).

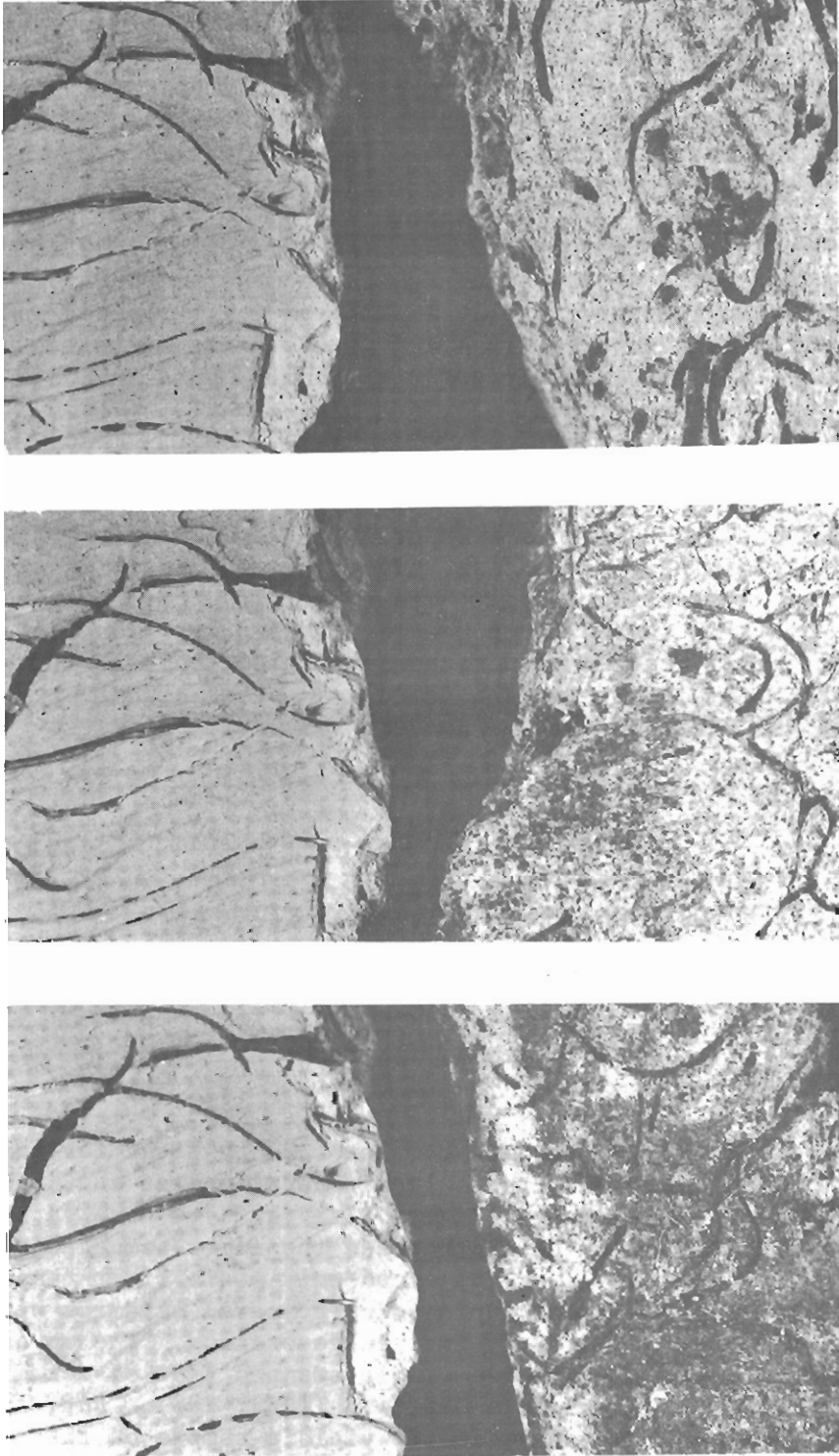


FIGURE 4

Surfaces-- sherds made in Harvard Peabody Museum during August, 1970 (left), compared with aboriginal sherds from Yazoo Basin (a), Stallings Island (b), and Rabbit Mount (c).

CONCLUSION

Therefore, it is our hypothesis that the concept of vegetational tempering was widespread at an early pottery horizon, and that wherever it was available palmetto fiber was the favored agent. This conclusion is based upon the relatively concurrent aboriginal distributions of both the palmetto and fiber-tempered pottery-- excluding the distinctively different northern Alabama types-- in the Southeast (Fig. 1).

Furthermore, in laboratory tests during which a variety of vegetational materials were used as tempering agents to make pottery, only fibers from monocotyledonous plants* virtually duplicated the vesicular pattern found in sherds from locations as far apart as the Yazoo Basin in the Lower Mississippi Valley, and Stallings Island and Rabbit Mount in South Carolina (Figs. 2-4).

* The fact that only yucca fibers were available and used in most of the tests in no way diminishes our case, since, for the purposes at hand, the properties of the fibers from these two closely related plants-- the only monocots in the southern United States-- are identical. Furthermore, the small blade incorporated in a sherd from Rabbit Mount (Fig. 3c) has been positively identified as a piece of palmetto leaf by Drs. Wood and Barghoorn of the Harvard University Herbaria.

#

THE REFUGE PHASE IN THE SAVANNAH RIVER REGION

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In 1947, a distinctive ceramic complex came to light for the first time. Antonio Waring, Jr., conducted salvage operations at the Refuge Site on the Carolina side of the Savannah River Delta (1968). Here, a stratified sequence was found that filled the gap between the fiber-tempered and the Deptford ceramics. The basal layer contained only plain fiber-tempered ceramics. Above this was a layer containing sand-tempered ceramics with dentate, simple-stamped, punctated, and rarely incised decoration. The uppermost natural layer contained a better-executed simple-stamped type of ceramics considered by Waring to be typologically Deptford (1968: 208). But, for many years, the Refuge Site was the only site to yield a sample of this Refuge ceramic complex (Waring 1966).

In 1969, however, the Refuge ceramic complex was isolated in the Groton Plantation locality along the Savannah River about 70 miles northwest of the original Refuge Site. The relative placement of the Refuge phase (between fiber-tempered and Deptford) was corroborated with the added clarification that a Thom's Creek phase occurred in the Groton locality after one

with fiber-tempered ceramics (Rabbit Mount) and before the Refuge. Additionally, the Refuge phase was found to be very common on Groton Plantation (Peterson 1971: 151-168).

The Refuge ceramics from Groton Plantation are not exactly the same as those from the site in the Savannah Delta, but they are very similar and include the same forms and decorations:

Refuge Phase:

More regularly coiled pottery...; paste... rather coarse...; two shapes, deep straight-sided ollas and slightly flaring bowls with flattened bases; some plain bowls, also bowls and ollas decorated with simple stamping (dowels, broad dowels or even fingers, and sharp instruments) without significant emphasis on parallel application, irregular punctation applied usually obliquely and in groups, a combination of simple stamping and irregular punctation, and less commonly dentate stamping or impressing with a cord-wrapped stick; stamped lips... (Peterson 1971: 126-127).

Figures 1 through 5 show these forms and decorations.

The most common decorations are the various forms of simple stamping and the irregular punctation. An idea of the relative frequencies of the various decorative techniques can be suggested from a block of three 5-foot squares excavated at Clear Mount (GR-2) where the Refuge ceramics were most clearly isolated from earlier and later complexes. From the three natural levels-- C, D, and E-- come the following samples:

Squares 14,15,16	DENTATE	CORD-WRAPPED STICK	IRREGULAR PUNCTATE	SIMPLE STAMPING		
				<u>Broad</u>	<u>Dowel</u>	<u>Sharp</u>
Level C	0	0	0	5(17%)	9(30%)	15(53%)
Level D	0	0	1(8%)	3(23%)	4(31%)	5(38%)
Level E	3(17%)	1(5%)	11(61%)	0	2(12%)	1(5%)

Similar percentages are found from all the various excavated and surface collections from the Plantation. What the Clear Mount data may also show is that there probably was a trend away from the commonly punctated Refuge ceramics of Level E to simple-stamped ceramics by Level C. This development would mirror a similar shift from punctation to simple stamping found by Waring at the Refuge Site as mentioned above.

Agreeing with all this stratigraphic evidence for the relative placement of the Refuge ceramics are two radiocarbon dates. A date of 970 ± 200 B.C. (M-267) comes from a sample collected by Waring from the earlier Refuge

FIGURE 1

Reconstructed section of Refuge olla from GR-2, square 7BC-- Irregular punctations and sharp simple stamping (Peterson 1971: Plate 40).

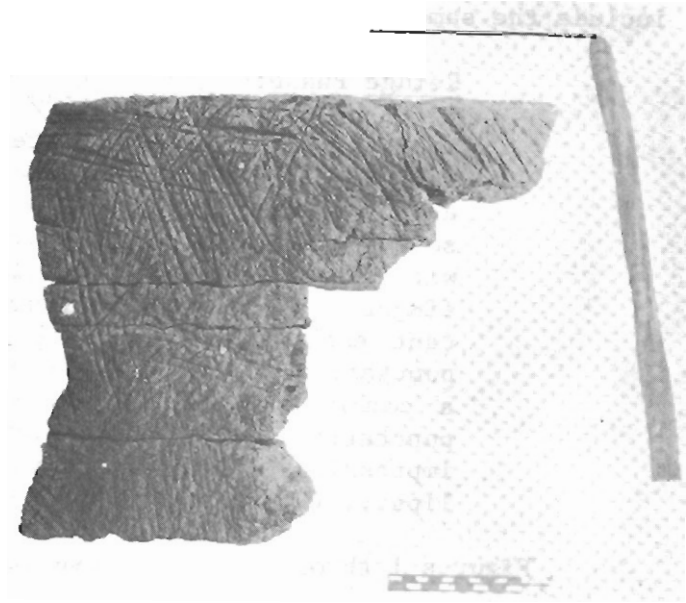
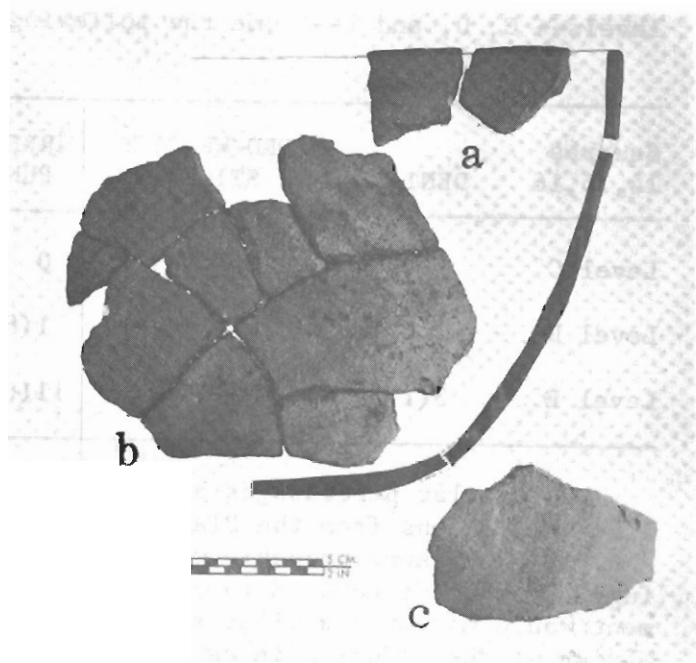


FIGURE 2

Reconstructed Refuge bowl with flattened base-- rim, side, and base sections do not exactly fit together although there is no doubt that only one vessel is involved; from GR-2, Refuge Zone of squares 14, 15, and 16 (Peterson 1971: Plate 38).



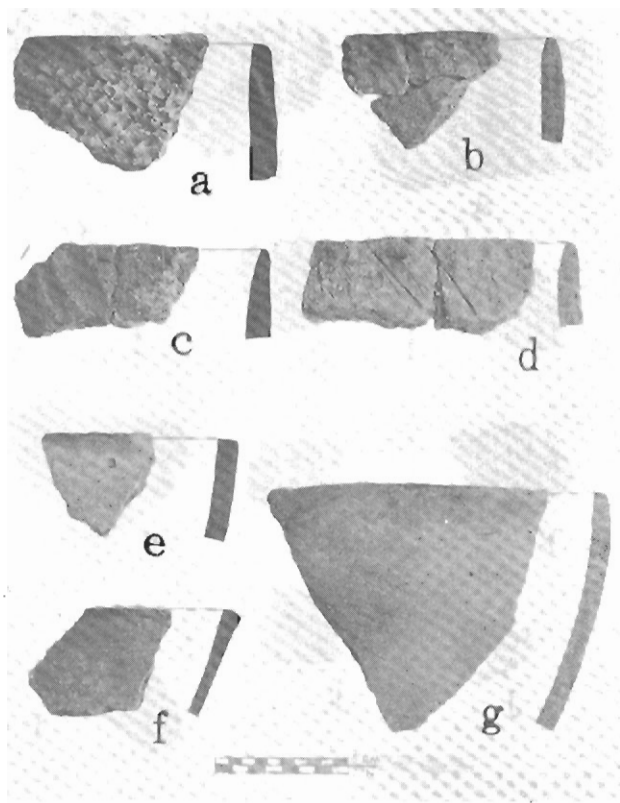


FIGURE 3

Refuge rims, all from Refuge Zone of GR-2, squares 14-16; a, irregular punctated; b, dowel simple-stamped; c, broad dowel simple-stamped; d, sharp simple-stamped; e, plain; f, plain; g, plain with few dowel simple stamps (Peterson 1971: Plate 41).

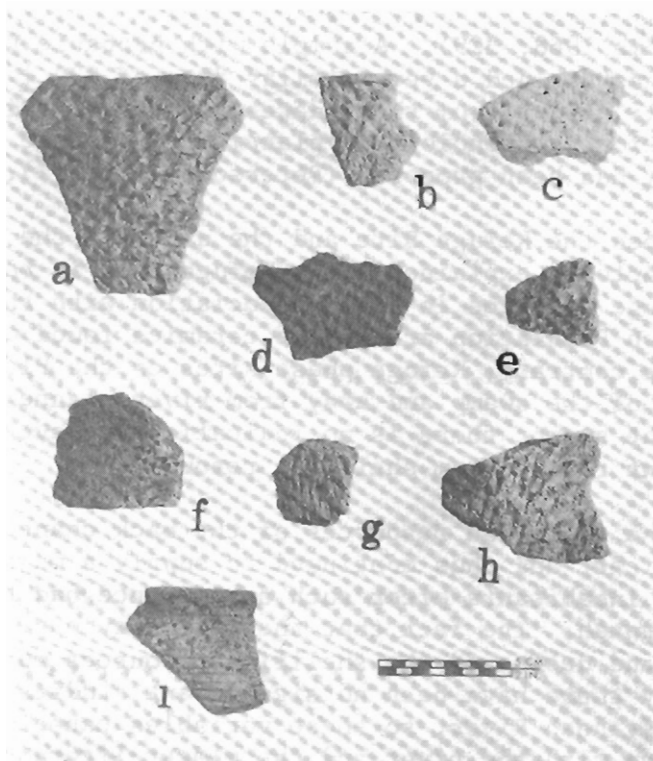
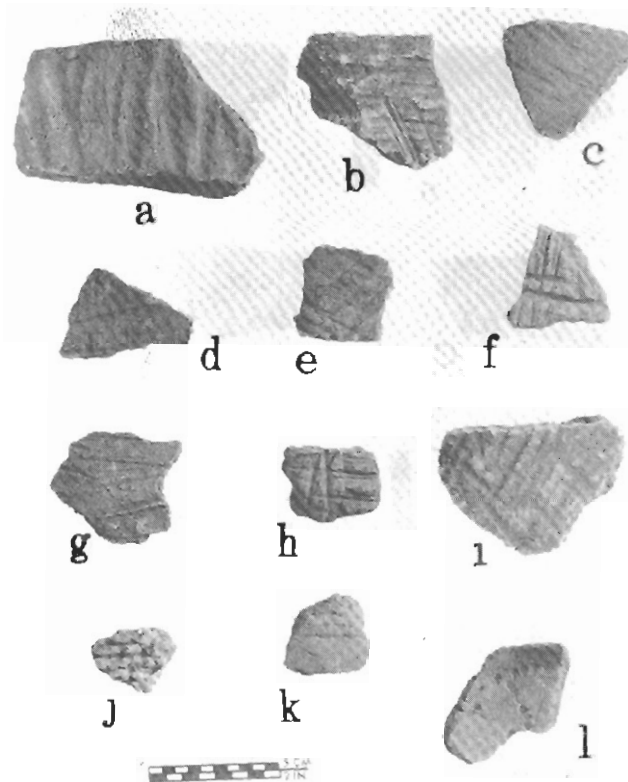


FIGURE 4

Refuge irregular punctation; a, GR-4; b,c, GR-35; d-h, GR-2, Refuge Zone, squares 14-16; i, irregular punctation with simple stamping, GR-2, Stoltman's excavation, square 3B (Peterson 1971: Plate 42).

FIGURE 5

Refuge sherds, GR-2; a, broad
dowel or finger simple-stamped;
e-h, sharp simple-stamped; i,
cord-wrapped stick impressed;
j,k, dentate-stamped; l, interior
cane (?) punctuation (Peterson
1971: Plate 43).



component at the type site (Williams 1968: 329). A sample with probable Refuge associations at Clear Mount has yielded a very similar date of 920 ± 110 B.C. (GXO-1752; Peterson 1971: 249). From these dates and the stratigraphic evidence on Groton Plantation a chronological placement of Refuge ceramics between 1100 and 600 B.C. has been proposed (Peterson 1971: 357).

One major difference between the Refuge Site and the sites in the Groton locality remains to be satisfactorily explained. The Refuge Site is basically a shell midden with the Refuge ceramics in clear association with the shell refuse, but nowhere on Groton Plantation are Refuge ceramics found with shell-midden associations. On the contrary, Refuge phase sites on the Plantation are found commonly outside of the swamp and away from river channels; and, even when the sites are in the swamp, there is no indication whatever of the selective use of and consequent refuse from shellfish resources.

It could be argued that the shellfish resources of the back channels and estuaries of the delta were richer and thus continued to supply a major portion of the diet of the area's inhabitants after such subsistence had been abandoned by others along the Savannah. The fact that the river may have silted or aggraded significantly and destroyed the shellfish resources must also be considered. Unfortunately there have been no significant studies of the history or resources of the Savannah River, so these variables cannot yet be handled. From my own experience with the river and the meager literature on the subject, I would suggest that no amount of aggradation of the Savannah would seriously disrupt shellfish beds but that the greater richness of the

coastal beds along with the old reliable crutch of hypothetical outside influences will better explain the differences between the riverine and delta zones.

As a conclusion, and to help anyone who may wish to pursue the history of the river, the evidence for the utilization of shellfish resources on Groton Plantation follows. The Rabbit Mount (fiber-tempered ceramics) and Thom's Creek phases of the Groton locality are clearly associated with shell middens (the Thom's Creek data coming from information about the Georgia side of the river supplied to me by Gordon Midgette). These shell middens are on old Savannah channels in what is now the river's swampy floodplain. Beyond the edge of the swamp, Rabbit Mount or Thom's Creek sherds are found only sporadically, suggesting that the upland sites were smaller and much less permanent. Proposed dates for these phases are: Rabbit Mount, 2550 to 1300 B.C. (with ceramic decoration beginning about 1800 B.C.); and Thom's Creek, 1300 to 1100 B.C. (Peterson 1971: 356).

The Refuge phase follows with the aforementioned dating of 1100-600 B.C. Again, there are no Refuge-associated shell middens or even shell concentrations. The whole pattern of distribution for Refuge ceramics is much different. There are many large and small Refuge components in the uplands in direct opposition to the pattern shown by the earlier Rabbit Mount and Thom's Creek materials. Significant utilization of the swamp environment continues with Refuge sites at various high places or mounts in the swamp but apparently not with shellfish collecting. My own interpretation of this patterning is that the Refuge phase subsistence base was hunting and gathering and not agriculture at about 1100 B.C. since changes in settlement pattern suggestive of significant agriculture do not show up on the Plantation until about A.D. 600 (Peterson 1971: 405-428).

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IVA ANNUA VAR. MACROCARPA: EXTINCT AMERICAN CULTIGEN?

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ABSTRACT

Exceptionally large achenes of sumpweed, Iva annua L., have been recovered from archaeological sites in the region extending from Kansas City and the Ozarks to eastern Kentucky and western North Carolina. The dates of occupation range from early first millenium B.C. to the first half of the second millenium A.D. Achene size progresses from slightly larger than modern achenes at the earliest sites to double the modern length at later sites. This is taken as evidence of evolution under domestication of a now extinct cultigen utilized for food by the aboriginal inhabitants of eastern North America.

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SESSION VI

CONTRIBUTED PAPERS

SITE ANALYSIS WITH A MOBILE ARCHAEOLOGICAL LABORATORY: MICRO SAMPLE EXTRACTION AND RADIOCARBON DATING

Kent A. Schneider* and John E. Noakes**
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ABSTRACT

The value of small plant and animal remains as a source of ecological information for archaeological research is increasingly recognized. Equally important, these remains can provide archaeologists with a temporal framework leading to chronological interpretation through radiocarbon dating. A mobile archaeological laboratory has been developed through the joint efforts of the Department of Anthropology and the Geochronology Laboratory at the University of Georgia. The mobile laboratory is self propelled and capable of traversing rough terrain to reach site locations. Self-support operation has been demonstrated up to two week intervals with fuel needs of the electric generators being the limiting factor. Mobile laboratory equipment presently includes micro fraction extractors capable of retrieving small plant and animal remains, radiocarbon dating instrumentation and support systems for assisting in 24-hour dig site operation. Field operation of the mobile laboratory at an interior and a Georgia coastal site will be discussed.

