JEFFERSON CHAPMAN. The Rose Island Site and the Cultural and Ecological Position of the Bifurcate Tradition in Eastern North America (Under the direction of JOFFRE LANNING COE.)

Archaeological investigations under the direction of the author, and as a part of the University of Tennessee Tellico Archaeological Project, were conducted on Rose Island, Monroe County, Tennessee, in 1973 and 1974. Excavations revealed a stratified sequence of prehistoric occupations spanning 8500 years, from the Early Archaic to the Early Mississippian periods.

One of two intensive periods of occupation investigated was assigned to the Early Woodland Greeneville phase. The samples of triangular projectile points and crushed quartz or limestone tempered ceramics that were recovered provide additional data concerning the cultural significance of Watts Bar, Long Branch, and Candy Creek ceramics, as well as data for the general problem of Woodland manifestations in the Little Tennessee River valley.

The most significant discovery and the principal focus of research were the buried Early Archaic horizons. Systematic excavation revealed a stratified sequence of projectile point types that both confirm and considerably expand the understanding of this culture period. A series of phases are defined, designated by the characteristic projectile points: the earliest was a possible Palmer phase followed by Kirk, MacCorkle, St. Albans, LeCroy and Kanawha phases. An Early Middle Archaic component was also identified.

The artifacts from the LeCroy and St. Albans components are described and discussed, and comprise the largest in-context assemblages of this period yet discovered. The recognition of a bipolar flaking technique and the associated pièces esquillées in the Early Archaic horizons is an important aspect of this study. Other artifact classes, including cobble spall choppers/scrapers, pitted cobbles, manos and metates, worked hematite (goethite), and an abundance of chipped stone tools, offer insight into tool assemblages in use at one time. The large bifurcated base projectile point sample is a primary focus.

Eight radiocarbon dates along with relative dates from archaeomagnetic sampled hearths suggest dates of 7270 B.C. for the Kirk phase, 6770 B.C. for the St. Albans phase, 6300 B.C. for the LeCroy phase, and the termination of the bifurcate tradition by 6070 B.C.

Analysis of paleobotanical remains suggests that during the Early Archaic period, the area was a near-climax, mixed mesophytic forest with little evidence of disturbed habitats. Hickory nuts and acorns were the principal plant foods. It is suggested that the site served as a late summer-fall-early winter base camp in a central based transhumance system.

Using the Rose Island sample of bifurcate points as a comparative base, their distribution in eastern North America is examined. The distribution suggests that the bifurcate tradition is correlated with the deciduous forest area and was a horizon style during the seventh millenium B.C. Data from the Rose Island site are used with data from other sites of this period to generate theories concerning settlements patterns and systems.

THE ROSE ISLAND SITE
AND
THE CULTURAL AND ECOLOGICAL POSITION
OF
THE BIFURCATE POINT TRADITION
IN
EASTERN NORTH AMERICA

by

Jefferson Chapman

A Dissertation submitted to the faculty of the University of North Carolina in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Department of Anthropology.

Chapel Hill

1975

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I. INTRODUCTION

The Rose Island site (40 Mr 44) is the central focus and the comparative frame of reference for this study. The site is situated on an alluvial terrace at the downstream end of Rose Island at approximately 84° 14' 20" west longitude and 35° 37' 6" north latitude (Plates I and II; Fig. 1). Rose Island comprises several hundred acres and is located between Miles 16.8 and 18.4 in the Little Tennessee River, Monroe County, Tennessee. The western half of the island (see Fig. 1) has been occupied since 1957 by the Hiwassee Land Company for use as a tree farm. The area of the site is planted in an orchard of Loblolly pines that provide seed for the annual cultivation of millions of pine seedlings elsewhere on the island. Rose Island and the lower Little Tennessee River valley are located in the Ridge and Valley Physiographic Province (Thornbury 1965:124) and are within the Carolinian Biotic Province (Dice 1943) which is characterized by a temperate deciduous forest (see Chapter V).

The lower Little Tennessee River, from its confluence with the Tennessee River to Mile 33 and Chilhowee dam, is scheduled by the Tennessee Valley Authority to be impounded in January 1977, thus forming the Tellico Reservoir. Salvage archaeology by the University of Tennessee, funded by the Tennessee Valley Authority and National Park Service, has continued since 1967. The Rose Island excavation were a part of the University of Tennessee Tellico Archaeological Project, Alfred K. Guthe, Principal Investigator.

Plate I. Rose Island, View to the West. Arrow Indicates Site Area

Plate II. The Rose Island Site and Seed Orchard, View to the East

Plate I

Plate II

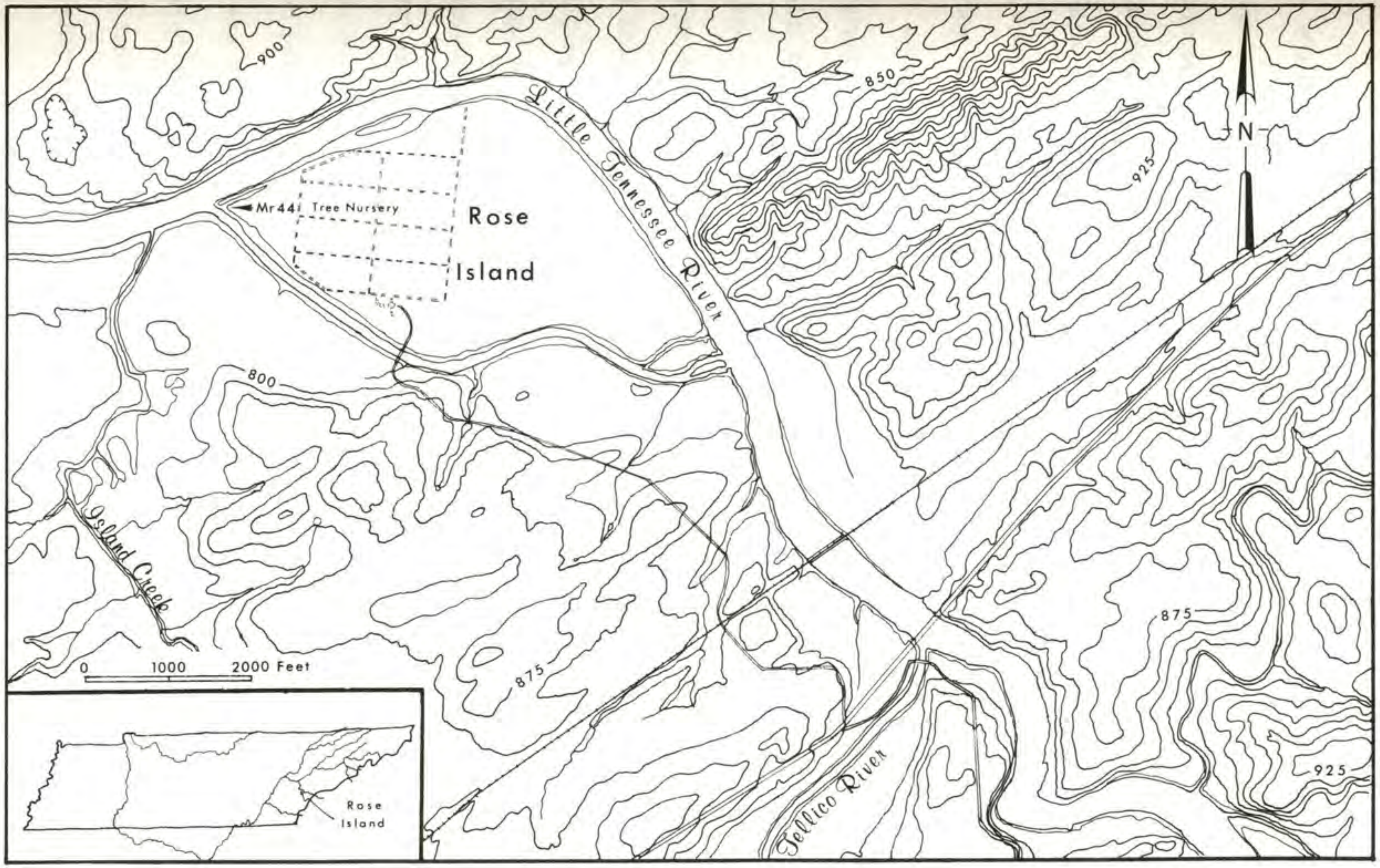


Fig. 1. Map of area including Rose Island.

Background

The Tellico Archaeological Project has had as one of its principal objectives the investigation of the Overhill Cherokee town sites in the reservoir area. These investigations have focused on the Overhill relationships with the antecedent Dallas phase, and on the acculturative effects of colonial trade and contact. The project has also focused on the location and excavation of the prehistoric cultural manifestations in the valley. To date 89 sites have been located and 15 excavated.

Archaeology is frequently opportunistic. The author was the field director in 1973 of a crew excavating the Hodge site (40 Mr 46) with the design of obtaining additional data on the Woodland period occupations in the vicinity of the Icehouse Bottom site (40 Mr 23), the Patrick site (40 Mr 40), and the Harrison Branch site (40 Mr 21). It was hoped that the information obtained from the excavations would enable the author, building on ideas developed in his masters thesis, to develop a research design for investigating Woodland settlement patterns and systems. Unfortunately, the Hodge site did not yield the expected data (Chapman 1974) and excavations were terminated after three weeks. The crew was then moved to Rose Island for five weeks to investigate the Early Woodland period deposits at the downstream end of the island (see Chapters II and III). During the course of excavations a stratified Early Archaic period horizon was encountered below the Woodland and Late Archaic horizons. The objectives and research interests of the author changed at that time.

Background on the Archaic

The term "Archaic" was first employed in 1932 by William Ritchie to describe the Lamoka complex in New York. Subsequent data from the Brewerton and Frontenac cultures led Ritchie (1944:319-320) to the observation that

> "...the archaic level as a whole shows (a) a large variety and numerical abundance of chipped stone types; (b) the lack of all the so-called problematical group of polished stone artifacts, except the banner-stone of several simple forms; (c) a considerable typological range in a large number of bone tools; (d) the prevalence of copper tools and the total lack of copper ornaments; (e) the general absence of shell artifacts; (f) the complete dearth of pipes; (g) the want of pottery, except in perhaps the closing phase; (h) the nonexistence of agricultural traces; and (i) the large variety of burial practices, generally not involving mortuary offerings."

The derivation and early applications of the concept of an Archaic stage have been well summarized by Byers (1959:229-232).

By 1973 Ritchie departed from a diagnostic trait list and observed with Funk (Ritchie and Funk 1973:37):

> "We prefer to stress the notion of the Archaic as a relatively simple stage of economic development, nonagricultural and nonceramic, based on hunting, fishing, the gathering of wild plant food, and sometimes of shellfish. Archaic settlement patterns, social organization, and other aspects of culture were functionally interlocked with the economic and technological aspects, and indeed were largely determined by them. Archaic cultures in general represent the adjustments of North American Indians to the changing environments of post-Pleistocene times (cf. Caldwell 1958). Specific traits or trait-complexes are in themselves unsatisfactory criteria of the Archaic, except within restricted time periods and geographic areas."

Early, Middle, and Late Archaic are still employed as sub-stages of the Archaic. Griffin (1967) was able to generalize some criteria for the Archaic as it is defined in the east.

The Early Archaic (9000-6000 B.C.) is marked by a shift from lanceolate to stemmed, notched, or barbed broad bladed projectile point forms. Other chipped stone tools remain essentially the same. Drills, awls, hammerstones, choppers, adzes, gouges, and some grinding stones are added to the assemblage.

The Middle Archaic (6000-4000 B.C.) shows an increase in ground and polished stone with such artifacts as atlatl weights, grooved axes, pendants, and pestles. There is a large variety of bone tools and there are burials of both humans and dogs.

By the Late Archaic (4000-1000 B.C.) there are clear regional adaptations, inter-regional exchange of raw materials, and a marked population increase. Copper, marine shells, steatite and sandstone bowls, circular house patterns, whistles and rattles, stone plummets, "net sinkers", fiber tempered pottery, and boatstones and birdstones are present in various Archaic manifestations.

Problems and Objectives

Evidence for Paleo-Indian and Early Archaic occupations is numerous and widespread in much of eastern North America. Most of the sites of this period, however, are not stratified, such that the early components and their associated cultural assemblages are not sealed from later occupations or disturbance. Concern for controlled data led John Witthoft (1959:79) to remark that sites "... with deep and highly differentiated stratigraphy are as yet almost unknown, but they are of such basic importance that locating and studying them should take precedence over any other approach to the Archaic."

Early Archaic horizons were present in the long sequences at Russell Cave and the Modoc and Stanfield-Worley rock shelters. Coe's (1964) seminal work on the Archaic sequences of the North Carolina Piedmont demonstrated that under certain conditions, early sites have been preserved in alluvial terraces. The projectile point sequence at the Hardaway site has become the framework for Early Archaic studies in the eastern United States. Broyles' (1966, 1971) discovery of a deeply stratified Early Archaic sequence at the St. Albans site offered stratigraphic grounds for the temporal separation of many types. But even with the Hardaway, St. Albans, and rockshelter sites, data on the Early Archaic assemblages are extremely limited.

The inherent importance of the Rose Island Early Archaic horizons and the paucity of comparable sites in eastern North America offered the author a unique opportunity for research. Seven broad research designs and objectives were formulated that served to guide the second season of excavations and the subsequent analysis which forms this study. These are summarized below and are expanded in their treatment elsewhere in the study. In general, the emphasis of the study is on the description and significance of the assemblages as a whole, and select classes of artifacts within them. Ancillary emphases include areal comparisons, chronological studies, and paleobotanical studies, with the aim of generating theories concerning the cultural and ecological position of the bifurcated projectile point tradition in eastern North America.

(1) Given the virtually unique situation of a sealed, stratified site spanning approximately 1000 years of the Early Archaic period, excavations were conducted to recover, record, and analyze as much data

as possible. Although this objective should be standard practice in archaeological research, it has not always been the case. Excavation procedures and priorities have changed dramatically form the salvage archaeology of the WPA era. Factors of available time, personnel, and equipment have affected data results. Finally, many of the available studies of the Early Archaic period are based on incomplete analysis of the recovered data.

This objective included not only the recovery of an adequate sample of the preserved assemblages, but also an effort to record the assemblages in context, such that the articulation of their members might be understood. It became readily apparent during the second season of excavations that the materials would comprise one of the largest in context collections from an Early Archaic period site in eastern North America. The analysis of the material alone would be a major contribution.

(2) Although the principal focus of the Rose Island excavations was the Early Archaic horizons, later occupations were also present. Another objective, therefore, was to sample these components so that the data would be available for longer range studies of these prehistoric periods in the Little Tennessee River valley.

(3) Certain artifact classes were present in the Early Archaic horizons at Rose Island that call for description and analysis. These are classes of artifacts that are poorly understood, subject to dispute, or generally unrecognized in eastern North American prehistory.

The typological classification of bifurcated base points is of primary importance. There is some question as to the temporal and spatial dimensions of the defined projectile point types Kanawha Stemmed, LeCroy Bifurcated Stem, St. Albans Side Notched-Variety A, St. Albans Side Notched-Variety B, and MacCorkle Stemmed. A third objective of this study is to examine the validity of these types in light of the Rose Island data. The alternative that the bifurcated base points might be a task-specific artifact within one or two procurement and processing systems, and therefore might be temporally synonymous with other Early Archaic point types, will be explored.

The relationship of the Kirk Corner Notched and Palmer Corner Notched type projectile points is also an objective of investigation in the stratified deposits at Rose Island.

The bipolar flaking technique is something that has gone generally unrecognized in much of eastern North America. The investigation of the numerous artifacts representing a bipolar industry in the Early Archaic horizons at Rose Island is an important aspect of this study.

(4) Bifurcated base points are widely distributed throughout the eastern United States. Using the Rose Island and St. Albans sites' point sequences as typological bases, the geographical distribution of bifurcated base points will be examined and the possibility of bifurcate points as horizon markers in the eastern Archaic will be investigated.

(5) No qualitative or quantitative analyses of paleobotanical remains from the Early Archaic period are available. The abundant carbonized plant remains in the Early Archaic horizons at Rose Island were an important focus of recovery during the excavations. One of the objectives of this study is the analysis of these remains and the subsequent generation of theories concerning paleoenvironment and subsistence.

(6) Data concerning Early Archaic settlement patterns and systems are generally lacking. The Rose Island site will be used as a focus to address this subject and certain proposals will be advanced that only future investigations can test.

(7) Temporal controls on the span of a point tradition, or the duration of cultural phases during early prehistoric periods are generally inadequate. There are relatively few radiocarbon dates from this period, and many of those that have been assayed have large error factors. Abundant carbonized wood and nutshell in features and scattered through the Early Archaic horizons provided an opportunity to obtain a good sequence of radiocarbon dates. There were also numerous fired hearth areas throughout the Early Archaic horizons which provided a unique opportunity to employ archaeomagnetic dating techniques to obtain the relative ages of the hearths. The results of these two dating techniques are presented in this study and combined to establish depositional and cultural chronology.

There is a heavy description and comparative emphasis to this work. Early Archaic studies are basically still at the assemblage level in their analysis, and Rose Island is extremely important for the informational building blocks it provides. The study contributes to our knowledge of this important stage in North American prehistory and the site should join the ranks of important and significant sites in North American archaeology.

Terms

Several terms are employed in this study whose meaning should be clarified.

Type. Simply stated, type is a pattern of attributes that distinguishes a group of artifacts and defines it as a class (Rouse 1972:300). Two uses of type are made. One is a descriptive type, composed of modes referring primarily to the nature of the artifacts (Rouse 1960:317). These have not yet been shown to have temporal and spatial significance. The other type is historical (Ibid.). These are defined, established type names that putatively have temporal and spatial significance. Ideally a type "...should approximate as closely as possible that combination of mechanical and aesthetic executions which formed a definite structural pattern in the minds of a number of workers, who attained this pattern with varying degrees of success and interpretation" (Krieger 1944:278).

Cultural Assemblage. These are the remains obtained from a cultural component (Rouse 1972:270). As used here, the cultural assemblages include features associated with the components.

Tradition. An archaeological tradition is a temporal continuity represented by persistent configurations in single technologies or other systems of related forms (Willey and Phillips 1958:37). The persistence of the attribute of bifurcation is viewed as a tradition in the projectile point/knife technology in some of the Early Archaic horizons at Rose Island. The term implies a temporal span and a spatial dimension. Attribute changes occur within a tradition over time.

Phase. Phase is used here as a temporal sub-class of a tradition. Within a technological tradition such as the bifurcate point tradition, phases are marked by a change in the attributes that mark a type, but that retain the diagnostic attribute(s) of the tradition. Hence there are traditions, and phases in that tradition. Phase is temporally equivalent to a component, but implies cultural continuity and change which is not implied in component. Willey and Phillips (1958:22) suggest that the phase is spatially limited to the order of magnitude of a locality or region. The phases of the bifurcate tradition at Rose Island correspond to their concept. A larger spatial magnitude is given to phase here as applied to the bifurcate tradition in eastern North America. For this, the term group is used.

Group. The term group is applied to a universe of artifacts that share a number of attributes like the geographically narrower phase, within a tradition. Groups include a number of similar phases within a tradition of wide geographic distribution.

Culture. An archaeological culture is a polythetic set of traits that have been combined into a cultural system assumed to have been shared by a group of people at one time. Such a culture is reconstructed by studying the assemblages of associated components. If the assemblage is from a site that was seasonally occupied, as is assumed for the Early Archaic at Rose Island (see Chapters V and VI), then it represents only a portion of the cultural assemblage and cannot be used to speak of a culture. The term culture is not employed in this study because it is felt that the research on this time period is still at the assemblage analysis level.

II. EXCAVATIONS, SOILS, AND STRATIGRAPHY

Excavations

Previous Collecting and Excavation

The first account of archaeological research in the area of Rose Island is contained in Cyrus Thomas' (1894:389) accounts of mound explorations in the Little Tennessee River valley. Three mounds were investigated on the south side of the river on the alluvial bottom to the east of Island Creek. Thomas (Ibid.) observed that "Partly on the land about the mound and partly on the island are the indications of a former village. This is the site of Timberlake's Mialaquo..." There is no mention of the lower end of Rose Island.

Until 1957 the lower end of the island was under cultivation. Conversations with many of the local inhabitants indicate that each year large amounts of cultural material, including skeletal material, were turned up by the plow. The area was popular with collectors and it is assumed that many artifacts of the Early Woodland and later periods were removed.

In 1971, as a part of the continuing University of Tennessee archaeological survey of the Little Tennessee River valley, Paul Gleeson (1971:6) excavated two 3 x 5 ft test pits to a depth of 2 ft and 4 ft at the Rose Island site. His excavations revealed two cultural horizons; one from surface to 2 ft was classed as Early Woodland; the other at about 2.5 ft was preceramic. These would correspond to the author's Strata I and II, and Stratum III respectively (Tables 1 and 2). There was no suggestion of an Early Archaic horizon.

University of Tennessee Excavations--Season I

The first season of archaeological investigations began at the lower end of Rose Island on June 20 and ended on August 10, 1973. The investigations were of a salvage-sampling nature, designed to ascertain the extent of the site as located by Gleeson in 1971 and to determine if further excavation beyond sampling was justified.

Initially a series of nine 3 x 3 ft test pits were excavated in order to delineate the extent of the Woodland period midden (Fig. 2). A grid was established on the site to correspond to the layout of the trees in the seed orchard. A grid north (compass east) baseline (R 300) was laid out and a 0 baseline was established perpendicular to it at the grid south end beyond what was thought would be the limits of the cultural deposits. A bench mark was established with an assumed elevation of 100 ft; all elevations were relative to this point.

Seven 5 x 10 ft squares were excavated to sample the Woodland and presumed Late Archaic deposits; two of these were expanded to 10 x 10 ft (Plate III). Excavation procedure was to remove the plow zone as a unit and then to excavate in arbitrary 0.2 ft cuts until culturally sterile soil was reached. Features and post holes were recorded and excavated as they were encountered, the 0.2 ft cut enabling closer location of points of origin.

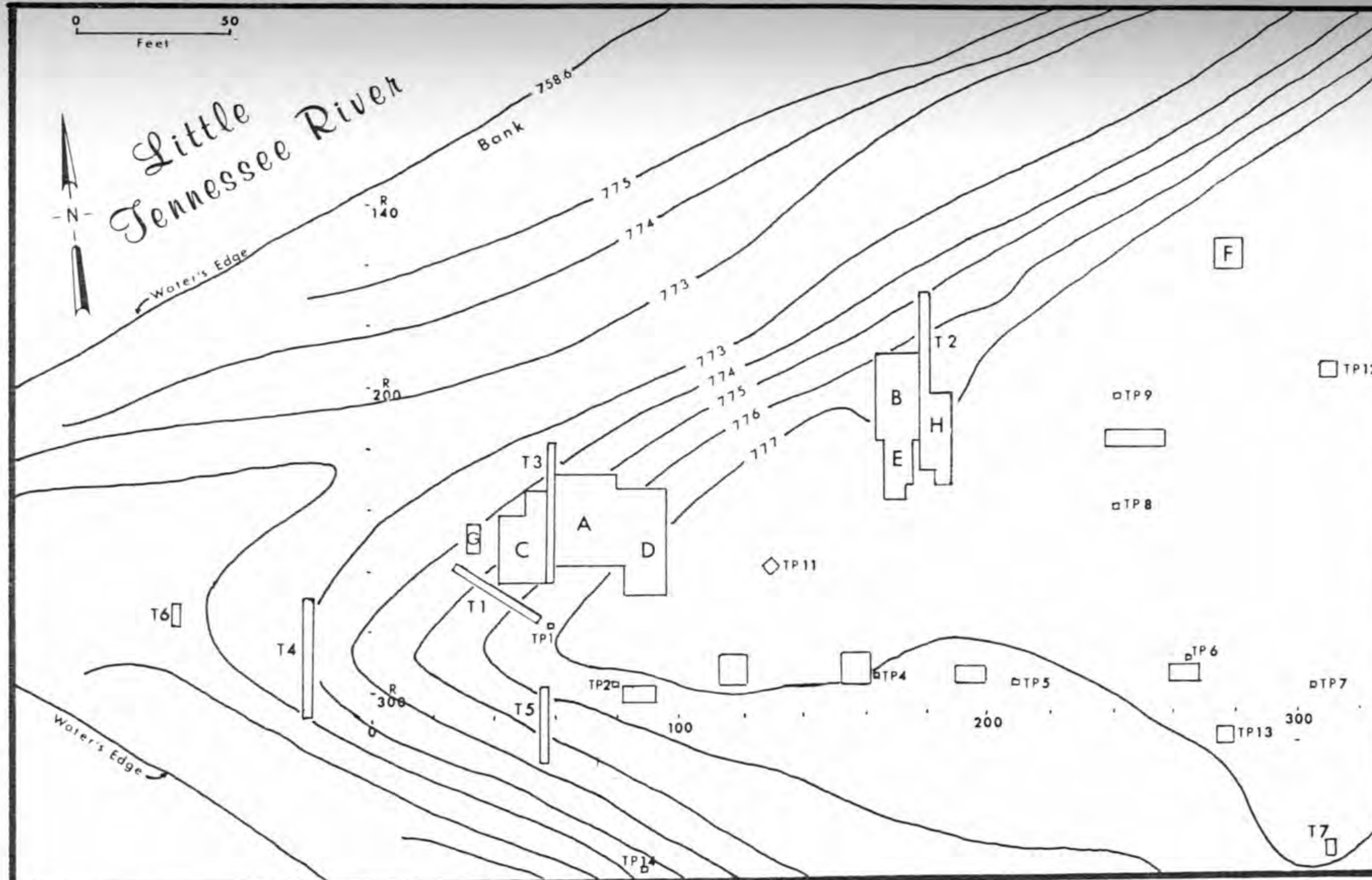


Fig. 2. Site map with excavation units.

Plate III. Season I, Excavation, Square 150 R 295, Level 2, Stratum II

Plate IV. Season I, Excavation, Unit H

Plate III

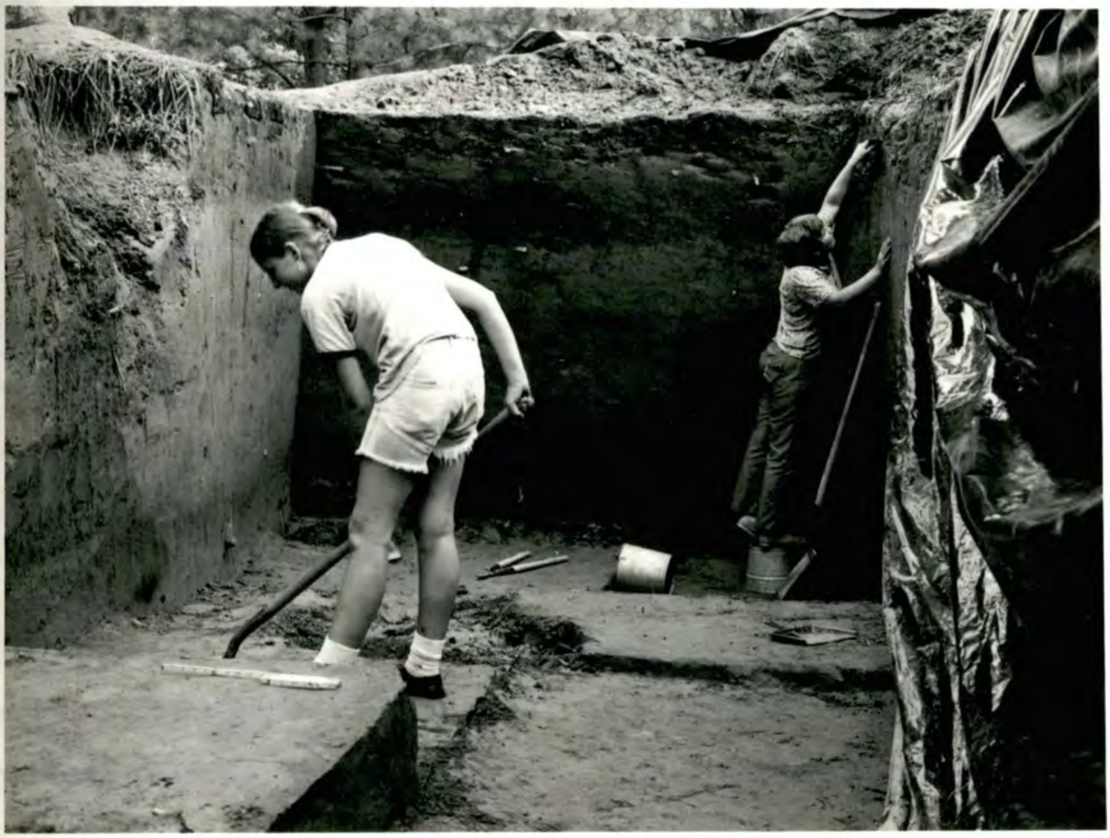


Plate IV

All soil including the plow zone was waterscreened through one-fourth inch mesh, feature soil through one-sixteenth inch mesh. The waterscreen employed a three-inch trash pump to pump water from the river to the screens. At the screens the three-inch diameter hose entered a coupling and the water flow was divided into one and one-half inch diameter hoses and a five-eighths inch diameter hose. Nozzles on the large hoses were short lengths of one-inch pipe, flattened at the end to create a broad spray. Soil was brought by wheelbarrow to one of three screen boxes, dumped and hosed through, leaving all material one-fourth inch or larger in size. The boxes were hinged so they could be lifted and hosed clean. The waterscreen employed in Season II (Plate IX) was an improvement on that of Season I. Instead of hardware cloth, one-fourth inch mesh steel smokescreen was braised to an iron frame giving the needed strength to withstand heavy loads of dirt along with an occasional wheelbarrow.

In order to determine if there were any deeply buried deposits on Rose Island, one of the stump craters was dressed up and dug deeper (Test Pit 10). At about six feet below ground surface a buried cultural horizon was encountered. A feature (Feature 1) and artifactual material suggested a possible Early Archaic horizon. Test Pits 11, 12, and 13 were dug in other stump craters to sample and ascertain the distribution of this horizon.