This paper supports an attitude on the part of the writers; namely, that ecological-environmental studies are an integral part of archaeology; that man-land relationships and interdependencies have seriously-- and often purposively-- been neglected in past archaeological work; that the future of archaeology as a substantive discipline is wholly dependent upon recognition and application by prehistorians of an interdisciplinary approach to the study of man. Artifacts as loci of ideas are more than Lithic, Ceramic, or Metallic; they necessarily include the totality of organic and physical components involved in the reciprocal relations between man and his environment. As Hans Helbaek (1959: 365) has succinctly stated: any domesticated or near-domesticated plant or animal is itself an artifact, a product of human manipulation.

A fresh appraisal of archaeological literature brings into focus a wide range of data obtainable from most archaeological sites. Part of the

* Anthropology Department; ** Geochronology Laboratory

interest in environmental aspects of archaeology stems from collaboration of archaeologists with specialists in other disciplines. While the British have been far advanced in such collaborative efforts (compare, for example, Archaeometry with American attempts at instrumentation in archaeology), the work of Braidwood and associates in the 1950's, and more recently the investigations conducted by Flannery, Hole, Heizer, Struever, and Binford have served to broaden archaeological investigative horizons. Such studies have led to new perspectives of archaeological methods and objectives, wherein fruitful research has been generated through sound scientific reasoning and methodology. A second factor responsible for environmental-archaeological study has been the rise to national concern of man's role in altering the face of the earth. Through collaborative efforts archaeologists have been able to assist other specialists in suggesting appropriate measures which would in part resolve many of our contemporary ecological issues. Environmental archaeology, then, camps both with the prehistorian and with the scientist concerned with contemporary man.

While an interest in archaeological-environmental investigations is being expressed by some contemporary archaeologists, the dearth of such studies in American archaeological literature over the past several decades is equally apparent, and stems from several factors. For one, traditional archaeology has been concerned with the definition of stages of cultural development or of historical reconstructions made from collection and collation of material objects (artifacts) discovered in excavations or in museum cases. In particular, archaeologists have been quick to capitalize upon the more prolific of cultural markers, ceramics, to the neglect of other kinds of data incorporated in the soil (Dimbleby 1967). While we grant the importance of ceramics (pottery) as horizontal and vertical cultural markers, we stress the importance of ecological materials as equally significant components of the archaeological enterprise. To understand past cultural events and processes is to understand man as a participant in his environmental surroundings. Unfortunately, most archaeological reports have failed to tap data contained in the soil which relates man more fully to his lifeways. An archaeological specialty in any geographic area requires knowledge of a broad range of data, yet a majority of our areal specialists, particularly in the southeast, are in fact ceramic specialists. Adequate archaeological syntheses cannot be written from pottery types alone; regard for other kinds of evidence which do reflect prehistoric lifeways must be demonstrated. Although directed toward a different audience, the dictum rendered by Bidney offers a note of propriety in the present context: Only a perverted, dehumanized sociology and culturalogy would attempt to eliminate man himself from a study of culture and society (1953: 120). Our interests today go beyond mere identification of the archaeological record; we are interested in processes of cultural development, of adaptive changes which man has made in response to his total setting. Greater insight into the nature of these processes and changes will come when the full range of data which can be gleaned from archaeological sites is utilized.

A second factor related to the paucity of archaeological-environmental study lies in the nature of traditional archaeological methodology. As Binford (1968) has suggested, data which pertains to a delineation of past sociocultural systems "are preserved in the archaeological record." As epistemology changes, so must methods employed in gathering supporting data. Traditional methods, procedures, and apparatus for analyses are hardly sufficient to achieve the stated aims of the field. Middens abound with infor-

mation which can provide archaeologists those kinds of data requisite to the generation of fruitful syntheses. Excavations which, in the final analysis, do not make full use of modern technology for eliciting information from sites, can only result in a less-than-acceptable summary of work completed. With the possible exception of salvage work, we submit that no sites should be investigated until the principal investigator is prepared to include in his research program a team of specialists equipped to examine every potential bit of evidence attainable from an excavation. To Binford's recent statement that "there has been as yet no attempt to assess the limitations of the archaeological record for yielding different kinds of information" (1968: 22), we add that no eye is large enough to capture the information lost on back-dirt piles. Assessment of the archaeological record begins with the employment of new methods in archaeology.

A NEW CONCEPT IN METHODOLOGY

Studies in environmental archaeology require the use of scientific equipment and personnel in data collection and analysis. Since its earliest days, archaeologists have had to rely upon talents of specialists located in diverse geographical areas of the country for assistance in data retrieval and analysis. There has never been a centralized facility capable of conducting full-scale environmental archaeological study in the United States.

In meeting the demands set forth by the "new archaeology" and in this paper, the writers collaborated in the Spring of 1970 with the stated aim of developing and deploying a mobile archaeological laboratory for on-site analysis. The laboratory consisted of newly developed equipment designed to extract organic remains as small as 1 mm. from middens, and radiocarbon instrumentation with support systems. Financial support for the laboratory and its components was supplied by the National Science Foundation. The laboratory was tested in Georgia during the Summer of 1970, and proved to be an indispensable facility capable of providing immediate relevant information for archaeologists conducting excavations.

I. Micro-Fraction Extraction:

The importance of plant and animal remains as indispensable in inferring ecological conditions, chronological relationships, and cultural practices, has been succinctly stated by Struever (1968), Heizer and Cook (1960), Brothwell and Higgs (1963), and Dimbleby (1967). However, remarkably few reports include those kinds of botanic or faunal data which would enable one to make exact interpretive statements about human ecological adjustment, subsistence, or economic productivity. The paucity of such studies in the southeastern United States is a consequence of the difficulties encountered in the recovery and identification of the data. The archaeologist is confronted with two related problems: (a) efficient and effective methods for extracting organic materials; and (b) analysis (identification) of the extracted remains. The problem of interpretation is dependent upon the recovery of quantitative evidence upon which reconstructions may be based.

The problem of recovering plant and animal remains has been approached from two technical standpoints: (a) immersion of data-bearing samples into fluid matrices; and (b) dry-sifting (mechanical sorting) of data-bearing sam-

ples. Struever (1968), a recent proponent of the immersion technique, initiated water separation-chemical flotation procedures in the 1960's, laying the groundwork for the present study. Utilizing the different porosities and chemical properties of organic and inorganic materials, Struever immersed previously screened soils in water; the different substances fell into momentary strata, where they were scooped off with a strainer according to stratum, and were subsequently air-dried. The dried organic materials were later placed in a zinc chloride solution, which separated bone from plant matter.

Dry-sifting (mechanical sorting) has been used principally by Yarnell. Essentially, this technique involves sifting dry data-bearing soil samples through graded U.S. Geological sieves; identification then proceeds on the basis of size, then class, in contrast to chemical flotation which seeks class in quantity.

Both of these techniques have drawbacks. Struever's technique, while effective, lacks mobility; it can only be effectively used near a source of moving water. The technique is time-consuming and requires employment of a sizeable labor force to haul quantities of soil to the flotation site and to carry out the flotation process itself. In addition to these restrictions, Struever's technique is limited by the vicissitudes of weather.

Dry-sifting also has serious drawbacks. It can only be used with small samples; it is extremely slow and tedious, such that it cannot be adapted to large-scale site sampling required in statistical analyses; and it increases breakage of delicate plant parts and animal remains through abrasion.

Modifications of Struever's technique and Yarnell's method have been proposed by other investigators. However, all such modifications with which the investigator (Schneider) is familiar maintain or even increase the limitations discussed above.

Knowledge of soil classes found on archaeological sites is a first step toward organic remains useful in establishing prehistoric man-land relationships. Physically, the soil is an aggregate of mineral particles associated with decayed organic materials and inorganic colloids. Incorporated in the soil matrix are the plant and animal remains which occur in abundance on most archaeological sites. Recovery of these inclusions depends upon the efficiency with which the soil can be broken into distinct classes. When we speak of "efficiency", we must consider two factors. First, plant and animal remains in the soil must be handled with utmost care, for identification of these materials can only occur when key features of the remains can be noted. Second, the time required in breaking down the soil, or time/unit volume, is important when we consider the volume of soil found on an average archaeological site. Adequate statements regarding prehistoric environmental-cultural conditions on a site cannot be rendered from knowledge of a few pits. At least the entire site should be sampled for its organic materials.

Breaking down the soil begins with dispensing colloidal aggregates which, on many Georgia archaeological sites, constitute a large portion of the soil matrix. In the present study, soils from several areas of two sites were analysed and appropriate reagents were selected as dispersion media. Calgon, obtainable commercially, proved to be a most generally useful dispersing agent.

The extraction system aboard the mobile lab included a suspension tank, a bank of extractors, and a drying oven. A fifteen pound sample of soil removed from a site with a shovel was placed in the suspension tank. As the soil dispersed, the solution was pulled through cylindrical extractors, where free organic particulate accumulated on filters. Filter size used in the extraction process was determined from an examination of soil particle size in conjunction with preliminary tests developed to ascertain density, distribution, and size of recoverable organic remains. Upon completion of the process, recovered materials were dried in an oven, catalogued, and placed in suitable containers preparatory to identification. A fifteen pound soil sample was processed in five minutes.

The extraction equipment was initially tested at a village site in northern Georgia. Although identification of all materials recovered has not reached completion, preliminary analyses indicate the presence of maize, phaseolus, chenopodium, and other plants in rather striking concentrations. Particular interest lies in the concentration of phaseolus, a count of over 25,000 being a conservative estimate.

Equipped with radiocarbon instrumentation, the mobile lab was additionally tested at a second site on St. Catherine's Island. While on the island, the extraction equipment was able to operate as a self-contained unit for up to two weeks through solution recycle. In addition to the remains of several kinds of terrestrial fauna and flora, a wide variety of marine life was recovered from the shell midden, including remains as small as fish teeth.

II. Radiocarbon Dating:

The benzene method for radiocarbon dating as reported by Noakes (1961, 1962, 1965, 1967) was used in the mobile laboratory age-dating activities. This method of radiocarbon dating was selected over other methods because of its ideal suitability for mobile laboratory operation.

Equipment for chemically processing the samples was mounted on a 4-by-5-foot metal rack. Low vacuum requirements for the benzene chemistry allowed connection of the glass-metal apparatus with plastic tygon tubing. This equipment set-up resulted in a chemical train insensitive to hard jolts or rough treatment. The radiocarbon analysis was carried out with a BTC Intertechnique liquid scintillation counter. This counter required a minimum of lead shielding of 300 pounds and was constructed of rugged solid state electronic components. The total equipment used for radiocarbon dating occupied a space of not more than 30 cubic feet. Electrical power to run the chemical apparatus and nuclear counter was supplied by an AC generator and DC batteries.

The samples submitted for radiocarbon dating were first cleaned of extraneous debris, treated with dilute alkali or acid and finally washed with distilled water and dried. The chemical processing of the carbonaceous samples to liquid benzene required the following steps. The sample was first converted to carbon dioxide either by wet or dry combustion. The carbon dioxide generated was collected and passed into a reaction chamber containing hot lithium metal. The lithium and carbon dioxide reacted in an exothermic reaction to form lithium carbide. Water was injected into the reaction chamber and acetylene gas was formed. The acetylene was passed through a purification column into storage and subsequently onto a vanadium-alumina catalyst. The

catalyst trimerized the acetylene gas to form liquid benzene. The total sample processing was completed in two to three hours with benzene yields approaching 90% efficiency.

The synthesized benzene sample was transferred to a pre-weighed liquid scintillation counting vial and the amount of benzene sample was determined by the weight difference of the tared vial. The carbon content of the sample was calculated as 92.26% of the weighed benzene. The sample was adjusted to a constant volume usually selected as 5 cc with spectrometric grade benzene which was devoid of any radiocarbon content. Two scintillators were dissolved in the benzene sample to assist in the conversion of the decaying radiocarbon radiation to photon energy. The liquid scintillation counter detected the light energy as an indirect measurement of the radiocarbon content of the sample. The benzene sample was usually counted for 24 hours and its radioactivity recorded as disintegrations per minute per gram of carbon in the sample. A comparison of the sample's activity to a background sample and a modern standard of 1950 A.D. age permitted calculation of the age of the sample. When a stratigraphic sequence of samples from a single dig site was dated it was possible to estimate an age as older or younger than the previous sample data within several hundred minutes of counting. This information was very helpful in directing the immediate dig site operations when crews were waiting for instructions to excavate.

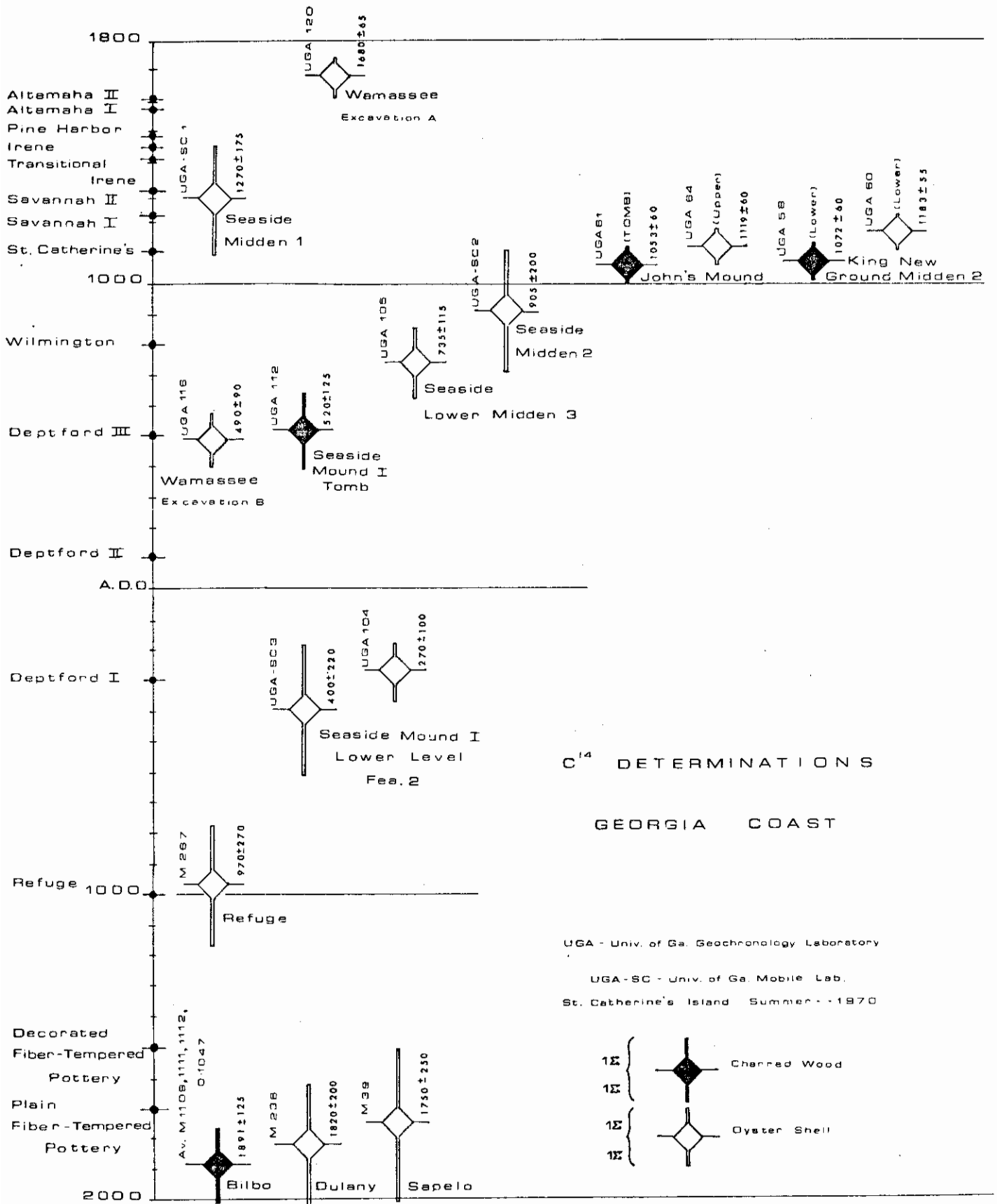
CONCLUSIONS

Modern archaeology has become dependent upon the skills and expertise of specialists in several related disciplines. The mobile archaeological lab represents such a collaborative endeavor, and has proved to be an indispensable tool for recovering and analysing a wide variety of data relevant to the study of prehistoric man. Not only has the lab permitted the collection and collation of such data on location, it has in addition opened doors to new kinds of data not previously available to archaeologists. On-site recovery of a wide range of information suitable for immediate analysis, and on-site radiocarbon dating with precision and without delay, are first-order components of the modern archaeological enterprise.

ACKNOWLEDGMENTS

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CHRONOLOGY OF THE GEORGIA COAST

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A discussion of radiocarbon determinations and pottery sequences can be dull. Therefore, in an attempt to arouse your interest, I present my conclusions in the beginning.

First, on St. Catherine's Island, where we have been working under the auspices of the Edward John Noble Foundation for the past two years, radiocarbon determinations made from oyster shell do not appear significantly from determinations made from charred wood. In this connection some of you will recall that a few years ago modern oyster shells from adjacent Sapelo Island collected in 1955 were run at the University of Michigan (M-614) and did not differ significantly from Michigan's wood standard.

Second, through a combination of radiocarbon determinations and ceramic analysis we have been able to establish rather fine divisions of time for the Central Georgia Coast. I am confident that with another two dozen determinations we shall be able to describe cultural change during the later periods of this region in terms of 100 and even 50 year intervals. If it should turn out that our oyster shell calendar is slightly out of phase with charred wood calendars elsewhere, we may at least have internal consistency. Of course we shall continue to look for an oyster shell correction factor and other factors based on the available amount of radiocarbon in the biosphere at particular times.

Third, we can see additional evidence for the point made by Lewis Larson (1958) that no single cultural sequence will hold for the entire Georgia coast, and I suspect that we already need a separate sequence for the regions adjacent to each major estuary.

I shall not mention the earlier periods shown on the accompanying chart; their radiocarbon determinations have long been known. I shall speak instead of 12 new determinations obtained at St. Catherine's Island, all for the later periods. Until the St. Catherine's excavations we had no radiocarbon determinations later than 900 B.C.

On the chart you will see opposite Deptford I, two determinations made at the Seaside Mound from oyster shell in Feature 2. Feature 2 was a small pit filled with oyster shell and containing three Deptford I pottery fragments. In fact, the pottery found in all levels of the Seaside Mound was Deptford I, undoubtedly inclusive in the sand from which the mound was built. Our excavations were limited, but reached the old humus layer at mound base. Dug into this old humus layer was a large oblong pit and the sand taken out of the pit had been banked up on the sides. Sometime later the pit had been refilled with nearly clean sand, which also contained a few Deptford I potsherds. On the southeast side on the slope of the banked sand around the pit was a mass burial consisting of an unknown number of poorly preserved skeletons, some of which were extended and some of which were simply parts. The locality then remained undisturbed long enough for the development of a secondary natural humus layer 6 to 8 inches thick. The aforementioned shell

pit (Feature 2), from which we made our radiocarbon determinations, had been dug through this humus level.

Our conclusion is that the Deptford I pottery from this site is no later, and is undoubtedly considerably earlier than our two radiocarbon determinations. More work is planned, but for the time being we believe that the mass burial outside the large empty pit was contemporary with it. There is no evidence that the pit belonged to a domestic dwelling. Instead, we believe that although apparently empty, it had some functional connection with the mass burial.

Although the pit was refilled, no significant amount of sand was piled on it prior to the development of the secondary humus line. With reference to the well known coastal feature of large central pits, sometimes empty, under burial mounds the intriguing possibility raised by this situation is that on the coast central pits may antedate burial mounds per se. In other words, we may start with a dimple and end with a pimple.

We have not located any occupation area belonging to the succeeding Deptford II Period which, as you know, is distinguished from Deptford I by the addition of complicated stamped pottery. Stray Deptford Complicated Stamped sherds on St. Catherine's Island suggest that a site will eventually be found there.

Higher on the chart you will notice a new period called Deptford III, with a radiocarbon determination from Wamassee Excavation B. The pottery is tempered with clay or sherd particles, and the check stamping is more variable than in Deptford I. There is a very large shallow "spider web" variety of check, a very tiny check, and an unusual "barbed wire" design of alternate raised solid triangles on either side of a raised line. Elsewhere on this site, and undoubtedly belonging to this period, was a large fragment of a very poor and carelessly executed complicated stamped pottery.

This fragment may turn out to be typical. Some of the complicated stamped pottery elsewhere of this date is very poorly stamped. A nice problem is raised however by the fact that certain clay tempered complicated stamped pottery from the W.P.A. excavations in Chatham County is very well decorated with early to middle Swift Creek designs. If our Wamassee sherd is typical of the condition of complicated stamping on the coast of about A.D. 500 clay tempering may have reached Chatham County sooner.

Opposite Deptford III on the chart you will see a charred wood determination called Seaside Mound I, tomb. This comes from the next mound level above the secondary humus line previously mentioned, and was a poorly preserved extended skeleton covered with logs. Since none of the burials in the Seaside Mound had any artifacts with them, we have only the radiocarbon determination to suggest that this burial belonged to Deptford III times.

Higher on the chart opposite the Wilmington Period are two determinations from Wilmington shell middens. Both are somewhat later than I, for one, had believed the Wilmington Period to be. My previous judgment was based upon the extraordinarily poor quality of Wilmington ceramics. Some Wilmington sherds even show cord markings on the interior, a trick the intelligent Indians of the Northeast had given up some 2,000 year before.

Higher on the chart opposite the St. Catherine's Period are two determinations from John's Mound, a St. Catherine's Period burial mound. Before we

ran the sample we had already decided that this mound showed evidence of three successive burial ceremonies which might have been one generation apart. The earliest of these ceremonies involved a log tomb of pentagonal form which contained a child.

Adults were buried outside and around it. The charred wood determination is from the tomb and the shell determination is from the latest part of the mound and there is just 66 years between them. This is exactly what we hoped for, even though one determination is from oyster shell and the other is from charred wood. Two other St. Catherine's Period determinations are from the lowest level of a shell midden at King New Ground Field. The charred wood determination is 111 years older than the oyster shell determination. There may be a real difference here between wood and oyster shell results but we must confess that we did not look at the wood sample before we submitted it closely enough to see that it was not the inside portion of a 111-year-old tree.

St. Catherine's is a new period in our coastal sequence. The pottery is tempered with very small particles of clay or sherd. The ceramics are a clear development out of Wilmington and show characteristics intermediate between Wilmington and Savannah I. The determinations for the St. Catherine's midden at King New Ground Field are for pottery of this kind, but associated was a type, St. Catherine's Net Marked, which differed from the other pottery only in decoration. Net marked pottery is rare on the northern part of the Georgia coast, abundant in the southern part, and may thus reflect regional differences on the Georgia coast.

Exploratory trenches were put into Mary's Mound, which seems to be on the borderline between the St. Catherine's and succeeding Savannah I periods. A radiocarbon determination has not yet been made. The central pit, pentagonal as at John's Mound, contained no burials. Burials were outside of the pit. In the pit was a pavement of broken pottery vessels, two of which have a St. John's paste and are clearly imports from Florida. One of the latter was a good example of Sarasota Incised.

Next on the chart, opposite Savannah II, is a determination from Seaside Shell Midden I. The associated pottery was Savannah Fine Cordmarked, Check Stamped, Complicated Stamped, and Plain. The radiocarbon determination and the presence of Savannah Complicated Stamped suggest a Savannah II complex. Unlike Savannah II pottery from the mouth of the Savannah River, however, the rims of jars are straight rather than overhanging. From the southern part of the coast, Fred C. Cook's report on the Lewis Creek Site, McIntosh County, Georgia (n.d.), presents a Savannah II component in which the rims of some of the vessels are nearly straight, and Savannah Fine Cordmarked is absent. At the moment, it seems that we can detect geographical differences in Savannah II times variously involving rim form and the presence of Savannah Fine Cordmarked.

Our final date is from the excavation of Area A at Wamassee and the shell sample submitted was associated with a pottery complex consisting mostly of Altamaha Line Block Stamped and accompanied by Spanish iron artifacts, Spanish majolica and olive jar fragments. The Spanish abandoned St. Catherine's Island in 1680, apparently taking the Indian inhabitants with them. Our radiocarbon determination is 1680 ± 65 years. Our shell sample was taken about 8 inches below the top of midden. Although an enthusiastic oyster eater can

deposit a small 8-inch midden in one sitting, I rather imagine that the true date of this sample would be toward the earlier end of the 65-year standard deviation. This, in connection with the aforementioned sample from King New Ground Field suggests that our shell determinations, while compatible with the charred wood determinations, may be running slightly later.

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THOUGHTS ON THE CALICO MOUNTAINS SITE

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In the course of a general archaeological survey of the Pleistocene Manix Lake Basin by the San Bernardino County Museum, Miss Ruth De Ette Simpson recovered some chipped stone material, in 1963, that appeared to be quite old. She interested Dr. L.S.B. Leakey, of Nairobi, Africa, in the site and excavations were begun in 1964 that continued from mid-Fall to mid-Spring of each of the next six years. The work was sponsored by the San Bernardino County Museum and funded by various agencies including the Museum, the National Geographic Society, the University of Pennsylvania, the L.S.B. Leakey Foundation, and others. Miss Simpson has been in charge of the archaeological work throughout and Dr. Leakey has been her constant advisor and consultant, visiting the excavations frequently. Dr. Thomas Clements has served as the Project Geologist.

The Calico Mountains Site is approximately 150 miles northeast of Los Angeles, and 15 miles east of Barstow, in southcentral California. It is situated on a segment of a large outwash fan derived from the Calico Mountains at the edge of the Manix Lake Basin in the southwestern extremity of the Great Basin physiographic province. Within that fan, at depths of from a few feet to nearly 30 feet, chipped stone specimens have been found in quantity. Several hundred have been set aside as possible artifacts, and all of the other stone material from the excavation pits has been saved and is available for future study. Well toward the bottom of the excavations are two clusters of rocks arranged in a vaguely circular pattern that have the appearance of being hearths.

This site has become somewhat controversial since the chipped stone specimens are very crude and extreme antiquity has been suggested for them. In order to try to resolve some of the questions raised by the site and to obtain as much objective, firsthand opinion as possible, the San Bernardino County Museum, the L.S.B. Leakey Foundation, and the University of Pennsylvania sponsored a three-day conference at the site in October, 1970. Archaeologists, geologists, climatologists, and others from all over the world were present. Many views were expressed, but unfortunately not enough opinions were expressed and discussed openly during the meetings. Most of us were absorbing all of the information we could at the site and in the specimen exhibits and really, I suppose, arguing with ourselves. Unless one is handling discreet, analytical data, I believe some reflection and time to mentally analyze what he is shown,

weighing the pros and cons very carefully, is required before he makes a judgment on such controversial material. I have weighed the evidence that I saw and reflected upon it at considerable length and offer these thoughts on what the material appears to me to represent.

My first visit to this site was in August 1968. During that two day visit, Miss Simpson gave my wife and me a grand tour of the site, site area, and opened up all of the collected specimen materials for examination. I again visited the site and examined the collections as a participant in the Calico Mountains Site Conference in October 1970. During the latter visit, Dr. Thomas Clements gave us, in the field and conference rooms, a most lucid and able discussion of the geology of the site and the locality. Miss Simpson gave us one of the best oral presentations of the archaeology of the site that it has been my privilege to hear. This three day conference allowed all of us time to adequately see, hear, and digest aspects so far known of this site.

During this conference many of the most competent specialists in the world were present to view and discuss the site and the materials related to the site. There was no question, I believe, in anyone's mind as to the excellence of the excavations, the recording of the data, and the preservation of the recovered material. There was, though, great divergence of opinion as to the interpretation of the data. These divergent opinions related to both the archaeological and the geological interpretations. I found myself consistently expressing a minority opinion among the group, but was pleased to have some very good company in this minority view.

Since I am an archaeologist, and involved with geology primarily as it relates to specific archaeological sites, I shall first discuss the archaeological aspects of this site, as I see them, and follow this with briefer comments on the geology. Basically, since the field excavations are agreed by all to have been done with the utmost competence, there are, for the present purposes, but four archaeological questions. First, are the recovered specimens artifacts or not? Second, are the two rock clusters hearths or not? Third, is there any other evidence of man's having been at this site? Fourth, what is the age of the recovered specimens? The fourth question, of course, is basically geological; but, if the answer to any of the first three could conceivably be "yes," then it must certainly be asked as an archaeological question as well.

Let me, at the outset, very clearly say that I am firmly convinced that several hundred of the recovered specimens are chipped stone tools of extremely primitive characteristics, chipped by man at what one might call a quarry site, at least a site where raw materials were gathered and made into artifacts. Many of these tools are so primitive that it is conceivable that they could have been chipped by natural agencies. In fact, someone at the Conference found one specimen that, when placed beside a published illustration of a specimen known to have been chipped by natural agencies, compared very favorably. This demonstrates nothing, however. It is comparable to placing a rough stone sphere known to have been made by a lapidary beside a selected illustration of a concretion to demonstrate that both are concretions. The form may be the same but the manner of deriving that form is not demonstrated. It isn't even questioned. It is only falsely assumed. I find it quite beyond the range of expectability, even if every one of these specimens could conceivably have been chipped by natural forces, to find so many in such a small, concentrated area. There are several hundred and they represent the chips as well

as the core material. Such a concentration and the presence of the chips does not seem reasonably explainable by any agent other than man.

Many of these specimens are bifacially chipped along one or more edges, and on some of them the chipping alternates from side to side of the edge. Many have clearly distinguishable bulbs of percussion. Some of the chips are concavo-convex, clearly having been struck from already existing bulbs of percussion by well-placed secondary blows. A few specimens are chipped on several sides and edges by numerous blows requiring that the specimen be repeatedly struck from several angles. A few specimens are chipped on all surfaces of one end to form a point while the opposite end is not chipped at all and tends to be rounded. These resemble hand axes. I suggest that the chance of any of these having been formed by natural forces is extremely remote and to find so many of them together in one small locality is virtually impossible. The hand axe-like specimens, for example, would have to have been caught by one rounded end in a crevice or some such holding device and repeatedly struck on all exposed surfaces by literally a score or more of blows administered by rocks or other hard objects that happened to be passing by with rather violent force.

The geologists at the Conference seemed to concur that the fan in which these specimens were found, the Yermo Fan, was formed by a mud flow or series of mud flows. Now a mud flow is, as I understand it, a rather gently moving phenomenon and not a violent one. It carries with it the mud itself which serves as a sort of cushioning agent for the tumbling and moving rock inclusions. The included rocks, of course, do strike each other and rub and grind as they move along with the mud, but repeated, violent contact of rock on rock is not a feature of a mud flow due to this cushioning. Natural fractures, of these included rocks, are expectable and chips are expected to be broken from them in the course of the mud flow action. Repeated attacks on any one rock are not expectable and several scores of chips broken from a single rock would be unusual. Here in a very small area, several hundred rocks have each had several scores of chips removed and I suggest that this could hardly have resulted from the natural action of a mud flow.

A critical point made by a number of my colleagues at the Conference was that there seems to be no "pattern" to the Calico specimens. The term "pattern" may have more than one meaning in this regard but it became apparent that most of those with whom I discussed this matter meant that there were no "artifact types." They meant that the amassed collection of Calico specimens was not amenable to being separated into known typological categories such as scrapers, choppers, bifaces, projectile points, anvils, etc. I suggest that we cannot be bound, in our identifications, to the several preconceived typological categories that we have, on the basis of previous experience, been able to identify and define from other collections of specimens. Not all artifacts necessarily fit neatly into preconceived categories or typological pigeonholes. We may make as many new types as we like, to accommodate the data. Typological categories are mental constructs designed to be useful aids in understanding and dealing with data. They are not ends in themselves nor determinants of the data.

Furthermore, if this is what is meant by "patterns," I suggest that there are patterns in the Calico specimens. Specific groups of these specimens chipped on one or more faces of one or more long edges by several scores of chipping blows, clearly indicate to me the "pattern" of side scraper. Other groups of specimens seem equally clearly to have the "patterns" of end scrapers, hammerstones, anvils, and hand axes. Admittedly, these are of crude, primitive form, but they are nonetheless "patterns" in this sense.

Now if "pattern" means a systematic series of chips removed in some regular fashion from a particular specimen, I submit that this kind of "pattern," too, is present in the Calico material. Systematic, repeated, alternating edge chipping is one "pattern." Repeated unifacial chipping along one edge of a specimen is another. Systematic removal of chips from all sides of one specimen to form a pointed end with a rounded, unchipped opposite end is still another. I could go on with still different "patterns" and these all seemed quite obvious to me in my examination of the specimens from Calico.

During the Conference I argued that if these Calico specimens had been found in a known Archaic workshop site along with a few other more easily recognizable specimens such as projectile points, they would arouse but slight comment. They would be sorted into the "junk" category of poorly made or partially made artifacts from the site and but briefly mentioned in the report. Responses to this argument were in agreement. The individuals to whom I put this argument agreed that under those circumstances they, too, would have no hesitation in calling these specimens crudely made artifacts "but here they are in too old a context to be artifacts." Are we to assume that what a thing is depends upon where it is found? I think not. If a specimen is an artifact in one set of circumstances, it is an artifact in any set of circumstances. If we were to find a Coke bottle under a foot of undisturbed Crater Lake pumice, there could be no argument that it would be still a Coke bottle. The problem would be not that it is in too old a context to be a Coke bottle, but to determine how it was introduced into that context. Is it really Crater Lake pumice? Is it really undisturbed? Is Crater Lake pumice really as old as it is thought to be, etc.? This is an extreme example, of course, but it is exactly the same problem.

Of course these are all opinions argued from reason. They are not empirical proofs of anything. So are the opposing arguments that the Calico specimens are not artifacts. Much laboratory work with these specimens will be required in order to demonstrate clearly that these are or are not artifacts. That laboratory work has hardly begun. If anything further is to come of this material, every analytical technique available must be brought to bear on these specimens. John Witthoft has made a brief start on this and indicated some of the directions of these analyses in a brief preliminary paper passed out at the Conference under the title of "Technology of the Calico Site." High powered microscopic analyses of all the chip scars on these specimens must be made. A search must be made for evidence of wear scars or use abrasion on specimen edges. Witthoft recognized some use abrasion on a few specimens. Lithologic and chemical analyses might prove highly useful. Statistical treatment of fracture angles, bulbs of percussion, and other physical features are essential. Some of the new computer techniques for determining morphological consistencies and clearly isolating repetitive patterns would be abundantly useful. Simple counting of flake scars on each specimen and comparisons of the fracture angles on any one specimen as compared to other specimens should provide the kinds of evidence required to solve some of these problems. I trust that the next phase of the Calico Project will address itself to these and any other detailed laboratory analytical techniques known.

We were shown two clusters of rocks during the Conference, each of which appears to be situated in a circular pattern of systematic form resembling the rocks in a hearth. There is no apparent visual evidence of ash, charcoal, or burning of the rocks in or around either cluster. They simply

have the physical appearance of rocks placed around a fireplace. These may or may not be hearths, but they certainly look like hearths.

One rock was removed from one cluster and tested for differential magnetism. The tests showed differential magnetism on the end near the center of the cluster from that away from the center of the cluster suggesting greater heat toward the center of the rock cluster, hence fire, hence a hearth. One test is not enough. Several rocks from each cluster should be tested, and identical tests should be made on other rocks not associated with the clusters, but from the same level of the deposit. The question of the "hearths" is still open, but visual appearance and one test tends to indicate that these may well be hearths.

Three other scraps of evidence suggest the presence of man at the Calico Site. One is a fossil gastropod that is said to have its closest source of origin some 80 or 90 miles to the west along the California coast. If this is true and there is no source for this kind of fossil within the source material of the Yermo Fan, we are obliged to attribute its presence in the Calico Site to man. Witthoft has identified two flakes of moss-agate gravel in the collections from the site and places the nearest known source of this material some 100 miles to the east along the Colorado River outwash. These, too, could only have been introduced into the site by man if there actually is no source of this material in the Yermo Fan area. The third scrap of evidence, also identified by Witthoft, consists of five small pieces of quartz crystal, each of which has been chipped and battered from a unitary crystal. Witthoft places the nearest source of these near Needles, California, some 40 miles to the east.

Here, again, we have only reasoned opinion and "best evidence" to support these three indications of man's presence. We need empirical proof and demonstration that sources for these materials are or are not available in Mule Canyon of the Calico Mountains where the Yermo Fan material had its origin. This can only be derived from detailed analyses of all of the Mule Canyon source material by every geologic and lithologic means possible.

This brings us to the questions of the geology of the area and the age of the deposits. There can be little question that the kinds of detailed geological and geochronological studies that are essential to a resolution of the questions about this site have only begun. Dr. Clements, the project geologist, has done a fine job as far as he has gone, but much more is needed both in the field and in the laboratory. For example, at the Conference, he was frank to say that he was not certain if the Yermo Fan is one or more than one fan. Some of the world's leading geologists at the Conference had opinions about the age of the deposits ranging from terminal Pliocene to mid-Wisconsin and added, "Whatever that may mean, in years."

Karl W. Butzer and Carl L. Hansen, in a brief geologic summary "A Report on the Geomorphology and Stratigraphy of the Calico Hills Site," that was passed out at the Conference, offered some sound suggestions about the sequence of events there. Their report, of course, necessarily raised more questions than it answered being based as it was on their "brief examination" of the locality. Butzer and F. Clark Howell added an appendix to the report listing five suggestions for further work, all of which are essential for understanding this complex deposit.

Butzer and Hansen are lead to "... suspect that further, detailed studies will indicate that the site is older than 'classical' Wisconsin, i.e. the

main body of the Yermo Fan will prove to be greater than 30,000 years." It also, to them, "... seems improbable that the Yermo Fan is older than late Middle Pleistocene (perhaps 120,000 years)."

Obviously the detailed studies are needed. It is not enough to "suspect" that these dates will apply. We need some concrete evidence which may be very difficult to obtain. We also need a great deal more detailed studies of the lithology. It is, for example, still to be demonstrated that moss-agate, quartz crystals, and fossil gastropods are or are not available naturally in the area.

Dating of the site appears to rest squarely on the shoulders of the geologists because the usual, non-geological means of dating seem to be missing. This means that the geological determinations must be refined to their greatest precision. A range of 30,000 to 120,000 years even if demonstrated, is probably close enough for most geological problems, but it is not close enough for an archaeological problem.

One end of the time range can apparently be closed by empirical tests already done. Near the edge of the Yermo Fan a series of shorelines of Lake Manix has been dated by Carbon-14. The upper shoreline here, almost certainly younger than the Yermo Fan, is dated at 19,750 years ago. This provides a minimal date for the deposits, but the other end of the time range appears to be wide open with opinions ranging as far back as terminal Pliocene.

Throughout this brief commentary, I have emphasized the need for additional field and laboratory geology and additional laboratory study of the archaeological materials. It seems essential to me that every possible effort should be made to pursue these studies to their absolute limits in every way possible. At present the Calico Site is a well excavated site, the interpretation of which is largely subjective and controversial. Empirical, demonstrable evidence that it even is an archaeological site is tenuous. If it is not an archaeological site, the work done there has been nothing more than an expensive exercise in field techniques. If it is an archaeological site, if the specimens actually are artifacts and man occupied this locality during the deposition of the Yermo Fan, it is the most significant site yet known in the New World. The age is yet to be determined, but it seems certain that it is beyond 20,000 years ago.

My personal opinion, and it is only a reasoned opinion, is that these are artifacts; that this is an archaeological site of more than 20,000 years ago and that it is worth every possible effort that can be made to demonstrate the validity of the specimens, or their lack of validity, and to demonstrate some empirical evidence for the age of the site within as narrow a range as is humanly possible. I do not believe that we have human occupation here in the terminal Pliocene or at any time even approaching that. I do believe that we have human occupation at this site and I would not be even slightly surprised to learn of good substantial evidence for its age being within the range of 30,000 to 60,000 years ago.

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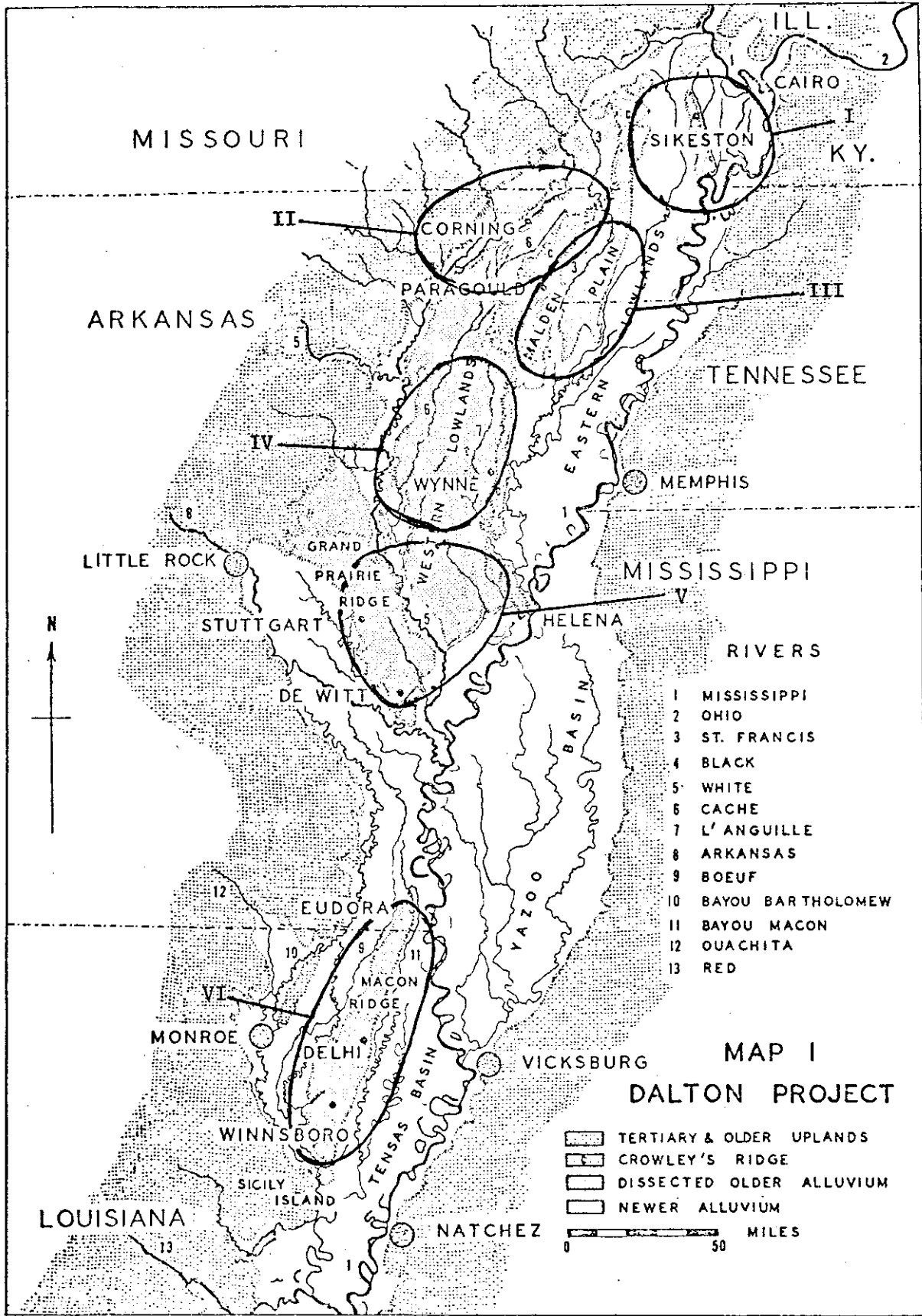


FIGURE 1- Areas covered by the Dalton Project.