A backhoe was employed to remove the overburden above this horizon in the area of Test Pit 10. An area approximately 275 ft^2 was exposed and is designated Unit H (Fig. 2; Plate IV). Excavation of this buried horizon (Strata V and VII--Table 2) was in 0.2 ft cuts using trowels.

All rock, débitage, and artifacts were plotted and exact elevations were taken on all artifacts. All soil was waterscreened to recover any material overlooked in the hand excavation.

A trench (Trench 1) was cut by the backhoe in the lower end of the site (Fig. 2). Stratification within the Early Archaic horizon was observed, and two 5 x 10 ft squares were excavated in this area; square 30 R 260 is designated Unit G. Other excavation activities included a profile cut in the area of previous land fill removal (square 350 R 80) and Test Pit 14 on the back side of the island.

University of Tennessee Excavation--Season II

A second season of investigations was conducted from June 1-August 31, 1974, and concentrated exclusively on the Early Archaic horizons. A back hoe was employed to remove the overburden from three areas designated Units A, B, and F; midway in the season, Units C, D, and E were similarly uncovered (Plate V). In addition, seven backhoe trenches were dug to delineate the Early Archaic occupation area and define the stratigraphic situation.

Excavation units were 5 ft squares within the grid of the previous season. All soil except that removed by the machinery was waterscreened.

Unit A (Plates VII and VIII). Unit A was bounded by the R 235, R 265, 60, and 80 grid lines and was excavated following the stratigraphy exposed in Trench 3 along the 60 line. Excavation was by 0.2 ft trowel cuts, except in the areas of sterile loamy sand, and followed the natural stratigraphy. All rock, flint, and artifacts were plotted and elevations taken on each artifact. Excavation continued one cut into soil horizon X Alb (Table 1). A 15 x 20 ft area was excavated 1.5-2.0 ft further in 0.2 ft cuts to and through a Kirk horizon. Five squares

Plate V. Season II, Backhoe Excavation, Unit A

Plate VI. Season II, Excavation, Unit B, Stratum VII, Level 4

Plate V

Plate VI

Plate VII. Season II, Excavation, Unit A, Stratum VII A, Level 1

Plate VIII. Season II, Excavation, Units D, A, and C

Plate VII

Plate VIII

were then taken 3.0 ft below this to expose two hearths (Features 218 and 219) of soil horizon XIII B2b. One square was taken down to the water table.

Unit B (Plate VI). During the removal of the overburden from Unit B, a buried A soil horizon (Stratum IV) was encountered 1.3 ft below the Early Woodland horizon and 3.0 ft above the Early Archaic horizon. A 10 x 10 ft block was retained and excavated in five cuts from below the Woodland down to the Early Archaic horizon. An area bounded by the R 220, R 195, 165, and 180 grid lines was then trowel excavated in nine 0.2 ft cuts, plotting all rock, flint, and artifacts. Elevations were taken on all artifacts. A backhoe cut along the 180 line allowed excavation along the natural contours.

Unit C. The overburden covering the Early Archaic was removed from Unit C on the opposite side of the backhoe trench from the 60 line of Block A. It included squares 50 and 55 R 270 excavated in Season I. The area was bounded by the 57, 40, and R 270 lines and a line diagonal from point 57 R 240 to 40 R 248. Following the natural stratigraphy, the unit was excavated in 0.2 ft cuts by skim shoveling to one cut into Stratum VIII (Table 1). Elevations and proveniences were recorded for artifacts in situ.

Unit D. Unit D was bounded by the grid north boundary of Block A --the 80 line, and by the 95, R 274, and R 240 grid lines. The overburden was removed and the Early Archaic horizons were excavated by shovel in 0.2 ft cuts. Elevations and proveniences were recorded for artifacts in situ. All squares were taken through Stratum VII; 12 squares were excavated through Strata VIII and XI, and were excavated beyond.

Unit E. Unit E was an extension from the 10 x 10 ft block in Unit B to investigate Stratum IV. The overburden was removed by backhoe and an area bounded by the R 220, R 240, 162, and 172 grid lines was excavated by shovel in two cuts through the horizon.

Unit F. Unit F was a 10 x 10 ft area opened off a backhoe cut at stake 275 R 170. Two 0.5 ft cuts by shovel removed the Early Archaic horizon.

Soils and Stratigraphy

In the soil survey of Monroe County the soils on Rose Island have been classed into three types: Bruno loamy fine sands at the upper end of the island, Statler loams in the center and northern side, and Transylvania loams at the tip (USDA, Soil Conservation Service n.d.). In the area of the site, however, the soils and stratigraphic situations have been made complex by alluvial deposition, flood scouring, overbank deposits, foreset bedding, and 9500 years of aboriginal visitation and occupation.

Tables 1 and 2 present descriptions of the soils and stratigraphy in the excavation areas of Units B and H, and A and C. The detailed soil descriptions were prepared by Mr. Rector H. Moneymaker and Mr. Steven Ottinger, soil scientists with the United States Soil Conservation Service. Their descriptions are based on a single profile within each of the excavation areas. Colors are by the Munsell System and notations are of moist soil unless otherwise indicated. pH readings were obtained using a Hellige-Irvog Soil Reaction (pH) Tester No. 693; pH readings taken by the author using the Sudbury Soil Test Kit (Green Thumb-Model T) suggested slightly greater acidity in the area of Units B and H (Chapman n.d.). Due to the stratigraphic situations the horizon sequence described varies within each excavation area, as well as between the two areas. Brief textural and color descriptions only are given for those horizons not present in the two profiles analyzed. The lithologic discontinuities were established in consultation with Stanley W. Buol, Department of Soil Science, North Carolina State University. The archaeological horizons are based on the distribution of artifactual material.

Figs. 3-7 presents profiles illustrating the stratigraphy in the various excavation areas. Plates X-XIV illustrate the profiles in Units A, C, and D, and Strata I,II, and III in squares 240 and 250 R 225.

Discussion of Archaeological Strata and Soil Horizons

Stratum XI in Unit A represents the earliest recognized occupation of the Rose Island site. Backhoe Trenches 4 and 6 suggest that the first visitors to the site found the island tip situated at least 150 ft upstream from its present location. Alluvial deposition had been occurring rapidly with little time for horizon development. At least 14 soil horizons comprised of sandy loams, loamy sands, and sands, and devoid of cultural material, occurred in the 6 ft between Stratum XI and the water table. The island tip was probably devoid of vegetation at this time and the occurrence of two hearth remains (Features 218 and 219) represent transient groups. A radiocarbon date of 7160 B.C. $\pm$ 145 yr (Chapter IV, Table 26) was obtained from Feature 219.

Table 1. Soils and stratigraphy of excavation Units A and C.

Archaeological Horizon	Soil Horizon	Description
Stratum I Mixed Early--Late Woodland and Early Mississippian	Ap	0-11" Very dark brown (10YR 2/2) loam; few fine (< 5mm) variegations of strong brown (7.5YR 5/6); moderate medium granular structure; friable; many medium (5-15mm) roots, many fine (< 2mm) mica flakes, few sandstone gravel ranging from about 2mm to 2cm in diameter, few fine (<5mm) particles of charcoal, few red and dark red 2.5YR 5/8-3/6) particles ranging from about 1mm to 10mm in diameter, few fine (< 2mm) pores (apparently old root channels); pH 6.3; clear smooth boundary.
	B2	11-20" Dark yellowish brown (10YR 3/4) sandy loam; weak fine granular structure; very friable; few fine (< 5mm) roots, many fine (< 5mm) mica flakes, few fine (< 5mm) particles of charcoal; pH 6.3; clear smooth boundary.
	C	(in places) Dark yellowish brown loamy fine sand.
Stratum II Early Woodland	II Alb	20-34" Dark yellowish brown (10YR 3/4) loam; moderate medium granular structure; friable; many roots ranging up to about 1.5cm, many fine (< 5mm) mica flakes, few quartz gravel ranging up to about 15mm in diameter, few fine (< 5mm) red (2.5YR 5.8) particles, common fine (< 2 mm) pores (apparently old root channels, 1 fragment of limestone tempered pottery; pH 6.2; clear smooth boundary.
Stratum III-V	Missing	
Stratum VI	III Cb	34-54.5" Dark yellowish brown (10YR 4/4) loamy fine sand; single grain; very friable; few fine and medium (< 10mm) roots most of which are concentrated in lower 5 inches of horizon, many fine (<4mm) mica flakes, few red sandstone gravel ranging up

Table 1. (continued)

Archaeological Horizon	Soil Horizon	Description
		to 4 inches in diameter, few fine (< 5mm) particles of charcoal; pH 6.3; abrupt smooth boundary.
Stratum VII-A Early Archaic LeCroy	IV A11b	54.5-58" Dark yellowish brown (10YR 3/4) loam; few fine variegations of dark grayish brown (10YR 4/2); moderate medium granular structure; friable; common roots, most of which are (<5mm) in diameter, many fine (<3mm) mica flakes, few fine (< 5mm) particles of charcoal; pH 6.7; clear smooth boundary.
	IV A12b	58-65" Very dark brown (10YR 2/2) loam; moderate medium granular structure; friable; common fine (<3mm) roots, many fine (<3mm) mica flakes, common quartz gravel ranging up to about 10 cm in diameter, few fine and medium (<1cm) particles of charcoal, few fine (<3mm) red (2.5YR 5/8) particles; few fine (<5mm) pores (apparently old root channels) filled with brownish yellow (10YR 6/6) sand; pH 6.1; abrupt smooth boundary.
Stratum VII-B Early Archaic St. Albans	V B21b	65-72" Dark yellowish brown (10YR 3/4) fine sandy loam; few fine faint variegations of reddish brown (5YR 4/4); weak fine subangular blocky structure; friable; few fine (<5mm) roots, many fine (< 3mm) mica flakes, few fine (< 5mm) particles of charcoal; pH 5.7; clear smooth boundary.
Stratum VII-C Early Archaic St. Albans	VI B22b	72-79.5" Dark yellowish brown (10YR 4/4-3/4) sandy loam or loamy fine sand; weak fine and medium subangular blocky structure; very friable; few fine (<5mm) roots, many fine (<4mm) mica flakes, few fine (< 5mm) particles of charcoal; pH 5.5; clear smooth boundary.

Table 1. (continued)

Archaeological Horizon	Soil Horizon	Description
Stratum VII-D Early Archaic St. Albans	VII Cb	79.5-84" Dark yellowish brown (10YR 4/4/) loamy sand; single grain; loose; many fine (<5mm) mica flakes, few fine (<2mm) particles of charcoal; pH 5.5; abrupt smooth boundary.
Stratum VII-E Early Archaic St. Albans	VIII Alb	84.5-88" Dark brown (10YR 3/3) fine sandy loam; horizon is darkened by carbon (charcoal) stains; weak fine granular structure; very friable; few fine (<5mm) roots, many fine (<5mm) mica flakes, many carbon (charcoal) ranging up to about 5mm in diameter; pH 5.6; clear wavy boundary.
Stratum VII-F Early Archaic St. Albans	VIII Cb	(in places) Dark yellowish brown loamy sand.
Stratum VII-G Early Archaic St. Albans	IX B2b	88-93.5" Dark brown (10YR 3/3) fine sandy loam or loam; weak fine granular structure; friable; few fine (<5mm) roots, few fine (<3mm) mica flakes, few quartz fragments most of which are less than 5 cm, few fine (<5mm) particles of charcoal; pH 5.7; abrupt smooth boundary.
Stratum VIII Early Archaic Kirk	X Alb	93.5-97" Dark yellowish brown (10YR 3/4) (has reddish tinge not measurable with Munsell System) loam; structureless; friable but compact in places; many fine (<4mm) mica flakes, few fine (<5mm) particles of charcoal, few fine (<3mm) reddish brown (5YR 4/4) particles, pH 5.8; gradual smooth boundary.
	X B21b	97-102" Dark brown (10YR 3/3) loam; few variegations of yellowish red (5YR 5/8), dark yellowish brown (10YR 3/4), and brown (10YR 5/3), weak fine subangular blocky structure; friable but compact in place, many fine (<4mm) mica flakes, few carbon (charcoal) stains; pH 6.3 clear smooth boundary.

Table 1. (continued)

Archaeological Horizon	Soil Horizon	Description
	X B22b	102-199" Dark brown (10YR 3/3) fine sandy loam; weak medium subangular blocky structure; friable; few fine (<5mm) roots, many fine (<4mm) mica flakes, few fine (<3mm) particles of charcoal; pH 5.7; abrupt smooth boundary.
Stratum IX Sterile	XI Cb	119-124" Yellowish brown (10YR 5/4) loamy sand; single grain; loose; many fine (<4mm) mica flakes, few fine (<3mm) particles of charcoal, pH 6.4; clear smooth boundary.
Stratum X Sterile ?	XII A11b	(in places) Dark brown fine sandy loam.
	XII A12b	124-132" Dark yellowish brown (10YR 3/4) loam; weak fine subangular blocky structure; friable; many fine (<4mm) mica flakes, few fine (<3mm) particles of charcoal; pH 5.7; clear smooth boundary.
	XII B21b	Dark brown fine sandy loam; thickness: c. 3.5".
	XII B22b	Brown fine sandy loam; thickness: c. 2.5".
	XII Cb	Yellowish brown loamy sand; thickness: c. 7".
Stratum XI Early Archaic Kirk	XIII B2b	Dark brown fine sandy loam; thickness: c. 7".

At least 14 horizons comprised of sandy loams, loamy sands, and sands occur in the next 6 ft. to the watertable. All are devoid of cultural material and represent rapid bedding in the development of the island tip.

Table 2. Soils and stratigraphy of excavation Units B and H.

Archaeological Horizon	Soil Horizon	Description
Stratum I	Ap	0-9" Very dark brown (10YR 3/2) loam; few variegations of dark brown (7.5YR 4/4) dry, dark brown (7.5YR 3/2) moist; weak fine granular structure; friable; many roots ranging in size from less than 1mm to 1.5cm; common fine (<2mm) mica flakes; few quartz gravels ranging in size from 2mm to 4cm; few particles of charcoal, few fine (<2mm) red (2.5YR) particles, few small fragments of flint; pH 6.7; gradual smooth boundary.
	B2	(in places) Brown fine sandy loam.
	C	(in places) Yellowish brown loamy sand.
Stratum II Early Woodland	A1-	9-14.5" Very dark grayish brown to very dark brown (10YR 3/2-2/2) loam; few variegations of dark brown (7.5YR 4/4) dry, dark brown (7.5YR 3/2) moist; weak fine granular structure; friable; common roots ranging in size from less than 1 mm to 1.5 cm; common fine (2mm) mica flakes; few quartz gravels ranging in size from 2mm to more than 7 cm; few particles of charcoal; few more than in Ap); fine (<2mm) red (2.5YR 4/8) particles; pH 6.3; clear smooth boundaries
Stratum III Late Archaic	II B21b	14.5-26" Dark brown (7.5YR 4/2) silt loam; variegations are dark brown (7.5YR 4/4), silt coats along old root channels are dark grayish brown (10YR 4/2) dry; weak medium subangular structure; friable; few fine roots, common fine (<2mm) mica flakes, common fine (<4mm) pores (apparently old root channels) pH 6.3; clear smooth boundary.

Table 2. (continued)

Archaeological Horizon	Soil Horizon	Description
	II B22b	26-24.5" Dark brown (10YR 4/3-3/3) silt loam; silt coats are dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure; friable; few fine roots, common fine (<2mm) mica flakes, common fine (<5mm) pores (apparently old root channels); pH 6.3; clear smooth boundary.
Stratum IV Early Middle Archaic	III A1b	34.5-43" Dark brown (10YR 3/2-4/2) loam; silt coats along old root channels are dark grayish brown (10YR 4/2) dry; weak medium granular structure; friable; few fine roots; many fine (<2mm) mica flakes, common fine (<4mm) pores (apparently old root channels), few particles of charcoal; pH 6.7; clear irregular boundary.
	III B2b	43-52.5" Dark brown (7.5YR 4/3) loam; weak fine granular structure; friable; few fine (<2mm) roots, many fine (<2mm) mica flakes, common fine (<4mm) pores (apparently old root channels); pH 6.7; clear wavy boundary.
Stratum V Early Archaic Kanawha ?	IV A1b	52.5-64" Dark brown (7.5YR 4/3) loam; moderate fine granular structure; friable; few fine (<2mm) roots, many fine (<2mm) mica flakes, common fine (<4mm) pores (apparently old root channels), few particles of charcoal; pH 6.3; clear smooth boundary.
Stratum VI-missing		
Stratum VII Early Archaic LeCroy and St. Albans	V A1b	64-72" Dark brown (7.5YR 3/2) silt loam; moderate fine granular structure; friable; few fine (<2mm) roots, many fine (<2mm) mica flakes, common fine (<4mm) pores (apparently old root channels), common particles of charcoal, few fine (<2mm) red (2.5YR 4/8) particles; pH 6.5; abrupt smooth boundary.

Table 2. (continued)

Archaeological Horizon	Soil Horizon	Description
Stratum VII continued	VI Alb	72-76" Dark brown (7.5YR 4/3) loam; moderade fine granular structure; friable; few fine (< 2mm) roots; many fine (< 2mm) mica flakes, few particles of charcoal, common fine pores (< 1mm) (apparently old root channels); pH 6.3; abrupt smooth boundary.
	VI A3b	76-86.5" Brown (10YR 4/3) to dark brown (7.5YR 4/3) loam; weak fine granular structure; very friable; very fine (< 1mm) roots; many fine (< 2mm) mica flakes, few particles of charcoal, few fine (< 1mm) pores (apparently old root channels); pH 6.3; clear smooth boundary.
Base of archaeological investigations. Soil horizons below defined from test pit profile. Horizons apparently culturally sterile.		
	VII Clb	86.5-92.5" Dark brown (10YR 4/3-3/3) fine sandy loam; single grain; very friable; very few fine (< 1mm) roots, many fine (< 2mm) mica flakes: pH 6.3; gradual smooth boundary.
	VII C2b	92.5-109.5" Dark yellowish brown (10YR 4/4-3/4) fine sandy loam; single grain; loose; very few fine (< 3mm) roots; many fine (< 2mm) mica flakes; pH 6.2; gradual smooth boundary.
	VII C3b	109.5-138.5" Yellowish brown to dark yellowish brown (10YR 5/4-4/4) loamy fine sand; single grain; loose; very few fine (< 1mm) roots, many fine (< 3mm) mica flakes, few fine (< 5mm) particles of charcoal; pH 6.2; gradual diffuse boundary.

Table 2.(continued)

Archaeological Horizon	Soil Horizon	Description
	VIII Alb	138.5-149.5" Dark brown (10YR 4/3) loam; weak medium granular structure; very friable; few fine (<5mm) roots, many fine (<3mm) mica flakes; pH 6.0; abrupt wavy boundary.
	IX Clb	149.5-164.5" Dark brown (10YR 4/3) fine sandy loam; single grain; very friable; very few very fine (<2mm) roots, many fine (<4mm) mica flakes, few fine (<2mm) particles of charcoal; pH 7.0; clear smooth boundary.
	IX C2b	164.5-211.5+" Mottled dark brown (7.5YR 4/2-3/2), grayish brown (2.5YR 5/2), and strong brown (7.5YR 5/6) loam; mottle abundance, size, and contrast increase with depth; structure, if present, not determined; many fine (<4mm) mica flakes, few very fine (<1mm) black concretions; pH 7.0. (Water came into hole at approximately 209 inches below the surface.)

Fig. 3. Profile, 60 line, Unit A

	Archaeological Stratum	Soil Horizon
a.	I	Ap
b.	I	B2
c.	II	II Alb
d.	VI	III Cb
e.	VII A	IV Allb
f.	VII A	IV Al2b
g.	VII B	V B21b
h.	VII C	VI B22b
i.	VII D	VII Cb
j.	VII E	VIII Alb
k.	VII F	VIII Cb
l.	VII G	IX B2b
m.	VIII	X Alb
n.	VIII	X B21b
o.	VIII	X B22b
p.	IX	XI Cb
q.	X	XII Allb
r.	X	XII Al2b
s.	X	XII B22b
t.	X	XII Cb

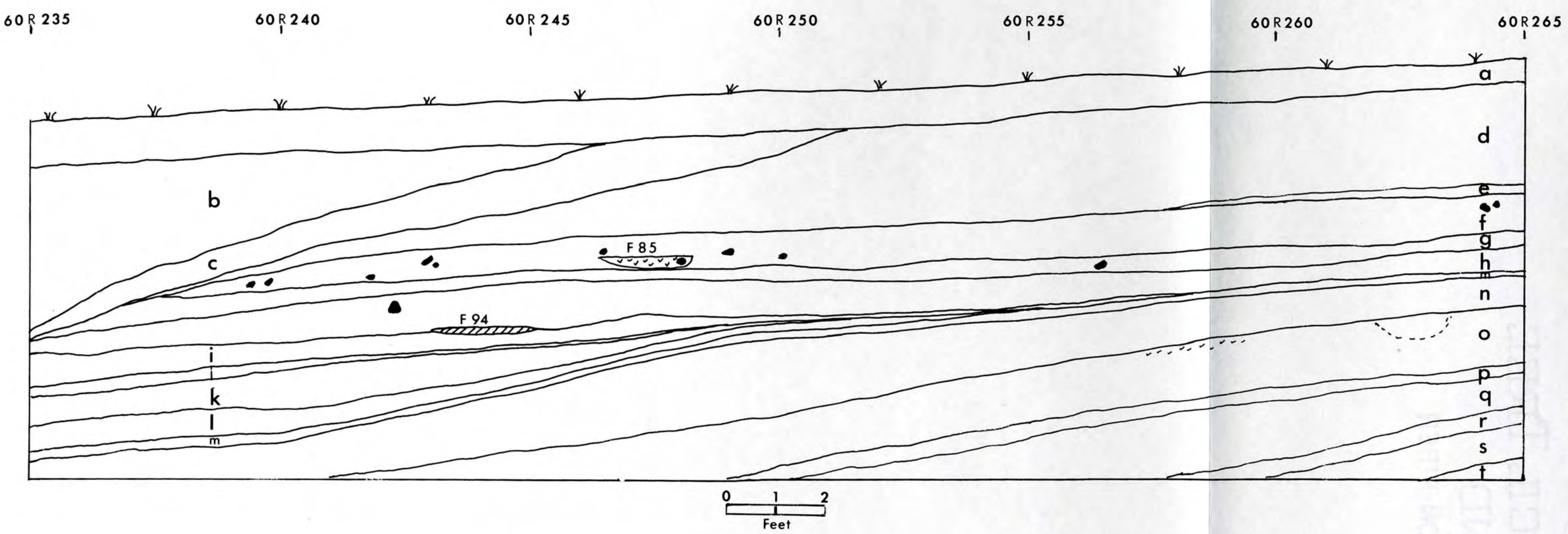

60 R 235
60 R 240
60 R 245
60 R 250
60 R 255
60 R 260
60 R 265
a
b
c
d
e
f
g
h
i
j
k
l
m
n
o
p
q
r
s
t
F 85
F 94
0 1 2
Feet

Fig. 3

Fig. 4. Profile, R 235 line, Unit A.

	Archaeological Stratum	Soil Horizon
a.	I	Ap
b.	I	B2
c.	I	C
d.	II	II Alb
e.	VI	III Cb
f.	VII A	IV A11b
g.	VII A	IV A12b
h.	VII B	V B21b
i	VII C	VI B22b
J	VII D	VII Cb
k.	VII E	VIII Alb
l.	VII F	VIII Cb
m.	VII G	IX B2b
n.	VIII	X Alb

S=sherd

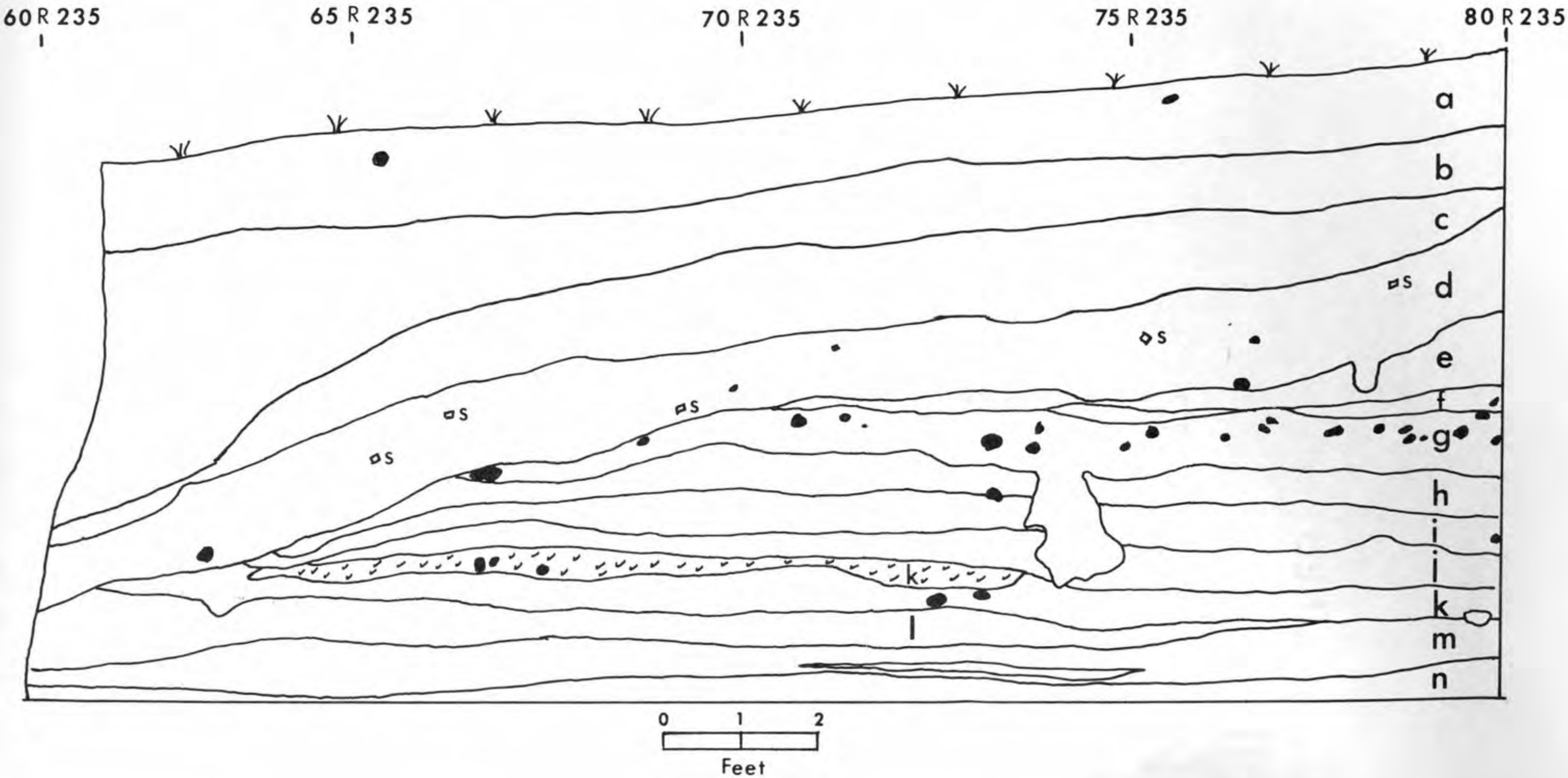

60 R 235
65 R 235
70 R 235
75 R 235
80 R 235
a
b
c
d
e
f
g
h
i
j
k
l
m
n
s
s
s
s
s
s
k
0
1
2
Feet

Fig. 4

Fig. 5. Profile, R 265 line, Unit A.

	Archaeological Stratum	Soil Horizon
a.	I	Ap
b.	II	A1
c.	I	B2
d.	VI	III Cb
e.	VII A	IV A11b
f.	VII A	IV A12b
g.	VII B	V B21b
h.	VII C	VI B22b
i.	VIII	X A1b
j.	VIII	X B21b
k.	VIII	X B22b
l.	IX	XI Cb
m.	X	XII A11b
n.	X	XII A12b
o.	X	XII B21b
p.	X	XII B22b
q.	X	XII Cb
r.	XI	XIII B2b
s.	Sandy loams, loamy sands, and sands	

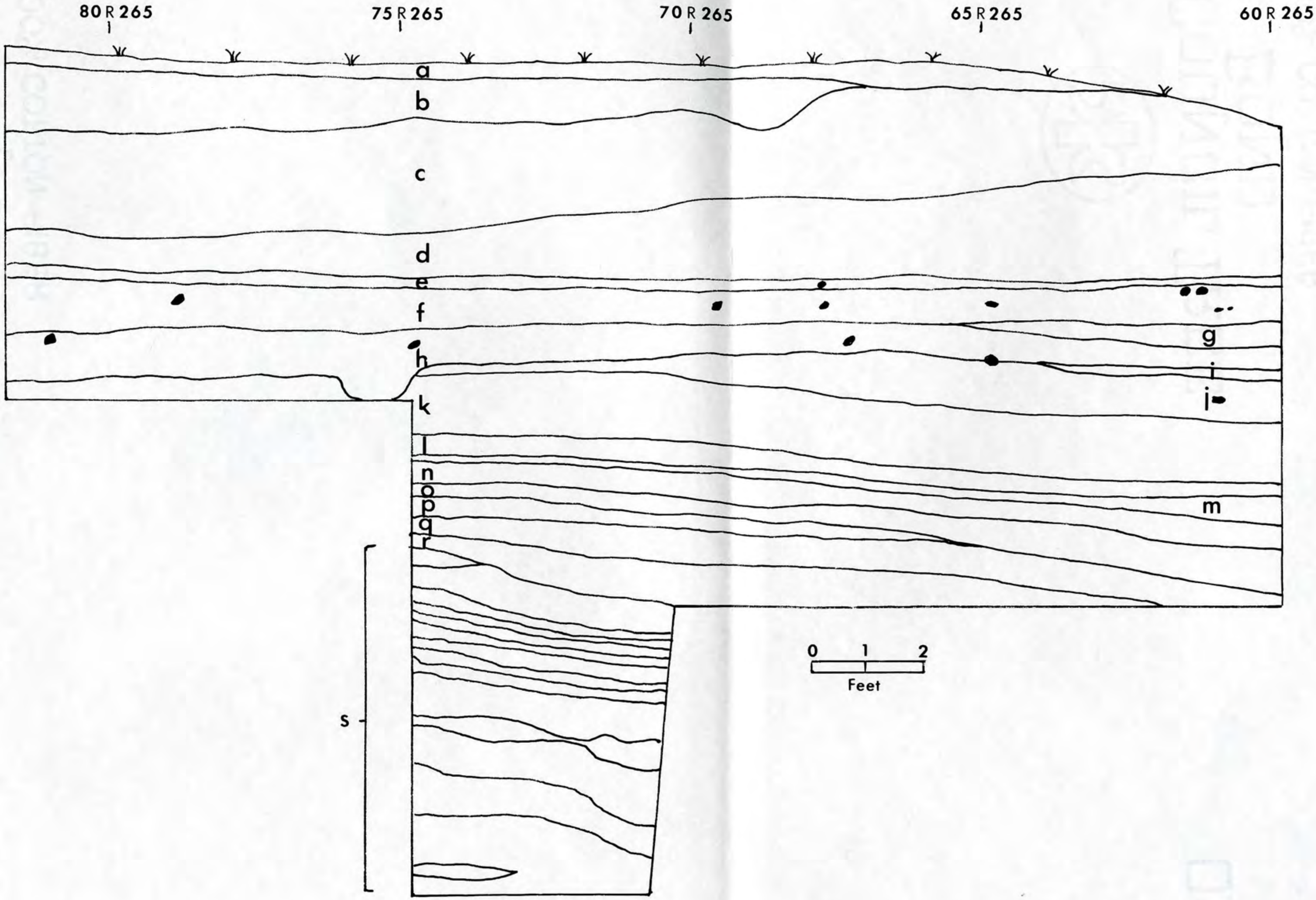
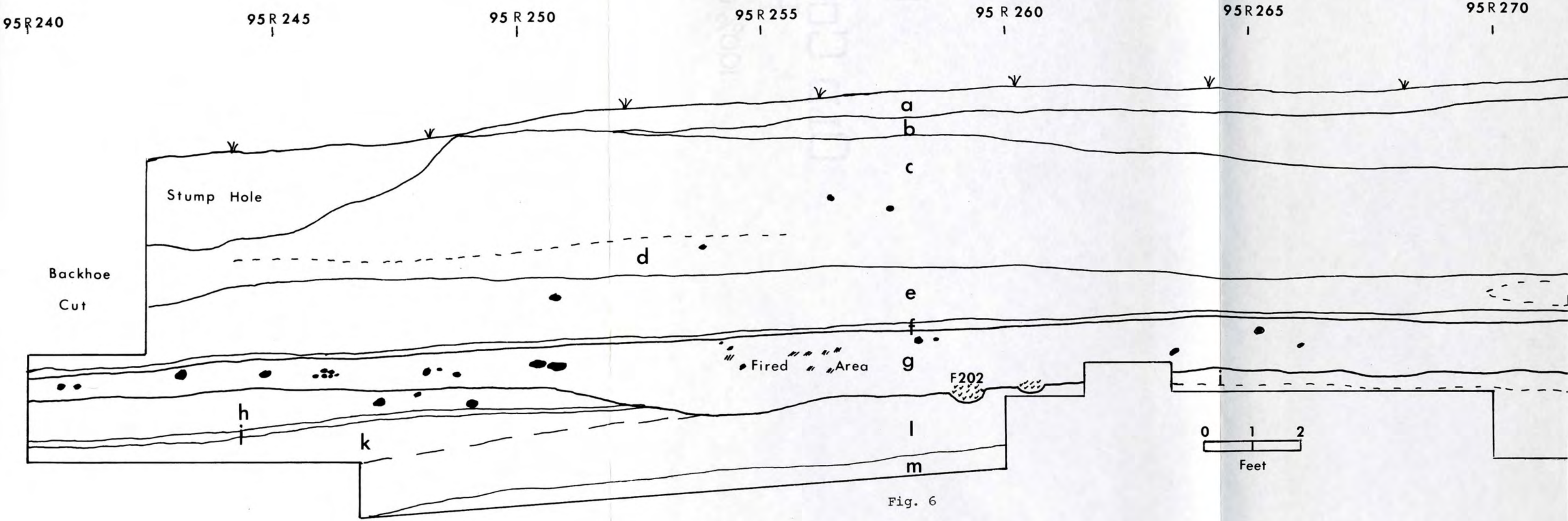

80 R 265
75 R 265
70 R 265
65 R 265
60 R 265
a
b
c
d
e
f
g
h
i
j
k
l
m
n
o
p
q
r
s
0
1
2
Feet

Fig. 5

Fig. 6. Profile, 95 line, Unit D.

	Archaeological Stratum	
a.	I	
b.	II	
c.	III	
d.	IV (?)	
e.	V (?)	
f.	VII A	
g.	VII A and C	
h.	VII C	
i.	VII	(soil horizon A 3b)
j.	VIII	(" " X Alb)
k.	VIII	(" " X B21b)
l.	VIII	(" " X B22b)
m.	IX	(" " XI Cb)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95R245
95R250
95R255
95R260
95R265
95R270
a
b
c
Stump Hole
d
Backhoe
Cut
e
f
Fired
Area
g
F202
i
h
j
k
l
m
0
1
2
Feet

Fig. 6

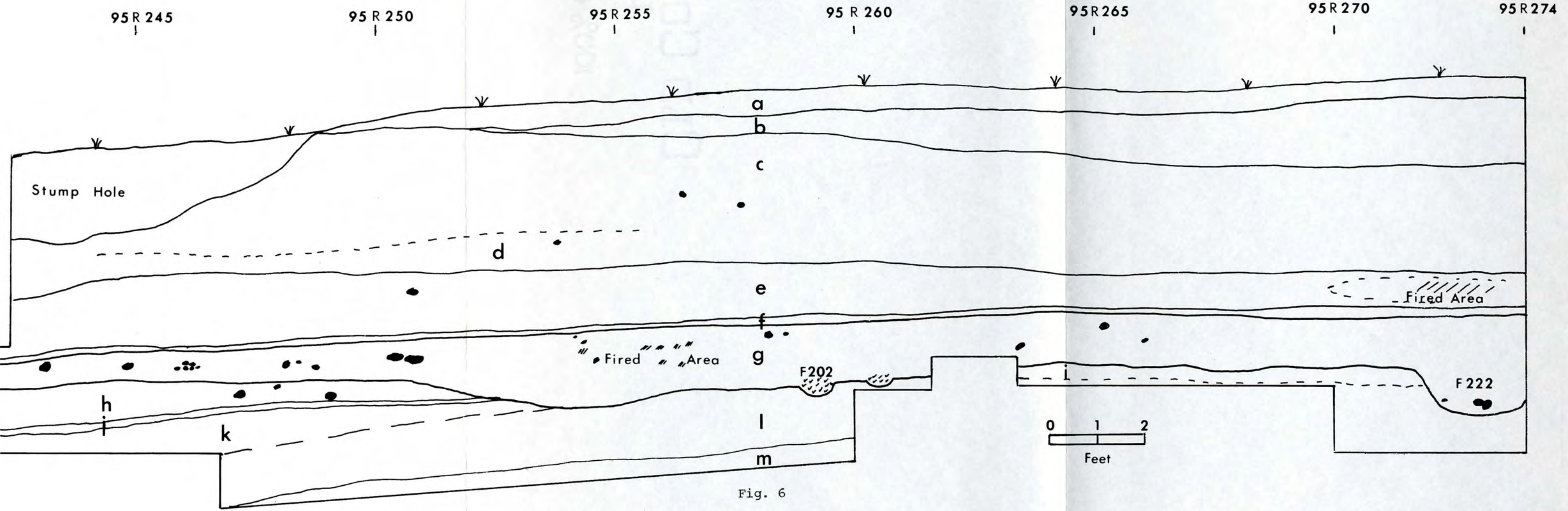

95 R 245
95 R 250
95 R 255
95 R 260
95 R 265
95 R 270
95 R 274
Stump Hole
a
b
c
d
e
Fired Area
f
g
Fired Area
F202
i
F 222
h
j
k
l
m
0 1 2
Feet

Fig. 6

Fig. 7. Profile, 165 line, Unit B.

	Archaeological Stratum	Soil Horizon
a.	I	Ap
b.	I	B2
c.	I	C
d.	II	Al-II Alb
e.	III	II B21b & B22b
f.	IV	III Alb
g.	IV	III B2b
h.	V	IV Alb
i.	VII	V Alb & VI Alb
j.	VII	VI A3b

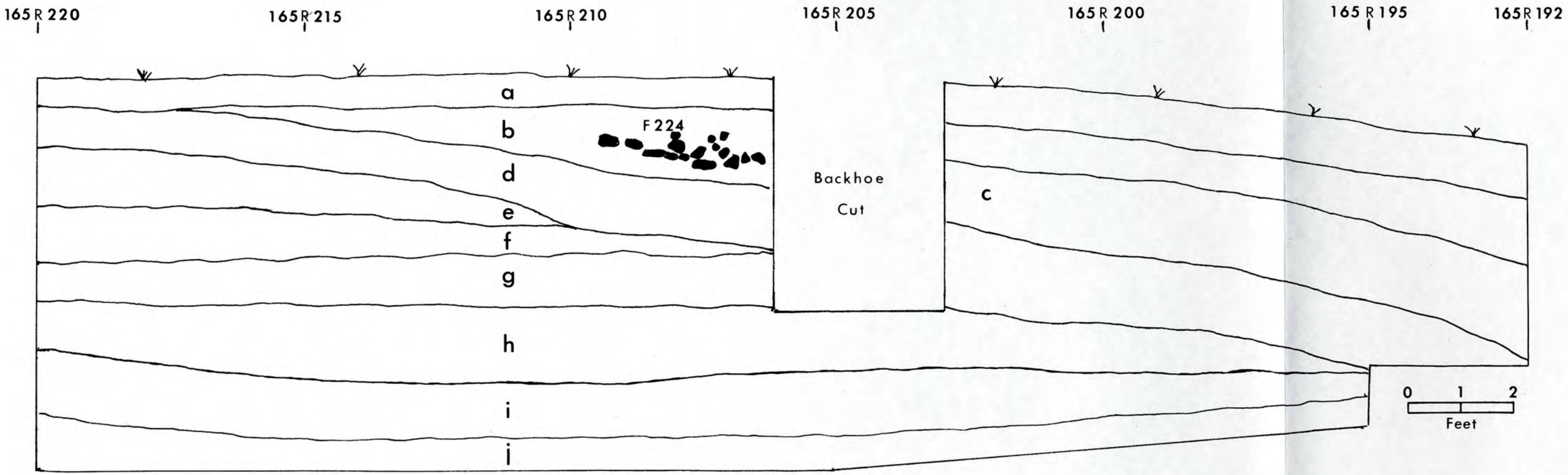

165 R 220
165 R 215
165 R 210
165 R 205
165 R 200
165 R 195
165 R 192
a
b
F 224
d
e
f
g
h
i
j
Backhoe
Cut
c
0
1
2
Feet

Fig. 7

Plate IX. Season II, Waterscreen

Plate X. Profile, R 230 Line, Square 240 R 225, Strata I, II, and III.

Plate IX

Plate X

Plate XI. Profile, 35 Line, Unit G

Plate XII. Profile, R 235 Line, Unit A

Plate XI

Plate XII

Plate XIII. Profile, R 265 Line, Unit A

Plate XIV. Profile, 90 Line, Unit D

Plate XIII

Plate XIV

Strata IX and X in Unit A yielded no cultural material and, even with the development of an A soil horizon, may not represent much time. A radiocarbon date of 7380 B.C. $\pm$ 250 yr (Chapter IV, Table 26) from a hearth (Feature 212) within soil horizon X B22b suggests that, within the one sigma range, Strata VIII and XI are the same age. The angle of dip of Stratum VIII is less than that of IX and X, and the well-developed soil A horizon (X Alb) suggests that by this time the island formation had become more stable and the area of Unit A more suitable for occupation. Stratum VIII was easily delineated from the overlying Stratum VII G due to the compact nature of the A soil horizon (X Alb). In addition, vertical seams of compact fine sandy loam originated from the horizon surface and extended upwards into Stratum VII G. This distinct soil horizon which marks the cultural break between the Kirk assemblage below and the St. Albans assemblage above, is possibly due to the horizon being a zone of lower permeability. Laterally moving water carried organic carbon that could be used as an energy source, and a decrease in oxygen created a reducing atmosphere, resulting in reddening and cementation from the conversion of ferric oxides to ferrous oxides (Stanley Buol, personal communication). Numerous seepage lines also occur in the overlying Stratum VII A-G, representing a similar phenomenon.

Stratum VIII is most apparent in Units A and C. At the top of the terrace it becomes difficult to distinguish, in that the diagnostic compact A soil horizon (X Alb) has disappeared. In Unit B no Stratum VIII was detected although some Kirk material was present. Two possibilities are suggested: The bifurcated point users settled on a stable surface occupied by the earlier peoples. Only towards the end of the island and the mainstream slope was any of this earlier material incorporated into successive depositions. Thus on much of the site the earlier material, including Palmer Corner Notched points (Coe 1964:67, 69) were on the surface and were incorporated into the bifurcate point horizons. Second, the Kirk occupation appears to be concentrated on the old island tip in the area east of Unit D.

Strata VII A-VII G, as seen in Units A and C, developed above Stratum VIII. Foreset bedding along the mainstream tip of the island created an alluvial build-up with periods of stability, enabling formation of A soil horizons. These distinct horizons, however, merge into a single Early Archaic stratum in Unit D and higher on the terrace (see Figs. 5 and 6). Where the soil horizons could be separated, typological change among the bifurcated base projectile points could be discerned, enabling a division into LeCroy and St. Albans type points, as Broyles (1966, 1971) was able to demonstrate at the St. Albans site in West Virginia (see Chapter IV). The temporal span of these strata are discussed below.

Stratum VII in Units B and H overlies a series of alluvial deposits that are apparently devoid of cultural material. In contrast to Unit A, the separation of Stratum II into distinct archaeological horizons on the basic of artifact distributions within clear soil horizons was impossible. Archaeological Stratum VII in Unit B and H therefore includes three A soil horizons. This stratum should be considered the temporal and cultural equivalent of Strata VII A-VII G in Units A and C. A distinctive attribute of Stratum VII in all excavation units was the abundant scattered carbonized wood and hickory (_Carya_ sp.) nut shell.

Stratum VI occurred only in Units A, C, and part of D. The Stratum is homogeneous and devoid of cultural material except for an occasional river cobble, and it appears to represent a major deposition after the LeCroy occupation. It is possible that Stratum VI is contemporary with the relative fast build-up of Strata IV and V in Block B.

Stratum V occurred in Unit B only and contained scattered cultural material. Two projectile points suggest association with the Kanawha Stemmed projectile point type (Broyles 1966:27; 1971:58-59) which occurs later than LeCroy Bifurcate points and precedes Middle Archaic Stanly Stemmed Points.

Stratum IV is comprised of an A and a B soil horizon and was defined only in Units B and E. The B horizon (III B2b) contained occasional cultural material as well as a hearth with large river cobbles (Feature 75). The A soil horizon (III Alb) was made more apparent by the presence of carbonized hickory nut shell (Carya sp.). A radiocarbon assay on the scattered nutshell from this horizon is 6070 B.C. ± 190 yr (Chapter IV, Table 26). The absence of bifurcated base projectile points and the presence of small stemmed points suggest an early Middle Archaic occupation.

Stratum III contained scattered non-ceramic cultural material--the most diagnostic artifact type being notched cobbles ("netsinkers"). This artifact type has been consistently associated with Late and Terminal Archaic assemblages in the Little Tennessee River valley and a similar association is suggested here. This stratum was recognized in all excavation units except Units A and C, but the artifactual evidence of occupation was extremely scattered.

At some time after Stratum IV and before Stratum II the mainstream, north side of the site was eroded, truncating the strata along that side (Plates XI and XII; Figs. 3,4,7). Subsequent occupation by Early Woodland period peoples is represented by Stratum II which slopes down the truncated face as an occupation layer in Unit B or as slope wash in Units A and C. This erosional disconformity is reflected in the slough defined by the 773-775 ft contours (Figs. 1 and 2).

Stratum II is situated directly below Stratum I (Ap) at the top of the terrace, but becomes a buried horizon (II Alb) as it slopes down the erosional face. Subsequent deposition occurred in portions of Units B, A, and C that covered Stratum II (soil horizons B2 and C) (Fig. 7). The B2 soil horizon contained some cultural material, but no systematic excavation of the horizon was conducted. A feature (Feature 224), profiled by the backhoe in Unit B, contained one Mulberry Creek Plain sherd (Haag 1939:9) which suggests a Middle to Late Woodland association for the B2 soil horizon.

Stratum I is the plow zone and is visible in all the excavation units. Cultural material associated with Early to Late Woodland and Early Mississippian periods was present. In excavation units 110 R 300 and 150 R 300, it was apparent that Stratum I had incorporated considerable portions of Stratum II.

Archaeomagnetic Dating

The most frequent Early Archaic feature type at Rose Island was a fired area-- an area of hard fired soil averaging 1.2 x 0.9 ft in diameter (Chapter IV). The Season I excavations suggested that since the hearths had both a horizonal and vertical distribution in the Early Archaic horizons, relative dates obtained by archaeomagnetic sampling procedures might provide data concerning occupational and depositional time spans. Dr. Robert L. DuBois of the Earth Sciences Observatory, Norman, Oklahoma, expressed an interest in obtaining data on the shifts in the magnetic field during this time period in the east. After visiting the Rose Island site during the Season II excavations, DuBois sent an aide, David Thorne, to obtain samples from the Early Archaic hearths.

DuBois has only recently begun to collect samples in the southeastern United States, but the method, with improvements, still follows that of his pioneer work in the southwest (cf. Weaver 1967). From each of 11 hearths at Rose Island, eight samples were taken. To obtain a sample, the fired clay was cut away isolating a one inch cube. A mold was placed around the sample and was leveled and oriented with a compass to present magnetic north. The mold was then filled with plaster, thus incasing the hearth sample. When hard, the sample was cut free and the bottom sealed in plaster as well. For each sample DuBois must arrive at two readings: declination and inclination. At any time these two define a single point on the polar path. With eight of these from each hearth, DuBois believes that an accurate estimation of the earth's magnetic field at the time of the hearth's use can be derived.

Although the Rose Island hearths were too early for absolute dating by their declination and inclination points on an established polar path, DuBois' analysis was able, at the 95% confidence level, to establish the relative ages of the sampled hearths (Robert L. DuBois, personal communication). The distribution of fired areas through Strata VII A-VII G in Unit A provided a unique opportunity to establish the time span of the bifurcate projectile point tradition at Rose Island, Fig. 8 presents a schematic view of the distribution of sampled hearths in Unit A. Fig. 9

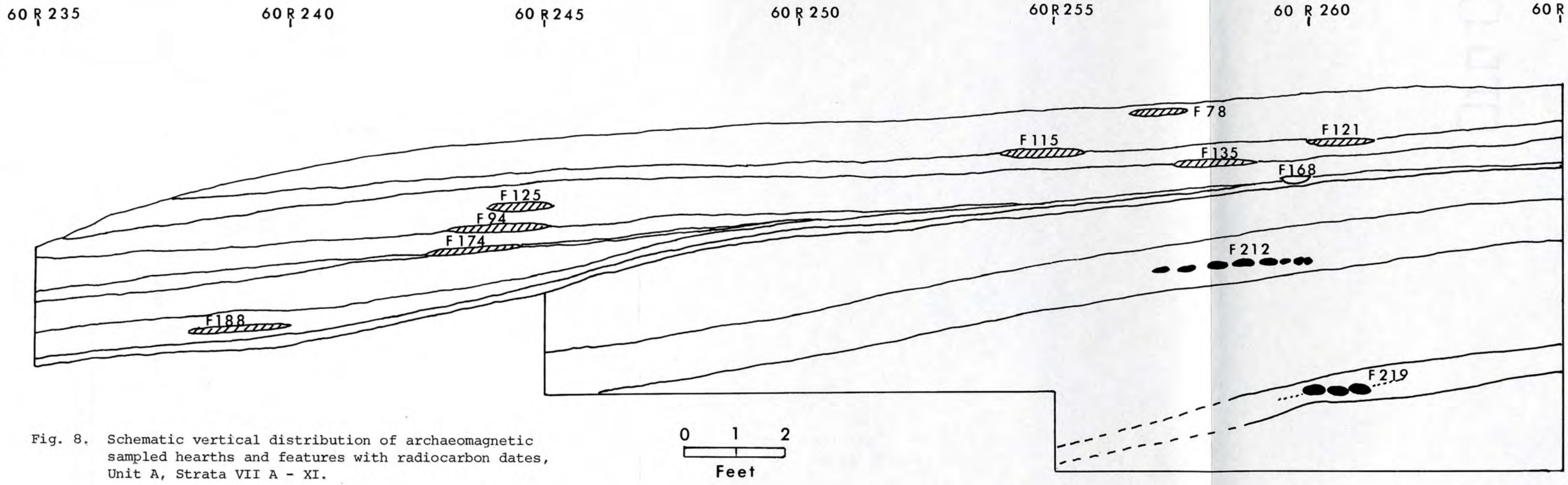


Fig. 8. Schematic vertical distribution of archaeomagnetic sampled hearths and features with radiocarbon dates, Unit A, Strata VII A - XI.

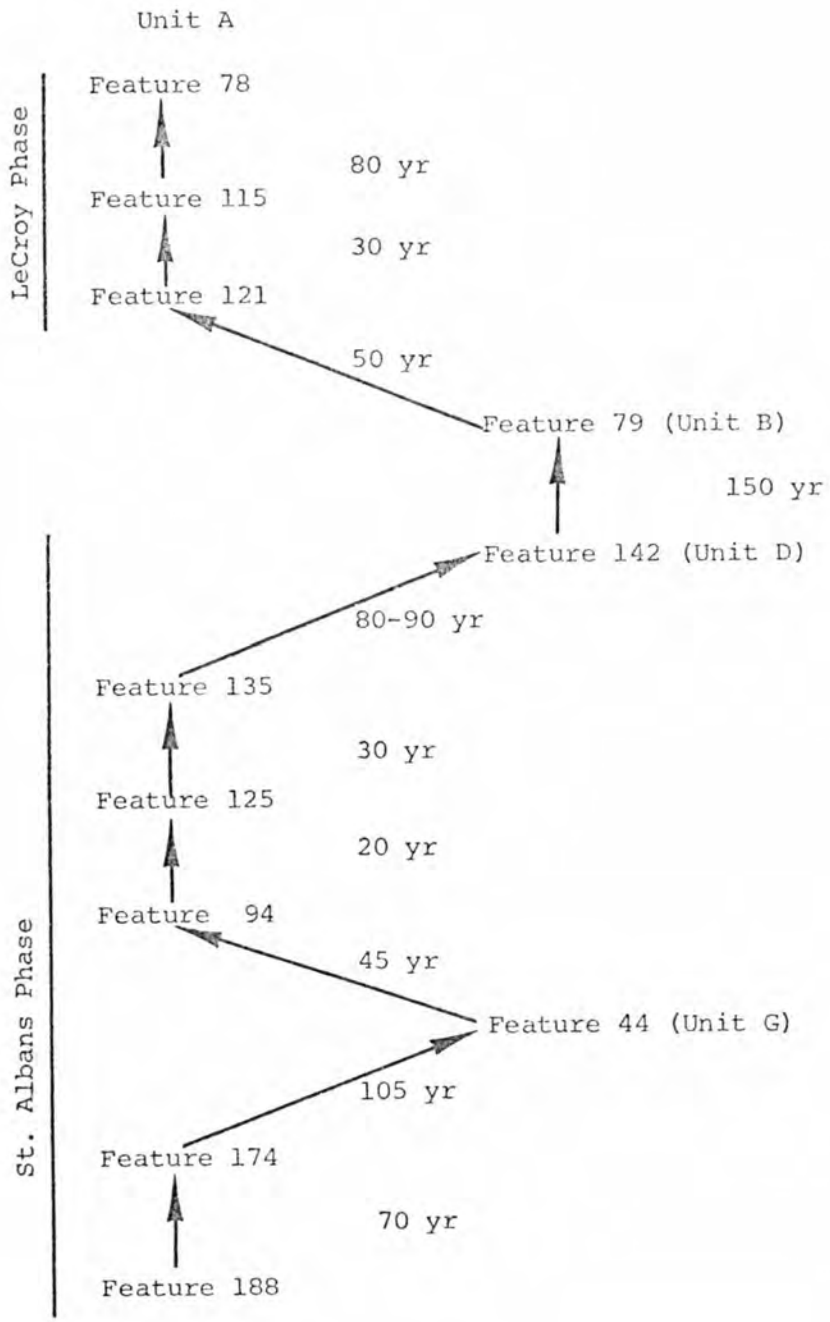


Fig. 9 Time spans between archaeomagnetic sampled hearths.

summarizes the time spans between the sampled hearths.

Approximately a 500 year span is suggested by the hearth analyses. The radiocarbon date of 6710 B.C. ± 180 yr (Chapter IV) from Feature 168 at the base of the bifurcate projectile point horizons in Unit A gives an absolute date for the relative sequence. The radiocarbon dates for the St. Albans phase suggest an average date of 6770 B.C. ± 250 yr (Chapter IV). A span of 500 year from the St. Albans phase to the LeCroy phase correlates well with the radiocarbon date of 6300 B.C. ± 100 yr (Broyles 1971) for the LeCroy zone at the St. Albans site.

III. THE LATER OCCUPATIONS

Excavations at Rose Island identified a sequence of prehistoric occupations spanning almost 9000 years. This chapter will describe the Middle Archaic to Early Mississippian period manifestations and will seek to place them in context with comparable material from the Little Tennessee River valley and the southeast.

Early/Middle Archaic

The identification of Stratum IV is tenuous considering the relatively small amount of material recovered. A later association than Early Archaic is suggested by a radiocarbon date of 6070 $\pm$ 190 B.C. (Chapter IV), by the absence of bifurcated base projectile points, and by the location of the stratum above Stratum V which contained Kanawha Stemmed type projectile points. The subdivision of the Early Archaic period into Early, Middle and Late is an abstraction from many archaeological assemblages and sites. The boundaries that separate Early from Middle are not clear and the process of transition is an evolutionary continuum. Griffin (1967) places the beginning of the Middle Archaic at 6000 B.C.; within the one sigma range, Stratum V could be considered either late Early Archaic or early Middle Archaic--a distinction that loses all meaning in cultural evolutionary terms. The lack of ground or polished stone tools cannot be viewed as significant considering the small assemblage and their presence in the Early Archaic assemblages (Chapter IV).

Artifacts

In the southern section of Block E, Stratum IV was situated higher and was difficult to distinguish from Stratum III. Some contamination from pits and roots introduced occasional ceramics into this area as well. In Block B Stratum IV was more deeply buried and distinct. Over 670 waste flakes and 130 blocky core fragments were recovered from Stratum IV. The projectile points are felt to be inclusive in Stratum IV.

Artifacts--Projectile Points

Medium, Side Notched (Plate XVf). One example has a straight, ground base with a slight basal notch produced by a thinning flake. The blade is straight and in cross section is slightly rhomboid.

Size: Length 33.0 mm; Width: 21.0 mm; Thickness: 5.5 mm.

This point is probably associated with the earlier Archaic occupations.

Medium, Wide Straight Stemmed (Plate XVg). One broken specimen has a slightly concave base, horizontal shoulders, and a straight serrated blade. The point is made from the cortex of a chert nodule and is flattened to plano-convex in cross section.

Size: Width: 24.0 mm; Thickness: 6.5 mm; Stem Length: 7.0 mm; Stem Width: 16.0 mm.

The point closely resembles the Kirk Stemmed type (Coe 1964:70) and may be secondarily deposited.

Small, Short Straight Stemmed (Plate XVh). One example has an excurvate base, strong, horizontal shoulders, and a straight, slightly serrated blade.