DALTON FORMS FROM THE LOWER MISSISSIPPI ALLUVIAL VALLEY

Alden Redfield

Museum of Anthropology
University of Missouri-Columbia

During 1961-62 Dr. James A. Ford of the American Museum of Natural History conducted the Dalton Project Survey in the Lower Mississippi Alluvial Valley, with the help of Alden Redfield, John Moselage, Charles Scheel, Roger Saucier, Vincent Fasano, and Shelby Gilley. The survey covered a large portion of the 500 miles of the Valley between Cairo, Illinois, and Sicily Island, Louisiana (Fig. 1). Some 7,000 projectile points (or knives or whatever they were) were found, including 520 concave-based specimens which probably were made during the Paleo-Indian Period. One goal of the Dalton Project Survey was to prove the need for the redating of the river channels and surfaces described by Fisk (1944), since the Dalton forms reported from the Valley were known to be older than Fisk's estimates of channel age (see Saucier 1968). A second goal was to attempt to map out the distribution of Dalton forms in the Valley.

Six regions were defined for analytic purposes, permitting discussion of distributions on a basic North-South orientation throughout the Valley: Area I, Sikeston, Missouri; Area II, Corning, Arkansas; Area III, Malden Plain, Arkansas; Area IV, Wynn, Arkansas; Area V, Helena, Arkansas; and Area VI, Delhi, Louisiana (Fig. 1). The areas are basically separated by either a geographic feature-- like Crowley's Ridge-- or by gaps in our collections. They do not necessarily conform to divisions made by the ancient Indians. A fuller description of these areas is in my 1967 manuscript.

The term "Families" is used in this report to indicate the broad and inclusive nature of some categories. A "Family" may be divided into "Sub-families" which are slightly less inclusive. Theoretically, several types may be separated out of any of the "Families" but at the present time this has not been done. A "Type" represents a more homogeneous category, usually named by some archaeologist, and probably representing artifacts made by a common group of people. A "Variety" would be the most restricted category, with only artifacts so similar in their gross morphological form and distribution that it may be reasonably assumed that they are the products of a single group of people. The "Variety" would be the smallest subdivision of a "Type."

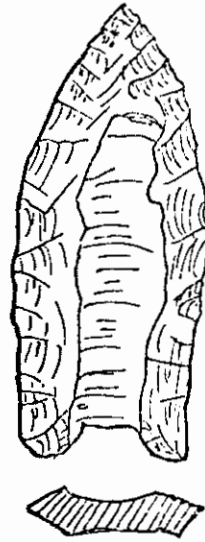
This paper will deal briefly with (1) some artifacts in the Paleo-Indian Family; (2) the Dalton Family, including the Classic Subfamily, Shallow Notch Subfamily, and the Lanceolate Subfamily; and (3) the San Patrice Family, including the San Patrice Type (Hope Variety) and St. John Type (or variety). The latter may be viewed as a variety of the San Patrice Type (Gagliano and Gregory 1965; Webb 1956). I would prefer to see it placed on the type level, due to its apparent widespread nature (see Angelico Point of the Carolinas, Painter 1964).

A major part of the problem in typology is based on the assumption made by the analyst in the beginning: is he searching for the true "Type" envisioned by the Indian craftsman, or for an arbitrary and useful "Type" which will separate various collections into regional and temporal units? The basic premises used by Ford in the classifications here are definitely of the latter category (Ford 1962). I hope to combine these approaches, with the Types and Varieties approaching perhaps the Indian's conception of his goal, while the Families and Subfamilies are grosser and more arbitrary units.

In Figures 3 and 4 the distributions of the Dalton Family and San Patrice Family artifacts are illustrated. The Paleo-Indian distribution is approximately similar to that of the Lanceolate Subfamily of Daltons (% of Total Projectiles graph), although based on a smaller sample. A clear distinction can be seen between the Classic Dalton Subfamily, with its major distribution in Area IV and the northern areas, and the San Patrice Subfamily (Hope and St. John) in the southern two areas.

The separation of the Dalton Dart Family into smaller units was not fully satisfactory, and currently is being revised as part of my dissertation. The distribution of the three Dalton Subfamilies (Classic, Shallow Notch, and Lanceolate) has been shown in Figure 3 in two ways; first, as a percentage of each area's total collection of all projectiles and, secondly, as a percentage of only the Dalton forms from each area. The huge percentage of specimens from Area IV was caused by the large collections from the Lace Place (Redfield and Moselage 1970) and other sites examined by John Moselage and Charles Scheel. Note the almost complete lack of the Dalton Classic Subfamily forms in the southern two areas. The Lanceolate Subfamily forms were more common in the southern areas than in the northern ones. This is very clearly shown in the second graph.

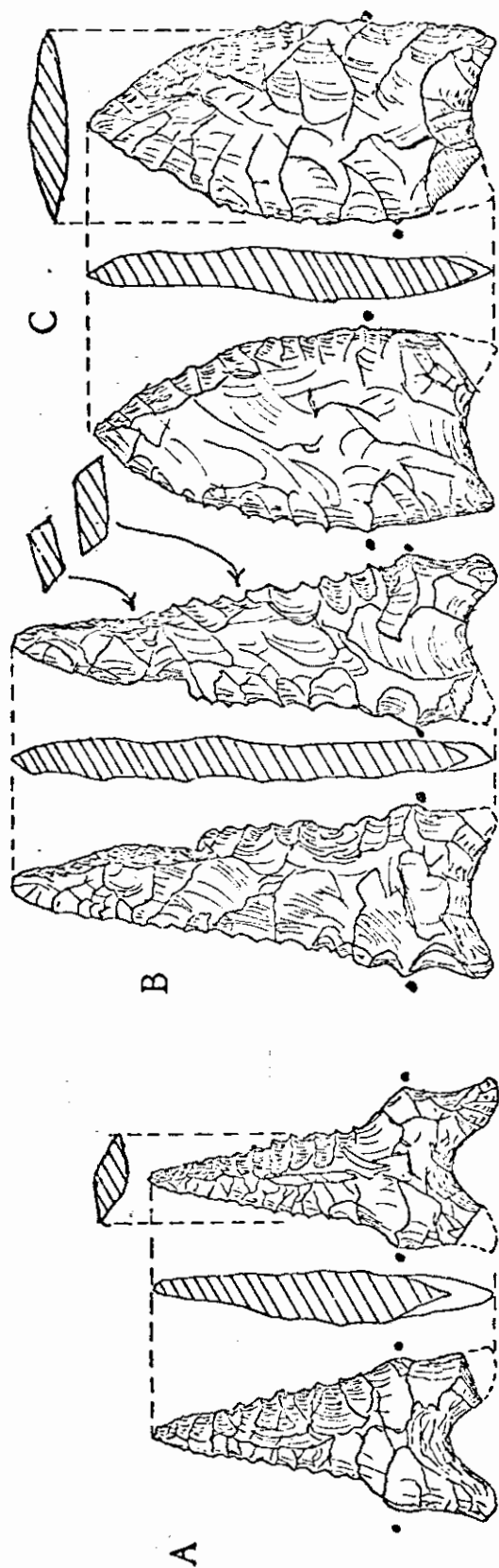
The narrow steeple-shaped blade common to many Daltons has been referred to as a necessary criterion for inclusion in the Dalton type (Chapman 1948; Wormington 1957). Our collections included many which are not steeple-shaped,




VARIOUS PALEO-INDIAN FORMS


I	.0 %
II	.0
III	.2
IV	.1
V	1.0
VI	.7

FIGURE 2



% OF TOTAL PROJECTILES  = 1.0%

I	4.4	2.5	1.3
II	1.3	.7	.7
III	1.9	1.8	1.9
IV	21.6	3.5	4.6
V	1.0	3.0	3.0
VI	.3	.4	1.6

% OF ALL DALTONS, EACH AREA = 100%  = 10.0%

I	54	31	15
II	49	26	25
III	35	31	35
IV	73	11	15
V	14	43	43
VI	13	19	69

FIGURE 3- Dalton Family: (A) Classic Subfamily, (B) Shallow Notch Subfamily, (C) Lanceolate Subfamily.

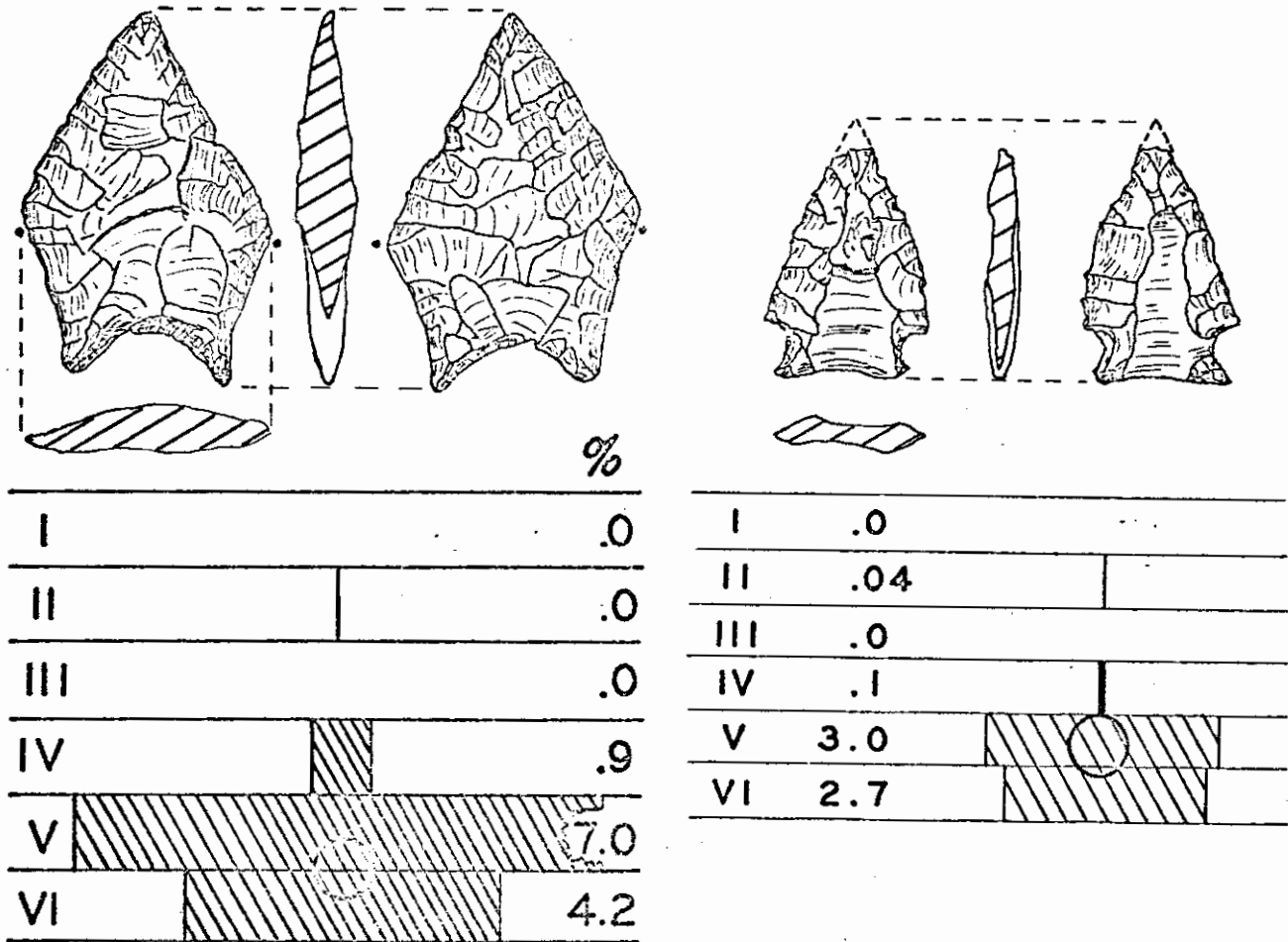


FIGURE 4

SAN PATRICE FAMILY

(Left) San Patrice Hope Variety and (Right) St. John Type.

are not beveled or serrated, and yet have essentially similar stem forms. The steple effect may be due to resharpening, repair after fracturing, or different initial ideas. In our collections the blade range shown in Figure 5, B, was fairly common on most sites. No site in our sample has only the "ideal" form. In our usage, the "Family" would include much greater variation than the "Type" and better describes our Classic Dalton Subfamily category. Any given artifact should have a number of the following basic characteristics, although it could never have all, in order to be included in the Dalton Family and its subfamilies. The Classic Subfamily includes specimens with many of these factors. The Shallow Notch Subfamily includes artifacts with some factors, and a shallow concave basal notch. The Lanceolate Subfamily includes the most lanceolate forms, some of which have only a few of the factors present.

Gross Morphological Form:

Always have concave bases.

Medium size, usually average about 5-6 cm., though may be as much as 12 cm. long.

Relatively thin biconvex cross section, averaging about .7 cm.; Flaking patterns similar to other Paleo-Indian and Early Archaic forms: parallel sided flake scars, quite shallow, forming an almost smooth surface. Fine retouch along edges.

Blade:

Blades usually are narrow triangles, half again as long as wide. Usually about same width as stems.

Edges may be slightly convex, straight, or concave (resharpening stages?).

Serrations may occur in several forms: large or small, along whole blade, or along lower half of blade.

Beveling may occur on left or right, or may be absent.

Shoulders: rarely pronounced, usually indicated by slight knob or expansion, never barbed.

Stem:

Sub-square or rectangle, usually slightly wider than long (as opposed to the typical earlier Paleo-Indian stem which is longer than it is wide).

Sides of stem: straight or slightly concave. The degree of concavity increases in some varieties until it approaches side-notching.

Grinding: sides and base of stem always ground.

Thinning: stems are thinned with flutes or thinning flakes. On some specimens "basal flakes" or abrupt short flutes are used, but do not extend up the stem an appreciable distance (Fig. 5, C, third from right).

Concavity: averages about .7 cm. in Classic Subfamily, .3 cm. in Shallow Notch Subfamily.

Proximal corners of stem: (1) "Foot-like," flat, often with small ear or projection laterally.

(2) Pointed or rounded.

(3) Flared.

May have any combination of these factors on any given specimen.

The mixture of varieties on each site could be due to the mixture of materials from different periods on each site or due to the manufacture of a variety of forms during one period. Some artifacts probably had other, or multiple, functions, and the shapes may be related to these factors (Witthoft 1970; Morse 1970).

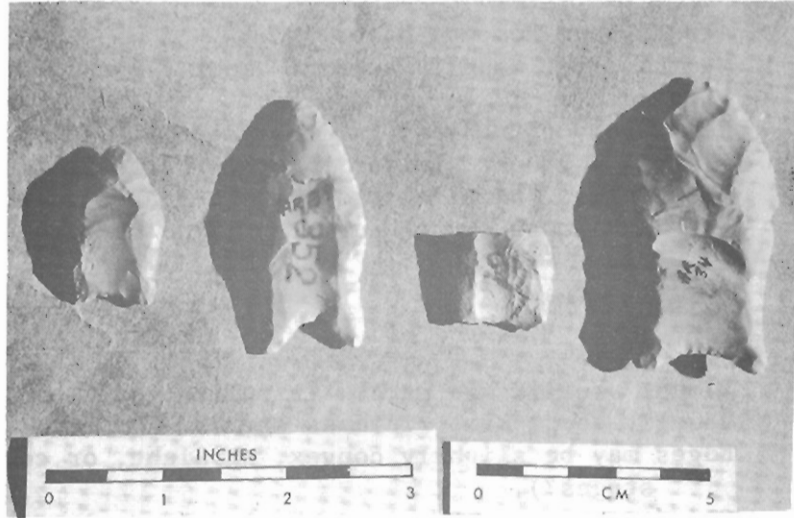
This paper, then, does not define the Dalton as a specific type, but rather presents a range of forms included in a general "Dalton Family" which

FIGURE 5

A

PALEO-INDIAN FAMILY

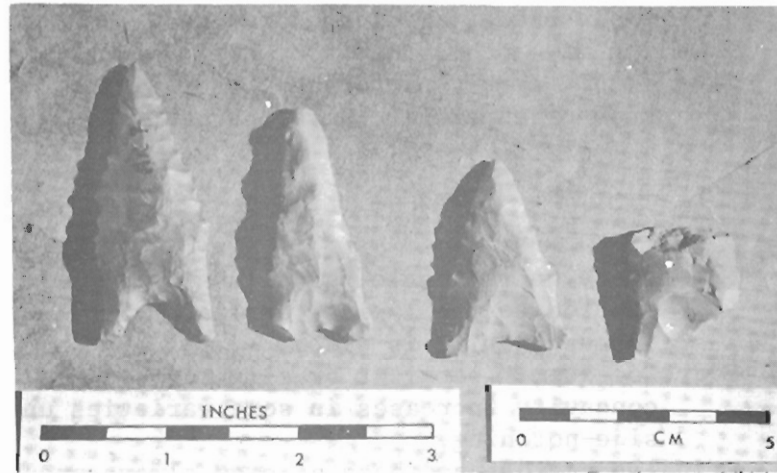
- 1- Area III
- 2- Area II
- 3- Area VI
- 4- Area V



B

DALTON FAMILY

Area 1
Sikeston, Missouri



C

DALTON FAMILY

Area II
Corning, Arkansas

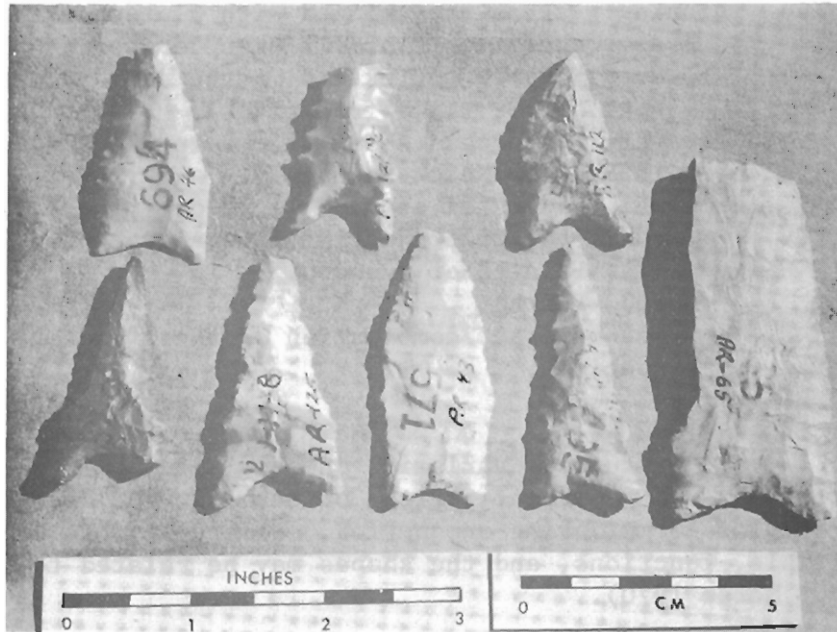
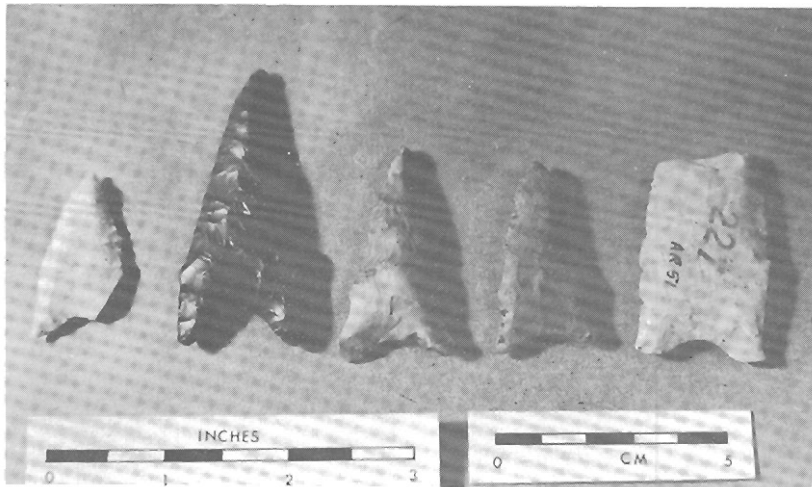