Plate XV. Late and Middle Archaic Artifacts

Late Archaic

a. Single shoulder, stemmed projectile point/knife

b. Medium, stemmed projectile point/knife

c. Drill

d. Steatite bowl fragment

e. "Netsinkers"

Early Middle Archaic

f. Medium, side notched projectile point/knife

g. Medium, wide straight stemmed projectile point/knife

h. Small, short straight stemmed projectile point/knife

i. Small, short expanded stemmed projectile point/knife

j. Pièces esquillées

k. Drill

l. End Scraper

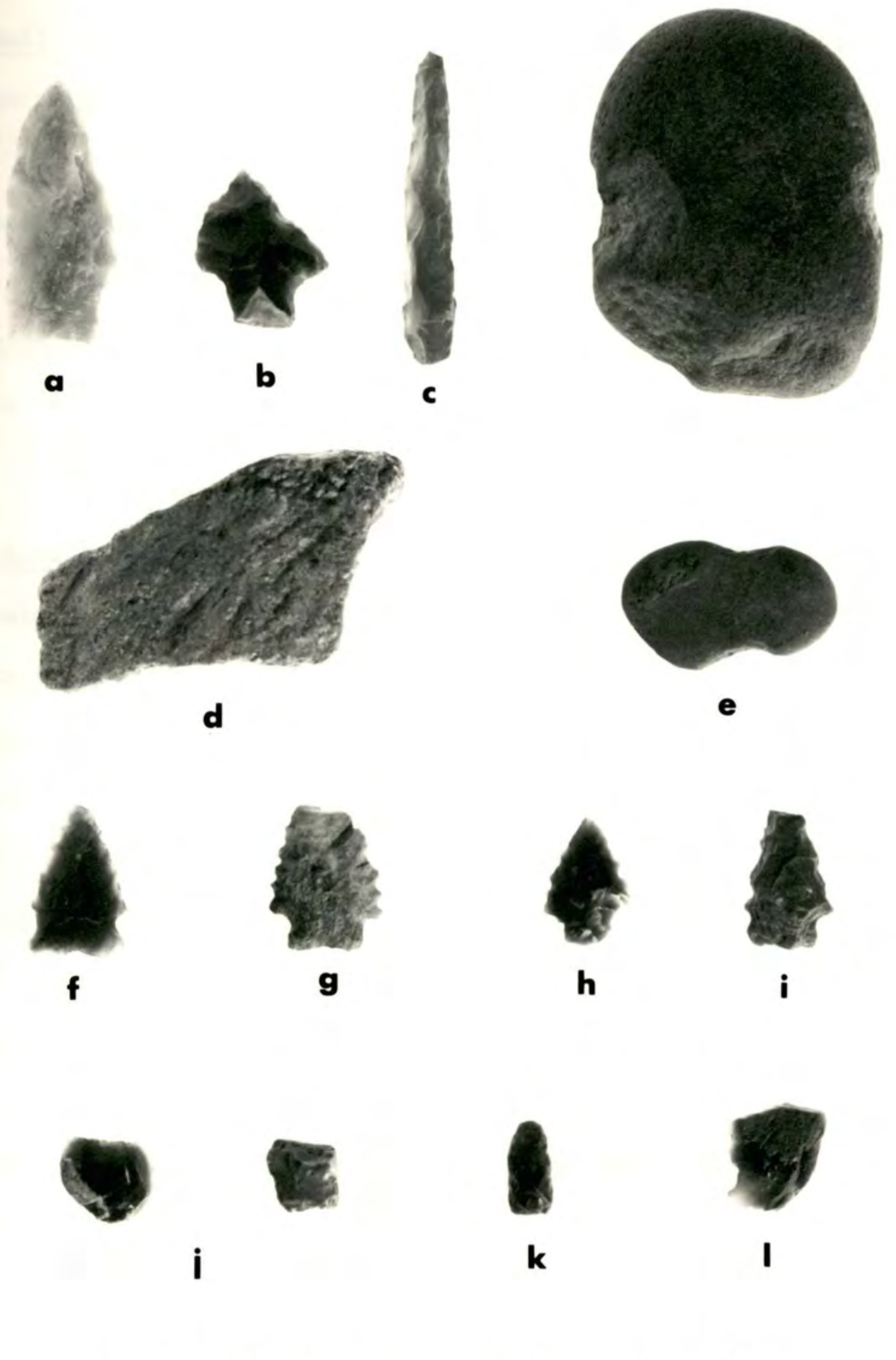


Plate XV

Size: Length: 27.5 mm; Width: 19.0 mm; Thickness: 7.5 mm; Stem Length: 6.0 mm; Stem Width: 11.0 mm.

Small, Short Expanded Stemmed (Plate XV i). One specimen has a straight unfinished base, horizontal shoulders, and a slightly incurvate blade.

Size: Length: ___ ; Width: 19.0 mm; Thickness: 7.5 mm; Stem Length: 6.0 mm; Stem Width: 15.0 mm.

Unidentifiable Broken Projectile Points/Knives. Two tips of this class were recovered from Stratum IV.

Artifacts--Other Chipped Stone

Pièces Esquillées (Plate XVj). Four specimens of this artifact class were recovered. These "splintered wedges" are the most frequent artifact type in the Early Archaic horizons (see Chapter IV for a full discussion of *pièces esquillées*).

Size: Length: 14.0-21.0 mm, Mean 17.9 mm; Width: 14.4-21.5 mm, Mean 17.7 mm; Thickness: 2.5-11.0 mm, Mean 7.1 mm.

As a part of the bipolar lithic assemblage, 11 bipolar cores or core fragments were also recovered.

Drill (Plate XVk). One small biface with a rod-like blade and edge grinding has been classed as a drill.

Size: Length: 20.0 mm; Width: 9.5 mm; Thickness: 6.0 mm.

End Scraper (Plate XVl). One bipolar decortication flake exhibits steep retouch on one end.

Size: Length: 24.0 mm; Width: 21.0 mm; Thickness: 5.0 mm; Work Area: 15.0 mm.

Utilized Flakes. One decortication flake and one secondary flake showed retouch along one edge.

Unidentified Worked Cryptocrystalline. Two bifacially worked fragments could not be classed as to form or function.

Artifacts--Ground Stone

Pitted Cobbles. One complete and one fragmentary cobble exhibited a single pecked depression on each opposing face. The complete specimen also showed abrasion on one face.

Size of complete specimen: Length: 106.5 mm; Width: 83.0 mm; Thickness: 46.0 mm; Gram Weight: 637.8 g.

This artifact type is considered part of the bipolar lithic assemblage (see Chapter IV).

"Netsinker". One flat, notched cobble fragment was classed as a "netsinker". Its function is as yet undetermined (Chapman 1973: 104), but they are frequently associated with Late Archaic assemblages in the Little Tennessee River valley. The Martin Farm (40 Mr 20) data suggest that they persist into the Early Woodland, Watts Bar phase (Salo 1969:89). Elizabeth Dumont (Personal communication) reports the association of bifurcated base points with "netsinkers" at the Rockelein site in New York, but no such association occurred at the St. Albans, West Virginia site or the Rose Island site. This one specimen is probably associated with Stratum III.

Hematite (Goethite). There were 71 unworked fragments of this ferromagnesian mineral recovered from Stratum IV. Extremely numerous in the Early Archaic horizons at the site, the mineral may have served as a pigment source (see Chapter IV).

Features

Only one feature was recorded in the 300 ft^2 of Stratum IV that was exposed. Feature 74 was a surface fired area with an associated charcoal stain (Table 11). The fired area measured 2.0 x 1.4 ft and the feature type is identical to the most frequent Early Archaic feature type.

Late Archaic

Only about 200 ft^2 of Stratum III were excavated. Cultural material was sparse and its distribution suggests only scattered and occasional occupation.

Artifacts

Very few artifacts were recovered from Stratum III. Several hundred waste flakes and a few blocky core fragments were scattered through the excavation levels. Interestingly, no *pièces esquillées* or bipolar cores were recovered. Similarly, only two *pièces esquillées* occurred in the Late Archaic strata at Icehouse Bottom (Chapman 1973:99) and only one in the Terminal Archaic Stratum III at the Higgs site (McCollough and Faulkner 1973:68).

Artifacts--Projectile Point/Knives

Single Shoulder, Stemmed (Plate XVa). The single specimen has an incurvate base and is manufactured from white quartzite.

Size: Length: 56.0 mm; Width: 25.0 mm; Thickness: 12.0 mm; Stem Length: 13.0 mm; Stem Width: 20.0 mm.

The point appears to be either transitional from the Appalachian Stemmed type (Kneberg 1957:66)/Savannah River Stemmed type (Coe 1964: 44-45) to the Greeneville triangular type (Kneberg 1957:64), or is an Appalachian/Savannah River Stemmed type that has lost a shoulder and been repaired. In either case it is the type of point associated with the Late and Terminal Archaic.

Medium, Stemmed (Plate XVb). The single specimen is straight stemmed with an unfinished base. It has pronounced horizontal shoulders and the blade is assymetrical with a straight and an excurvated edge.

Size: Length: 36.0 mm; Width: 27.5 mm; Thickness: 10.5 mm; Stem Length: 12.0 mm; Stem Width: 14.0 mm.

Unidentified Broken Projectile Point/Knife. One fragment of a biface was classed as this and was recovered from Stratum III.

Artifacts--Other Chipped Stone

Drill (Plate XVc). One rod-like biface was classed as a drill. The edges toward the tip exhibit grinding.

Size: Length: 67.5 mm; Width: 12.5 mm; Thickness: 8.0 mm.

The artifact was recovered from Feature 72.

Unidentified Worked Cryptocrystalline. One fragment was unidentifiable as to form or function.

Artifacts--Other Worked Stone

"Netsinkers" (Plate XVe). Flat, notched cobbles, as discussed above, are thought to be a diagnostic artifact for the Late Archaic and occur also in the Early Woodland Watts Bar phase. Nine of these were associated with Stratum III or the transition from Strata II to III.

Weight: 11.4 -199.0 g, Mean 95.2 g.

Steatite Bowl Fragments (Plate XVd). Two out of three of the steatite bowl fragments recovered at Rose Island were associated with Stratum III. As with the "netsinkers" this artifact class is associated with the Late Archaic and occasionally with the Early Woodland Watts Bar phase.

Hematite (Goethite). Two examples of this ferromagnesian mineral were ground on at least one face. They were possibly associated with Stratum III.

Hammerstone. One broken cobble from Feature 32 exhibited battering.

Siltstone. One fragment of siltstone may have served as an abrader.

Features

Three features (Features 20, 32, and 72) were associated with the Late Archaic on the basis of stratigraphic placement and content (Table 10). The three small crushed quartz tempered sherdlets in Feature 20 may be intrusive since the point of origin was within Stratum III. Feature 32, a rock filled basin, contained a broken hammerstone. Feature 72, a shallow depression, contained a fragmentary "netsinker" and a bifacial drill.

The scattered Late Archaic features and artifacts in a horizon beneath that of the Woodland is a common situation at sites in the Little Tennessee River valley. As McCollough (1973) has suggested, these small samples are, perhaps, representative of large numbers of discrete domestic units reflecting a part of the seasonal round of Late Archaic groups and lie in roughly linear, near continuous distribution along the Tennessee and Little Tennessee Rivers.

Woodland

The original objective of the archaeological excavations at Rose Island was to investigate the Woodland deposits that Gleeson (1970:6) had reported in his survey. During the course of testing, the discovery of a buried Early Archaic deposit shifted the focus of the investigations away from the Woodland, but not before it was adequately sampled.

By means of test pitting and systematic excavation, the distribution and depth of Early Woodland deposits were determined. The area of intensive Early Woodland occupation was situated on the top and north slopes of the terrace at the end of Rose Island, and comprised an area of approximately 250 x 150 ft. Scattered hearths and a thin midden extend further up the front side of the island but are peripheral to the main area of occupation. The Early Woodland material was mixed with that of later periods in the plow zone (Stratum I). The undisturbed Early Woodland deposits comprised Stratum II.

Ceramics

The sherds recovered from 400 ft^2 of excavation and from 26 features numbered 19,057. Since, as at the Icehouse Bottom site (Chapman 1973), many of the sherds recovered by waterscreening were small and eroded, it was decided that only those sherds that did not pass through a one-inch square mesh sorting screen would be classified. A total of 16,662 sherds (87.4%) were one inch or less in diameter and were therefore classed as sherdlets. Sherdlets were divided into four groups: limestone tempered, quartz tempered, sand tempered, and shell tempered. Rim sherds and exotic sherds were pulled from the sherdlets and added to the typed sample.

The sherds not passing through the sorting screen numbered 2395 (12.6%). These were first divided into classes according to tempering material. Each temper class was then subdivided according to surface treatment. Examination of the attributes possessed by each of the resulting sherd groups suggested that established ceramic type names could be applied to the ceramics from Rose Island.

One of the major problems of ceramic typology in the southeastern United States is that sherd counts have been used to derive type frequencies. When more than one tempering material is involved, differential frangibility between ceramic series makes relative frequencies questionable. This was demonstrated with the sand tempered Connestee series and the limestone tempered Candy Creek Series at the Icehouse Bottom site (Chapman 1973:46-47). A similar problem exists at Rose Island.

One of the issues in the Early Woodland studies in eastern Tennessee is the relationship between the quartz tempered Watts Bar series and the limestone tempered Long Branch series. The most recent discussion of this problem (McCollough and Faulkner 1973:92-94) deals with relative frequencies to develop a hypothesis for the development of Early Woodland in the upper Tennessee valley. At Rose Island these frequencies will vary depending upon the sherdlets. If one includes the sherdlets, the ratio of quartz tempered to limestone tempered ceramics is 1: 3.37 or 22.9%: 77.1%. The removal of the sherdlets from the sample eliminates the large number of more easily broken limestone sherds and the quartz to limestone ratio becomes 1: 1.95 or 33.9%: 66.1%. It is apparent, as it was at Icehouse Bottom, that waterscreening through one-fourth inch mesh adds a large number of sherds that in the past have not been included in type frequences. This can effect relative frequencies when more than one temper is involved. By dealing in sherds over one inch in diameter it is hoped that frequencies may be closer to cultural reality.

McCollough and Faulkner (1973:93), building on the early observations of Lewis and Kneberg (1946) and Kneberg (1961), have divided the Early Woodland into three phases. The earliest, the Watts Bar phase, is represented by components with exclusively quartz or sand tempered fabric or cord marked pottery. The second, the Greeneville phase, is comprised of components in which both Watts Bar quartz tempered and Long Branch limestone tempered wares are found, but with the former the predominant ware. The last phase, Long Branch, is characterized by predominance of Long Branch Fabric Marked limestone tempered ware. At Rose Island the ratio of Watts Bar quartz tempered sherds to Long Branch Fabric Marked sherds in Stratum II is 1: 1.77 or 36. 1%: 63.9%. This would suggest association with the late Greeneville phase. There is little change in Stratum I with the ratio of Watts Bar to Long Branch being 1: 1.45 or 40.9%: 59.1%.

Tables 3-9 present the distribution of ceramic types in each of the excavation areas. It should be noted that in the lower excavation levels quartz tempered pottery is slightly more frequent relative to limestone tempered than in the upper levels. A Watts Bar phase does not appear to be represented on the basis of ceramic distributions, however. The predominant occupation appears to be Early Woodland with smaller amounts of Middle and Late Woodland and early Mississippian ceramics in the plow zone and top of Stratum II.

In Table 10 the ceramic frequencies associated with features are presented. Two interpretations can be offered. First, if the relative frequency of Watts Bar to Long Branch implies culture change, then at any one time some families or kin groups may have been using one temper and others another. Change from early to late would imply a shift in

Table 3. Distribution of ceramic types, squares 80 R 305.
(N) = Rimsherds in sample.

CERAMIC TYPE	EXCAVATION LEVELS						
	1	2	3	4	5	6	TOTALS
LIMESTONE TEMP							
MULBERRY CRK. PL.	9	1	5	2	2		19
PICKWICK COMP. STMPD.	1						1
LONG BRANCH FABRIC MKD.	8	1	12(3)	34	40(2)	26(2)	121
LST RESID PL.				1	1		2
LST SHERDLETS	414	94	120	304	365	77	1374
TOTAL LST	433	96	137	341	408	103	1515
SAND TEMP							
COMP. STMPD	1						1
CORD MARKED	1						1
SHERDLETS	4						4
TOTAL SAND	6						6
QUARTZ TEMP							
WATTS BAR FABRIC MKD.			2	8(2)	8(1)		18
WATTS BAR CORD MKD.			1	3			4
GRIT RESID. PL.	1						1
SHERDLETS	44	11	14	25	45	22	184
TOTAL QUARTZ	45	11	17	36	53	22	184
SHELL TEMP							
SHELL PL.				2	1		3
TOTAL SHELL				2	1		3
TOTALS	484	107	154	379	462	125	1708

Table 4. Distribution of ceramic types, square 110 R 300.
(N) = Rimsherds in sample.

CERAMIC TYPE	EXCAVATION LEVELS 1	2	3	4	5	6	TOTALS
LIMESTONE TEMP MULBERRY CRK. PL.	2	4					6
LONG BRANCH FABRIC MKD.	48(5)	57(4)	48(3)	4	1	1	159
PICKWICK COMP. STMPD.	2	1					3
CANDY CRK. CORD MKD.	2	3					5
BLUFF CRK. SIMP. STMPD.		1					1
LST. RISID PL.	8				1		9
LST SHERDLETS	737	583	180	30	5		1535
TOTAL LST	799	649	228	34	7	1	1718
SAND TEMP. COMP. STMPD.	3	1					4
PLAIN	4						4
SAND SHERDLETS	3		1				4
TOTAL SAND	10	1	1	-	-	-	12
QUARTZ TEMP. WATTS BAR FABRIC MKD.	27(3)	36(8)	31		7		101
WATTS BAR CORD MKD.	4	2	9(1)	1		-	17
QUARTZ PLAIN		1					1
RESID. PLAIN	1		1				2
QUARTZ SHERDLETS	218	252	164	23	8		665
TOTAL QUARTZ	250	291	205	24	15	1	786
TOTALS	1059	941	434	58	22	2	2516

Table 5. Distribution of ceramic types, square 150 R 300.
(N) = Rimsherds in sample.

CERAMIC TYPES	EXCAVATION LEVELS 1	2	3	4	5	6	7	TOTALS
LIMESTONE TEMP								
MULBERRY CRK. PL.	3(2)							3
LONG BRANCH FABRIC MKD.	29(7)	9(2)	1	1			1	41
PICKWICK COMP. STMP.		1						1
CANDY CREEK CORD MKD.	3(1)	1						4
WRIGHT CKST.	1							1
LIMESTONE RESID. PL.	5							5
LIMESTONE SHERDLETS	667	284	11	12	7	4	9	994
TOTAL LST	707	295	12	13	7	4	10	1049
SAND TEMP								
PLAIN	1(1)							1
COMP. STMP.	3							3
TOTAL SAND	4	-	-	-	-	-	-	4
QUARTZ TEMP								
PLAIN	5							5
WATTS BAR FABRIC MKD.	42(8)	60(9)	40(2)	32(2)	6	2	3	185
WATTS BAR CORD MKD.	19(2)	18(3)	6(3)	7	2			52
RESID. PL.				2				2
SHERDLETS	375	78	121	77	8	2	2	663
TOTAL QUARTZ	441	156	167	118	16	4	5	907
TOTALS	1152	451	179	131	23	8	15	1960

Table 6. Distribution of ceramic types, square 190 R 300.
(N) = Rimsherds in sample.

CERAMIC TYPE	EXCAVATION LEVELS 1	2	3	4	5	6	7	8	9	10	TOTALS
LIMESTONE TEMP. MULBERRY CRK. PL.	2										2
LONG BRANCH FABRIC MKD.	41(1)	21	10(1)	1	2	2					77
LST RESID. PL.	4										4
SHERDLETS	410	68	32	5	7	4	3	3	1	1	534
TOTAL LST	457	89	42	6	9	6	3	3	1	1	617
SAND TEMP. SAND FABRIC MKD.	1										1
SAND COMP. STMPD.	2										2
SAND PLAIN	3										3
TOTAL SAND	6	-	-	-	-	-	-	-	-	-	6
QUARTZ TEMP. WATTS BAR FABRIC MKD.	13(3)	12(1)	1(5)	10	1				1		78
WATTS BAR CORD MKD.	1	2(1)	4	2(1)							9
SHERDLETS	76	66	80	29	4	4		1			260
TOTAL QUARTZ	90	80	125	41	5	4	-	1	1		347
STEATITE BOWL FRAG.	-		1								1
TOTALS	553	169	168	47	14	10	3	4	2	1	971

Table 7. Distribution of ceramic types, square 260 R 300. (N) = Rimsherds in sample.

CERAMIC TYPE	EXCAVATION LEVELS											
	1	2	3	4	5	6	7	8	9	10	11	TOTALS
LIMESTONE TEMP.												
MULBERRY CRK. PL.	5(3)	17(4)	7(2)	1(1)								30
CANDY CRK. CORD MKD.		2	2(1)									4
BLUFF CRK. SIMP. STMPD.		1		1	1							3
LONG BRANCH FABRIC MKD.	8(2)	19(1)		51(5)	33(8)	43(4)	22(1)	8				184
LST RESID PL.	7	12	1	3	2		1					26
SHERDLETS	785	585	304	334	363	248	121	11	3	3	-	2757
TOTAL LST	805	636	314	390	399	291	144	19	3	3	-	3004
SAND TEMP.												
PLAIN	3(1)	2		2		1						8
FABRIC MKD.						1						1
SHERDLET				1								1
TOTAL SAND	3	2	-	3	-	2	-	-	-	-	-	10
QUARTZ TEMP.												
WATTS BAR FABRIC MKD.	2	1	2	6(1)	6	7(2)	3	1				28
WATTS BAR CORD MKD.		1(1)	2	3	4(2)	2	1	1				14
RESID. PL.	1											1
SHERDLETS	58	24	14	39	27	49	44	13				268
TOTAL QUARTZ	61	26	18	48	37	58	48	15	-	-	-	311
TOTALS	869	664	332	441	436	351	192	34	3	3	-	3325

Table 8. Distribution of ceramic types, square 240 R 225. (N) = Rimsherds in sample.

CERAMIC TYPE	EXCAVATION LEVELS 1	2	3	4	5	6	7	8	9	10	11	TOTALS
LIMESTONE TEMP.												
MULBERRY CRK. PL.	4(2)	1(1)	2(1)									7
CANDY CRK. CORD MKD.	1	2					1					3
PICKWICK COMP. STMPD.	1	2										3
BLUFF CRK. SIMP. STMPD.		1										1
LONG BRANCH FABRIC MKD.	13(3)	42(3)	54(8)	43(6)	15(3)	1	4			1		173
LIMESTONE RESID. PL.	4	2		1	1		1					9
SHERDLETS	565	721	664	327	217	51	50	5	2	2	3	2607
TOTAL LST	588	771	720	371	233	52	56	5	2	3	3	2803
SAND TEMP.												
PLAIN		1										1
COMP. STMPD.		2										2
TOTAL SAND	-	3	-	-	-	-	-	-	-	-	-	3
QUARTZ TEMP.												
WATTS BAR FABRIC MKD.	2	13(2)	3	15	11(2)	4	13	4				65
WATTS BAR CORD MKD.		6	1(1)	5(2)	2	2	4(1)	1				21
PLAIN						1		1				2
RESID. PL.		1		2		1						4
SHERDLETS	13	100	36	155	87	22	87	17	3		1	521
TOTAL QUARTZ	15	120	40	177	100	30	104	23	3	-	1	613
STEATITE									1			1
TOTALS	603	894	760	548	333	82	160	28	6	3	4	3420

Table 9. Distribution of ceramic types, square 250 R 225. (N) = Rimsherds in sample.

CERAMIC TYPE	EXCAVATION LEVELS													
	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTALS
LIMESTONE TEMP.														
MULBERRY CRK. PL.	9	5	1											15
CANDY CREEK CORD MKD.	2	1												3
BLUFF CREEK SIMP. STMPD.	1	1	1											3
WRIGHT CHECK STMPD.	1													1
LONG BRANCH FABRIC MKD.	15	41(5)	72(3)	49(8)	32(3)	16(1)	12(2)							237
LIMESTONE RESID. PL.	8	1	4	2	1									16
SHERDLETS	546	217	511	404	189	135	61	3	3			3	-	2072
TOTAL LST	582	266	589	455	222	151	73	3	3	-	-	3	-	2347
SAND TEMP.														
PLAIN	2(1)													2
FABRIC MKD.	1	1	2	1										5
TOTAL SAND	3	1	2	1	-	-	-	-	-	-	-	-	-	7
QUARTZ TEMP.														
WATTS BAR FABRIC MKD.	2			8(2)		7(2)	7(2)	2						26
WATTS BAR CORD MKD.				2(1)		3(1)	1(1)							6
SHERDLETS	32	4	19	51	83	95	70	2	9			1		366
TOTAL QUARTZ	34	4	19	61	83	105	78	4	9	-	-	1	-	398
TOTALS	619	271	610	517	305	256	151	7	12	-	-	4	-	2752

Table 10. Feature data, Middle Archaic to Early Mississippian

Feat. No.	Category	Square	Excavation Level	Archaeological Horizon	Cultural Association	Dimensions L W	Depth or Thickness	Associated Ceramic (WBFM=Watts Bar Fabric Marked; WBCM=Watts Bar Cord Marked; LBFM=Long Branch Fabric Marked; CCCM=Candy Creek Cord Marked)
3	Basin with rock	110R300	2	II	E. Woodland	3.4 x 3.3	0.5	1 WBFM, 1 WBCM
4	Depression and Straight-sided pit	110R300	2	II	E. Woodland	4.0 x 4.0 2.6 x 2.6	1.6 2.3	97 LBFM, 16 WBFM, 3 WBCM, 1 CCCM
7	Straight-sided pit	150R300	2	II	E. Woodland	3.2 x 2.7	3.1	11 LBFM, 9 WBFM, 5 WBCM
9	Shallow basin	180R240	3	II	E. Woodland	3.2 x 2.0	0.5	4 LBFM, 1 WBCM,
10	Straight-sided pit	190R300	2	II	E. Woodland	1.7(int) x 1.6	2.7	6 LBFM, 2 WBCM, 1 WBFM, 1 Bluff Crk.S-S
11	Limestone capped pit	180R240	1	I	E. Woodland	3.8 x 3.0	1.4	46 LBFM, 7 WBFM, 3 WBCM, 1 Mulb. Crk. Pl.
11B	Straight-sided pit	180R240	2	II	E. Woodland	2.5 x 2.4	2.2	3 WBFM, 2 WBCM 2 LBFM
12	Pit	180R240	2	II	E. Woodland	1.8 x 1.7	1.2	5 LBFM, 1 WBFM, 1 CCCM
13	Basin with rock	110R300	3	II	E. Woodland	2.4 x 1.2 (int)	0.4	3 WBFM, 1 WBCM, 1 LBFM
14	Straight-sided pit	240R225	4	II	E. Woodland	1.9(int) x 1.3 (int)	1.8	4 LBFM, 1 WBFM
15	Pit	80R305	5	II	E. Mississippian	2.5 x 1.5 (int)	3.5	24 Mulb. Crk. Pl., 5 LBFM, 3 Shell Pl., 2 WBFM, 1 Pickwick Comp.
16	Fire basin	80R305	6	II	E. Woodland	4.1 x 1.8	0.4	9 LBFM, 1 WBFM
17	Straight-sided pit	150R300	3	II	E. Woodland	3.2 x 2.7	1.4	78 LBFM, 2 WBFM, 1 WBCM
18	Shallow basin	150R300	2	II	E. Woodland	2.8 x 2.2	0.2	4 WBFM
19	Fire Basin	80R305	6	II	E. Woodland	3.5 x 0.6 (int)	0.8	6 LBFM
20	Pit	240R225	11	III	L. Archaic(?)	3.4 x 2.4 (int)	1.8	3 Quartz tempered sherdlets
21	Fire basin	250R225	6	II	E. Woodland	4.5 x 3.5	1.3	15 WBFM, 7 LBFM, 2 WBCM
23	Depression	110R300	4	II	E. Woodland	3.5 x 2.7	0.8	2 LBFM
24	Shallow basin	150R300	4	II	E. Woodland	2.4 x 2.2	0.4	2 WBFM, 1 LBFM
26	Pit	110R300	3	II	E. Woodland	2.5 x 2.0	1.4	11 WBFM, 2 WBCM
31	Pit	110R300	3	II	E. Woodland	2.9 x 0.7	0.5	2 LBFM, 1 WBFM
32	Basin with rock	150R300	7	III	L. Archaic	2.4 x. 2.2	1.2	-
51	Pit	250R225	3	II	E. Woodland	2.0 x 2.0	1.2	6 LBFM, 1 WBFM
54	Basin with rock	250R225	7	II	E. Woodland	2.1 x 1.6 (int)	0.5	2 WBFM
58	Depression	250R225	7	II	E. Woodland	unknown	unknown	5 WBFM
72	Depression	160R220	-	III	L. Archaic	5.4 x 4.9	1.4	-
74	Fire area	160R220	-	IV	Middle Archaic	2.0 x .14	0.2	-
75	Surface concentration of rock	160R215	-	IV	Middle Archaic(?)	5.2 x 3.9	-	-
80	Basin with rock	170R195	-	II	E. Woodland	2.2 x 2.0	0.2	1 LBFM
104	Fire basin	275R170	-	III(?)	L. Archaic (?)	2.7 x 2.6	0.3	-
224	Limestone capped pit	165R210	-	I	E. Woodland (?)	3.0 x int	0.7	1 Mulb. Crk. Pl.

tempering popularity which may be kin group or family specific. Thus the predominance of one temper over another in a feature may reflect an association with a certain social group. Unfortunately, this hypothesis cannot be tested on available data. Delineation and comparison of individual structures and associated features are necessary, and recognition of contemporaneity remains a problem. A second interpretation would be to assign each feature to one of the three Early Woodland phases and assume the midden to be too homogeneous to reflect the change. Both of these interpretations should be viewed with caution considering the sample size.

Ceramic Types--Limestone Tempered

A total of 14,653 limestone tempered sherds and sherdlets were recovered from the excavation units and features. The bulk of these were sherdlets (89.4%) leaving 1549 (10.6%) classifiable sherds.

Long Branch Fabric Marked (Haag 1939:10; Heimlich 1952:17) (Plate XVIa). A total of 1318 (85.1%) of this type were identified. Four fragments of thick, conical bottoms and 113 rim fragments occurred in the sample. There were 108 rim profiles that were straight, and five excurvate; 72 lips were round, 27 flattened, seven thickened, and seven folded. Five examples had fabric impressions on the interior rim as well as the exterior (Plate XVIa, bottom right). One rim exhibited a zig-zag incision below the lip and another had an incised groove beneath the lip. One shoulder fragment of an excurvate rim jar had a smoothed neck and exhibited smoothing of the fabric impressions.

Plate XVI. Ceramic Artifacts, Limestone Tempered

a. Long Branch Fabric Marked

b. Mulberry Creek Plain

c. Candy Creek Cord Marked

d. Bluff Creek Simple Stamped

e. Pickwick Complicated Stamped

f. Wright Check Stamped

Plate XVII. Ceramic Artifacts, Crushed Quartz and Sand Tempered

a. Watts Bar Fabric Marked

b. Watts Bar Cord Marked

c. Connestee Plain

d. Swift Creek Complicated Stamped

e. Connestee Fabric Marked

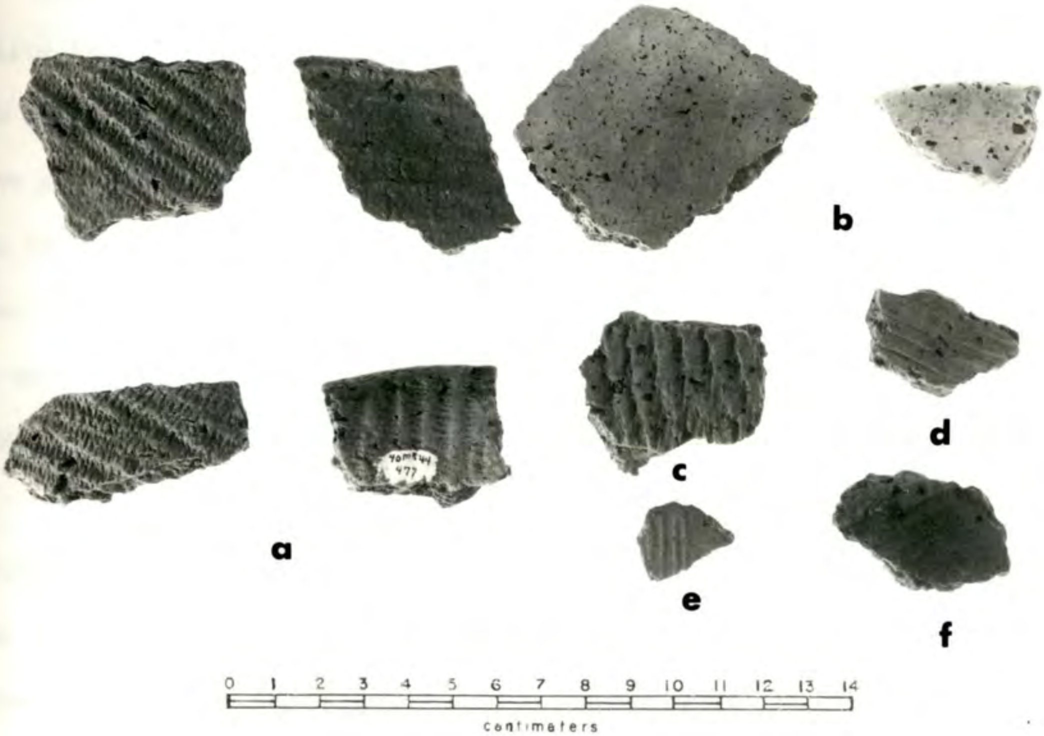


Plate XVI

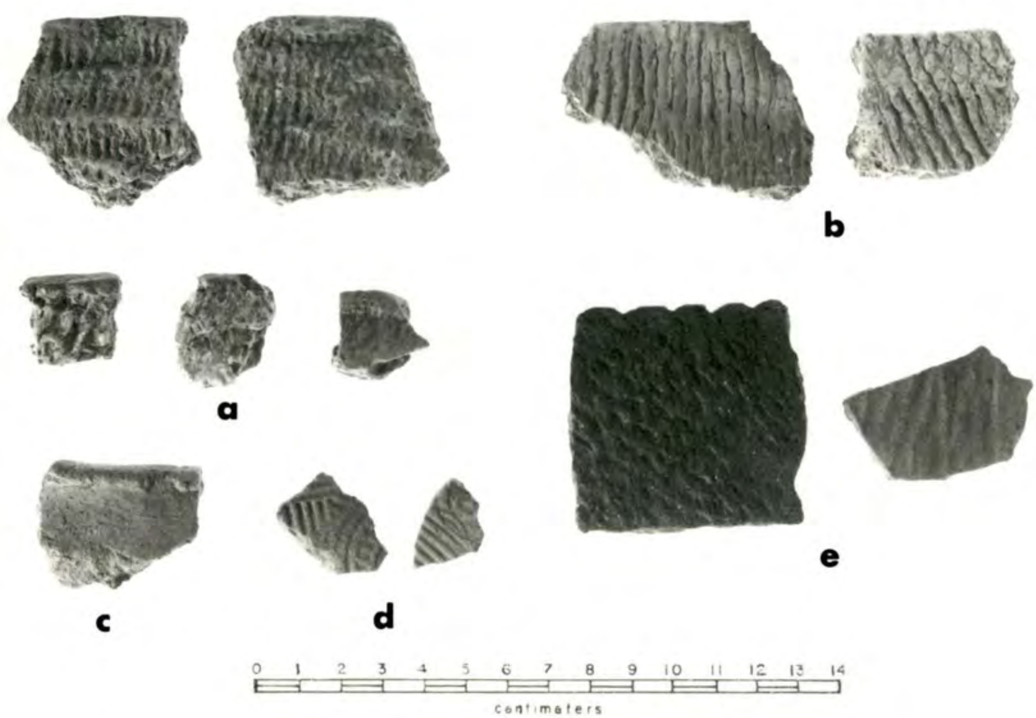


Plate XVII

Mulberry Creek Plain (Haag 1939:9; Heimilich 1952:15-17) (Plate XVIb). A total of 107 (6.9%) sherds of this type were recovered. The sample included 15 rims of which in profile nine were excurvate, five straight, and one incurvate. Eight lips were tapered, rounded, two thick rounded, four flattened, and one folded. It should be noted that 24 of the 25 sherds associated with features came from Feature 15 in association with shell tempered pottery. Its distribution suggests a Middle to Late Woodland context.

Candy Creek Cord Marked (Lewis and Kneberg 1946:102-103) (Plate XVIc). Twenty-two sherds (1.4%) of this type were recovered. Two rims occurred in the sample; in profile one was straight and the other excurvate. One lip was round and the other slightly flattened. This small sample is associated with the later Woodland occupations at the site.

Bluff Creek Simple Stamped (Haag 1939:18; Heimlich 1952:18) (Plate XVId). Nine sherds of this type were found. One rim occurred in the sample and was excurvate with a round lip. The type is associated with Middle Woodland in the valley.

Pickwick Complicated Stamped (Haag 1939:13 ; Heimlich 1952:18) (Plate XVIe). Nine sherds of this type were recovered. Six sherds exhibited curvilinear design and three were rectilinear. No rims were recovered. Faulkner (1968:30) observed that the type has tended to be a catch-all for all limestone tempered complicated stamped ceramics in eastern Tennessee and is in need of further study.

Wright Check Stamped (Haag 1939:12; Heimlich 1952:17-18) (Plate XVIf). Two body sherds of this Middle Woodland type occurred in the samples.

Residual Plain. A total of 83 sherds (5.3%) had eroded or fractured surfaces that obliterated any surface treatment.

Ceramic Types--Crushed Quartz Tempered

A total of 4344 (22.8%) quartz tempered sherds and sherdlets were recovered. Sherdlets comprised 81.7% of the sample which left 795 (18.3%) classifiable.

Watts Bar Fabric Marked (Lewis and Kneberg 1957:7) (Plate XVIIa). A total of 617 (77.6%) of this type occurred in the sample. One thick, conical bottom fragment was found but bowl forms were apparently present as well. Rim sherds numbered 86 and all but one of these were straight in profile, the one incurvate. Fifty-five of the lips were round, but four of these are slightly tapered from 11.0-18.0 mm of smoothing below the lip. Thirteen of the lips are flattened, seven thickened, six thickened with an exterior bevel, one thickened with an interior bevel, and one flattened with an exterior bevel. Two sherds have a folded lip (11.0-15.0 mm fold) and one sherd has a notched lip. Temper is primarily crushed quartz but three sherds contained minor limestone inclusions.

Watts Bar Cord Marked (Lewis and Kneberg 1957:7) (Plate XVIIb). A total of 148 (18.6%) sherds comprised this type. There were two conical bases and 28 rims in the sample. Twenty-five rim profiles were straight, two incurvate, and one excurvate. Lip forms include 20 round, three with a slight fold, three flattened and thickened, one flattened, and one round with exterior bevel. One body sherd exhibited incised cross hatching over the cord marking. The ratio of Watts Bar Cord Marked to Watts Bar Fabric Marked is 1:4.17 .

Residual Plain. A total of 30 (3.7%) sherds have eroded or fractured surfaces that obliterated any surface treatment.

Ceramic Types--Sand Tempered

A total of 58 sand tempered sherds and sherdlets were recovered. Nine of these were sherdlets and 49 were classifiable.

Connestee Plain (Holden 1966:71-72; Keel 1972:139-141) (Plate XVIIc). Nineteen sherds were classed as this Middle Woodland type and were similar to the type described elsewhere in the valley (Chapman 1973:53-55). Three rims were in the sample; two have straight profiles and one is excurvate. Two have thickened lips and one is round. None are notched.

Connestee Fabric Marked (Holden 1966:69-70; Keel 1972:139) (Plate XVIIe). Eight sherds of this type were recovered. One rim is straight in profile and has a rounded, notched lip. The sherds are assumed to have an early Middle Woodland association.

Swift Creek Complicated Stamped (Jennings and Fairbanks 1939:1) Early Swift Creek Stamped. (Wauchope 1966:54-57) (Plate XVIId). Twelve body sherds comprised this type. They may have been imports into the site during Middle Woodland times.

Residual Simple Stamped/Fabric Marked. Ten sherds had surfaces that were eroded but exhibited faint grooves which may be vestiges of the lands and grooves of simple stamping or the warps of fabric.

Ceramic Types--Shell Tempered

Shell tempered pottery has traditionally been associated with the Mississippian culture pattern and its presence in eastern Tennessee was assumed to be indicative of the replacement of indigenous Woodland peoples by Mississippian peoples (Lewis and Kneberg 1946:9). The "replacement hypothesis" is now viewed as untenable and data now suggest cultural continuities and time overlap between the two traditions (Salo 1969; Faulkner 1972 and 1974; Schroedl 1973; Cole 1974). The view of internal change and the Mississippianization of Late Woodland groups appears to be particularly true in the Little Tennessee River valley. Martin Farm (40 Mr 20) showed continuities termed Emergent Mississippian (Salo 1969:137-139) and it is the type station for the Martin Farm phase (Faulkner 1974).

Feature 15 at Rose Island contained three shell tempered plain sherds and three other sherds were found in the excavation square. The sherds in Feature 15 were in association with 24 limestone tempered Mulberry Creek Plain sherds. The association is suggestive of the Martin Farm phase. In any case the amount of material from this period at Rose Island is very small and suggests that after the Early Woodland occupation only occasional visitation by later groups occurred.

Steatite Bowl Fragments

One steatite bowl fragment was recovered from Stratum II.

Lithics

Over 12,500 waste flakes and 200 blocky core fragments were recovered during the general excavation of Strata I and II. Chipped stone artifacts associated with the Woodland period numbered 396 and other stone artifacts numbered 62. Raw materials utilized were primarily local gray and black nodular flints and cherts as well as river derived slates and quartzites.

Lithic Artifacts--Projectile Points/Knives

The typological framework employed with the Woodland lithics is one of intuited clusters of morphological attributes. Until wear pattern analysis and a comprehensive analysis of the lithics recovered by the Tellico Archaeological Project as a whole can be carried out, the functional, but generalized term, projectile point/knife will be employed and attribute clusters will be descriptive. The plethora of projectile point types and the even greater number of points that do not fit established type descriptions plague the classifier on any multicomponent site. The literature of the southeast is filled with type descriptions based on formal attributes from small samples and lacking adequately demonstrated time and spatial significance. The problems of type have been discussed in detail in Chapter I and do not need further elaboration here. It is hoped that the extensive excavation of a similar Early Woodland component at the Patrick site will enable the combination of certain of the following into meaningful types.

Small, Incurvate Triangular (Plate XVIIIa). Ten points resemble closely the established Hamilton type (Kneberg 1956:24). Two of the points in the sample are thick and probably unfinished. Seven were recovered from the plowzone and three from excavation level 2. A Late Woodland to Early Mississippian association is suggested (Gleeson 1970: 21; Faulkner 1974:6).

Size: Length: 16.0-24.5 mm, Mean 20.7 mm (5 artifacts); Width: 14.0-20.5 mm, Mean 16.1 mm (9 artifacts); Thickness: 3.0-5.0 mm, Mean 4.1 mm (10 artifacts).

Large, Excurvate Blade, Incurvate Base Triangular (Plate XVIIIb). A total of eight points are in this class. Four are from Stratum I, three from the top of Stratum II, and one from Burial 4. This class of artifacts resembles the established Greeneville type (Kneberg 1957: 64-65).

Plate XVIII. Stone Artifacts, Projectile Points/Knives

a. Small incurvate triangular

b. Large, excurvate blade, incurvate base, triangular

c. Medium, excurvate blade, incurvate base, triangular, wide variety

d. Medium, excurvate blade, incurvate base, triangular, narrow variety

e. Medium, excurvate blade, straight base, triangular

f. Medium, straight blade, incurvate base, triangular

g. Large, recurvate blade, incurvate base, triangular

h. Medium, recurvate blade, incurvate base, triangular

i. Large ,lanceolate

j. Medium, lanceolate

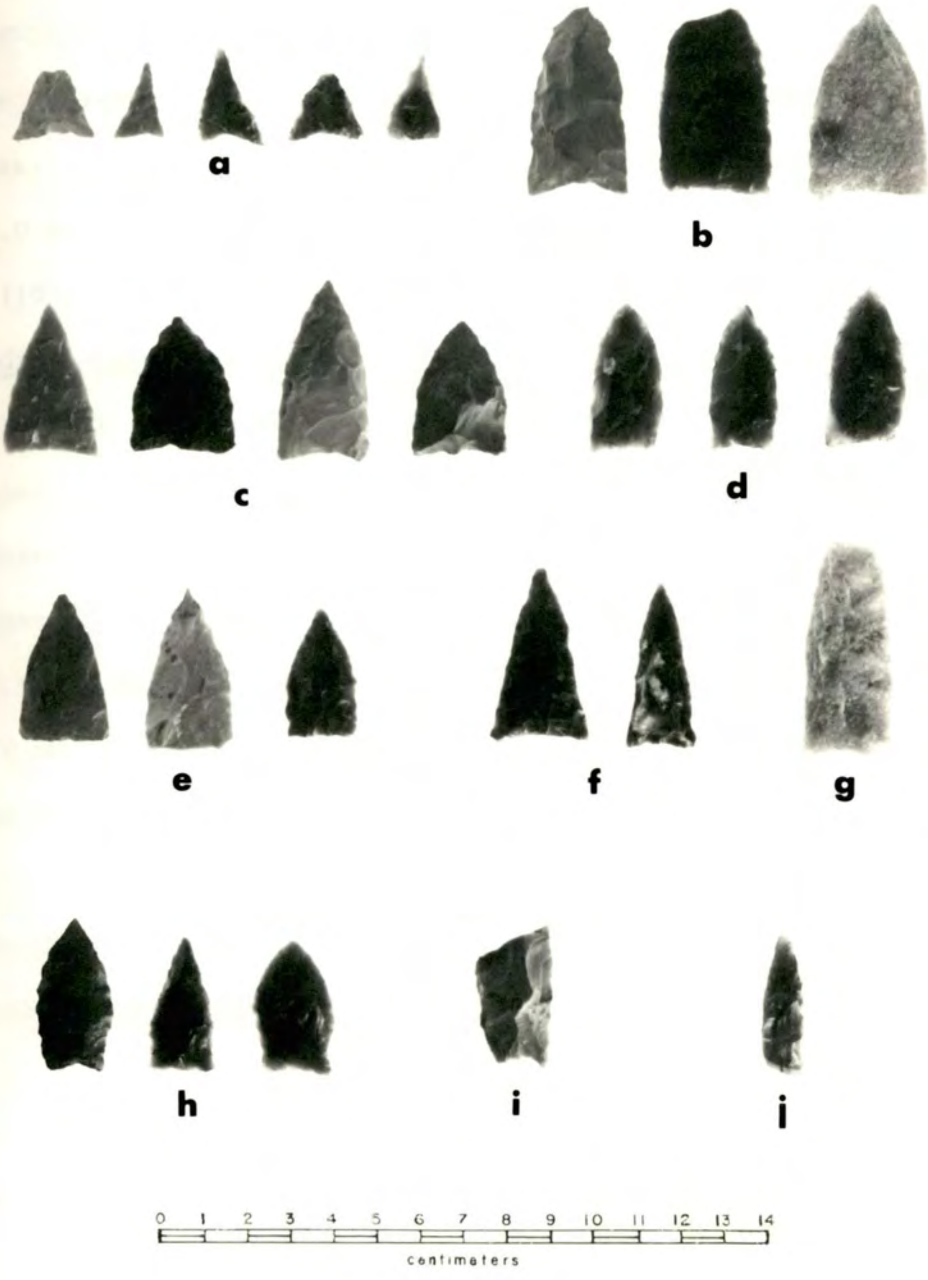


Plate XVIII

Size: Length: 45.5-56.5 mm, Mean 49.9 mm (5 artifacts); Width: 20.0-28.0 mm, Mean 24.1 mm (7 artifacts); Thickness: 6.0-15.0 mm, Mean 8.4 mm (8 artifacts).

Medium, Excurvate Blade, Incurvate Base Triangular-Wide Variety (Plate XVIIIc). Ten points were placed in this class. Three were found in Stratum I, five in Stratum II, and two in Feature 17.

Size: Length: 31.5-43.5 mm, Mean 35.1 mm (5 artifacts); Width: 21.0-24.0 mm, Mean 22.6 mm (8 artifacts); Thickness: 4.0-8.0 mm, Mean 6.3 mm (10 artifacts).

Medium, Excurvate Blade, Incurvate Base Triangular-Narrow Variety (Plate XVIIId). There were 14 narrower triangular points placed in this class. Five occurred in Stratum I, seven in Stratum II, and two in Feature 11.

Size: Length: 28.0-40.0 mm, Mean 35.7 mm (11 artifacts); Width: 14.0-19.5 mm, Mean 16.7 mm (12 artifacts); Thickness: 4.0-10.0 mm, Mean 6.8 mm (14 artifacts).

The separation by width of the class does not have any apparent spatial or cultural significance at Rose Island. Both are considered Early Woodland forms and probably variants of the Greeneville type.

Medium, Excurvate Blade, Straight Base Triangular (Plate XVIIIe). Eight of these probable variants on the incurvate base form were recovered. Two occurred in Stratum I, three in Stratum II, two in Feature 11, and one in Feature 7.

Size: Length: 30.0-38.0 mm, Mean 33.7 mm (6 artifacts); Width: 16.5-21.5 mm, Mean 19.4 mm; Thickness: 5.0-9.0 mm, Mean 6.8 mm (8 artifacts).

Medium, Straight Blade, Incurvate Base Triangular (Plate XVIIIf). Five specimens were placed in this category which resembles the established Camp Creek type (Kneberg 1956:23). One point occurred in Stratum I, three points in Stratum II, and one in Feature 13.

Size: Length: 27.0-43.0 mm, Mean 37.2 mm (5 artifacts); Width: 16.5-23.0 mm, Mean 20.7 mm (3 artifacts); Thickness: 6.0-9.5 mm, Mean 7.7 mm (5 artifacts).

Large, Recurvate Blade, Incurvate Base Triangular (Plate XVIIIg). One white quartzite specimen was placed in this class.

Size: Length: c.58.0 mm; Width: 21.0 mm; Thickness: 8.0 mm.

Medium, Recurvate Blade, Incurvate Base Triangular (Plate XVIIIh). Seven specimens were placed in this class which resembles somewhat the Nolichucky type (Kneberg 1957:65). One point was recovered from Stratum I, three from Stratum II, and from Feature 11, and one from Feature 4. Three specimens exhibited lateral grinding from the ear of the base to the inflection of the recurvature.

Size: Length: 32.0-36.0 mm, Mean 33.3 mm (3 artifacts); Blade Width: 12.0-23.5 mm, Mean 18.2 mm (6 artifacts); Thickness: 5.0-8.0 mm, Mean 6.6 mm (7 artifacts); Basal Width: 12.5-23.0 mm, Mean 17.7 mm (6 artifacts).

Large, Lanceolate (Plate XVIIIi). One point fragment of this class was recovered from Stratum I and had an incurvate base, excurvate blade, and was planoconvex in cross section.

Size: Width: 18.0 mm; Thickness: 6.5 mm.

Medium, Lanceolate (Plate XVIIIj). One narrow point from Stratum I had excurvate sides and a flat, unfinished base.

Size: Length: 34.5 mm; Width: 11.0 mm; Thickness: 5.0 mm.

This type may be related to the Flint River Spike type (DeJarnette et al. 1962:56) which had a Middle to Late Woodland association at Icehouse Bottom (Chapman 1973:82-83).

Medium, Straight Stemmed, Unfinished Base (Plate XIXa) Four specimens belong to this class. Three specimens were associated with Stratum II and one with Feature 19.

Size: Length: 36.5-45.0 mm, Mean 39.3 mm (3 artifacts); Width: 24.0-33.0 mm, Mean 27.6 mm; Thickness: 9.5-12.5 mm, Mean 10.5 mm; Stem Length: 7.0-13.0 mm, Mean 9.7 mm; Stem Width: 11.0-15.0 mm, Mean 13.2 mm (4 artifacts).

One point of this type occurred in Stratum III and is associated with the Late Archaic. The point is assumed to be a Late Archaic type and there are some affinities to the Elora type (Cambron and Hulse 1969).

Medium, Straight to Slightly Tapered Stemmed (Plate XIXb). There are three specimens of this class. They have at least one strong horizontal shoulder, the bases are straight to slightly convex, and the blades are straight to slightly recurvate. One occurred in Stratum I and two in Stratum II.

Size: Length: 25.6 mm; Thickness: 9.5-11.5 mm, Mean 10.2 mm; Stem Length: 11.0-13.5 mm, Mean 12.5 mm; Stem Width: 15.0-17.5 mm, Mean 16.0 mm.

Medium to Short Tapered Stemmed (Plate XIXc). The sample numbers two which have weak tapered shoulders, unfinished bases, and excurvate blades. One occurred in Stratum I and the other in the middle of Stratum II.

Plate XIX. Stone Artifacts, Projectile Points/Knives

a. Medium, straight stemmed, unfinished base

b. Medium, straight to slightly tapered stemmed

c. Medium to short tapered stemmed

d. Medium, straight stemmed, notched base

e. Round base stemmed

f. Small, straight stemmed

g. Narrow, thick lanceolate stemmed

h. Basally reworked, stemmed

i. Medium, deep corner notched

j. Medium, corner notched

k. Small, corner notched

l. Palmer Corner Notched

m. Small, shallow side notched

n. Small, side notched

Plate XIX

Size: Length: 33.0 mm (one artifact); Width: 18.0-22.5 mm, Mean 20.2 mm; Thickness: 7.5-9.0 mm, Mean 8.2 mm; Stem Length: 7.5-8.0 mm, Mean 7.7 mm; Stem Width: 11.5-17.0 mm, Mean 14.2 mm (2 artifacts).

Medium, Straight Stemmed, Notched Base (Plate XIXd). The two specimens have excurvate blades and tapered shoulders. One occurred in Stratum II and one in Feature 11.

Size: Length: 36.5-38.0 mm, Mean 37.2 mm; Width: 22.5-25.5 mm, Mean 24.0 mm; Width: 22.5-25.5 mm, Mean 24.0 mm; Thickness: 8.0-14.0 mm, Mean 11.0 mm; Stem Length: 9.0-9.5 mm, Mean 9.2 mm; Stem Width: 13.5-15.0 mm, Mean 14.2 mm.

Round Base Stemmed (Plate XIXe). Three specimens are variants on this class. One incomplete specimen from Stratum II has a straight stem, round, slightly ground base, and slightly tapered shoulders.

Size: Width: 29.0 mm; Thickness: 7.0 mm; Stem Length: 24.0 mm; Stem Width: 20.5 mm. The point resembles the established Adena type (Kneberg 1956:26-27; Bell 1958:4-5).

A second fragmentary specimen from Stratum I has a slightly notched stem, broad, slightly ground pointed base and strong horizontal shoulders.

Size: Length: __; Width: 28.0 mm; Thickness: 10.0 mm; Stem Length: 25.5 mm; Stem Width: 20.0 mm. The point closely resembles the Adena type point pictured by "Old Sarge" (1957: Figure 1, bottom row, second from left).

The third point from Stratum II has a narrow straight stem, round base, tapered shoulders, and excurvate blade.

Size: Length: 45.5 mm; Width: 23.0 mm; Thickness: 9.5 mm; Stem Length: 22.0 mm; Stem Width: 14.0 mm.

Small, Straight Stemmed (Plate XIXf). Two specimens have straight bases, weak, tapered shoulders and straight blades. Both came from the middle of Stratum II.

Size: Length: 27.5-32.5 mm, Mean 30.0 mm; Width: 19.5-20.0 mm, Mean 19.7 mm; Thickness: 8.5-9.0 mm, Mean 8.7 mm; Stem Length 12.5-13.5 mm, Mean 13.0 mm; Stem Width: 12.0-15.5 mm, Mean 13.7 mm.

Narrow, Thick Lanceolate Stemmed (Plate XIXg). One crude specimen from Stratum II had weak shoulders and was made of fine grained quartzite.

Size: Length: 10.0 mm; Width: 16.0 mm; Thickness: 10.0 mm; Stem Length: 9.0 mm; Stem Width: 14.0 mm.

The specimen may be a variant of the established Bradley Spike type (Kneberg 1956:27) and is associated with the Early Woodland period.

Basally Reworked, Stemmed (Plate XIXh). The stem on this point was apparently broken and reworked. The point has weak, tapered shoulders and the blade has slightly excurvate edges.

Size: Length: 40.0 mm; Width: 20.0 mm; Thickness: 6.0 mm; Stem Length: 3.0 mm; Stem Width: 9.0 mm.

Medium, Deep Corner Notched (Plate XIXi). Two fragmentary specimens have straight bases and are barbed. One occurred in Stratum I and the other in Stratum II.

Size: Length:--; Width: 22.0-25.0 mm, Mean 23.5 mm; Thickness: 5.0-6.0 mm, Mean 5.5 mm; Stem Length: 8.0-9.0 mm, Mean 8.5 mm; Stem Width: 14.0-17.0 mm, Mean 15.5 mm.

Medium, Corner Notched (Plate XIXj). The one specimen was found in Post Hole 32 and has a slightly round convex base, slight barbs, excurvate blade, and is plano-convex in cross section. It is well worked and exhibits edge retouch.

Size: Length: 46.0 mm; Width: 21.5 mm; Thickness: 5.5 mm; Stem Length: 5.5 mm; Stem Width: 13.0 mm.

The specimen is smaller than, but resembles the Motley type (Bell 1958:62). An Archaic association is suggested.

Small, Corner Notched (Plate XIXk). These thin specimens have straight-convex bases, slight barbs, and excurvate blades. One was recovered from Stratum I and one from Stratum II.

Size: Length: 19.5-24.0 mm, Mean 21.7 mm; Width: 18.0 mm; Thickness: 4.0-4.5 mm, Mean 4.2 mm; Stem Length: 6.0-7.5 mm, Mean 6.7 mm; Stem Width: 16.5 mm (one artifact).

Medium to Small Corner Notched, Heavy Ground Base (Plate XIXl). These two points are classed as Palmer Corner Notched (Coe 1964:67).

Size: Length: 29.0 mm (one artifact); Width: 20.5-25.5 mm, Mean 22.9 mm; Thickness: 4.5-7.5 mm, Mean 6.0 mm; Stem Length: 9.0 mm; Stem Width: 19.0-20.0 mm, 19.5 mm.

These points have an Early Archaic affiliation.

Small, Shallow Side Notched (Plate XIXm). Four specimens have concave or convex bases and straight to excurvate blades. Three are from Stratum I and one from Post Hole 8.

Size: Length: 17.5-28.5 mm; Mean 22.6 mm (3 artifacts); Width: 13.5-17.0 mm, Mean 14.7 mm; Thickness: 4.5-6.5 mm, Mean 5.7 mm (4 artifacts).

Small Side Notched (Plate XIXn). One specimen from Feature 4 has a concave ground base and excurvate blade. A portion of cortex remains on one face and one serration appears on one edge.

Size: Length: 28.5 mm; Width: 17.0 mm; Thickness: 7.0 mm.

The point is probably a variant of the established Big Sandy type (Kneberg 1956:25; Bell 1960:8-9).

Unidentifiable Projectile Point/Knife Fragments. A total of 105 specimens comprise this class. One is a broken triangular and 12 are stemmed or notched fragments. On the basis of symmetry, thinness and execution, 32 are thought to be projectile point tips. Sixty remain unidentifiable.

Discussion. It is felt that a number of described projectile point/knife categories share certain basic characteristics and differ only in certain formal attributes that may be due to available raw material, skill of the artisan, or resharpening (cf. Anonymous 1972: 99). With this in mind, Faulkner and McCollough (1973:142-155) defined 11 projectile point clusters for the Normandy Basin surface sample. Two tentative clusters can be defined for some of the Rose Island Woodland categories.

An Early Woodland Triangular Cluster is proposed that would combine the described types illustrated in Plate XVIII b, c, d, e, f, g, and h. These are essentially the combined variants of the established Greeneville, Camp Creek, Nolichucky types which occurred together with the Early Woodland component at Camp Creek (Lewis and Kneberg 1957). The points in this cluster find comparable types in Western North Carolina in the Transylvania Triangular (Keel 1972:172-173) and the Garden Creek Triangular (Keel 1972:173-176) and in northern Georgia in the Indented Base Triangular, Isocoles Triangular, and the Medium Triangular (Wauchope 1966:105-111). Some of the points are within the range of the Connestee Triangular (Keel 1972:176-177) which was the predominant point in a Middle Woodland context at Icehouse Bottom

(Chapman 1973). There was most likely both a cultural continuum and a variational range in execution involved in the Early Woodland Triangular Cluster.

The other cluster suggested is the Late Woodland to Early Mississippian Hamilton. Until further work is done on the stemmed points in the Little Tennessee River valley, it would be best not to construct clusters from the small Rose Island sample.

Lithics--Other Chipped Stone

Medium, Lanceolate Knives (Plate XXa). Four bifaces exhibiting assymetry and retouch on at least one edge were functionally classed as knives. Two occurred in Stratum I and two in Stratum II.

Size: Length: 40.0-44.5 mm, Mean 41.9 mm; Width: 11.5-16.0 mm, Mean 14.2 mm; Thickness: 6.0-9.0 mm, Mean 7.4 mm.

Medium, Stemmed Knife, Unfinished Base (Plate XXb). One straight stemmed, weak shouldered, excurvate blade specimen came from Stratum II.

Size: Length: 40.0 mm; Width: 21.0 mm; Thickness: 11.0 mm.

Assymetrical Short Stemmed Knife (Plate XXc). Three specimens from Stratum II form this class. They have round bases and incurvate blades.