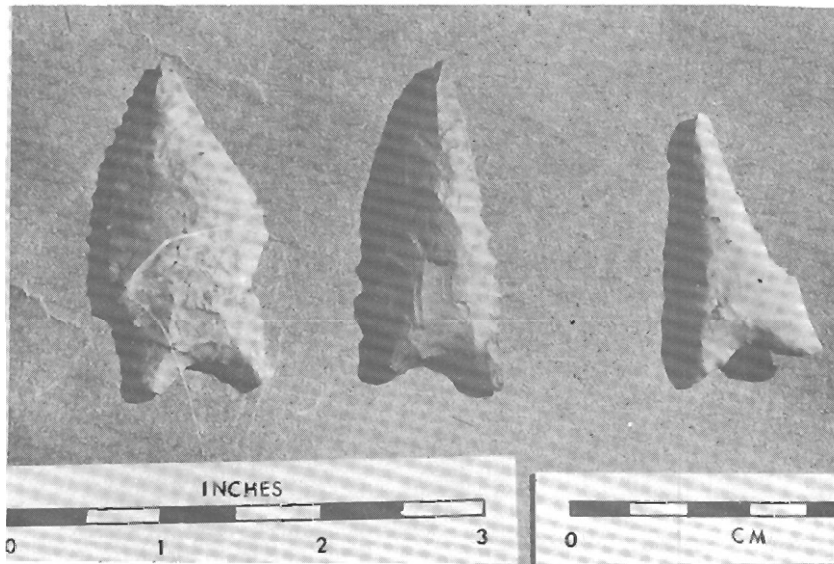
FIGURE 6



A

DALTON FAMILY

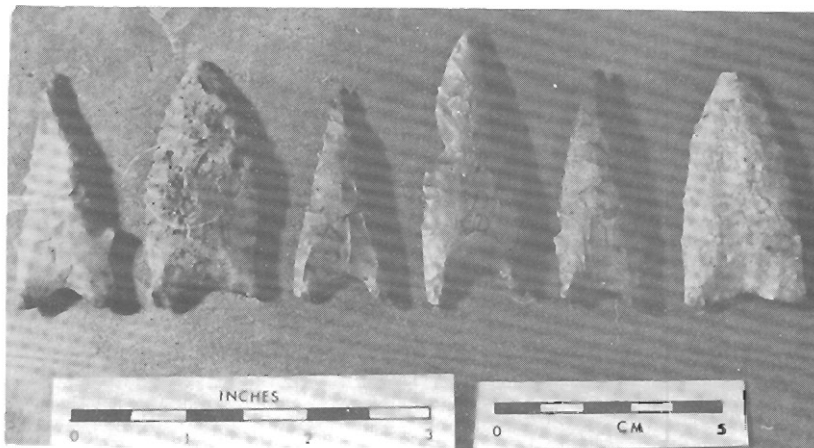
Area III
Malden Plain,
Arkansas



B

DALTON FAMILY

Area IV
Wynn, Arkansas



C

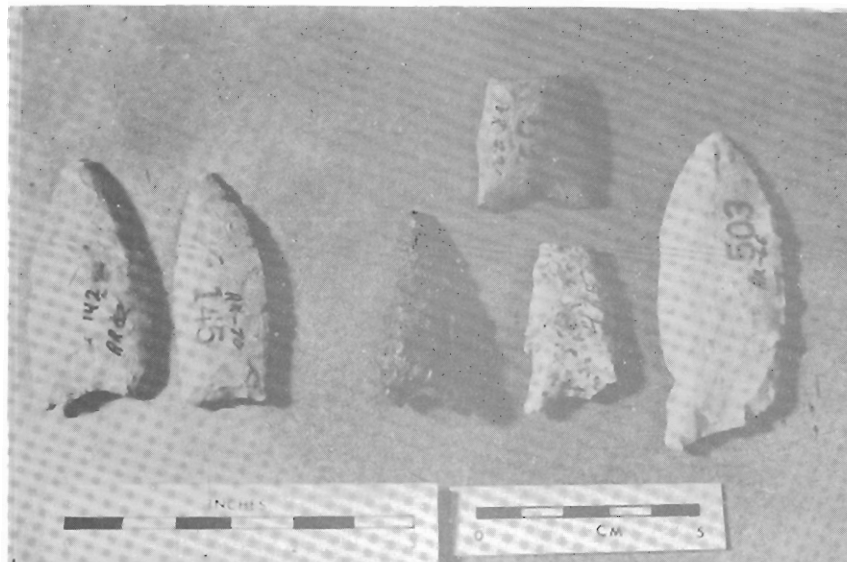
DALTON FAMILY

Area IV
Wynn, Arkansas

FIGURE 7

A

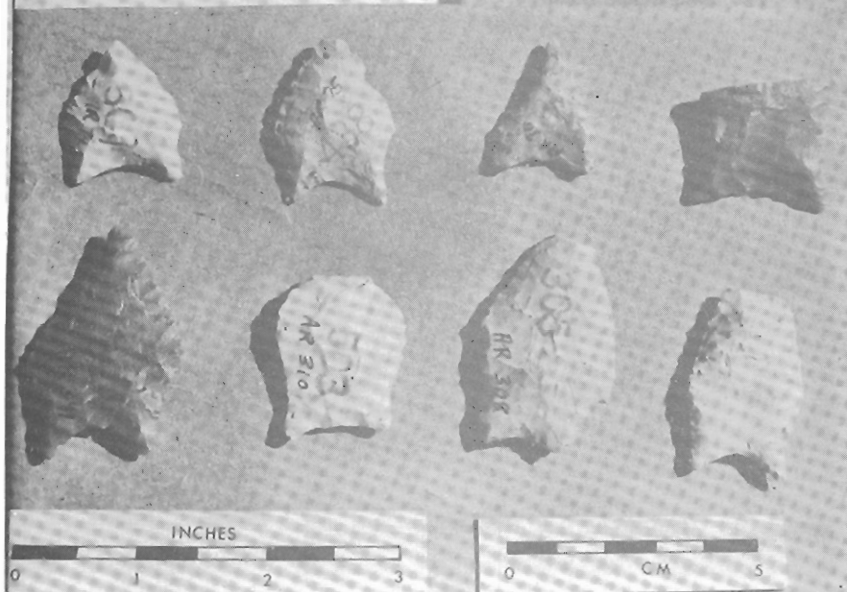
DALTON FAMILY

Area V (left)
Helena, ArkansasArea VI (right)
Northern Louisiana

B

SAN PATRICE FAMILY

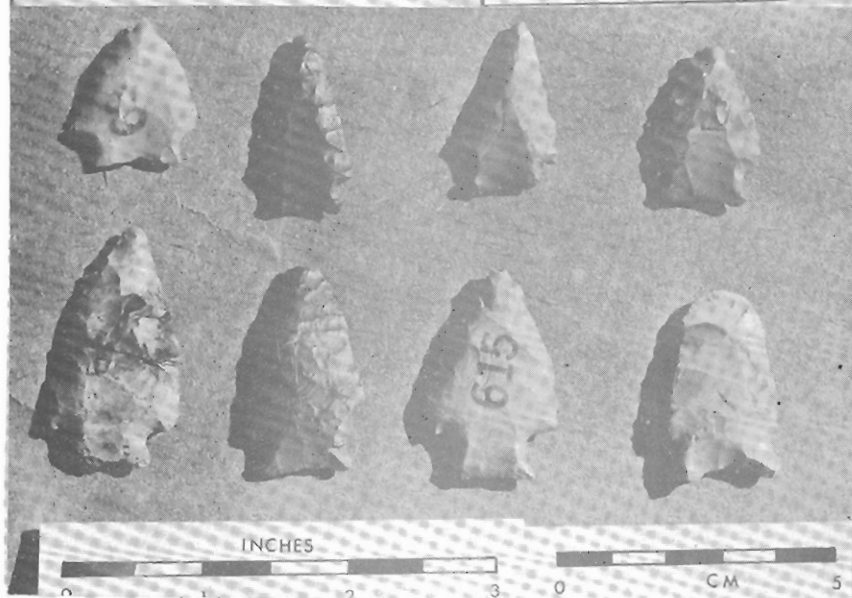
San Patrice Hope

Area VI
Northern Louisiana

C

SAN PATRICE FAMILY

St. John

Area VI
Northern Louisiana

have a number of essentially similar features of design. The San Patrice Family which occurs in the southern areas, presumably during a generally similar broad period of time, has been more successfully divided into several types. The refinement of the Dalton Family into its component types must be left for workers with purer sites or excavated samples, who can more clearly demonstrate which variations occur together consistently in time and space.

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THE TUNICA TREASURE

Robert S. Neitzel
Marksville, Louisiana

and

Jeffrey P. Brain
Peabody Museum, Harvard

ABSTRACT

An extraordinary cache of European and aboriginal artifacts, deposited as grave offerings by the Tunica Indians of southwest Mississippi, has recently come to light. The great quantity and variety of artifacts will provide invaluable data on the pattern of French contact in the Lower Mississippi Valley during the first half of the 18th century. Furthermore, the European artifacts will set a firm historic dateline for the aboriginal artifacts, which in turn can be utilized in a direct historic approach to answer some key questions relating to the late prehistory of the valley.

A pamphlet on the Tunica Treasure has been prepared by Jeffrey P. Brain (Peabody Museum, Harvard University, Bulletin No. 2, 1970) with a short description of the Tunica Indians and the group's acquisition of the "Treasure". Four illustrations of a small sample of the artifacts and a general inventory are also included in the pamphlet.

In addition to the study of the collection, Stephen Williams and Jeffrey Brain are planning a field expedition to Mississippi for the summer of 1971, one of the objectives of which will be to locate the burial site from which the artifacts came. Limited excavations there and at the associated village (or villages) will then be carried out in order to establish the archaeological background.

The collection of artifacts is currently on loan to the Peabody Museum by the collector. It is hoped that this collection can be acquired by the Museum.

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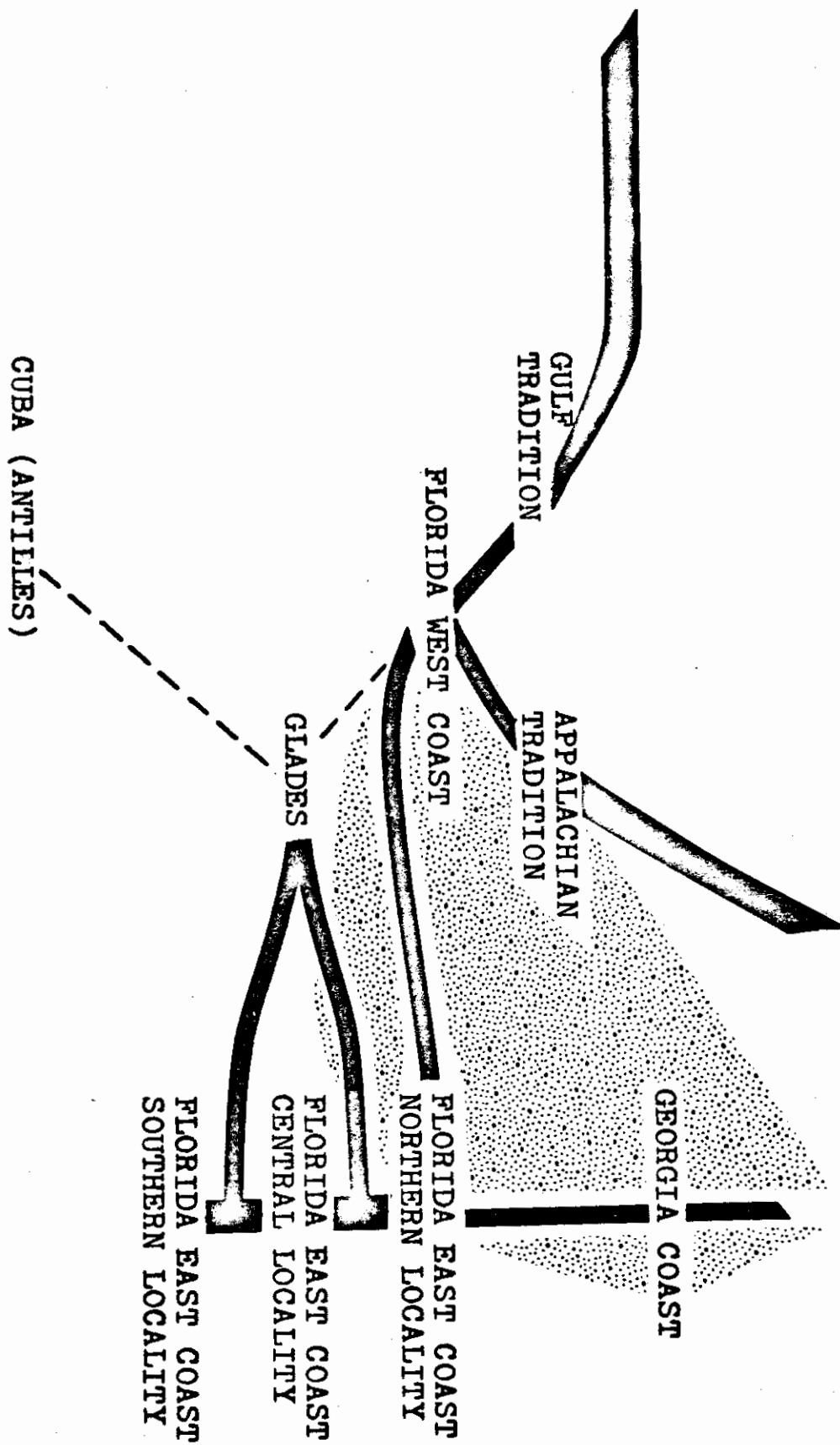


FIGURE 1

A diagrammatic representation of regional interactive spheres with respect to "chalky" ceramic fabrics. The stippled area represents the general location of Fuller's earth deposits.

THE MISSING HALF: THE ANALYSIS OF THE CERAMIC FABRIC

Donald L. Crusoe

University of Georgia

At the length of this paper I wish to have presented a general orientation regarding ceramic paste or fabric analysis. I wish to focus upon the utility of ceramic fabric analysis by presenting some data extracted petrographically, and finally, I wish to point out some well quoted hypotheses which may possibly be tested directly by fabric analysis.

That man is a creature of habit and that these habits are dictated by traditions, is the assumptive pillar of the now famous stylistic pottery studies of Deetz and Longacre. It is likewise quite reasonable to suppose that the selection of certain clays and tempering materials, as well as the way these materials were mixed, are indicative of the cultural tradition in just the same way as the subsequent processes of forming and decorating. In some cases, what is inside the pot may well be a more reliable index of the heritage of the potter than the pot's exterior (cf. Peacock 1970). The ethnographic literature is filled with statements noting the conservativeness of potters. Why are potters so conservative? The successful production of batch after batch of pottery "... requires the most meticulous attention to detail, and to tried and proven procedures. At a hundred points in the production process error or carelessness can lead to disaster" (Foster 1967: 300-301). In short, if the potter walks a rather straight and narrow path in the selection of his materials, their mixing and processing, their curing, and their firing, he can be most assured that his efforts will be rewarded by a successful finished product. For the archaeologist then, the detailed attention paid by the potter to the fabrication process can yield cultural data valuable in interpreting interaction networks.

As in Shepard's (1945) study of New Mexican pottery, certain materials may only be found in particular localities; and the occurrence of these fabric characteristics in pottery from another area will necessarily imply connections. There appears to be a limited number of ways material could get from one area to another. Whole pots could be traded. Raw materials were traded and fabrication was in another area. The specific material was preferred and journeys were made to obtain it.

Intermittently, for the last 5 years, I have been grinding, drilling, and dissolving fragments of pottery, and have been collecting and firing local clays. In particular, I have worked with the various Floridian chalky types. By way of a rather tedious process, I was able to isolate a common denominator present in all of the so-called chalky pottery types. This isolate is Fuller's earth whose main constituent is diatoms-- microscopic plants inhabiting a box-like siliceous shell or frustule. The study revealed a very strong relationship between the Glades and Florida east coast localities. Pots and/or raw materials were necessarily traded into the Glades since apparently there is a lack of native clays, especially diatom bearing deposits. The nearest such diatom deposits are located above a line running just south of Tampa and Vero Beach, Florida.

The picture for the Gulf Coast of Florida is more difficult to discern

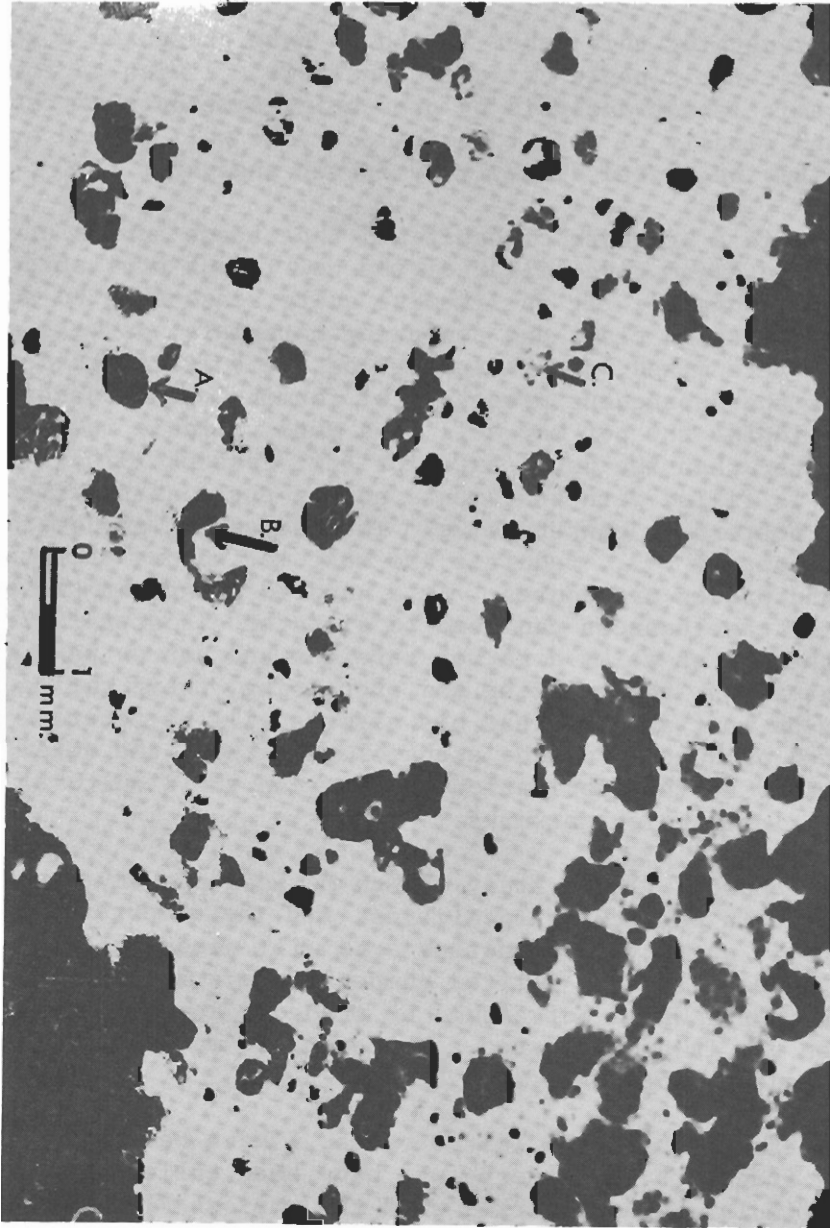


FIGURE 2

A thin-section of a Type I manufactured fiber-tempered sherd: (A) a rounded fiber cast; (B) a "U" shaped fiber cast; (C) sand inclusion.

since most of the area, at least that area from which Florida chalky pottery has been reported, falls within the general geological region indicated to have deposits of Fuller's earth. The interactions between the Gulf and the Florida east coast are not as strong nor as clear-cut as those between the Glades and the east coast.

The over-all picture can be summarized into what could be termed basic interactive spheres. First, the heartland is to be found in the St. Johns and Indian River areas. Evidence in this area indicated that the chalky tradition developed directly out of the fiber-tempered period (Bullen 1969; Crusoe 1971). Secondly, a primary interactive network is found between the heartland and the geographically isolated and geographically deprived Glades area. A secondary interactive network exists between the Gulf and Florida east coast areas. This third network, unlike the second petrographically, appears not as intensive nor as necessary for the maintenance of the ceramic tradition. A tertiary interactive network may be present with impulses traveling from the St. Johns area to the Lower Mississippi Valley area via an intermediary-- the Gulf Coast. The occurrence of chalky ceramics in the northwestern area of the Florida Gulf Coast appears less frequent as the distance from the heartland increases. Further west, among the cultures directly under the Mississippi Valley influence, there is an increase in the frequency of chalky feeling ceramics. Numerous Mississippian pottery types have been described as having a chalky feel. The most well known of these are Tchefuncte, Baytown, and Coles Creek (Thorne and Broyles 1968). Bullen (1969) has recently discussed the Tchefuncte-St. Johns origin problem, making note of ceramic attributes moving east as well as west. The chalky "feel" attribute is the most difficult of these to account for. I petrographically examined several Baytown sherds, a few of which were considered to be extra chalky. I found no diatoms. If analysis of Tchefuncte materials reveals the presence of diatoms then one may argue for strong Tchefuncte-St. Johns ties. With better control of method, one may even make a case for the Floridian origin of the Tchefuncte fabrics-- provided diatomaceous deposits do not occur in the Mississippi Valley area. If, on the other hand, the pottery contains no diatoms, then consideration should be given to a stimulus diffusion mechanism of transmission. These two models seem appropriate since typological, petrological, and stratigraphic evidence, strongly associated with a number of consistent radiocarbon dates, all point to a Florida east coast origin for the idea of making chalky feeling pottery. The model indicated at present would be the one which considers the heartland of chalky ceramics to be the Florida east coast. Impulses spread from the heartland into a secondary interactive area (the Gulf Coast), and into a tertiary interactive area (the Lower Mississippi Valley); the secondary area never having had knowledge of the ceramic "recipe" was not therefore in a position to transmit the formula into the tertiary area, but could transmit the idea.

Work on Georgia Coastal examples of chalky pottery led me to believe that interaction between the Florida and Georgia Atlantic Coastal areas was continuous since Deptford (Crusoe 1971). The recent work of Caldwell at St. Catherines Island has necessitated a change in this idea, and it would now appear that the materials petrographically examined by me and attributed to Wilmington, belong to the later St. Catherines phase. The developmental sequence, in terms of the ceramic fabric, noted in Caldwell's refined chronology highlights the longevity of sherd tempering (Deptford III, Wilmington, St. Catherines). One could test the idea that Wilmington does represent an invasion: Deptford III is its prelude, St. Catherines representing acculturated invaders. Petrological studies of thin sections, as well as examination of



FIGURE 3

A thin-section of a Type II manufactured fiber tempered sherd; (A) rounded fiber cast; (C) sand inclusion; (D) planar fiber cast. The dark line running through the upper quarter of the micrograph is the dividing line between the outer and inner clay matrix bands.

potsherds for chalky wares ought to yield data sufficient for the testing of this model. Central to this Wilmington study would be the idea that if Wilmington does represent an invasion, then the invaders would have disrupted the regional interaction network, later being integrated into it.