Size: Length: 38.0 mm (one artifact); Width: 17.0-21.0 mm; Mean 18.8 mm; Thickness: 7.5-9.0 mm, Mean 8.2 mm (3 artifacts).

Large Rough Biface (Plate XXd) Three specimens from Stratum II may be blanks or preforms.

Size: Length: 66.0 mm (one artifact); Width: 33.0-43.0 mm, Mean 37.6 mm; Thickness: 13.5-25.0 mm, Mean 17.5 mm (3 artifacts).

Medium, Rough Biface (Plate XXe). Five specimens may be knives, blanks or preforms. Two are from Stratum I and three are from Stratum II.

Plate XX. Other Chipped Stone Artifacts

a. Medium lanceolate knives

b. Medium stemmed knife

c. Assymetrical, short stemmed knife

d. Large rough biface

e. Medium rough biface

f. Stemmed scraper

g. End scraper

h. Drills/perforators

i. Blade-like flakes

j. *Pièces esquillées*

Plate XX

Size: Length: 32.0-43.0 mm, Mean 37.1 mm; Width: 18.0-27.0 mm, Mean 22.8 mm; Thickness: 6.0-10.0 mm, Mean 8.1 mm.

Stemmed Scraper (Plate XXf). Two bases of stemmed points have been reworked into scrapers. One is from Stratum I and one is from Stratum II.

End Scraper (Plate XXg). One blocky core fragment from Stratum I exhibits steep retouch.

Drill/Perforator (Plate XXh). There are seven artifacts in this category; four are from Stratum I and three are from Stratum II.

Blade-like Flakes (Plate XXi). A total of 27 blade-like flakes occurred in Strata I and II. Only five were utilized. It is probable, considering the sample size, that these were accidental by-products of the knapping activities rather than the results of deliberate blade production. Schroedl (Personal communication), however, reports a large number of these in an Early Woodland context at the Patrick site and it is apparent that a local blade and core industry existed at Icehouse Bottom by Middle Woodland times (Chapman 1973:91-95).

Size: Length: 19.0-44.0 mm, Mean 27.1 mm (25 artifacts); Width: 5.0-18.0 mm, Mean 10.4 mm; Thickness: 1.5-6.0 mm, Mean 2.8 mm (27 artifacts).

Utilized Flakes. A total of 41 amorphous flakes exhibiting retouch or edge nibbling occurred in Strata I and II. Care was taken to include only those flakes that showed definite use and not those with psuedo-utilization as produced by trowels, shovels, waterscreens, and bagging.

Pièces Esquillées (Plate XXj). A total of 43 artifacts of this class were recovered from Strata I and II. For a discussion of pièces esquillées see Chapter IV. There were also 12 bipolar cores or core fragments in the bipolar lithic sample.

Unidentified Worked Cryptocrystalline A total of 47 artifacts of this class were unidentifiable as to form or function.

Lithics--Ground Stone

Celts. Four fragments of ground slate exhibited a portion of the bit end of a celt.

Grooved Ax (Plate XXIa). Two fragments were recovered from Stratum II. One specimen is a reworked broken grooved ax; the original break was in the grooved haft area and the blade was then notched and regrooved.

Gorgets (Plate XXIb). Two ground slate gorget fragments were recovered. Their form was one of a constricted center with expanded semi-lunar or pointed ends. A similar gorget form occurred at the Early Woodland Rankin site in eastern Tennessee (Smith and Hodges 1968). One rectangular two-hole gorget was made from a steatite bowl fragment.

Steatite Tube. One fragment of a biconical "medicine tube" was found in the backhoe backdirt.

Pestle (Plate XXIc). One pecked sandstone pestle occurred in Feature 7.

Bird Effigy (Plate XXId). A conglomerate cobble fragment shows abrasion on the edges and protrusions suggesting refinements of a psuedomorph into a bird form. The artifact is from Feature 4.

Hammerstone (Plate XXIe). Four cobbles exhibiting battering suggest the function of a hammerstone. Two are from Feature 4, one from Feature 21, and one from Feature 32.

Plate XXI. Other Worked Stone Artifacts

a. Grooved ax

b. Gorgets

c. Pestle

d. Bird effigy

e. Hammerstone

f. Worked hematite (goethite)

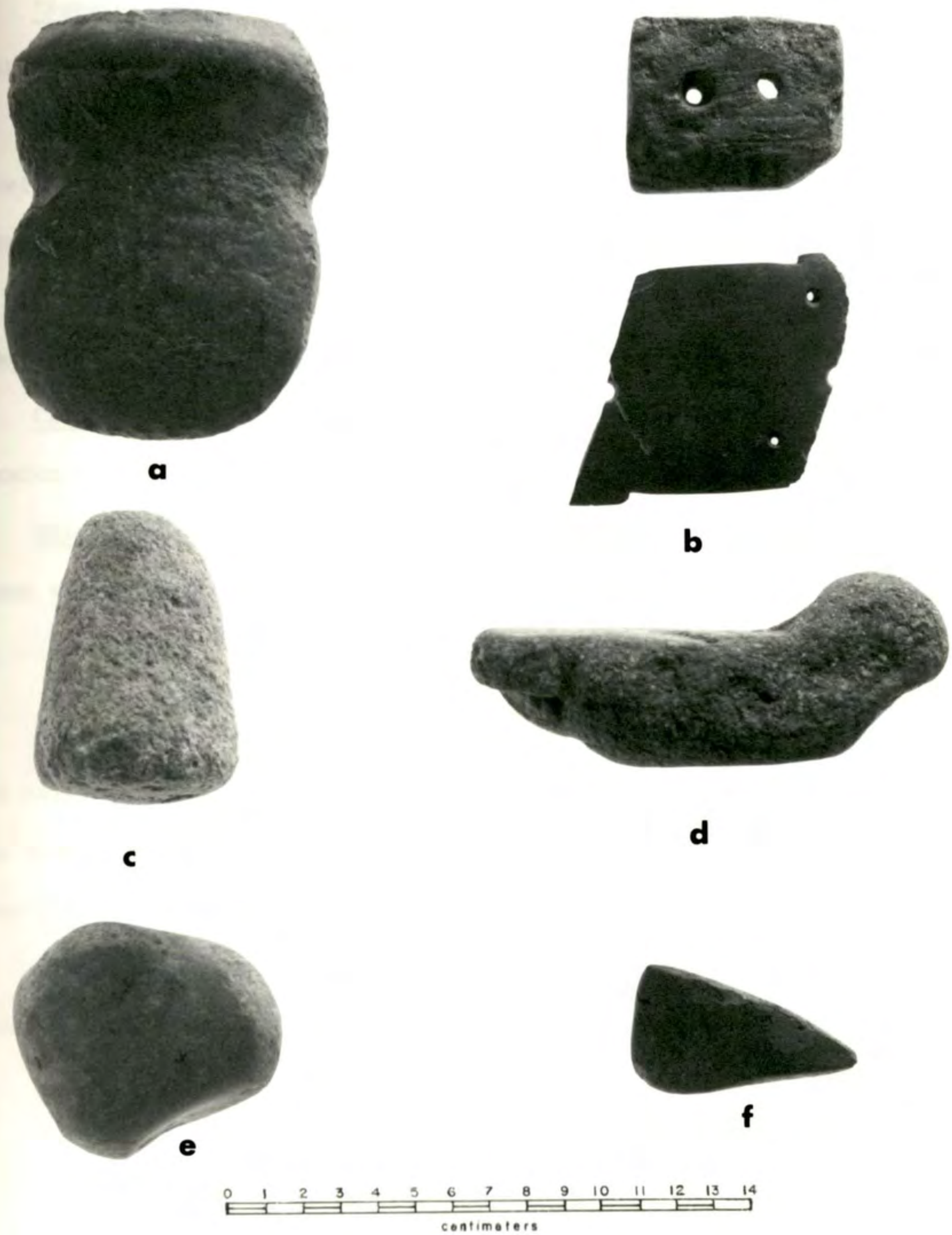


Plate XXI

Pitted Cobbles. Two cobble fragments show areas of pecking. One is bipitted and the other is larger and exhibits an area of pecking (70 x 75 mm) that resembles the metates from the Early Archaic horizons.

"Netsinkers." Two flat notched cobbles are probably associated with the underlying Stratum III (see above).

Hematite (Goethite)(Plate XXIf). Ten pieces showed abrasion or faceting and four were unworked. Five are from Stratum I, six from Stratum II, and one each from Feature 9, 21, and 24.

Chopper/Scraper. One fragment of worked mudstone occurred in Feature 17 and may be a digging or fleshing implement (see Chapter IV).

Crinoid Stem. One broken fragment of a crinoid stem occurred in Stratum II.

Unidentified Ground Stone. A total of 26 slate, one sandstone, three siltstone fragments exhibit grinding.

Bone

Bone preservation was poor to fair with some larger bone fragments and calcined bone being present. Identification and quantification of the faunal remains has not yet been done, but field observation suggest deer predominated.

One antler tine fragment and a fragment of worked bone were recovered from Stratum I. One burned deer metatarsal occurred with Burial 2.

Features

Table 10 summarizes the feature data of the later occupations at Rose Island. Twenty-three Early Woodland, one Middle Woodland, and one Late Woodland-Early Mississippian features were recorded.

Six categories of Early Woodland features could be recognized. One common Early Woodland feature is the straight-sided, flat bottom, mottled fill pit (Plate XXII). Six of these were recorded (Features 4,7,10,11B, 14, and 17). The mottled effect is created by the lighter brown silt loam from Stratum III and the dark brown loam of Stratum II. Layers or pockets of each suggest fairly rapid refill before the soil from Stratum III could be dispersed. Cultural material was scattered but not numerous. Burial 2 was found in Feature 11B.

A second category is that of a basin containing fire-cracked rock and some charcoal. The floor of the basin is not fired suggesting a baking pit into which heated stones were placed. Four features of this type were recorded (Feature 3, 13, 54, and 80).

A third category is that of fire basins containing fire-cracked rock, charcoal and ash, and evidence of firing on the floor or sides. Features 16, 19, and 21 are of this category. Feature 21 (Plate XXIII) contained over 600 cobbles and cobble fragments and had been subjected to considerable firing. Its size and intensity of use suggest possible association with a structure, although limited excavation prevented confirmation of this.

A fourth category is comprised of shallow basins and depressions. Features 4, 9, 18, 23, 24, and 58 belong to this class.

A fifth category comprises two features (11 and 224). In the case of each of these, large limestone slabs and blocks were situated at the top of a pit. These may be Middle Woodland in that a Mulberry Creek Plain sherd was associated with each.

A final category includes four features. These are categorized only as pits. Feature 26 showed a layer of fire-cracked rock within

Plate XXII. Feature 7, Straight-sided Pit, Early Woodland

Plate XXIII. Feature 21, Fire Basin, Early Woodland

Plate XXII

Plate XXIII

the fill, Feature 31 may be a stump or root hole, Feature 51 is intruded through by Feature 21. Feature 12 had one straight and one sloping side.

Paleobotanical Remains

Flotation (see discussion of technique and analysis in Chapter V) was performed on a sample of the fill of the Early Woodland features when possible. Only one sample has been analyzed to date. The results from Feature 21 are as follows: Total weight of the sample 23.6g: wood charcoal 6.9g (29.3%), hickory nut shell (*Carya* sp.) 16.2g (68.8%), acorn shell (*Quercus* sp.) 0.2g (0.9%), black walnut shell (*Juglans nigra*) 0.2g (0.9%), and 9 seeds (0.1%). The seeds represented are 1 grape (*Vitis* sp.), 1 maygrass (*Phalaris*), 2 sumpweed? (*Iva annua*), 1 sunflower? (*Helianthus* sp.), and 4 unknown. The spectrum of plant foods represented is consistent with other Early Woodland features in the eastern United States. Sunflower has been identified in a Late Archaic or Terminal Archaic context only 30 miles from Rose Island (Brewer 1973).

Post Holes

A total of 49 intrusions were classed as post holes. However, in none of the excavation units was any pattern discernable. Considering the separate, small areas of Stratum II exposed, it is doubtful that one could recognize a structure.

Burials

Four human interments were encountered during the Season I archaeological investigations of Stratum II. Osteological and demographic studies of the remains were conducted by Emmanuel Breitburg at the Department of Anthropology, University of Tennessee, Knoxville.

Burial 1. This burial was encountered in square 180 R 245 during the backhoe removal of Strata I-V to expose the Early Archaic horizons. In addition to backhoe disturbance, a stump crater (AG-82) was adjacent to the skeletal remains. Although no pit was discerned, the burial is apparently a primary inhumation; deposition is face down with arms and legs fully flexed. The body was oriented with head to the east. The skull was missing and bone preservation was extremely poor. On the basis of the epiphyseal union of a proximal portion of a tibia, the individual was classed as an adult but of indeterminable age and sex. There were no grave accompaniments.

Burial 2 (Plate XXIV). Interment of this burial was in a straight-sided circular pit 2.4 x 2.6 ft by 3.5 ft deep (Feature 11B) situated in square 185 R 245. The pit was stratified with alternating levels of dark brown midden and brown silt loam from Stratum III. The sequence of construction of Features 11 and 11B is uncertain. The burial is an articulated primary inhumation placed on the back with legs flexed to the chest and the arms flexed along the sides. Orientation was with the head to the east and the face facing west. One burned deer metatarsal was found near the right femur and an amorphous chunk of reddish brown sandy clay occurred near the left elbow. That these were burial accompaniments is indeterminate in that there was scattered material throughout the pit fill. Bone preservation was good.

The interment was that of a female, age 16 $\pm$ 1 yr, and her stature is estimated to have been 167.0-168.0 cm (5'5"-5'6"). Breitburg observed no anomalies but recorded three pathologies. First there was abscession and bone resorption in the area of the left mandibular

Plate XXIV. Burial 2, Early Woodland

Plate XXV. Burial 4, Early Woodland

Plate XXIV

Plate XXV

canine and second premolar. Second, the dentition shows advanced occlusal wear for the age of the individual. Third, there was an incomplete fracture of the left fibula. X-rays of both tibiae revealed that no additional trauma occurred as a result of the fracture.

Burial 3. The greater portion of this burial was destroyed during the Early Woodland period by Feature 4, such that only the upper torso and cranial region remained. The individual was apparently articulated and placed on the back with the head to the north. Bone preservation was poor.

Breitburg was able to demonstrate that the individual was a female, age 14. No anomalies were observable and the only pathologies appeared to be excessive occlusal wear of teeth.

Burial 4 (Plate XXV). The burial pit of this interment was intrusive through the northern edge of Burial 2. The pit measured 3.2 x 3.0 ft and was 1.5 ft deep. The body was articulated and placed on the back. The legs were flexed and drawn up to the right of the chest. The right arm was partially flexed, hand towards hip, and the left arm extended along the body. The head was oriented to the southeast. Bone preservation was poor. One large, excurvate blade, incurvate base triangular point occurred in the pit fill by the left elbow.

Breitburg concluded that the individual was a male, age 23 + years. No anomalies were apparent but advanced occlusal wear was in evidence upon all first molars. Dentin patches occurred on the second molars and the third molars had been worn flat.

Summary

Almost 7000 years was represented by the strata covering the Early Archaic deposits at Rose Island. Except for the Early Woodland occupation, visitation was sporadic leaving only scattered evidence of Middle and Late Archaic occupations. The Early Woodland occupation of the site has been classed in the Greeneville phase and is characterized by the presence of both quartz tempered fabric and cord marked pottery and limestone tempered fabric marked pottery, as well as large to medium triangular projectile points/knives. The date for this phase probably lies in the second to third centuries B.C. (cf. McCollough and Faulkner 1973:77-80). Later occupations by Middle and Late Woodland and by Early Mississippian peoples are again scattered and unintensive. No evidence of later Dallas phase or Cherokee occupations were recovered, although Timberlake (Williams 1927) showed the Overhill Cherokee town of Mialaquo adjacent to and on Rose Island.

IV. THE EARLY ARCHAIC ASSEMBLAGES

Excavations of Strata V, VII, VIII, and XI recovered over 40,000 artifacts associated with the Early Archaic period. Of this total, over 27,000 were flakes and 3000 were blocky core fragments that were produced by simple percussion and by bipolar flaking techniques. Included in this total also are over 3800 pieces of unworked hematite (goethite). The remaining artifacts total 1943 and are discussed below. There were 196 features recorded which are considered non-artifact parts of the assemblages.

With the exception of four unidentifiable bone fragments and large quantities of carbonized paleobotanical remains, the artifact assemblage is entirely lithic. Raw material for the manufacture of these artifacts was derived almost entirely from readily available local sources. A detailed analysis of the cryptocrystalline material and available resources in the Little Tennessee River valley has not been done at this time. It appears, however, from field and labortory observations, that the principal cryptocrystalline material that was utilized is a dark gray to black, very fine grained chert that is common in nodular form in the neighboring dolomite outcroppings and gravels of the riverbed and terraces. Much of the chert is badly weathered, fracturing along cracks or around impurities. Occasional artifacts of other cherts native to the area (Kellberg 1963:5) occur and include porcelaneous and jasperoid cherts. Some use of slates and vein quartz suggest raw materials from the Appalachians to the east, but may have been derived from river cobbles. Sandstone and quartzite cobbles provided raw material for hammerstones and other non-cryptocrystalline tools.

Tables 11-22 present the distribution of the lithic artifacts by archaeological horizon and excavation levels in Units A and C, Units B and H, and Unit D. The artifacts recovered from features have been included in the artifact frequencies of the horizon or level in which the feature occurred; their distribution in the features is presented in Table 25. The distribution of artifacts in Unit G, square 30 R 260, has been incorporated into the horizons of Units A and C. The Kirk horizons (Strata VIII and XI) were recognizable in Block D although the separate horizons of the LeCroy and St. Albans phases were not. The artifacts recovered from the excavated area of the Kirk horizons in Block D have been combined with those from Units A and C which are shown in Tables 11, 14, 17, and 20.

Heat Treating of Chert

The phenomenon of heat treating chert has a wide distribution in North America as well as other parts of the world. Some of the ethnographic and historic descriptions discussed in the recent literature have been summarized by Michael Collins (1973:2). In the east, thermal treatment of archaeological samples have been recognized and discussed in Florida (Purdy and Brooks 1971; Fairbanks 1969), Kentucky (Collins 1973), and North Carolina (Bass n.d.)

Certain changes occur in the properties of chert which has been heat treated and these changes vary especially with material and with temperature. Experimental data have shown that in spite of the variations, some of the following changes can be recognized (Collins 1973: 3-7): color change, heat damage, retardation of patination, loss of light energy by thermoluminescence, obliteration of fission tracks by heat annealing, loss of water of hydration, change of compressive strength, and the "healing" of cracks. Subsequent flaking of the heat treated chert is evident on the artifacts and débitage in such attributes as luster, size and quality of flakes and flake scars, nature of ripple marks, and flake scar texture.

During the course of excavations, two phenomena were noted that suggested thermal treatment might be a technique used at Rose Island during the Early Archaic. A visible luster was apparent on a few bifaces and occasional chunks of low quality burned chert occurred scattered in the horizons and in association with fired areas and basins. Barbara Purdy at the University of Florida, Gainesville agreed to conduct experiments in hopes of determining if heat treating was employed. The results of her experiments (Purdy 1975) are summarized below.

The chert for the experiment came from two sources: one source was blocky core fragments from the LeCroy phase Stratum VII-A; the other source was nodules and nodule fragments from the chert outcropping, 40 Mr 45, three miles upstream. The two sources appear to be identical material as far as Purdy could tell. There were four objectives in the experiment: (1) To determine if heating of weathered nodules (many nodules were quite "rotten") resulted in healing and the restoration of some flakability. (2) To determine if heating produced any color changes, especially in the cortex.

(3) To determine the percentage of water loss and at what temperature the loss occurred. (4) To determine the subsequent effects on flaking ease and on the visual surface. Several flakes were removed prior to heating to serve as controls.

The results were: (1) The two core fragments that were "rotten" did not heal through heating. The specimen from Mr 45 crumbled when flaking was attempted. Thermal alteration is apparently detrimental at least at 250°C or above. (2) Color change on the cortex is very apparent after 250°C, changing from a tan to a reddish brown. There was a slight color change in the chert itself, becoming slightly less dark gray. (3) Compared to Florida cherts practically no weight loss occurred. Florida cherts lose between one and two percent total. (4) Purdy is convinced that the material did not benefit by exposure to heat. The heated specimens exhibited a "sugary" surface where flaked even after heating only to 250°C. Florida cherts take 350°C to alter and then exhibit a very vitreous surface when flaked after heating, The Rose Island and Mr 45 material works very well without heating, although Purdy did note that it will fracture easily in only one direction. Heating had no effect on this property.

The data suggest that heat treatment did not improve the workability of the available cherts in the Rose Island area and was apparently little used. There are less than a dozen artifacts that exhibit the sugary appearing flaking which Purdy observed on heat treated specimens. The source of the luster observed on certain specimens must be sought elsewhere, perhaps as a form of patination. It is possible that the examples of burned chert represent attempts at healing, but more likely they were unintentional inclusions in the fire.

Projectile Points/Knives

Coe (1964:9) observed that "...when an occupation zone can be found that represents a relatively short period of time the usual hodgepodge of projectile point types are not found--only variations of one specific theme." The diagnostic value of projectile points was again confirmed by Broyles (1966) at the St. Albans site. These studied led Brennan (1967) to develop the "specific theme" as a culture tracing principle and to speak of the Coe Axiom. Fitzhugh (1972:3) later warned against the assiduous application of the model of one culture-one point style in interpretation, but recognized the importance of projectile points as diagnostic artifacts. The Rose Island Early Archaic sample conforms to Coe's and Broyles' models and are the only artifacts in the assemblage that appear to reflect change.

Recognizing that the artifacts classed as projectile points may have several functions, the convention is continued here of a bifunctional term to categorize these artifacts. Because most of the artifacts in this class could be divided on the basis of certain attributes into subclasses for which established type names have been given, the names are employed here. Variations on a type are recognized and type names are ascribed to clusters of artifact subclasses sharing certain attributes. Tables 11-13 present the distributions of the various types and the artifacts are discussed below.

Bifurcated Base Projectile Points/Knives

The diagnostic artifacts of Strata V and VII are the bifurcated base points. They have been divided into three established types on the basis of certain attributes and stratigraphic placement;

Table 11. Distribution of Projectile point/knife types by archaeological horizon, Units A and C.

Type	Archaeological Horizons								
	VII A No.	VII B No.	VII C No.	VII D No.	VII E No.	VII F No.	VII G No.	VIII No.	Totals No.
LeCroy	27	3							30
St. Albans	6	6	21	1	3		3		40
Bifurcate Variant 1	1	1	1					2	5
Bifurcate Variant 2			1						1
Bifurcate Variant 3	1		2						3
Bifurcate Variant 4		1							1
Bifurcate Variant 5								1	1
Unidentified Bifurcate Bases	10	2	3	1	2		1		19
Kirk Variant 1								2	2
Kirk Variant 2	2		1		2			1	6
Kirk Variant 3	1		1					1	3
Kirk Variant 4	1	2						4	7

Table 11. (continued)

Type	VII A No.	VII B No.	VII C No.	VII D No.	VII E No.	VII F No.	VII G No.	VIII No.	Totals No.
Kirk Variant 5			1					1	2
Kirk Stemmed	1								1
Palmer	1		1		1			1	4
Decatur	1								1
Shallow Side Notched			1	1					2
Big Sandy			1						1
Unidentified Side and Corner Notched Bases		1						2	3
Totals	52	16	34	3	8	-	4	15	132

Table 12. Distribution of projectile point/knife types by archaeological horizon and excavation level, Units B and H.

Type	Archaeological Horizon and Excavation Level										
	V 1	V 2	VII 3	VII 4	VII 5	VII 6	VII 7	VII 8	VII 9	VII 10	Totals
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Kanawha		2									2
LeCroy			2	5	3	1	1		1		13
St. Albans		1			2	1		2	2	1	9
Bifurcate Variant 1			1								1
Bifurcate Variant 4									1		1
Bifurcate Variant 5									1		1
Bifurcate Variant 6					1						1
Unidentified Bifurcate Bases		1	1		2	3		1			8
Kirk Variant 3									1		1
Kirk Variant 4							1				1
Kirk Variant 6					1						1
Palmer				3		1					4
Shallow Side Notched							2				2
Totals	-	4	4	8	9	6	4	3	6	1	45

Table 13. Distribution of projectile point/knife types by archaeological horizon and excavation level, Unit D.

Type	Archaeological Horizon and Excavation Level										
	VII 1	VII 2	VII 3	VII 4	VII 5	VII 6	VII 7	VII 8	VII 9	VII 10	Totals
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
LeCroy	2	2	1								5
St. Albans		1	1	2	5	1	1				11
Bifurcate Variant 1				1						1	2
Bifurcate Variant 2					1						1
Unidentified Bifurcate Bases	1										1
Kirk Variant 1				1							1
Kirk Variant 2		1									1
Palmer						2					2
Hardaway-Dalton				1							1
Unidentified Side and Corner Notched Bases			1			1					2
Totals	3	4	3	5	6	4	1			1	27

in addition, six variants not meeting established type description have been described. It is the view here that the bifurcated base points represent a tradition that persisted a little over 500 years. Change occurred in the point form over time and variations on the theme existed throughout this time. Because of the large stratified sample of bifurcated base points from Rose Island, and because of the widespread distribution of similar points throughout the eastern United States, a separate chapter (Chapter VI) is devoted to a discussion of the cultural and ecological position of this tradition in eastern North American prehistory. In this chapter, therefore, only a description of the bifurcated base points will be presented. The terms Kanawha, LeCroy, and St. Albans phases will be employed to designate phases within the bifurcate tradition that have stratigraphic and temporal significance. A total of 161 artifacts comprise the Rose Island sample of bifurcated base projectile points/knives.

Kanawha Stemmed (Broyles 1966:27, 1971:59) (Plate XXVIIIa). Two specimens of this type were recovered from Stratum V in Unit B. The points are small with incurvate triangular blades and short, shallow notched bases. Although one is broken, both had a pronounced projection at one shoulder which is a common attribute for this type.

Size: Length: 15.0-19.0 mm, Mean 17.0 mm; Width: 13.0-18.5 mm, Mean 15.8 mm; Thickness: 5.0 mm; Stem Length: 6.0-6.5 mm, Mean 6.2 mm; Stem Width: 11.0-14.0 mm, Mean 12.5 mm; Bifurcate Depth: 1.0-1.5 mm, Mean 1.2 mm.

These points are smaller than those described by Broyles. Stratigraphically these points were situated above the LeCroy points and below the non-bifurcated stemmed points of Stratum IV, thus making them similar in age to those at the St. Albans site (c. 6200 B.C.).

LeCroy Bifurcated Stem (Lewis and Kneberg 1955:79,81; Kneberg 1956:27-28; Broyles 1966:26-27, 1971:69) (Plate XXVI). Kneberg included within this type some bifurcated and notched base points that later Broyles classed on stratigraphic grounds as the St. Albans Side Notched type. The distinction between the two types is maintianed here and is justified on stratigraphic grounds as well as morphological grounds (see Tables 11-13).

The LeCroy type point at Rose Island is a small, thin bifurcated stemmed point. The blade is triangular with straight to incurvate edges. Serrated edges occur in over one third of the specimens. Several blades have been reworked until very little of the blade remains. Bases are deeply notched by the removal of several flakes. The stem is straight or slightly flared and grinding occurred on the outer edges of the stem in 13 cases. Only one bifurcation exhibits grinding. The shoulder is generally pronounced and at right angles to the stem. Six points are made from thin unifacial flakes, and one (Plate XXVI, lower right), perhaps best viewed as a model or product of an idle moment, is made of a thin piece of cortex. A total of 49 points including two unfinished specimens were assigned to this type.

Size: Length: 16.0-35.5 mm, Mean 26.4 mm (37 artifacts); Width: 17.5-26.0 mm, Mean 20.7 mm (42 artifacts); Thickness: 2.5-7.0 mm, Mean 4.8 mm (47 artifacts); Stem Width: 12.0-20.0 mm, Mean 15.0 mm (45 artifacts); Bifurcate Depth: 2.0-6.0 mm, Mean 3.1 mm (47 artifacts).

Plate XXVI. LeCroy Bifurcated Stem Type Projectile Points/Knives

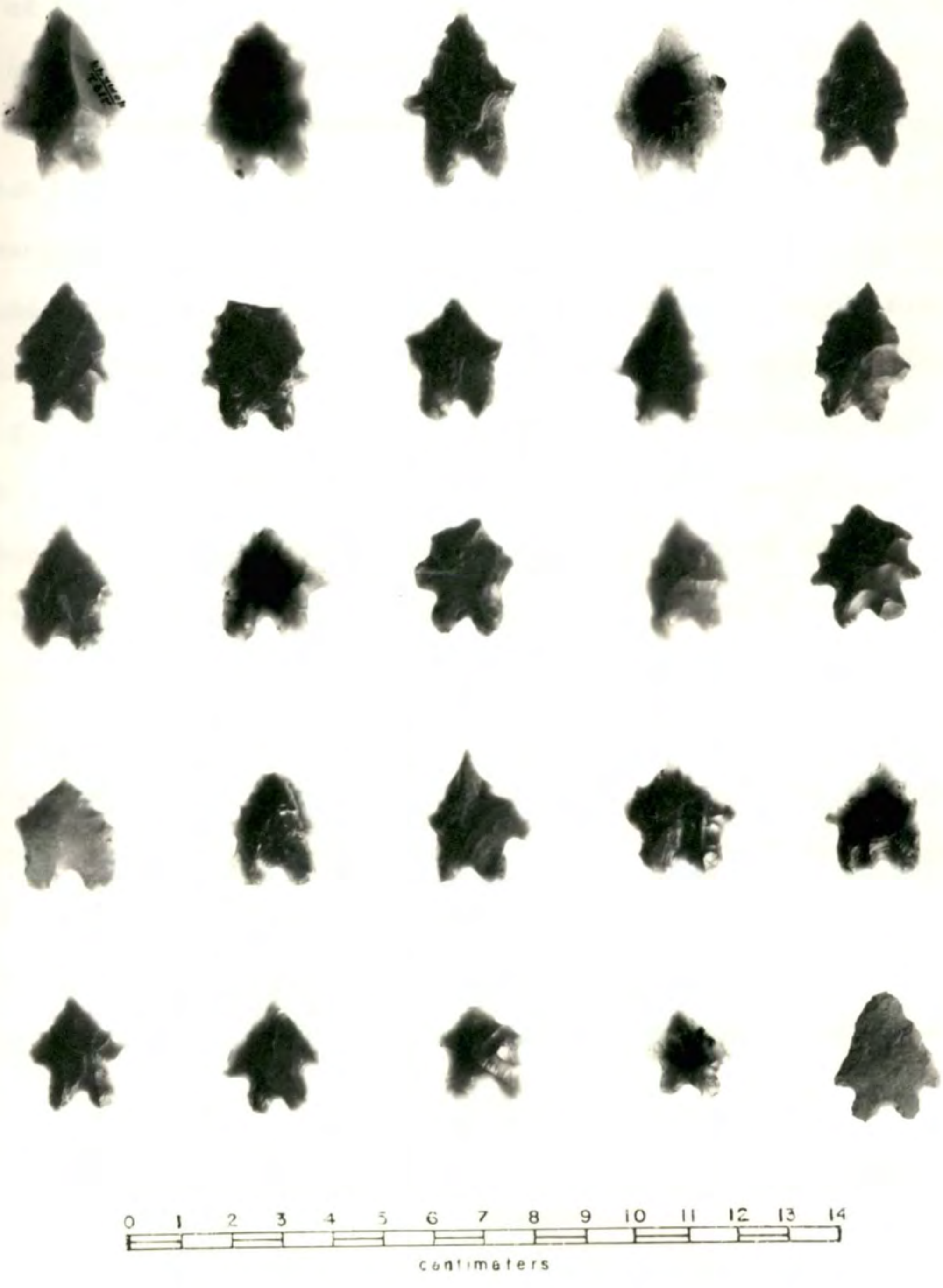


Plate XXVI

Stratigraphically the LeCroy points were distributed primarily in Stratum VII-A in Units A and C, and above the St. Albans type points in Units B, H, and D. In Units A and C where the stratigraphic separation of Strata is clearest, the distribution is striking. A temporal span of 150 years for the evolution of the LeCroy type from the St. Albans type is supported by the archaeomagnetic calibrations from the top of Stratum VII-C to the base of VII-A (Figs. 8 and 9). In Units B and H the separation is less clear due to the relative homogeneity of Stratum VII and aboriginal mixing--for example four pieces of a single biface exhibited a one foot vertical and 15 foot horizontal distribution.

St. Albans Side Notched (Broyles 1966:23,25, 1971:73,75)(Plate XXVII). Broyles defined two varieties of this point due to stratigraphic separation, but acknowledges that separation, if the points were mixed, would be virtually impossible. No variety distinction was made of the Rose Island sample.

The St. Albans type points at Rose Island are small, side notched points with a notched base. The blades are triangular with edge ranging form incurvate to straight to excurvate. Serrations occur on the edges of approximately one third of the sample. The side notching is usually shallow and broad, and with the ears created by the notched base, some have the effect of a flared stem. Grinding occurs in the side notching and along the outside of the ear in 26 cases, and in the basal notch in 11 cases. Shoulders in some cases are well defined and are tapered to horizontal. Some specimens with weak, poorly defined shoulders approach Broyles' Variety B. The base is generally wider than the shoulder and the type is usually thicker than the LeCroy type.

Plate XXVII. St. Albans Side Notched Type Projectile Points/Knives

Plate XXVII

The sample consists of 63 specimens including three unfinished examples (one illustrated Plate XXVII bottom right).

Size: Length: 19.0-34.5 mm, Mean 26.1 mm (42 artifacts); Width: 14.0-24.0 mm, Mean 17.3 mm (43 artifacts); Thickness: 4.5-8.0 mm, Mean 5.9 mm (48 artifacts); Stem Length 6.0-13.0 mm, Mean 9.3 mm (46 artifacts); Stem Width: 13.5-22.0 mm, Mean 17.8 mm (44 artifacts); Bifurcate Depth: 1.0-4.5 mm, Mean 2.6 mm (48 artifacts).

In Units A and C the St. Albans type points occurred most frequently in Stratum VII-C and were scattered down to Stratum VIII. A comparison of the distributions of the LeCroy and St. Albans types clearly supports their temporal separation. The radiocarbon assays from the Rose Island St. Albans horizons are in good agreement with the dates from the St. Albans Zone 11 at the St. Albans site (see below) and archaeomagnetic calibrations suggest a span of over 300 years for the type's dominance (see Chapter II).

Bifurcate Variant 1 (Plate XXVIIIf). This is a medium sized stemmed point with a bifurcated base. The blade is triangular with straight to excurvate edges. Serrations occur on the edges of three specimens. The stem is expanded and the base deeply notched giving the effect of pronounced flaring ears. Five out of seven specimens exhibit grinding on the stem edge and two have grinding in the bifurcations. The shoulder is pronounced and horizontal or inversely tapered.

Size: Length: 23.0-42.5 mm, Mean 33.9 mm (5 artifacts): Width: 22.5-28.5 mm, Mean 24.4 mm (5 artifacts); Thickness: 5.0-8.0 mm, Mean 6.2 mm (7 artifacts); Stem Length: 8.0-10.5 mm, Mean 9.6 mm (7 artifacts); Stem Width: 15.0-22.0 mm, Mean 19.3 mm (7 artifacts); Bifurcate Depth: 1.0-5.0 mm, Mean 3.1 mm (7 artifacts).

Plate XXVIII. Other Bifurcated Base Projectile Point/Knife Variants

a. Kanawha Stemmed

b. Bifurcate Variant 5

c. Bifurcate Variant 6

d. Bifurcate Variant 2

e Bifurcate Variant 3

f. Bifurcate Variant 1

g. Bifurcate Variant 4

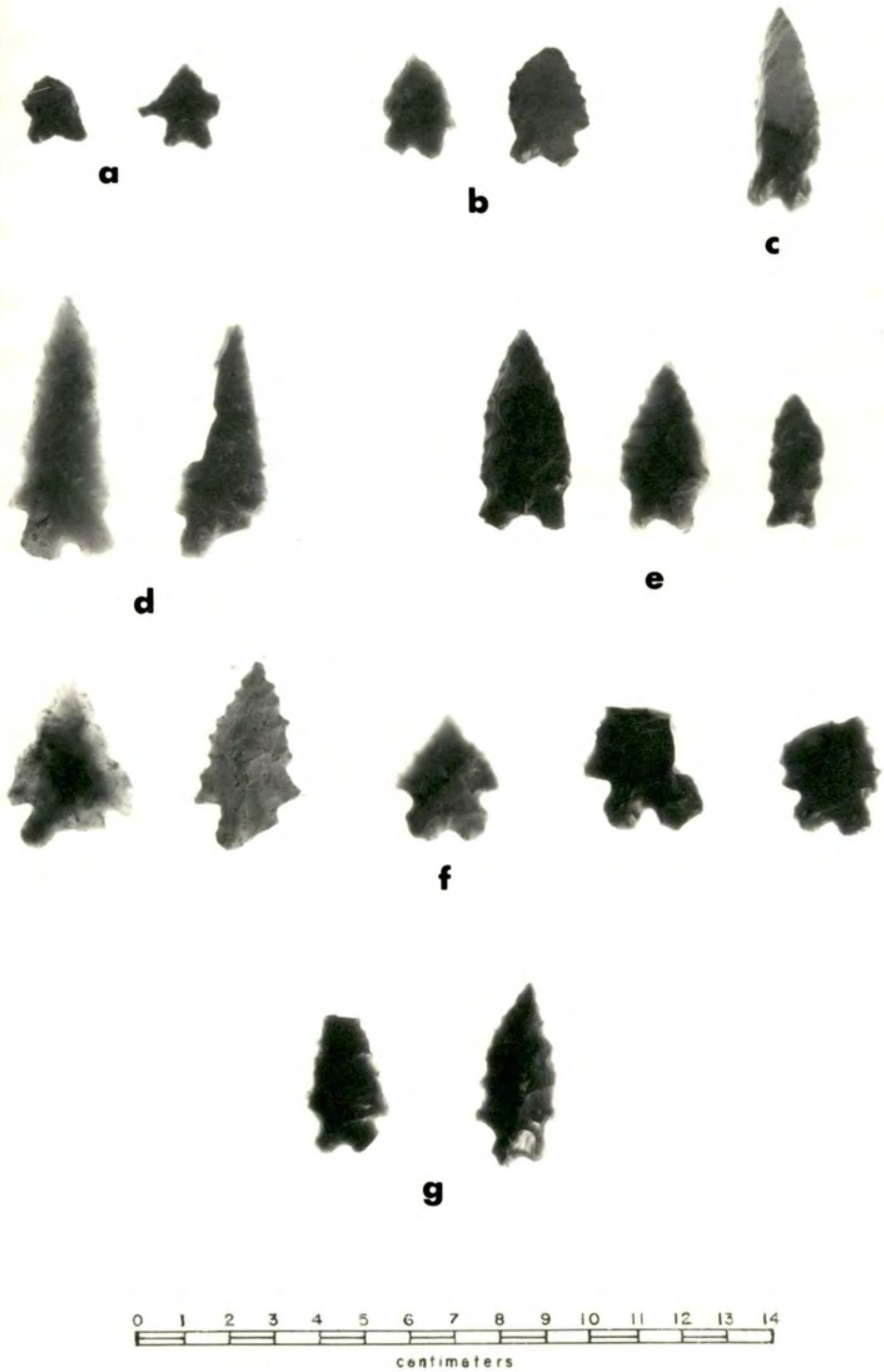


Plate XXVIII

This point type may be the earliest of the bifurcate types at Rose Island in that two artifacts came from soil horizon X Alb at the top of Stratum VIII and one example occurred in Stratum VII-G. The other higher occurrences can be attributed to aboriginal displacement. The type may be related to the MacCorkle Stemmed type (Broyles 1966: 23, 1971:71) which appeared to be a transitional type between the Kirk Corner Notched type and the St. Albans type at the St. Albans site.

Bifurcate Variant 2 (Plate XXVIIId). Two artifacts of this type were recovered. The point has a long narrow blade with a wide, slightly expanding stem with a deeply notched base. Grinding occurs on the stem edge and one specimen has grinding in the bifurcation.

Size: Length: 56.0-59.5 mm, Mean 57.8 mm; Width: 21.0-23.5 mm, Mean 22.2 mm; Thickness: 6.0-7.0 mm, Mean 6.5 mm; Stem Length: 9.0-11.0 mm, Mean 10.0 mm; Stem Width: 16.0-21.0 mm, Mean 18.5 mm; Bifurcate Depth: 3.5-5.0 mm, Mean 4.2 mm.

Stratigraphic placement suggests an association with the St. Albans phase.

Bifurcate Variant 3 (Plate XXVIIIe). This class of artifacts has a concave base rather than a notched base, but it is felt to be a variant on the bifurcate tradition. The three points have triangular blades with excurvate edges, short, wide, straight to slightly expanded stems, and concave bases. They have moderate, tapered shoulders.

Size: Length: 30.5-46.0 mm, Mean 38.5 mm; Width: 12.0-21.0 mm, Mean 17.8 mm; Thickness: 4.5-8.0 mm, Mean 6.3 mm; Stem Length: 8.0-9.5 mm, Mean 8.8 mm; Stem Width: 12.0-19.5 mm, Mean 15.5 mm; Bifurcate Depth: 1.0-3.0 mm, Mean 2.3 mm.

These points may be associated with the St. Albans phase.

<u>Bifurcate</u> <u>Variant</u> <u>4</u> (Plate XXVIIIg). This category consists of two stemmed, bifurcated base points with narrow blades. The blades are triangular with one having straight edges and the other excuvate edges. The stem is straight to expanding and the points have pronounced horizontal shoulders.

Size: Length: 35.0-41.0 mm, Mean 38.0 mm; Width: 18.0-18.5 mm, Mean 18.2 mm; Thickness: 6.0-8.0 mm, Mean 7.0 mm; Stem Length: 8.0-8.5 mm, Mean 8.2 mm; Stem Width: 12.5-15.0 mm, Mean 13.8 mm; Bifurcate Depth: 1.5 mm.

Stratigraphic placement suggests association with the St Albans phase.

<u>Bifurcate</u> <u>Variant</u> <u>5</u> (Plate XXVIIIb). Two points form this class. They are similar to the St. Albans type, but because of a narrower base and different blade configuration, they are, at present, given separate variant status. The point is small with a triangular blade and excurvate edges. Side notching creates moderate horizontal shoulders and a notched base gives the effect of an expanding, earred stem.

Size: Length: 23.5-27.0 mm, Mean 25.2 mm; Width: 18.0-18.5 mm, Mean 18.2 mm; Thickness: 5.0 mm; Stem Length: 6.0-7.0 mm, Mean 6.5 mm; Stem Width: 13.5-15.5 mm, Mean 14.5 mm; Bifurcate Depth: 1.5-2.0 mm, Mean 1.8 mm.

<u>Bifurcate</u> <u>Variant</u> <u>6</u> (Plate XXVIIIc). This class includes the other untyped bifurcated base points. The illustrated specimen is plano-convex in cross section and could best be described as a St. Albans Side Notched type knife.

Size: Length: 45.5 mm; Width: 15.0 mm; Thickness: 5.5 mm; Stem Length: 11.0; Stem Width: 15.0 mm; Bifurcate Depth: 2.0 mm.

The other point (not illustrated) in this class is a small reworked point which has been split and the remaining stem reworked into the typical earred bifurcated form. The blade is triangular with excurvate edges.

Size: Length: 25.0 mm; Width: 16.0 mm; Thickness: 6.0 mm; Stem Length: 7.5 mm; Stem Width: 9.5 mm; Bifurcate Depth: 1.5 mm.

The point was recovered from the backdirt of a backhoe cut.

Bifurcated Bases, Unclassed. A total of 29 bifurcated bases were recovered that lacked any shoulder or side notching remnants which might have enabled assignment to one of the bifurcate types above.

Kirk Corner Notched Cluster

This cluster takes its name from the Kirk Corner Notched type described by Coe (1964:69-70) and from the Large and Small Varieties described by Broyles (1966:19, 21, 1971:63, 65). The points placed in this category were felt to share a majority of attributes and to differ in only a few. Stratigraphically at least one point of each of the variants was recovered from Stratum VIII in soil horizons X B21b or X B22b, effectively sealed from the bifurcated point horizons above. The radiocarbon date of 7380 B.C. ± 250 yr from Feature 212 places this cluster earlier than the St. Albans phase and, within the one sigma range, the same age as Zone 20 at the St. Albans site which contained the Kirk Corner Notched, Small Variety type. Discussion of the relationship of the Kirk Cluster and the Palmer Corner Notched type is presented below under the heading of the latter. A total of

29 points comprise this cluster at Rose Island.

Broyles (1969a:31) noted that at the St. Albans site in the period from 8000-7000 B.C. there were a larger number of artifacts made from non-Kanawha Black Flint. Between 7000-6000 B.C. the use of black flint increased to over 90%. Turnbaugh (1973:68) suggests, in viewing the survey material of the West Branch of the Susquenana River, that the trend towards an increased use of locally available cherts can be viewed as a hallmark of the Early Archaic. At Rose Island there is no appreciable shift in the use of cherts over time; even the earliest point type, the Hardway-Dalton, is of local black chert. There is, however, one exception; all of the points in the type Kirk Variant 4 are of tan and light gray chert. In that these are the large variants, it is possible that the shift in material reflects the lack of available large black chert nodules.

As discussed in Chapter II, it is felt that Strata VIII and XI are stratigraphically distinct only in the areas of Units A, C, and part of D. If towards the top of the levee, the Kirk material remained on the same surface occupied a short time later by the St. Albans phase, mixing of earlier material with later would occur as is apparently the case (Tables 11-13).

Kirk Variant 1 (Plate XXIXa). Points of this type have triangular blades with excurvate edges which in over one half of the specimens are serrated. They are corner notched and have a slightly excurvate base. Basal grinding occurs on two specimens. Two points appear to have been reworked and one of these appears to be a reworked point fragment (illustrated specimen, top right). There are seven points in the sample.

Plate XXIX. Kirk Corner Notched Type Projectile Points/ Knives, Variants

a. Kirk Variant 1

b. Kirk Variant 2

c. Kirk Variant 3

d. Kirk Variant 5

e. Kirk Variant 4

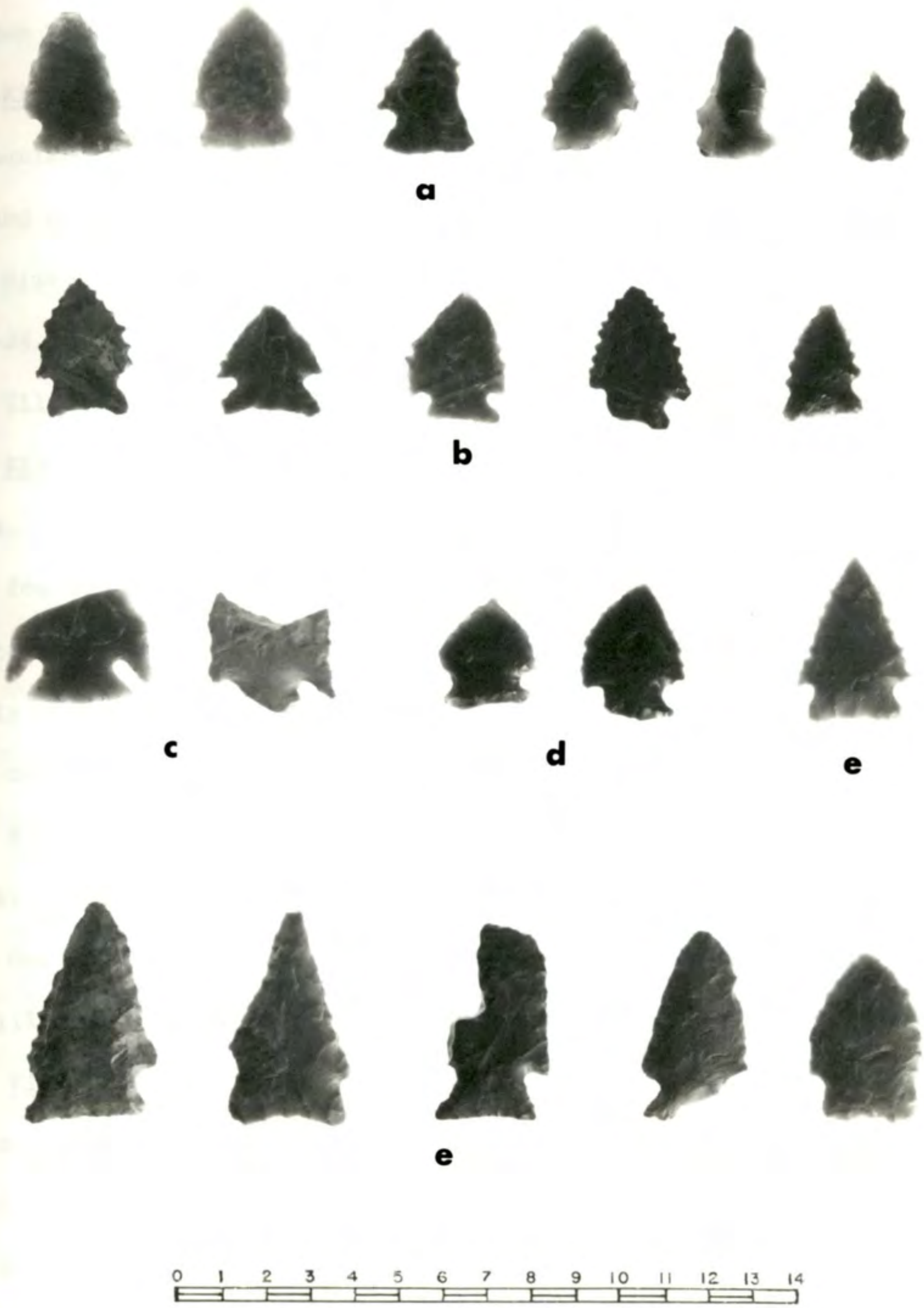


Plate XXIX

Size: Length: 21.0-41.5 mm, Mean 31.4 mm; Width: 14.5-24.0 mm, Mean 20.1 mm (6 artifacts); Thickness: 5.5-9.0 mm, Mean 6.9 mm.

Illustrated specimen a2 was recovered from soil horizon X B22b near Feature 212; illustrated specimen a3 was recovered from soil horizon X B21b.

Kirk Variant 2 (Plate XXIXb). Seven artifacts of this class had triangular blades with excurvate serrated edges. They are corner notched and have incurvate bases. Three specimens have ground bases.

Size: Length: 26.0-33.0 mm, Mean 29.2 mm (5 artifacts); Width: 18.0-24.5 mm, Mean 21.6 mm; Thickness: 5.0-8.0 mm, Mean 6.1 mm.

Illustrated artifact b1 was recovered from soil horizon X B21b.

Kirk Variant 3 (Plate XXIXc). There are four artifacts in this class. The point would have been large, but no complete specimens were found. One broken specimen has been reworked to an off-center point (not illustrated). The blade is serrated and the points are deeply corner notched and have an excurvate base. Three specimens have basal grinding.

Size: Length: --; Width: 25.0-35.0 mm, Mean 29.5 mm (3 artifacts); Thickness: 6.0-7.0 mm, Mean 6.4 mm.

One unillustrated fragment was recovered from soil horizon X B22b and illustrated specimen c2 came from excavation level 9 of Unit B.

Kirk Variant 4 (Plate XXIXe). This class comprises the larger variants of the Kirk Corner Notched type and is represented by eight specimens. The blades are triangular with straight to excurvate edges. One has incurvate edges due to retouch and serrations occur on two specimens. The points are corner notched and the bases are straight to incurvate. Two specimens have basal grinding.

Size: Length: 37.5-50.5 mm, Mean 44.0 mm (5 artifacts); Width: 24.0-30.0 mm, Mean 27.2 mm (6 artifacts); Thickness: 5.0-8.5 mm, Mean 6.6 mm (8 artifacts).

Illustrated specimen e1 was recovered from soil horizon X Alb in Unit D, e3 and e4 from soil horizon X B21b in Unit D, and an unillustrated specimen came from Feature 216.

Kirk Variant 5 (Plate XXIXd). Two specimens form this class. The blade is triangular with excurvate edges, and the points are side notched and have unfinished bases.

Size: Length: 25.0-31.5 mm, Mean 28.2 mm; Width: 22.5-24.0 mm, Mean 23.2 mm; Thickness: 6.5-8.0 mm, 7.2 mm.

Illustrated specimen d1 was recovered from soil horizon X B22b in Unit A.

Other Projectile Points/Knives

Nineteen other projectile points were divided into six types or classes. The samples are unfortunately small and their stratigraphic placement may suggest disturbance or redeposition.

Hardaway-Dalton (Coe 1964:64) (Plate XXXa). One specimen of this type was recovered from the St. Albans horizon in Unit D. The blade has been reworked, reducing its length, and it is broad with serrated edges. The base is concave and, along with the shallow side notches, is heavily ground.

Size: Length: 34.5 mm; Width: 25.0 mm; Thickness: 7.5 mm.

This is the earliest point type recovered at Rose Island. Material of comparable age and earlier have been recovered elsewhere in the Little Tennessee River valley, but only in surface or redeposited contexts.

Plate XXX. Other Projectile Points/Knives

a. Hardaway-Dalton

b. Decatur

c. Kirk Stemmed Variant

d. Palmer Corner Notched

e. Shallow Side Notched

f. Big Sandy

Plate XXX

Decatur (Cambron 1957:17, Bell 1960:28; Cambron and Hulse 1969: A-31) (Plate XXXb). One point of this type was recovered from Stratum VII-A in Unit C. The example is small with an incurvate, serrated, triangular blade. It is corner notched and has a ground base. The blade edges are beveled on one edge producing a rhomboid cross-section.

Size: Length: 31.5 mm; Width: 24.0 mm; Thickness: 5.0 mm.

This type has been assumed to have an Early Archaic association and its placement in the LeCroy horizon at Rose Island suggests a date of 6300 B.C. or earlier.

Kirk Stemmed Variant (Plate XXXc). Two specimens may be variants of the established Kirk Stemmed type (Coe 1964:70; Broyles 1966:21, 1971:67). The points have long blades with deeply serrated, excurvate edges. The stems are expanded and the base unfinished in the case of illustrated specimen c1. Illustrated specimen c2 has a slight notch formed by the removal of a single flake in the center of the basal edge. If intentional, this may foreshadow the bifurcate tradition; Broyles (1971:67) observed that the point type occurred above Kirk Corner Notched and below St. Albans Side Notched types.

Size: Length: 34.0-44.0 mm, Mean 39.0 mm; Width: 18.0-21.5 mm, Mean 19.8 mm; Thickness: 5.5-7.0 mm, Mean 6.2 mm; Stem Length: 8.0-9.0 mm, Mean 8.5 mm; Stem Width: 15.0-16.5 mm, Mean 15.8 mm.

Stratigraphic placement of these two artifacts is not diagnostic; one occurred in the LeCroy horizon and the other was recovered from the profile cut in square 350 R 80.

Palmer Corner Notched (Coe 1964:67,69) (Plate XXXd). Ten artifacts of this type were recovered. The point type has a narrow triangular blade with deeply serrated edges. It is corner notched with a straight to incurvate, heavily ground base. The basal width is generally greater than the shoulder width.

Size: Length: 26.0-41.0 mm, Mean 32.8 mm (6 artifacts); Shoulder Width: 16.0-25.5 mm, Mean 19.1 mm (7 artifacts); Basal Width: 17.0-24.0 mm, Mean 21.1 mm (7 artifacts), Thickness: 4.5-8.0 mm, Mean 6.3 mm (10 artifacts).

Only one specimen came from the Kirk horizon and the remainder were scattered through the LeCroy and St. Albans horizons. Unfortunately, this helps very little in tying down the relation of this type to the other Early Archaic types in Tennessee. Palmer points are widespread in eastern Tennessee, and in the lower Little Tennessee River valley there are few sites that have not produced scattered examples. They occur in both ridge and alluvial bottom context and Rose Island is the closest approximation to a stratified context in Tennessee.

Coe's (1964:70) excavations at the Hardaway site suggest that the Kirk Corner Notched type evolved from the Palmer type. Level III at the Hardaway site contained 19 Palmers and nine Kirk Corner Notched point types (Coe 1964: Table 7). Unfortunately, Level III is an arbitrary excavation level and can only roughly be correlated with the natural stratigraphy; also, Coe's published analysis was preliminary and did not include data recovered in 1958 and subsequent years. On the available evidence, however, it appears that perhaps little time separated the two types. Broyles (1971:63) observed that at the St. Albans site the Kirk Corner Notched, Small Variety types are closer in size to Coe's Palmer Corner Notched type but lack the basal grinding.

On the available evidence, what is suggested is that little time was involved in the attribute changes of the corner notched points of the Charleston Corner Notched (Broyles 1971:56-57), Palmer, and Kirk types. The consistency of the radiocarbon dates is striking. Within the one sigma range the dates from the Rose Island Kirk horizons (Strata VIII and XI) (see below) and the dates from the St. Albans site for the Charleston Corner Notched (7900 B.C. ± 500 yr) and the Kirk Corner Notched, Large Variety (6900 B.C. ± 320 yr) and 6850 B.C. ± 320 yr) are very close, and at the two sigma level, are the same. At the Richmond Hill site on Staten Island, New York, a radiocarbon date of 7410 B.C. ± 120 yr was derived from a hearth in a zone containing three Palmer Corner Notched points (Ritchie and Funk 1973:39). Subsequent examination of the Richmond Hill assemblage by the author suggests that these points (Ibid.:Fig. 3:1-3) are not Palmers but are Kirk Corner Notched variants similar to the Rose Island Kirk Variant 1. Slight basal grinding occur on only one of the three points. A fourth corner notched point (Ibid.:Fig. 3:4) does not have basal grinding and should be classed in the Kirk Corner Notched cluster as well.

At the Sheep Rock Shelter in Pennsylvania, the zone just below the horizon containing a Kirk Corner Notched point was dated 6920 B.C. ± 320 yr (Michels and Smith 1967:58). The date of 5100 B.C. ± 250 yr from the horizon containing the Kirk point is probably too late. At the Fifty site near Front Royal, Virginia, a radiocarbon date of 7300 B.C. ± 300 yr (Gardner 1974:mimeographed supplement) was obtained within a fragipan horizon between the rhyolite side notched Kirk Serrated points and the somewhat lower Palmer Corner Notched variant.

The sequence of Palmer types to Kirk types appears to be repeated at several sites and the types should be viewed as the two ends of a continuum involving a relatively short period of time. It was hoped that excavation of Stratum XI at Rose Island would provide additional data on the sequence, but unfortunately no diagnostic material was recovered. It is believed that the earliest occupations at Rose Island included peoples manufacturing corner notched points that can be classed as the Palmer type. The Kirk variants show a close affinity to the Palmer type and are probably closely related temporally. The distribution of Palmer types in the higher St. Albans and LeCroy horizons is attributed to the same aboriginal disturbance described for the Kirks.

Big Sandy (Cambron and Hulse 1960:17; Cambron and Hulse 1969: A-10) (Plate XXXf). One basal fragment of a small side notched point resembles this established type. The base is incurvate and heavily ground.

Size: Basal Width: 20.0 mm.

The point fragment was recovered from Stratum VII-C in Unit A. This type is thought to be earlier than the corner notched variants and was dated near 10,000 B.P. at Stanfield-Worley Bluff Shelter (DeJarnette et al. 1962).

Shallow Side Notched (Plate XXXe). Four basal fragments of shallow side notched points with straight bases were recovered from the St. Albans horizons. One example had slight basal grinding.

Size: Length: --; Width: 21.0-26.5 mm; Mean 23.7 mm; Thickness: 4.5-11.5 mm, Mean 7.0 mm.