My current interests are with fiber-tempered pottery-- its origins and spread. I have only recently begun work on this fabric class but have made progress. First, in the spring of 1970, Donald Smith (Geochronology Laboratory, University of Georgia) found a fiber-tempered vessel with the fibers still intact. Examination of the fibers indicated the presence of two general forms-- a rounded and a planar form. The botanist consulted indicated that the fibers could not be Spanish moss, nor could it be rootlets never removed from the fabric. Instead, the botanist thought that the fibers, as well as the cast forms, indicated plants similar to the salt marsh rush and palmetto palm. Clay from St. Catherines Island indicated the presence of a very fine sand which comprised approximately 25% of the sample-- sand grains measured less than 1 mm. in diameter. Clay mixed in a similar fashion, but tempered with pine needles, grass, river rush, and palmetto were fired. The experiment indicated that if the fibers were carefully placed in the clay matrix, this is, between two rolled slabs of clay, a blackened area resulted adjacent to the fibers which were not volatilized at 725° F. fired for one hour. In short, a "core" black area was formed. A small bowl was made of the clay-sand mixture tempered with grass and pine needles. The fabric material was thoroughly kneaded which completely mixed the fiber; in some cases the grass was doubled back over itself. The pine needles, however, were not affected in that they ran parallel to each other and the surface. With these results in mind, I now turn to the second part of the recent research.

Thin sectioning of St. Simons fiber-tempered pottery from the lower coast of Georgia has led to the tentative identification of five distinct patterns of pottery making. The first type (Fig. 2) appears to have the fibers thoroughly mixed throughout the fabric. Fiber casts appear rounded (Fig. 2 A) and "U" shaped (Fig. 2 B) in cross section and measure about 1 mm. Sand inclusions (Fig. 2 C) generally measure less than 1 mm. in diameter.

The second type (Fig. 3) has an exterior band of orange clay. Fiber casts indicate the utilization of rounded as well as planar fibers-- though the rounded forms are more frequent. Rounded fibers (Fig. 3 A) measure under 2 mm., while planar forms (Fig. 3 D) occur up to 5 mm. Sand inclusions (Fig. 3 C) measure under 1 mm.

The third type (Fig. 4) has an interior and exterior orange band, both narrow and measuring less than 2 mm. Rounded (Fig. 4 A) and planar (Fig. 4 D) fibers occur only in the center blackened core, which measures 6.5 mm. (X). Sand grain inclusions measure less than 1 mm.

The fourth type (not illustrated) has an interior and exterior of orange clay. These two bands measure less than 2 mm. each. Within these two bands are two blackened layers measuring less than 3 mm. each and containing both rounded and planar fiber casts. A third layer is sandwiched between the two blackened bands. This third layer is extremely sandy, appearing light grayish in color and is fiberless.

The fifth type (not illustrated) is similar to the third in that it has an exterior and interior orange band with a black central core. The only

difference between these two types is that the latter type contains sand granules measuring up to 6 mm. in diameter. These granules have replaced the fibers which are completely absent.

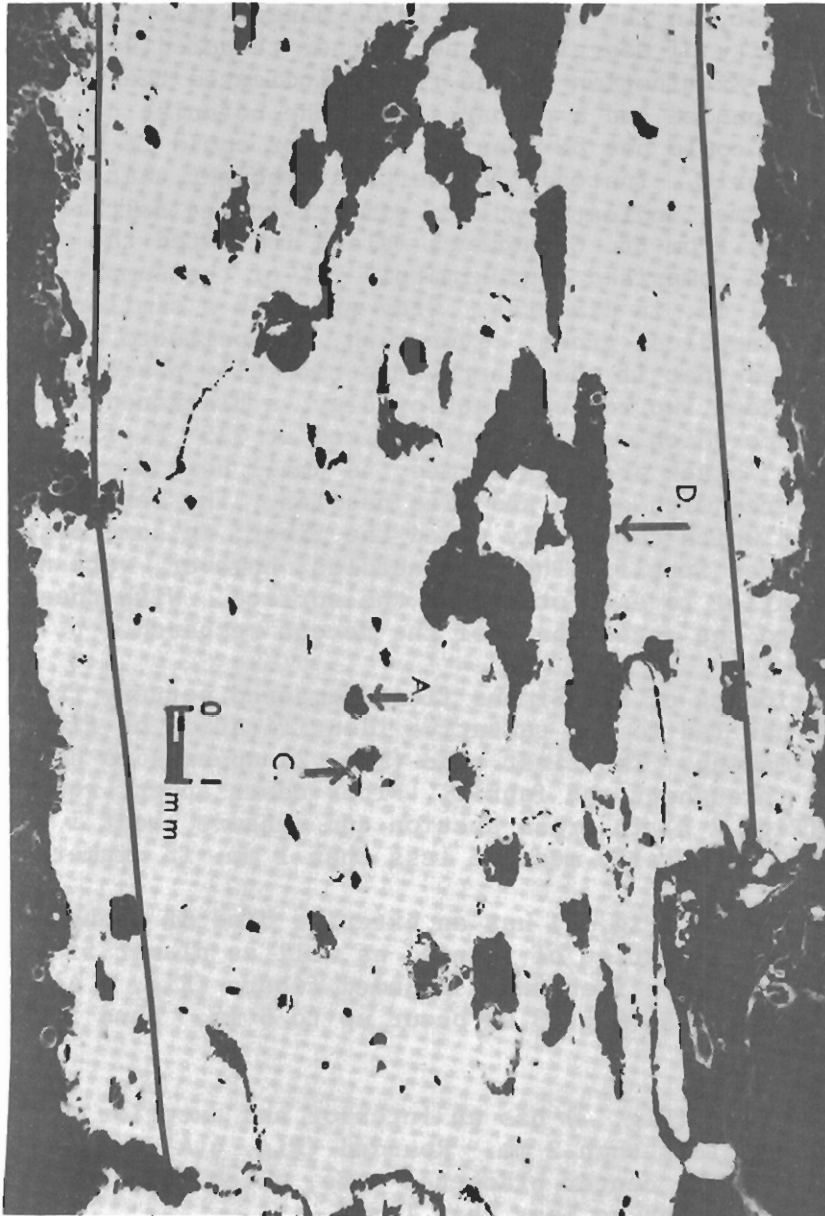


FIGURE 4

A thin section of a Type III manufactured sherd: (A) Rounded fiber cast; (C) Sand inclusion; and (D) Planar fiber cast.

OBSERVATIONS FROM THE LUM MOSS SITE:
AN INTERPRETIVE FIELD REPORT

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Institute of Archeology and Anthropology
University of South Carolina

INTRODUCTION

Information recovered through archaeological salvage completed at the Lum Moss Site (9G02) in northwest Georgia has revealed a number of components which are individually distinguishable on the basis of horizontal feature separation. The most important components of this site, which is located at the historic site of New Echota at Calhoun, Georgia, on the confluence of the Coosawatte and Conasauga rivers approximately 50 miles south of Chattanooga, Tennessee, are Deptford of the Upper Early Woodland, a combined Woodstock/Hamilton of the Late Woodland/Early Mississippi, and the historic Cherokee periods.

The salvage of this site was completed by the Georgia Historical Commission when construction of a new golf course at Calhoun threatened to destroy it through topsoil stripping operations. Since work had not been programmed as part of a separate research project at New Echota, only a minimal amount of salvage work was allowable. Topsoil stripping operations exposed extensive numbers of pits and post molds, which were accordingly flagged, excavated, and mapped. The quantities of features and the damage done to them by the scraping has, in some cases, made it difficult to separate individual structures and to relate them to the specific components evidenced by certain artifact-yielding features.

RADIOCARBON DATING

Three radiocarbon age determinations have been run on samples recovered from the site. The determinations were made by Isotopes Incorporated and suggest an occupation in the first century B.C. for elements of the Deptford Aspect as represented by Deptford Plain and Simple Stamped ceramics.

Sample I-4868 yielded a date of 2050 ± 95 or 100 B.C. and was determined from charred post remains in a house pattern associated with Deptford Simple Stamped ceramics, and therefore provides an indicative date for the occurrence of these wares.

Sample I-4869 was taken from charcoal that occurred in a trash pit yielding Deptford Plain pottery. This determination was 2005 ± 95 or 55 B.C. and is a good date which, together with the slightly earlier date from the structural member, provides a well supported dating of the Deptford component.

A third date of 990 ± 95 or A.D. 960 was determined for contents of a pit of presumably Early Mississippi affiliation. This pit yielded no diagnostic cultural materials, but did provide a quantity of corn and other vegetal remains and is suspected of relating to a Woodstock/Hamilton occupation of the site.

The dates for the Deptford component agree with related dates from Georgia, including a date of A.D. 1 for the Deptford component at Mandeville (M-1042 from Kellar, Kelly, and McMichael 1962) and Michigan dates from the Mahan Site near Calhoun of 540 B.C. (M-1117) and 636 B.C. (M-1116). These latter dates relate to the occurrence of Dunlap Fabric Impressed pottery which is ancestral to Deptford and other sand-tempered wares in this area. The date of A.D. 960, if it is indeed from the Hamilton/Woodstock component, would compare favorably to the University of Georgia's recent date of 928 ± 40 A.D. for the Woodstock component at the Pott's Tract Site in the Carter's Dam area (Halley 1970) and minimally can be considered locally indicative of the presence of corn in the Early Mississippi Period.

WOODSTOCK/HAMILTON COMPONENT

Woodstock ceramics were observed from four pits, and in two cases were directly associated with limestone-tempered wares of the Hamilton complex (Kneberg 1952, 1961). The Woodstock ceramics (Wauchope 1966) are represented by both the diamond and bar and lineblock stamping. Limestone-tempered wares are plain surfaced with constricted neck and pronounced lipping of the rim.

Lithics from this component consist of small triangular projectile points, larger stemmed points, bifacial blades, and a polished steatite bar gorget. Structural patterns are undoubtedly present, but, due to time restrictions on the field work, are not currently separable from previous as well as later overlapping structures. The Woodstock/Hamilton occupation at the Lum Moss Site would appear to be typical of this cultural complex as represented at other sites in the southern Appalachian region of Georgia and Tennessee.

DEPTFORD COMPONENT

One trash pit has yielded portions of at least six different Deptford Simple Stamped vessels (Wauchope 1966), nearly all of them bearing tetrapods. They show varying degrees of "fineness" in the application of the stamping, as demonstrated not only among the various vessels, but also in the range encountered on individual pots. Plain and Check Stamped Deptford wares are present in a very small percentage, but are not separable in context from the Simple Stamped.

A variety of lithic remains from the Deptford component demonstrates the presence of "Archaic/Early Woodland" projectile point types in this aspect. These include forms suggestive of Big Sandy, Bradley Spike, Ebenezer, Greenville, and large stemmed beveled points.

Quantities of mica appeared consistently in the features of the Deptford Component, along with hematite, green slate, unusually pure quartz flakes, kaolin lumps, and pyrite crystals. The presence of these items is consistent with the limited descriptions of Deptford to date available in the literature (Waring and Caldwell 1939; Wauchope 1966).

DISCUSSION OF SIMPLE STAMPING IN GEORGIA

Simple stamping is widespread in Georgia and the general southeast area, appearing over the years at a number of sites under a variety of type descriptions. It is predominately associated with Deptford Simple Stamped in Georgia, but often has been referred to as Mossy Oak, and before that, as Vining Simple Stamped.

Seldom have Deptford or Mossy Oak been found in a tightly closed component and most often have been dismissed relatively lightly in site reports. Simple stamped wares typically are associated with "Adena-like" traits, including among others, cut mica, greenstone slate, galena, and other relatively rare minerals.

In the original type description, Caldwell and Waring (1939) have mentioned that "considerable variation is present from site to site" in the surface stamping of Deptford. It is stated that it closely resembles Mossy Oak Simple Stamped, which was typed by Jennings and Fairbanks (1939). Although avoiding a tedious repetition of the descriptions of these two types, it must presently be pointed out that the type descriptions originally described two entirely different wares. Mossy Oak and Deptford share basic similarities in the presence of simple stamping and sand temper, but they apparently disagree in demonstrated distribution and perhaps in attributes as important as vessel shape, form of the base, including the presence of tetrapods, rim form, and perhaps very importantly the incidence of incising. The more recent publications concerning these two types treat them as the same basic ware, differentiated solely on the basis of "finess" of stamping as demonstrated by the size and boldness of the lines. The degree of simple stamping "boldness" by itself is not suitable criteria for the assignment of pottery to one or the other of these two types, although validity for change or deviation within the types may be demonstrable on such a basis.

Simple stamped wares recovered from the Lum Moss Site demonstrate that under the current informal type designation criteria in use, we have both Deptford and Mossy Oak simple stamping present on the same vessels, while under formal type considerations as originally established, we have only Deptford.

Mossy Oak, as evidenced by the surprisingly few solid cases for its occurrence, has several things to be said about it. Particularly the type vessel which shows a definite incised groove around the rim is not known from any published occurrence of Deptford Simple Stamped, other than perhaps from the Refuge Site where Waring reported a very minor occurrence (Williams 1968). Although Deptford has been demonstrated as reasonably early in the ceramic sequence of Georgia, Mossy Oak has not, and at the type site the only overlying component was Lamar, separated by a thick blanket of sterile soil. This is not to imply that Mossy Oak is not early, but simply that this fact has not been fully demonstrated and is therefore open to some questioning.

What is the true distribution of Mossy Oak and Deptford and not just the distribution of simple stamped wares? Are they two different wares marked by distinct attributes which may or may not have implications regarding two distinct groups operating at different points in time and/or space?

SUMMARY CONCLUSIONS

In conclusion, the simple stamped component of the Lum Moss Site is a component of the widespread Deptford Aspect and reflects "Adena-like" elements. On the basis of ceramic typology as now established, it has no demonstrated relationship to the Mossy Oak complex of central Georgia. The Deptford Aspect is preceded in the southern Appalachian area of north Georgia by the fabric impressed, grit-tempered wares of the Dunlap pottery complex and was in all probability followed by the Swift Creek and other Middle Woodland pottery types. The Deptford Aspect relates to the later Early Woodland Period and in the terminology of Caldwell's "Trend and Tradition" (1958) would reflect the Cartersville Complex of the Southern Appalachian Tradition. The relationships of Deptford Simple Stamped to other simple stamped ceramics is not really known, and at this point in the development of our taxonomies and understanding of the cultural processes active in Georgia's prehistoric past, must not unhesitatingly be equated with other materials which are still of questionable significance regarding their role in space and time.

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EXCAVATIONS AT THE BELL FIELD MOUND, CARTER'S DAM; 1970 SEASON

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University of Georgia

The return to Bell Field Mound in the summer of 1970 was actually the fifth season of exploration at the site. Previous work had been carried out from 1965 to 1968. In 1969, funds were not available for river basin salvage at Bell Field. The author was engaged in salvage at the industrial park development of the Great Southwest Company in southwest Atlanta. Subsequently pipe line archaeology and a project in innovative education was undertaken at the Pebblebrook School in Cobb County, Georgia.

The 1970 program at Bell Field was concentrated on excavation of the basal portion of the mound to uncover structures partially exposed at the end of the 1968 season. The earlier work had indicated that the mound was a multiple construction of successive pancaked building levels, of which the uppermost gave evidence of truncation during more than 100 years of modern cultivation. Only the downslope remnants of these separate mound constructions remained with midden, fired daub, and charcoal derived from the ceremonially burned structures on top. Ritual burning and destruction of both domestic and public buildings were suggested in the full Dallas Period at the several Carter's Dam unit sites. Diagnostic cultural material from the downslope deposits revealed that the final occupations at Bell Field exhibited a ceramic and artifactual assemblage assimilated to a continuum of Dallas and increasing increments of a north Georgia variant of Lamar. The author labeled this suggested syncretic combination "Dallamar" with the hypothesis that an original Dallas ceremonial complex was gradually mixed with Lamaroid elements attributed to proto-historic Cherokee.

The untruncated intact mound core occupations number at least three mound intervals of building and occupation. In 1965-1966 a rectangular council house with a saucered floor and a huge central hearth was found. This was connected by a clay passageway to a dormitory-like structure. These were Structures 4 and 5. Structures 6 and 7 were exposed to the north grid of the first core mound as defined. It was apparent the Bell Field Mound must have originally exhibited mound pyramid summits at differential heights, with a main "temple" group overlooking an apron or ramplike extension on a lower level, reminiscent of the model reconstructed by Tennessee archaeologists at Hiwassee Island.

Beneath Structures 6 and 7 in the first core mound, we next uncovered portions of Structure 8, which was separated from the building level above by nearly three feet of blue gumbo mound fill. Structure 8 had really been three successive structures ceremonially demolished and rebuilt. In the summer of 1968, under another 2 to 3 feet of blue gumbo and beneath Structure 8 in the higher pyramid, we encountered the corner section of another saucer or bowl-shaped building with collapsed roof and wall debris. This was Structure 12 and was found immediately adjoining still another structure (13) whose ramp led underneath the unexcavated west quadrant of the mound.

Structure 9 was also found in 1968, under Structure 6. Structure 9 had a covered passage connecting it with Structure 10 to the north, which in turn was in tandem position with Structure 11, less than 5 feet alignment to the east. To recapitulate: we have Structures 4, 5, 6, and 7 in the first, untruncated, core mound; Structures 8, 9, 10, and 11 underneath in an intermediate building zone; and Structures 12, 13, and 14 partially exposed close to the base of the mound. At the end of the 1970 season, we had uncovered a postmound sequence and partial floor section of still another building in the base of the cut of the East axis trench, possibly a sub-mound structure.

After two years, we returned in 1970 with a restricted budget and small field crew, and about 6 weeks to uncover the remainder of Structure 12. Both time and money were inadequate for the task at hand. Due to heavy rains in July and August, we spent about half of the time bailing water from the bowl-like floor section of Structure 12. Also, there were tons of collapsed and melded soil from the eroded balks left from previous seasons of excavation. At least half of Structure 8 was still intact over Structure 12, with 3 feet of blue gumbo mound fill intervening. Ninety feet of the East axis entry trench was cleared and the old profiles recut. This operation in the deepened axis trench exposed Structures 14 and 15. Several large cooking areas, ash beds, and a 12-foot-wide roasting pit at the featheredge of the interior core mound to which Structure 8 belonged were also found. The walls of Structure 14 had been ceremonially demplished and pushed in over the floor section. Decomposed logs in situ still revealed the original bark contours and termite nests and residues were still preserved in the log moulds.

Some interesting finds were made in the ash beds and roasting pit at the mound featheredge, reflecting the diet of the early Dallas people. Several fired dauber nests, belonging to a wasp species known locally as "dirt daubers", imply that the roasted pupae were eaten. Forty years ago at the Korando Village Site in southern Illinois, this author found large quantities of similar roasted daubers in the ash filled, clay-lined cooking pits of the village.

Another discovery consisted of several large local deposits of a partially roasted or baked starchy mass buried in the ash beds. These are presently being analyzed by ethno-botanists and food technologists at the University of Georgia. The initial archaeological "hunch" was that the starchy "blobs" might be the remains of crushed tubers-- the Indian Bread in local ethno-history from the late 18th to the 19th centuries.

At least four radiocarbon samples are being run at the University of Georgia nuclear laboratory, but no dates for Bell Field are available at this time. Our pottery collections from the mound structures are extremely meager, although we do have a fine collection of Dallas mortuary ware from the log-tombs made intrusive through the house floors from one of the final occupation levels. No log tombs, or burials of any kind, have been found thus far in the early core mounds.

Some evidence is accumulating with the 1970 survey of the basal mound that there is an increase of grit-tempered pottery attributed probably to a north Georgia Savannah Period, along with a small minority of pottery related to Hiwassee Island, i.e., Hiwassee Red on Buff and Plain. This is in sharp contrast to the nearly "pure" Dallas aspect in the upper mound with markedly increasing Lamar sherds and rims in the final occupation. No historical trade items have been found.

Carol Hill and Margaret V. Clayton, two pre-doctoral students at the University of Georgia, have collaborated on an excellent ethno-historical study in which they conclude that the site at Carter's Dam is most likely Coosawattee Old Town. The archaeological data and the ethno-historical documentation seem to be congruent.

Another full season at Bell Field, centered on the crucial mound base structures and occupation, is needed to adequately cover the prehistoric spectrum from a Savannah-Wilbanks (Etowah) to a proto-historic Cherokee settlement. It seems rather clear that Bell Field closely parallels the sequence uncovered and reported at Hiwassee Island by Lewis and Kneberg. Details of mound construction, burials, and Dallas architecture are very similar at both sites. Instead of a Hiwassee component at the base of Bell Field-- such as antedated the Dallas continuum at Hiwassee-- we may have, on the Coosawattee River at that time interval, a preponderant Late Savannah related to the situation revealed at the Plant Hammond Mound (on the Coosa River) at Rome, Georgia. This site was excavated in 1968 by a University of Georgia field party for the Georgia Power Company, and is currently being analyzed and a report prepared. Carbon 14 dates for burned buildings at Plant Hammond were A.D. 1120 and 1290. No "Cult" objects were found at Plant Hammond, and very little at Bell Field except a few very late traits, although both sites are less than 50 miles from the type site at Etowah.

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HIGH SCHOOL ARCHAEOLOGY IN COBB COUNTY, GEORGIA

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and

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ABSTRACT

Pebblebrook High School was found to be located on a 22-acre, multiple component site which was further endangered by additional construction of a 54-inch pipeline. A normal salvage operation with volunteer students resulted in a curriculum program in archaeology. The discovery that numerous other sites in the county were endangered by 109 miles of proposed pipeline, which will follow every major stream, has encouraged local archaeologists to involve every school in the system in a major salvage project wherein archaeology will be introduced as an innovative teaching technique and stimulus to secondary education. The major costs of salvage archaeology, that of labor, will be greatly reduced.

Pebblebrook High School, in southwest Cobb County, Georgia, sits on a terraced slope beside a polluted creek. The creek, Nickajack, empties into the Chattahoochee River a few miles to the south. The school is crowded, its curriculum restricted. Although located within the metropolitan Atlanta sprawl, the area is politically conservative and has a rural atmosphere. The school ground itself comprises the major portion of a 22-acre multiple component site containing material from Archaic to Mississippian.

A salvage operation was conducted using student volunteers as workers after it was learned that the county was installing a 54-inch sewer line along Nickajack Creek, which would cross the school yard and destroy an undisturbed portion of the site. From this evolved an experimental world history class with its 24 members working both in the classroom and in their school yard laboratory.

Last November, A.R. Kelly, who is director of the Pebblebrook program, spoke at the Southeastern Archaeological Conference on the need for emergency archaeology (see Bulletin 11). He described the salvage process at 9 Fu 14, a Woodland village which was on the Chattahoochee River a few miles downstream from the Nickajack. About this same time, a Pebblebrook student who had visited 9 Fu 14, recognized that his school yard had produced similar material. Pebblebrook was visited, favorably appraised, but considered a site that could wait. In February, news came of the approaching pipeline. The Cobb Board of Education was asked to support an emergency dig. The board allotted a small amount of money for four weeks of salvage work along the pipeline right-of-way. Sixteen students were divided into two groups working alternating mornings and afternoons. They received neither pay nor class credit. Each student was as-

signed to his own feature and was required to keep field notes. There was no vandalism. There was evidence of some pride in the school's uniqueness.

The salvage operation started in March and continued until school ended in June, after the pipeline had been installed. Good evidence of Woodland and Early Mississippian, Cartersville and Woodstock phases, was recovered. Part of the success of the salvage effort can be credited to the aid and interest of the pipeline construction workers.

As the operation continued beyond the original four weeks, the idea was conceived to convert the school grounds into a "living" laboratory, studying the site through the cross-discipline approach of both physical and social sciences. A juxtaposition of prehistoric and contemporary life-styles is demonstrated by the school building itself; the biology-chemistry wing bisects a 6-foot cooking pit and the history section sits on a 12-inch deposit of midden with intrusive features.

The 1970 season has started, working first in an area with Archaic traces. Twenty-four students are working on the site during the last two periods of each day, and will receive $1\frac{1}{2}$ units of credit for the work. During bad weather they will work on cleaning, analysing, and preparing the material for a permanent display in the school, plus classroom study. The course is currently designated for teaching history as culture change. The Board of Education has set aside a moderate sum of money, and the aim is to expand the program to other secondary schools in the county, then throughout the Chattahoochee Valley.

There are differences between the frantic salvage excavation in the controlled approach this fall. The 16 original volunteer workers were chosen by our history teacher-liaison man on the basis of interest and dependability--or because they had more than one study hall. They ranged from ninth graders to seniors, with averages of A to D. After the first 6 weeks, the students with lower grades improved their work in most subjects, even though they had to make up classes and homework every other day. Some students were unable to keep up their school work and dropped out of the program. Thirty students worked during the spring.

The Pebblebrook project points to an all too familiar problem. Urban and industrial expansion in Cobb County, the State's third largest county in population, has resulted in a long range, badly needed, water pollution control program. This would include installation of 109 miles of sewer lines along every major stream in the county.

In theory, the pipeline is granted 60-foot temporary easement. In actual practice, up to 300 feet are used and the subsurface distance results in heavy damage to most sites. Where streams are deeply entrenched, producing granite overhangs, entire valley walls will be blasted to make suitable ledges for the pipes. One valley, three miles long, contains nine of these rock shelters utilized as campsites by hunting parties throughout time. Not only will prehistoric and historic sites be affected, but natural, scenic, areas containing important ecological systems will be destroyed.

Add to this interstate highway construction and the incredible increase in urban housing, individual and multiunits, all affecting areas which were heavily occupied in aboriginal times. A partial survey of these streams during the past summer, using high school and college students, indicated that 94 per

cent of known sites, not considering unrecorded ones, will be destroyed within the next five years.

By extending the Pebblebrook idea to other high schools and with cooperation from local and federal agencies, a combined educational and salvage program could be developed to help reduce the loss of important data.

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THE CATTAIL CREEK FLUTING TRADITION

Floyd Painter

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ABSTRACT

Technique of removing flutes or channel flakes from Clovis-like projectile point preforms, as practiced at the Williamson Paleo-Indian Workshop Site in Little Cattail Creek, Dinwiddie County, Virginia.

The technique at this site differs greatly from methods suggested by scholars in past studies regarding other proposed fluting techniques. It is unique also in that technology and tradition can easily be identified by lithic debris alone. The author believes the Cattail Creek Fluting Tradition was the basic technology employed by Clovis Man in this and all other areas of the Continent where his lithic remains are found. The study does not include manufacturing techniques used on later variants, such as Cumberland, Folsom, and Holcombe points.

INTRODUCTION

Since the discovery of Folsom fluted points in 1926, virtually every scholar of Paleo-Indian lithic material has tried his hand at describing the method or methods employed in detaching flutes from the various Paleo-Indian projectile points. Unfortunately, most of these studies were made by persons familiar with completed fluted points only, and these in very limited quantity. The results of relatively few such studies received a wide circulation or a wide acceptance.

Deductions based upon completed fluted points have little value, since much of the technical evidence concerning the fluting process has been obliterated by the final basal retouching and deepening. Obviously one needs to examine a series of unfinished points ranging from crude preforms to nearly completed specimens, to arrive at a definite conclusion. This ideal study-collection must, of course, derive from the same site, complex, and tradition.

This writer has been privileged, for he has been able to study the well-known Williamson Paleo-Indian Workshop Site for the past several years. This site is in fact the center of Paleo Man's greatest activity as yet found

in North America. It produces in great quantity, blanks, rejects, and unfinished projectile points in every stage of the manufacturing process. A trained analytical mind is not required in order to arrive at the method used here to produce fluted points. The evidence is everywhere and any intelligent observer could, if he applied himself, arrive at the correct solution.

Cattail Creek Chalcedony, the lithic material occurring at the Williamson Site, has many impurities, geodes, bands of softer stone, and flaws of every sort. However, it was the finest workable stone available, in quantity, in southeastern Virginia. The early hunters valued it highly and returned to this favored lithic source for many generations. Indeed, Clovis Man used this preferred stone so very extensively that the material source has been completely exhausted. The workshop-site extends for a distance of more than a mile on both sides of Little Cattail Creek, and covers an area of perhaps 1,000 acres. Although great concentrations of workshop debris occur in several spots, the entire area is littered with waste stone material: chips, chunks, blades and spalls, rejects, cores, and unsuitable pieces of stone. Scattered among this debitage are complete and broken projectile points, unfinished points or preforms, and tools in great variety. Without doubt, the largest assemblage of Paleo-Indian cultural material discovered to date is at the Williamson Site. What better place to search for answers to the many mysteries posed by these nomadic hunters?

Apparently the finest lithic material at the site was reserved for the manufacture of core blades. These early hunters were quite adept at striking off long, triple-faceted blades from prepared cores. The coarser grades of stone were more often utilized in making fluted projectile points and tools. Core blades were seldom used in the making of projectile points, for the obvious reason such blades lacked the thickness and strength these hunters required of their weapon tips. The majority of points were made from thick spalls of irregular shape and size. These were struck from large untrimmed nodules and chunks of stone. Size of the original spall determined the size of the projectile point to be made from it, and these points ranged from one to six inches in length (25 to 155 mm.).

We all tend to seek the difficult, the complicated, answers to the many problems we strive to solve, yet the end product of our mental labors is usually a simple, logical solution. Such is the case at the Williamson Site. We find ourselves amazed at the simplicity of the fluting process, for we have been conditioned by the theories of well known scholars to expect complex methods and techniques. Once freed of these dogmas, we do a mental "about face" and begin seeking even simpler, easier methods by which Paleo Man could have produced serviceable projectile points. We ask ourselves, "why did they do it the hard way?"

The early hunters at the Williamson Site did manufacture their projectile points "the hard way." However, the method was not intricate or complicated in any phase of the process. These men made their weapon points in a simple, tried, and proven manner, employing a technique perfected by their ancestors and handed down with little change for untold generations. Slight evidence at the Williamson Site perhaps indicates there were those who now and again tried innovations of technique, who may have desired to improve the method. These deviant ways, however, were evidently not adopted by the majority. There were also those among them who were lazy or lacking in skill, who took advantage of thin blades or spalls by chance the right thickness. Such

pieces could be shaped into serviceable projectile points without the expenditure of labor necessary to flute or work down a thicker spall. Such opportunists were in the minority, for fully 90 per cent of the completed projectile points found at the Williamson Site were made in the traditional, or "hard way."

The writer, like many students of Early Man, had held the belief that flutes were removed only in the finishing stages of point manufacture. The point supposedly lacked only pressure retouching and grinding when fluting occurred. An on-the-site study of rejected material at the Williamson Site changed these dogmatic beliefs. The writer was amazed to learn flutes were removed as one of the initial steps in the manufacturing process, and fluting was repeated, often many times, before the point was completed. The fluting process was repeated as often as found necessary to thin the basal portion of the projectile point to the thickness required by the maker.

The writer was surprised to learn also that initial flutes were always struck from, or very near, the center of the preform base, and not from either or both sides of the center.

The author also wishes to call attention to the accidental or unintentional by-products of this fluting process: the broken or "snapped-off" bases, the crude, fluted preforms, and the aborted or "hinged-out" preforms, and to point out their usefulness as indicators of the Cattail Creek Fluting Tradition.

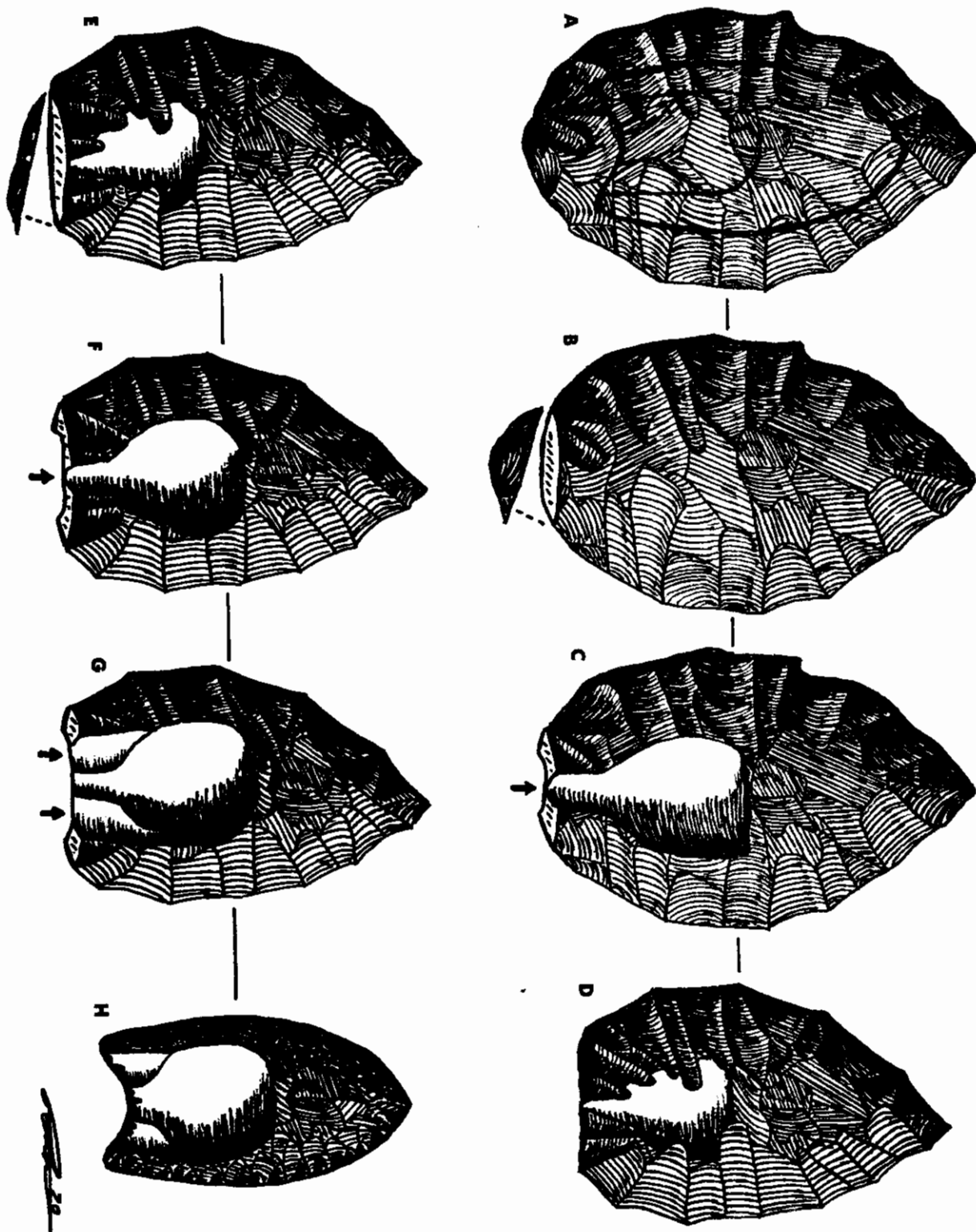
The following portion of this paper will describe the "step-by-step" process of producing fluted projectile points as proven by evidence in the form of large numbers of rejected or broken preforms in all stages of completion. This paper applies, of course, only to the manufacture of Clovis-like projectile points made at the Williamson Paleo-Indian Workshop Site, and particularly to those made in the traditional manner. The writer does, however, propose that all classic Clovis or Clovis-like points found in North America were manufactured in much the same manner as herein described. He asks students of early man in other areas of the Continent to re-examine their specimens in order to determine if his theory is indeed valid.

THE MANUFACTURING SEQUENCE

After choosing a spall he deemed suitable, our ancient stone-knapper began trimming it into a rough oblong or egg-shaped preform (hereafter referred to as a "blank" for purposes of simplification). Such trimming was accomplished by means of a small chalcedony or quartzite cobble used directly against the edges of the spall. This direct percussion method removed wide, thin, conchoidal flakes which sometimes extended halfway across the face of the blank. The blank at this stage (Fig. 1, A) was bifacially flaked and one-half to three-quarters of an inch in thickness (13 to 19 mm.). Width was between one and three inches (25 to 76 mm.), and the length averaged three and one-half inches (88 mm.).

The thicker, heavier end of the blank was chosen for the tip of the proposed projectile point. This was often the bulbar end of the original spall. The thinner end was, of course, used as the basal end, this in keeping with the form of the completed product. The blank was then pressed flat

FIGURE 1. THE CATTAIL CREEK FLUTING TECHNIQUE - WILLIAMSON WORKSHOP SITE



against an anvil of wood or stone, with the basal end projecting about one-quarter of an inch (7 mm.) over the edge of the anvil. A sharp blow of the hammerstone delivered at right angles to the blank served to break or "snap-off" a short section of the basal end. This sometimes left a perfect ninety-degree striking platform (Fig. 1, B). (Oftentimes the base snapped off with a short hinge extending as a flute down the face opposite the point of percussion. Now and again the blank would buckle or break an inch or more from the base, ruining or severely shortening the blank). These "snapped-off-bases" are found in large numbers on the Williamson Site (Fig. II, K, L).

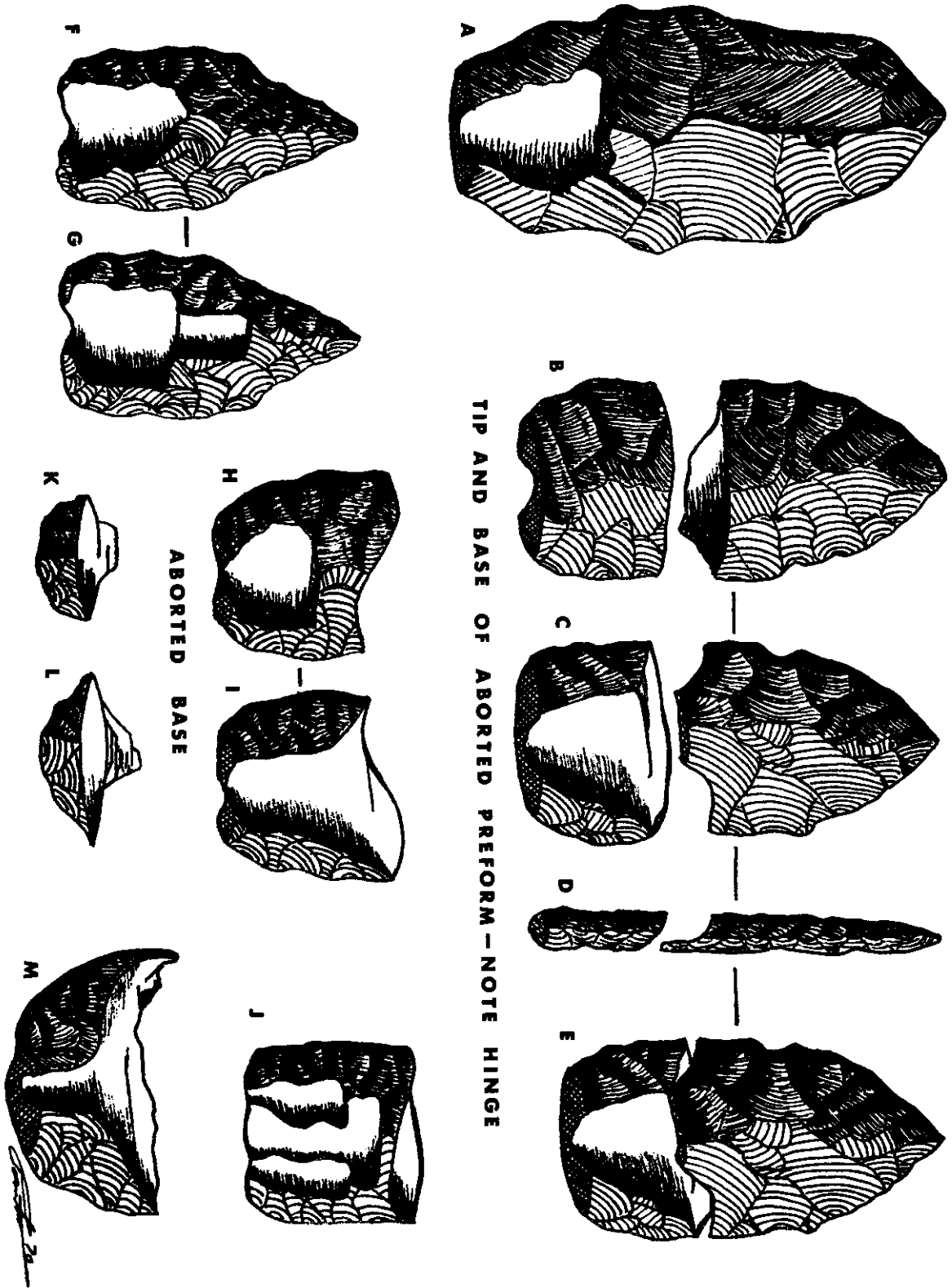
The blank was then set upright on the anvil and a flute struck from one face, this, no doubt, was accomplished by means of a punch of bone, antler, or ivory. The punch was held firmly against the striking platform at or very near the center of the base, then struck sharply with a hammerstone (On some discarded or broken blank specimens one can determine the size of the punch tip by the small half-circular cavity left in the striking platform (Fig. 1, C, F, and Fig. II, A, B, C, E, I, M). At this stage (Fig. 1, C), a flute was often removed from the opposite or reverse face of the blank. This, of course, depended on whether enough of the platform remained after the initial flake was struck. If not, another platform was prepared. Note in the illustrations that, flutes often form a narrow neck beginning at the point of impact, but this neck or narrow percussion bulb becomes wider as it progresses down the face of the blank. The flutes as viewed in the illustrations have this inverted bottle-shaped outline in order to call attention to the phenomena (Fig. 1, C, F, G, H, and Fig. II, A, C, E, F, G, H, I, M). In event such a bottle-shaped flute developed in the final stage of point manufacture, small flutes were removed from each side of the neck or narrow central flute, thus the triple fluted face was developed. At this early stage, however, such trimming served no practical purpose.

Our ancient craftsman had now reached a stage where he was forced to make a decision. He must decide whether to reject this blank because of obvious flaws in the lithic material or to continue the project because he found the stone quality to his liking. Fully 75 per cent of the rejects recovered at the Williamson Site were discarded at this stage, presumably because our craftsman did not approve of the manner in which the blade fluted or due to his failure to remove a projection or lithic flaw of some sort.

If the blank was considered suitable for completion, it was again percussion flaked (Fig. 1, D). Wide flakes were struck from both faces and the base, thus further reducing the blank in length, width, and thickness. This flaking often nearly obliterated all previous flutes and flake scars. The blank or blade at this stage was from three-sixteenths to three-eighths of an inch (5 to 10 mm.) in thickness, and one to one-and-one-half inches (25 to 37 mm.) in width. The length was reduced one-quarter to three-quarters of an inch (6 to 19 mm.). Now, for the first time in the manufacturing sequence, the blank began to resemble a projectile point to some extent. However, the pointed end was too blunt and the blank still too thick in the mid-section and basal area.

At the next stage (Fig. 1, E), the blank was again pressed against the anvil and the base once more broken off by a well-directed blow of the hammerstone. The striking platform was thus re-formed for the next, or most critical stage of the fluting procedure (It must be noted here, the striking platform was not always a perfect ninety-degree-angle; it was often sixty-

FIGURE II. BY-PRODUCTS OF THE CATTAIL CREEK FLUTING TRADITION



degrees or less. In this case, several small chips were removed along the upper or sharp edge of the platform to increase the angle or make a firmer rest for the fluting punch. The angle of the striking platform often dictated which face of the blank it would be possible to flute. It was often found necessary to repeat the platform preparing process in order to flute the opposite face of the blank. This repeated platform making often shortened the blank considerably. Sometimes, when the base was thin, but further fluting was desired, a platform was prepared entirely by chip removal. At other times the thin base or the edge of a steep platform was smoothed by grinding to facilitate resting the punch. In some cases, a small basal nipple was formed by chip removal, then the nipple was snapped-off, thus forming a small platform. In still others, the nipple was smoothed or ground down to form a punch rest. These differences, or refinements, in technique were brought about by a desire to flute an already thin base further without making the blade appreciably shorter; by workability of the particular lithic material at hand, by personal preference, or by fear of ruining an almost completed projectile point by further crude, basal-snapping platform preparation.

Again the blank was set upright on the anvil and a flute was struck from one face. This time the flute was removed with great force, for it was hoped to be the final flute taken from this face. It was at this stage when many of these larger, deeper, flutes hinged through the blank in the wrong direction (Fig. 2, B, C, D, E, I, M). This, of course, destroyed or shortened the blank to the extent it was useless, and added yet another bit of evidence to the discard heap. For lack of a better term, the writer calls these hinged-out blanks "aborted preforms" and considers them a reliable complex and temporal index marker.

We will assume our stone craftsman was successful, as was usually the case, and he produced a long, broad, flute. Let us assume also that enough of the striking platform remained to enable him to flute the opposite face without again snapping off the base (Fig. 1, F), or preparing another platform by a different method. If the blank at this stage met our craftsman's requirements as to thickness of blade and depth of flutes, he could then proceed with the finishing details. If not, he would repeat steps D, E, and F -- this was not at all unusual. The reader is again reminded that our ancient craftsman manufactured his projectile points "the hard way" and that he was often a perfectionist.

Let us suppose stage "F" met with our stone knapper's approval. He could begin giving his product its final shaping. Once more he placed the blank upright on the anvil, and this time very carefully struck a small flute from each side of the narrow bottle-neck formed by the last central flute. This process was repeated on the opposite face if a bottle-shaped flute had developed there also. Normally the central flute on one face of the blank did form such a bottle-shaped, while the flute on the reverse face was wide and shallow. This shallow flute was due, of course, to the fact that this second or last flute was removed with much less force. Our craftsman no doubt feared he might flute too deeply, or hinge through (abort) and destroy a nearly completed projectile point. We will assume that all had gone well and our stone knapper was pleased with his product (Fig. 1, G).

The base at this stage was very thin and the blade was somewhat irregular in shape, the blank lacked only the final retouching. Using a bone,

antler, or ivory flaking tool our craftsman proceeded to work a shallow to medium depth concavity into the basal end of the blank by using the pressure flaking method. He was often very adept at pressure flaking and removed small ribbon-like flakes that sometimes erased all traces of short secondary side flutes, and often the evidence of the platform making method as well. The deeper he shaped the basal concavity the more evidence concerning previous fluting and platform preparing he succeeded in destroying. By the same pressure flaking method he proceeded to shape the blade edges and the tip until the desired configuration was attained. The basal concavity and the lower lateral edges were abraded against a stone until they were dulled or smoothed to his liking, and the projectile point was complete.

Figure 1, H, illustrates the finished result of these labors, which probably consumed thirty minutes of our ancient workman's time. Far, far less time than was required by this modern savage to describe the procedure.

SUMMARY

The writer does not wish to imply that the aforescribed method of fluted point manufacture was rigidly adhered to by our early hunters. This description only represents the normal or average sequence of the process. Our early stone knapper was a versatile and very intelligent man and he readily adapted his method to the particular piece of stone he was working. He adhered to a tradition, but this tradition was flexible enough to allow him to improve to suit the occasion. As mentioned before, he sometimes did not flute his point at all; rather he took advantage of a thin flake or blade. He sometimes found that he need not repeat the fluting process, for the first flutes accomplished his objective. At other times he was forced to repeat the process three or four times depending on the thickness of the blank he was reducing. Sometimes a bottle-shaped flute did not develop on either side and one broad flute from each face served to make a perfect projectile point. At other times his flutes were all too narrow and this necessitated the removal of multiple flutes from one or both faces. These were required in order to thin the base sufficiently to facilitate hafting a point to a shaft. The adaptability and flexibility of the early hunter is demonstrated by the fact that seldom do we see a fluted point thinned or fluted in exactly the same manner on both faces of the point. This is demonstrated further by the many platform or punch rest preparing procedures employed by him in the final stages of point manufacture. The skill and ability of the knapper, and the flaking quality of the stone he was then working, governed the method or methods used to attain the traditional product. These differences in technique of manufacture are in reality all part of the same tradition, and the end result or product was of most importance. In other words, the projectile point itself, its shape, its finished characteristics, is the objective or embodiment of the tradition, regardless of the different methods used.

The writer wishes to establish in this short paper, that normally our early hunter made his projectile points by a difficult but very simple method, and he often began removing flutes in the crude preform stage. In some cases he was forced to flute the blank several times in order to reduce its basal thickness. The author wishes also to establish the fact, initial flutes were always struck from or very near the center of the base, in the hope that other or secondary side flutes would be unnecessary. Further, the writer wishes to point out, triple and multiple fluting was resorted to only when the initial

flute failed to develop a width and depth sufficient to haft the point properly. Lastly, he wishes to record the intelligence and versatility displayed by our early hunter, by his employment of several different methods of fluting and platform preparation. He hopes to make clear the fact, all these techniques were utilized in the same complex and tradition.

In this paper also, it is the writer's intention to establish the unintentional by-products of the Cattail Creek Fluting Tradition. The "aborted preforms" (Fig. 2, B, C, D, E, H, I, J, M), "fluted preforms" (Fig. 1, C, D, E, F, G, and Fig. 2, A, F, G), and "snapped-off basal ends" (Fig. 1, B, E, and Fig. 2, K, L), These can be of value when used as key or index markers of this complex and tradition. In other words, finished Clovis-like projectile points need not be found at a given site to indicate its lithic complex is Clovis-like, if these by-products of Clovis Man's fluting technology are present.

CONCLUSION

It is hoped that the foregoing description of the Cattail Creek Fluting Tradition, though involved, has been made clear to the reader. If not, this writer is at the service of any serious scholar who wishes some portion of this paper explained to him. The writer is well aware that his description of the fluting procedure does not agree with the theories of some well known scholars of the subject. He feels, however, a lengthy discourse on the differences between his conclusions and those of other writers is not called for here. The writer believes most students of early man are already familiar with the various theories that have been propounded and will be able to compare for themselves.

In conclusion, the writer wishes to state again, this paper can only describe with authority the fluting technique employed at the Williamson Paleo-Indian Workshop Site. It is, however, his theory, the same method or technique was used in the manufacture of all classic Clovis or Clovis-like projectile points. He could indeed carry this a step further and declare there could be little doubt the same technique, with certain refinements, was used by later Paleo-Indian hunters. These, of course, include Folsom, Cumberland, and Holcombe people. In truth, the lithic technology of these later hunters could all be considered within the Cattail Creek Fluting Tradition. The writer challenges anyone to disprove his theory, and to add new links to our evergrowing chain of knowledge concerning Early Man in the Americas.

We are making progress, certainly adding new evidence, but this evidence for the most part concerns lithic remains only. Our early hunters themselves have eluded us. They, who wandered over this Continent far back in the mists of time, are still shadowy figures without real physical substance. Who were they? Where did they come from, and where did they go?

We tend to romanticize when writing of these people, and we depict them as bold, big-game hunters. We wish to think the fluted projectile point we have before us was used to kill a large Pleistocene mammal, a mammoth, mastodon, bison, camel, or horse. Indeed, they were used for this type of game; it has been proven many times. We seldom picture them being used, however, against smaller animals, for this type of hunting has little glamour. We conjure up heroic pictures of the brave hunter, risking his all to hurl his

spear into the heaving side of a trumpeting, screaming, mammoth. The truth is surely, our early hunter was a prudent man, and in all probability attacked a mammoth only if the animal was too old, very young, crippled, sick, or trapped in some manner. Early man would probably eat anything that didn't eat him first, and to constantly risk his life for a steady diet of mammoth meat was surely unthinkable. The beautiful, fluted projectile points we search for so diligently, and study so carefully, probably killed more rabbits than any other game animal.

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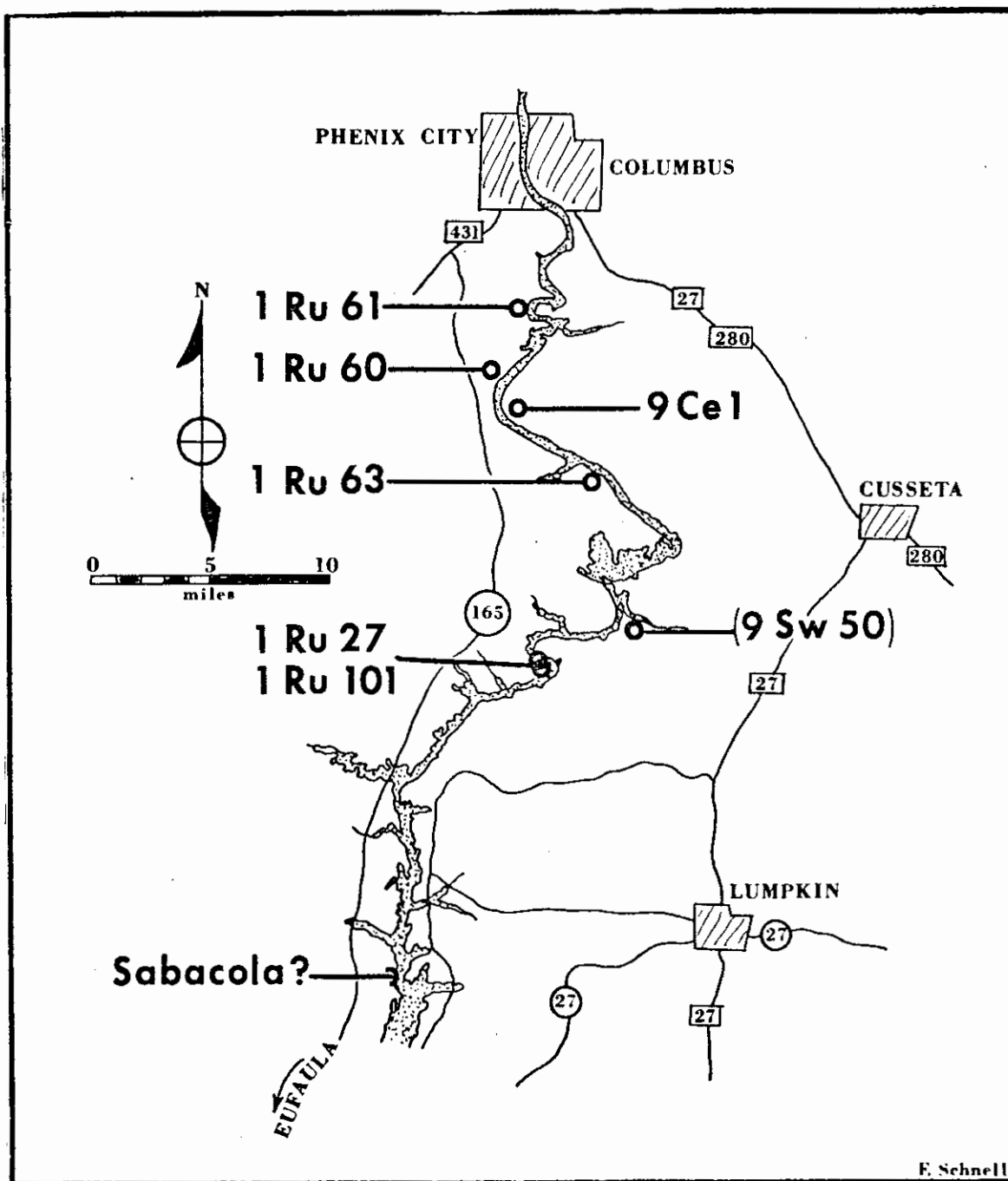


FIGURE 1

Lower Creek sites in the Chattahoochee Valley.

A COMPARATIVE STUDY OF SOME LOWER CREEK SITES

Frank T. Schnell

Columbus (Ga.) Museum of Arts and Crafts, Inc.

The title originally submitted for this paper was "A Comparative Study of Some Late Creek Ceramics" and the intent was to discuss geographical variations and similarities of ceramic types and styles recovered from historic Indian sites excavated in the general area controlled in the late 17th, the 18th, and the early 19th centuries by the Muskhogean Confederacy and by the Seminoles. In preparing this paper, it was realized that a core assumption had never been clearly stated for the record. I therefore decided that it might be more pertinent to use my time allotted on the program to state a hypothesis which has arisen in the Chattahoochee Valley concerning the change in "Creek" ceramics through time and concerning the identification of certain Lower Creek sites.

It has been mentioned by people writing on the historic archaeology of the lower Chattahoochee Valley that there are two variants of the Ocmulgee Fields Phase in that area. David Chase first recognized this and simply called them Ocmulgee Fields I and II. It has struck Chase and me that there is a possibility that there might be a correlation between this archaeological situation and a suggested historical outline for the area.

I have not checked with Chase as to the specific interpretations made in this paper, so any criticism should be directed toward me. Chase does deserve credit, however, for first pointing out this possible correlation between history and archaeology. One final point should be made before going into the reconstruction. The term "Creek" as used in this paper is simply a matter of convenience. I think it has already been used too widely in this manner. I am not using "Creek" as a specific tribal term, but in the sense of an amalgamation of a number of tribes of varying culture history and language. It is beyond the scope of this paper to go into the reasons why, so suffice it to say that "Creek" as used in this paper only means a group of tribes occupying southern Georgia and Alabama during the period already specified, all having relatively similar material culture inventories.

HISTORICAL OUTLINE

There has been considerable debate as to the exact locations of the various Lower Creek groups during the earliest periods of historic contact. John R. Swanton (1922, 1946) had worked out, strictly from historic documentation, his own interpretation of the locations and movements of the Lower Creeks, and it is this interpretation which stands as the "bible" for site identification. Although many of his interpretations have stood up under the scrutiny of archaeological and further historical research, many more have had doubt cast upon them and a number have been proven entirely erroneous. The interpretations presented herein are based in part on unassimilated archaeological evidence, personal observation, and correlation of this new data with the historical records by several people working in the Chattahoochee Valley.

The earliest European contact with the area which the Lower Creeks are known to have occupied was by Hernando de Soto. During the 1930's, considerable time and research was expended in attempting to correlate the numerous chronicles of this journey with actual locations in the Nuclear Southeastern area (Swanton 1939). Though a great number of known archaeological sites were identified as being those which DeSoto visited, recent archaeological excavations have shown that most of the sites are of the wrong time and were either in existence before DeSoto's visit or after.

The first extensive contact with the Lower Creeks that I know of was about 130 years later in 1679, when the Spaniard, Father Juan Ocon, attempted to set up a mission among them on the lower Chattahoochee (Fretwell 1956: 57). It was at this time that there developed strong competition between England and Spain as to who would claim and occupy this lower Chattahoochee River valley area. Since the sole purpose of the Spanish was missionization whereas the aim of the English was trade, the Lower Creeks tended to favor the English and after the Spanish sent punitive expeditions into the Lower Creek towns for their "collaboration" with the English, the Creeks abandoned that area and moved into central Georgia, away from the Spanish and nearer to the English at Charlestown.

From about 1682 until 1729, there may have been only skeletal remnants of settlements along the lower Chattahoochee. With the beginning of the decline in Florida of Spanish influence and the unpleasantness of the Yamasee War, many of the Lower Creeks returned to the lower Chattahoochee and either reoccupied old sites or settled in their vicinity. It is interesting to note that there are suggestions that they did not reoccupy the towns which had been burned by the Spanish but considered them as "hallowed ground."

From the middle of the 18th century until their final removal, the Lower Creek territory was gradually decreased by the westward expansion of English settlement. By 1810 the United States--Confederacy frontier had been pressed back from eastern Georgia to central Georgia, and by 1830 the frontier became the Chattahoochee River and the Lower Creeks were all concentrated into eastern Alabama until their final removal in the late 1830's and early 1840's.

ARCHAEOLOGICAL INTERPRETATION

Proto- and Early Historic Occupation (Abercrombie Phase):

Two sites assignable to this time period will be discussed here. One of them, known as the Kendrick (Abercrombie) Site, 1 Ru 61, and referred to by the Lower Creeks in 1798 as a part of "Coweta Tallahassee" (Hawkins 1916: 63) is probably the original site of Coweta during the Spanish period of interest. The second is simply referred to as 1 Ru 27. The latter site is slightly earlier and coeval with a Spanish fort (1 Ru 101) which was built upon the site in 1689 and abandoned in 1691.

C. B. Moore, a gentleman of means, traveled throughout the navigable waters of the Southeast in his boat the "Gopher" visiting sites. One of these sites was the "mound and cemetery at Abercrombie Landing" which he described as being "more thickly scattered than we recall having seen in any former experience" (1907: 449). The first scientific excavation on the site was by Wesley Hurt (n.d.). Surface material from this site was described and discussed by Fairbanks (1955).

In 1956, David W. Chase and I spent a portion of the summer excavating in the village area of the site and digging a stratigraphic trench into a mound located on the site (Chase and Schnell n.d.). It is the village excavation which is of interest here. This excavation was primarily concentrated upon a single structure located between the mound and the river. Part of the structure had been washed into the river. The remaining portion of the structure was approximately 15 feet in length, with an interrupted width of approximately 10 feet. The ceramic material of in situ association with the house proved to be morphologically intermediate between the known prehistoric Lamar Phase and the known historic Ocmulgee Fields Phase. It was concluded that this material in all likelihood reflected the period in time in which earliest historic contact had been made, but extensive trading had not begun because of the lack of trade material in association with this component on the site. This would logically be the time of Spanish contact. Additional credence was given to this supposition when it was discovered that this structure and a number of other tested structures of this component proved to have been unexpectedly burned. It is known that the Spanish burned a number of the Lower Creek towns in 1691, including the town of Coweta (Boyd 1949: 2). This also supports the late 18th century claim by the Indians that 1 Ru 61 was the site of Coweta "Tallahassee" ("old town").

Site 1 Ru 27 gave additional weight to this argument. It was demonstrated through stratigraphic testing by G. Hubert Smith of the Smithsonian Institution and by University of Alabama excavations under Lewis H. Larson, Jr., that this site was coeval with the Spanish fort of 1689-91. The ceramic assemblage from this site is strongly similar to that of the discussed component at Abercrombie. This was first given the name of Ocmulgee Fields I based exclusively on the ceramic assemblage and is now being defined as the Abercrombie Phase. So far as I know, no trade material has yet been found in specific association with the Abercrombie Phase.

Period of Abandonment:

None of these sites have yet been specifically identified, though they probably do exist as small settlements or as intermediate components of sites not burned by the Spanish. It is at this time that the major historic occupation of Ocmulgee Old Fields near the present Macon, Georgia, seems to have taken place. It was, of course, at Ocmulgee Old Fields that the historic Lower Creek ceramic assemblage was first recognized and defined (Kelly 1938).

Reoccupation of the Lower Chattahoochee (Lawson Field Phase):

This period seems to have a fairly consistent cultural continuum from mid 18th century until the period of removal from 1830-1845. Three sites will be discussed. The first of these sites is the Bickerstaff Site (1 Ru 60), located near the site of Fort Mitchell, an early 19th century frontier post. The second site is historic Yuchi Town (1 Ru 63), located south of the mouth of Yuchi Creek and described in 1776 by William Bartram (1955: 312-313). The final site, one which has been published, is the Lawson Field Site (9 Ce 1).

The Bickerstaff Site was tested by David W. Chase and yielded large percentages of two ceramic types which are not represented or are found only in small amounts in Abercrombie Phase sites. These two types are Chattahoo-

chee Brushed and Cusseta Red Filmed (Willey and Sears 1952: 5-7). Trade materials were also recovered from this site. There are still significant percentages of the earlier Abercrombie Phase types represented here and reflect the possibility that this site was occupied during the early period of the Chattahoochee reoccupation. This site has, therefore, been defined as possibly representing an early component of the later Lawson Field Phase.

The largest component of the Yuchi Site represents, to a certain extent, more nearly the main-stream of the Lawson Field Phase. The Lawson Field Phase, as represented at the Yuchi Site, is characterized by a large representation-- and in some sites the exclusive representation-- of three ceramic types: Chattahoochee Brushed (often making up 70-90 per cent of the total assemblage), Cusseta Red Filmed, and a later variant of Ocmulgee Fields Incised. There is also an almost complete change from the typically shell-tempered ware of the Abercrombie Phase and Ocmulgee Fields Phase to grit tempering. In the Yuchi Site, there occasionally occur examples of what is apparently a very late complicated stamped ware. This complicated stamped ware has definitely been documented as coming from an Abercrombie Phase component at the Hitchitee Site (Kelly, et. al. 1962) and may be "Cherokee" trade ware. The sherds seem to very closely resemble complicated stamped ware found at sites like Chauga (Kelley and Neitzel 1961).

Lawson Field, the presumptive site of post 1729 Kasihta, was extensively tested by Gordon R. Willey in June, 1938. In a report later published under the co-authorship of Willey and Sears (1952), it was pointed out that other than plain sherds and luted rims-- both modes which might be found on types-- there were only three ceramic types, Chattahoochee Brushed (83 per cent of the type-named sherds), Ocmulgee Fields Incised (14 per cent) and Cusseta (or Kasihta) Red Filmed (3 per cent).

SUMMARY

To summarize this very brief characterization, there seem to be present in the lower Chattahoochee Valley two distinct historic phases. The Abercrombie Phase appears to span the immediate protohistoric to early historic times, while the Lawson Field Phase is associated with the post-Yamassee War to removal period. Survey work conducted by Huscher (1959) has added evidence for this hypothesis. Much more work needs to be done to refine this assumption, but it is hoped that this paper presents a basically valid framework from which to work.

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Abbreviations Used

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BAE	Bureau of American Ethnology
CFSM	Contributions of the Florida State Museum
FA	Florida Anthropologist
PPMAE	Papers of the Peabody Museum of Archaeology and Ethnology
SAA	Society for American Archaeology
SEAC	Southeastern Archaeological Conference
SIS	Southern Indian Studies
US,LAS	University of Georgia, Laboratory of Archaeology Series
UM,MA	University of Michigan, Museum of Anthropology

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