Side or Corner Notched Basal Fragments. Five point fragments could be classed no further than this. Two were recovered from the Kirk, two from the St. Albans, and one from the LeCroy horizons.

Broken Projectile Points/Knives, Unclassed. A total of 87 tips, midsections and barbs could not be fitted into any of the above categories.

Other Chipped Stone

The projectile points/knives discussed above are the only artifacts that reflect change and that are diagnostic of a particular phase at the Rose Island site. Tables 14-16 show the distribution of other chipped stone by archaeological horizon and excavation level. It appears that the rest of the lithic assemblage remained relatively unchanged during the bifurcate phases. Some of the artifact categories occurred in the Kirk horizons and in the Kanawha horizon, but the samples from both of these periods are inadequate for comparison with the abundant assemblages of the bifurcate horizons.

The artifact categories used in classing the other chipped stone material are both functional and descriptive. The use of functional categories attempts to follow the more conventional use of these terms in the literature (cf. Irwin and Wormington 1970).

Biface Variant 1 (Plate XXXIa). Five bifaces were placed in this descriptive category. They are thin and ovate, with retouch along one edge.

Size: Length: 28.5-60.5 mm, Mean 49.6 mm; Width: 25.0-42.0 mm, Mean 33.5 mm; Thickness: 6.0-8.0 mm, Mean 6.9 mm.

Table 14. Distribution of other chipped stone artifacts by archaeological horizon, Units A and C.

Category	Archaeological Horizon									
	VII A No.	VII B No.	VII C No.	VII D No.	VII E No.	VII F No.	VII G No.	VIII No.	XI No.	Totals No.
Unidentifiable Broken Proj. Pt./Knives	13	8	14	1			1	3		40
Biface Variant 1	1	1	1	1						4
Biface Variant 2	3	1	1				1			6
Biface Variant 4	5		3							8
Biface Variant 6			1							1
Biface Variant 7		1	1							2
Biface Variant 8	1									1
Sidescraper Variant 1	11	3	8		2		1	2		27
Sidescraper Variant 2	5	1	4	1	1			1		13
Sidescraper Variant 3	2		2							4
Sidescraper Variant 4		1								1
Oval Scrapers	4	2	4				1			11
End Scraper Variant 1			1							1
End Scraper Variant 2	1	1	1							3

Table 14. (continued)

Category	VII A No.	VII B No.	VII C No.	VII D No.	VII E No.	VII F No.	VII G No.	VIII No.	XI No.	Totals No.
End Scraper Variant 3	1	1						1		3
End Scraper Variant 4	1									1
End Scraper Variant 5	1									1
End Scraper Variant 6	2	1	2							5
End Scraper Variant 7			2				1			3
End Scraper Variant 8	1									1
End Scraper, Broken	1	1	2					1		5
Drill			1					1		2
Unifacial Perforator	1	1	1					1		4
Spokeshave	1									1
Graver	7		4	2				1		14
Denticulate	1									1
Blade-like Flakes	13	2	5		1			2		23
Unidentified Worked Cryptocrystalline	12	4	9	1	3			4		33
Utilized Flakes	35	10	20	3	4		1	6	1	80

Table 14. (continued)

Category	VII A No.	VII B No.	VII C No.	VII D No.	VII E No.	VII F No.	VII G No.	VIII No.	XI No.	Totals No.
Utilized Chunky Core	1									1
Total Other Chipped Stone Artifacts	124	39	87	9	11		6	23	1	300
Flakes	8480	1651	5105	584	429	112	16	946	3	17326
Chunky Core Fragmants	696	165	563	52	65	27	2	82		1652
Total Débitage	9176	1816	5668	636	494	139	18	1028	3	18978

Table 15. Distribution of other chipped stone artifacts by archaeological horizon and excavation level, Units B and H.

Category	Archaeological Horizon and Excavation Level											
	V 1	V 2	VII 3	VII 4	VII 5	VII 6	VII 7	VII 8	VII 9	VII 10	VII 11	TOTALS
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Unidentifiable Broken Proj. Pt./Knives			5	6	4	3	2		1			21
Biface Variant 2			1		1	1						3
Biface Variant 3				1	2	1						4
Biface Variant 4					1							1
Biface Variant 6				1								1
Biface Variant 7		1										1
Biface Variant 8			1					1				2
Sidescraper Variant 1		2	4	2	3	2	2	1				16
Sidescraper Variant 2			1	2	1							4
Sidescraper Variant 3				1	1	1	1					4
Sidescraper Variant 4				1								1
Oval Scraper				1								1
End Scraper Variant 1			1		1		1					3
End Scraper Variant 2			1				1			1		3

Table 15. (continued)

Category	V 1 No.	V 2 No.	VII 3 No.	VII 4 No.	VII 5 No.	VII 6 No.	VII 7 No.	VII 8 No.	VII 9 No.	VII 10 No.	VII 11 No.	Totals No.
End Scraper Variant 4				1								1
End Scraper Variant 6						1						1
Spokeshave				1	1							2
Graver		1	1	1	1							4
Blade-like Flakes			3	5	6	5	1	2				22
Unidentified Worked Cryptocrystalline				1	1							2
Utilized Flakes	1	4	4	11	10	4	3					37
Total Other Chipped Stone Artifacts	1	8	22	35	33	18	11	4	1	1		134
Flakes	120	289	674	1163	1192	829	553	396	155	52	4	5427
Chunky Core Fragments	9	49	78	139	124	110	68	44	13	1		635
Total Débitage	129	338	752	1302	1316	939	621	440	168	53	4	6062

Table 16. Distribution of other chipped stone artifacts by archaeological horizon and excavation Level, Unit D.

Category	Archaeological Horizon and Excavation Level									
	VII 1 No.	VII 2 No.	VII 3 No.	VII 4 No.	VII 5 No.	VII 6 No.	VII 7 No.	VII 8 No.	VII 9 No.	TOTALS No.
Unidentifiable Broken Proj. Pr./knive	2		2	4	3	3	3	3	1	21
Biface Variant 1			1							1
Biface Variant 2				1					1	2
Biface Variant 4			1							1
Biface Variant 5			1							1
Biface Variant 6		1								1
Sidescraper Variant 1	1	1	3	1			2			8
Sidescraper Variant 2	1	1	2	1						5
Sidecrraper Variant 3			1							1
Oval Scraper	2		1	1		1	1			6
End Scraper Variant 2			1							1
End Scraper Variant 4			1							1
End Scraper Variant 5			1							1
End Scraper, Broken		1			1					2
Drill				1						1
Graver		1	1	1		1	1			5
Blade-like Flakes	1	3		3	1		2			10
Unidentified Worked Cryptocrystalline	2	2	2		1	3	2			12
Utilized Flakes	3	1	4	3	4	6	1			22

Table 16. (continued)

Category	VII 1 No.	VII 2 No.	VII 3 No.	VII 4 No.	VII 5 No.	VII 6 No.	VII 7 No.	VII 8 No.	VII 9 No.	TOTALS No.
	Archaeological Horizon and Excavation Level									
Total other chipped stone Artifacts	12	11	22	16	10	14	12	3	2	102
Flakes	434	725	700	716	617	486	284	145	67	4174
Chunky Core Fragments	84	106	118	119	91	73	39	27	10	667
Total Débitage	518	831	818	835	708	559	323	172	77	4841

Plate XXXI. Other Chipped Stone Artifacts, Bifaces

a. Biface Variant 1

b. Biface Variant 2

c. Biface Variant 3

d. Biface Variant 5

e. Biface Variant 7

f. Biface Variant 4

g. Biface Variant 8

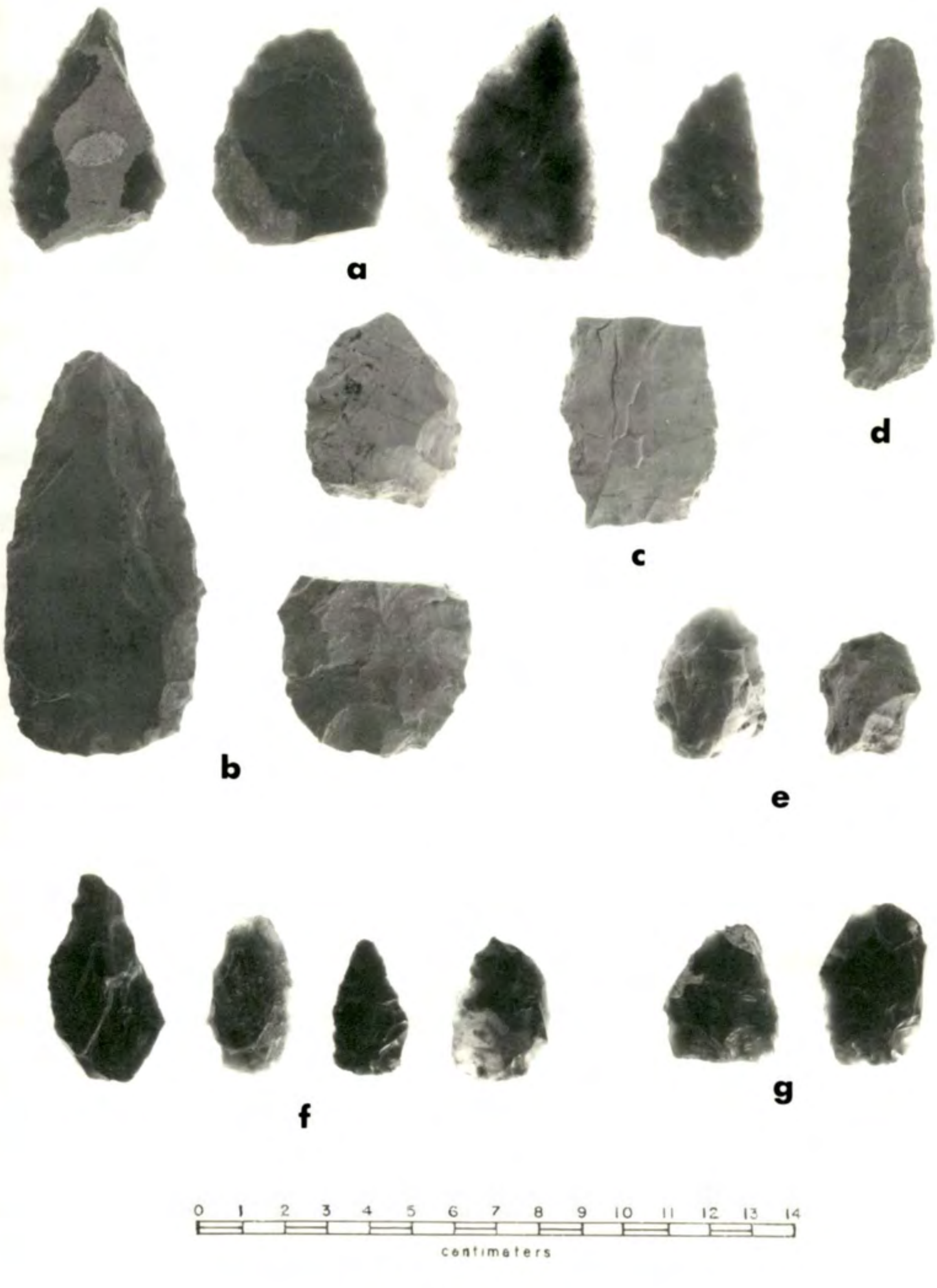


Plate XXXI

Biface Variant 2 (Plate XXXIb). This category is comprised of medium to large ovate bifaces. There are 11 artifacts in this class. These artifacts may be blanks or preforms in that the workmanship is rough.

Size: Length: 31.0-96.0 mm, Mean 53.2 mm (4 artifacts); Width: 22.0-48.0 mm, Mean 35.5 mm (11 artifacts); Thickness: 4.0-13.5 mm, Mean 9.3 mm (11 artifacts).

Biface Variant 3 (Plate XXXIc). These are medium to large bifaces with an incurvate or straight base. As with Variant 2, these artifacts may be unfinished blanks. There were four artifacts of this class recovered.

Size: Length: --; Width: 25.0-37.5 mm, Mean 29.9 mm; Thickness: 5.5-9.0 mm, Mean 7.6 mm.

Biface Variant 4 (Plate XXXIf). These are crude, medium sized ovate to lanceolate bifaces. They may have functioned as knives or may be blanks or preforms. Ten of these were recovered.

Size: Length: 31.5-50.5 mm, Mean 36.2 mm; Width: 18.0-26.5 mm, Mean 21.6 mm; Thickness: 6.5-12.5 mm, Mean 8.9 mm.

Biface Variant 5 (Plate XXXId). One large lanceolate biface forms this class. The workmanship suggests that this is a finished artifact.

Size: Length: 84.5 mm; Width: 22.5 mm; Thickness: 9.5 mm.

Biface Variant 6. This category is comprised of four broken, unclassed bifaces.

Biface Variant 7 (Plate XXXIe). Three artifacts form this class which consists of unfinished bifaces with an incipient stem.

Size: Length: 32.0-37.0 mm, Mean 34.0 mm; Width: 20.0-27.5 mm, Mean 23.8 mm; Thickness: 6.5-12.0 mm, Mean 9.3 mm.

Biface Variant 8 (Plate XXXIg). Four artifacts form this class. These artifacts appear to be less finished than those of Variant 4 and should be considered as early stages of the continuum toward finished artifacts.

Sidescraper Variant 1 (Plate XXXIIa). This category consists of medium to large flakes with retouch on principally one edge. A total of 52 specimens were recovered, two of these from the Kirk horizon.

Size: Length: 24.5-61.0 mm, Mean 39.4 mm (5 artifacts); Width: 15.5-38.5 mm, Mean 24.7 mm (52 artifacts); Thickness: 3.5-14.0 mm, Mean 7.3 mm (52 artifacts).

Sidescraper Variant 2 (Plate XXXIIb). This category consists of blade-like flakes with unilateral or bilateral retouch. A total of 24 specimens were recovered, one was from the Kirk horizons. Two specimens were bipolar psuedo-blades (see bipolar lithics below).

Size: Length: 37.5-59.5 mm; Mean 47.6 mm (17 artifacts); Width: 13.5-30.0 mm, Mean 19.7 mm (22 artifacts); Thickness: 3.5-13.0 mm, Mean 6.6 mm (22 artifacts).

Sidescraper Variant 3 (Plate XXXIIc). This category consists of thick oval or rectangular flakes with retouch on the wide distal end. There are nine artifacts in this category.

Size: Length: 24.0-33.0 mm, Mean 29.7 mm; Width: 16.0-30.0 mm, Mean 20.9 mm; Thickness: 4.5-12.0 mm, Mean 7.6 mm.

Sidescraper Variant 4 (Plate XXXIId). This category consists of two large unifacial flakes exhibiting retouch on all edges. Illustrated specimen d1 may have functioned as an end scraper as well. Specimen d2 is heavily patinated and is reminiscent of the weathered artifacts common on many surface sites on the Carolina Piedmont.

Plate XXXII. Other Chipped Stone Artifacts, Sidescrapers

a. Sidescraper Variant 1

b. Sidescraper Variant 2

c. Sidescraper Variant 3

d. Sidescraper Variant 4

Plate XXXII

Size: Length: 59.0 mm; Width: 28.5-32.0 mm, Mean 30.2 mm; Thickness: 7.5-10.0 mm, Mean 8.8 mm.

Oval Scraper (Plate XXXIII). This artifact type is a small oval to circular biface. A total of 18 were recovered and six (Plate XXXIIIb) of these were produced by the bipolar flaking technique (see below).

A similar artifact class occurred at the H.F. Hollowell site on Staten Island in apparent association with Kanawha Stemmed points. One measured 30.5 mm x 22.0 mm x 9.5 mm, and Hollowell (Personal communication) reports approximately 15 were recovered.

Size: Length: 20.0-36.0 mm, Mean 25.8 mm; Width: 14.0-30.0 mm, Mean 23.6 mm; Thickness: 4.5-10.5 mm, Mean 8.2.

End Scraper Variant 1 (Plate XXXIVa). The four artifacts in this class are triangular flakes with steep retouch on the blunt end and with graver points on one or two sides. Illustrated specimen a4 is a ridge area pièce esquillée (see bipolar lithics below). The type appears to be associated with the St. Albans phase.

Size: Length: 21.0-28.0 mm, Mean 24.0 mm; Width: 21.0-23.5 mm, Mean 22.4 mm; Thickness: 5.0-8.0 mm, Mean 6.5 mm.

Although microscopic examination was not performed, no wear was discerned on the scraper bits of this type, nor with any of the other end scraper variants.

End Scraper Variant 2 (Plate XXXIVb). This category consists of short, thick flakes or small blocky core fragments with one area of steep retouch. A total of seven artifacts comprise this class.

Size: Length: 20.0-27.0 mm, Mean 23.6 mm; Width: 15.5-26.0 mm, Mean 21.5 mm; Thickness: 8.0-13.0 mm, Mean 9.6 mm.

Plate XXXIII. Other Chipped Stone Artifacts, Oval Scrapers

a. Oval scrapers

b. Bipolar oval scrapers

Plate XXXIV. Other Chipped Stone Artifacts, End Scrapers

a. End Scraper Variant 1

b. End Scraper Variant 2

c. End Scraper Variant 3

d. End Scraper Variant 4

e. End Scraper Variant 5

f. End Scraper Variant 6

g. End Scraper Variant 7

h. End Scraper Variant 8

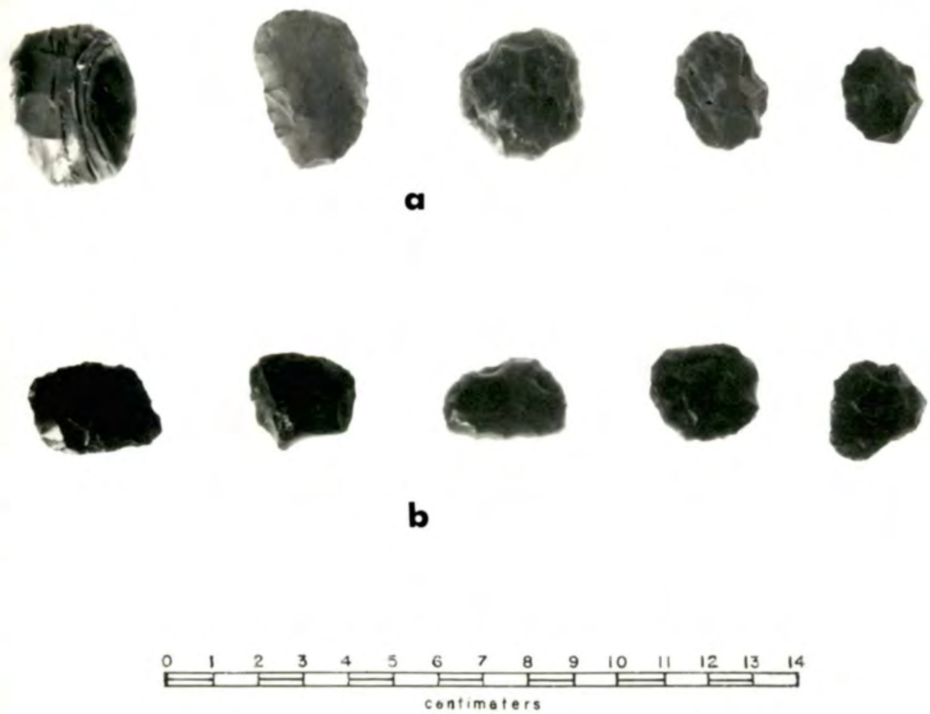


Plate XXXIII

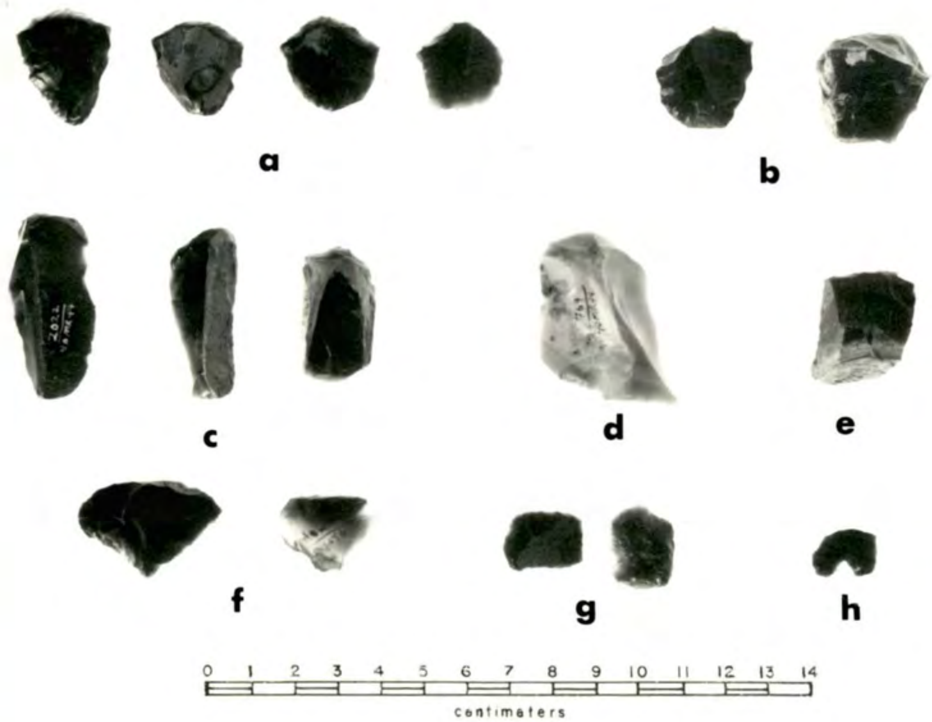


Plate XXXIV

End Scraper Variant 3 (Plate XXXIVc). Three artifacts comprise this class of thick blade-like flakes with steep retouch on the distal end. Illustrated specimen cl is from the Kirk horizon.

Size: Length: 32.5-43.5 mm, Mean 39.0 mm; Width: 16.0-20.0 mm, Mean 17.8 mm; Thickness: 7.0-9.5 mm, Mean 8.2 mm.

End Scraper Variant 4 (Plate XXXIVd). Three artifacts comprise this class of end scrapers on large, thick, irregular flakes. The scraper edge occupies the smallest edge. The type appears to be associated with the LeCroy phase.

Size: Length: 38.0-47.0 mm, Mean 43.3 mm; Width: 22.5-32.5 mm, Mean 27.5 mm; Thickness: 7.0-13.0 mm, Mean 10.2 mm.

End Scraper Variant 5 (Plate XXXIVe). Two end scrapers were manufactured on the sharp edges of blocky core fragments. The type appears to be associated with the LeCroy phase.

Size: Length: 21.5-27.0 mm, Mean 24.2 mm; Width: 21.0-26.0 mm, Mean 23.5 mm; Thickness: 10.0-12.0 mm, Mean 11.0 mm.

End Scraper Variant 6 (Plate XXXIVf). Six end scrapers were made on the long edges of small irregular flakes.

Size: Length: 22.0-25.5 mm, Mean 23.7 mm; Width: 19.5-33.0 mm, Mean 25.5; Thickness: 3.5-8.5 mm, Mean 6.1 mm.

End Scraper Variant 7 (Plate XXXIVg). Three end scrapers were made on the lateral edges of pièces esquillées. These appear to be associated with the St. Albans phase.

Size: Length: 13.5-20.5 mm, Mean 16.2 mm; Width: 16.0-19.5 mm, Mean 17.5 mm; Thickness: 6.0-6.5 mm, Mean 6.2.

End Scraper Variant 8 (Plate XXXIVh). One broken bifurcated base point was reworked to an end scraper.

Size: Length: 11.5 mm; Width: 15.5 mm; Thickness: 3.0 mm.

End Scraper, Broken. Seven fragments of end scrapers were identified by the presence of steep retouch.

Drill (Plate XXXVa). Three artifacts comprise this class of bifaces with a rod-like blade, blunt tip, and a degree of edge wear along the sides especially towards the tip. Illustrated specimen a2 was recovered from the Kirk horizon and the other two artifacts were associated with the St. Albans phase.

Size: Length: 26.5-37.5 mm, Mean 32.0 mm (2 artifacts); Width: 11.5-15.0 mm, Mean 13.2 mm (3 artifacts); Thickness: 5.0-6.5 mm, Mean 5.8 mm (3 artifacts).

Unifacial Perforator (Plate XXXVb). This category consists of flakes with a single tapering projection exhibiting retouch. Four artifacts were recovered and illustrated specimen b1 was recovered from soil horizon X B22b of the Kirk horizon.

Size: Length: 23.0-31.5 mm, Mean 28.2 mm; Width: 20.0-26.5 mm, Mean 22.5 mm; Thickness: 4.5-8.5 mm, Mean 6.5 mm.

Spokeshave (Plate XXXVc). Three artifacts of this class are flakes that exhibit one or two concavities. This tool type is called a Notch by Irwin and Wormington (1970:29), but has been referred to more often in the literature of the southeast as a spokeshave.

Size: Length: 27.0-32.5 mm, Mean 29.8 mm; Width: 14.0-26.5 mm, Mean 20.5 mm; Thickness: 3.0-6.0 mm, Mean 4.7 mm. Concavity Diameter: 10.0-12.5 mm, Mean 11.2 mm; Concavity Depth: 1.5-3.0, Mean 2.5 mm.

Graver (Plate XXXVd). This class is comprised of 23 small to medium irregular shaped flakes with one or more spurs formed by localized retouch. These occurred in all phases. One specimen (Plate XXXVe) is made on a projection on the lateral edge of an opposing ridge pièce

Plate XXXV. Other Chipped Stone Artifacts

a. Drills

b. Unifacial Perforators

c. Spokeshaves

d. Gravers

e. Graver on an opposing ridge pièce esquillée

Plate XXXVI. Other Chipped Stone Artifacts

a. Blade-like Flakes

b. Psuedo-blades

c. Psuedo-burin Spalls

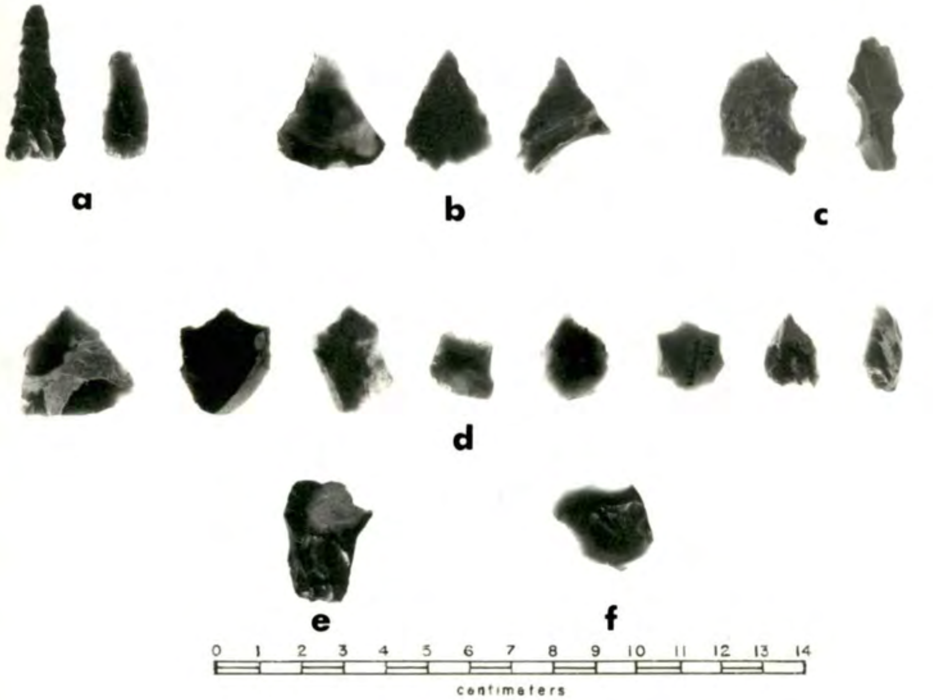


Plate XXXV

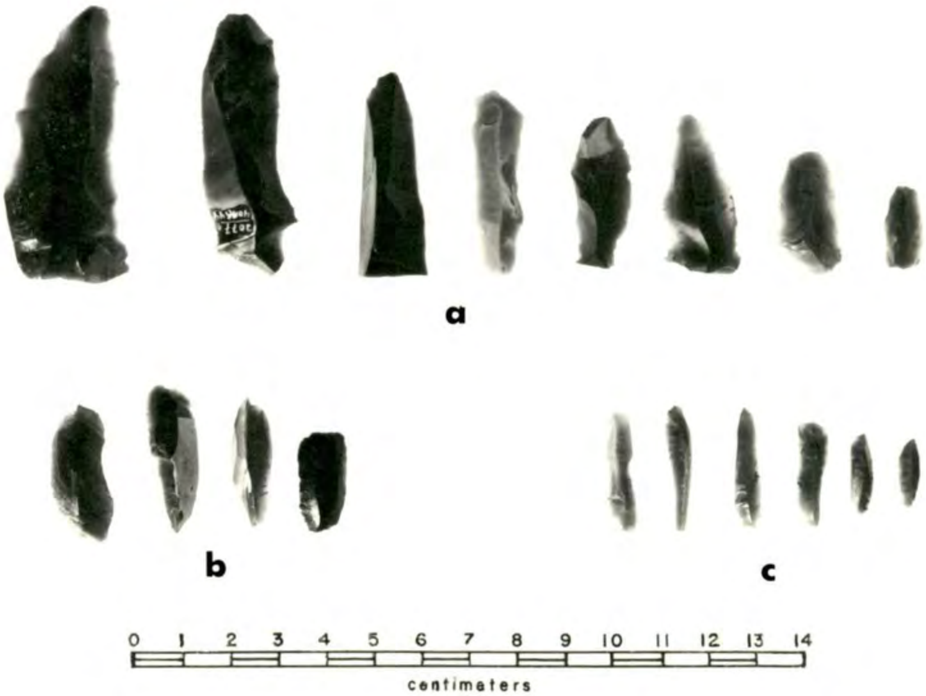


Plate XXXVI

esquillée (see below).

Denticulate (Plate XXXVf). One flake has a series of single flakes removed along one edge creating a serrated working edge. It is associated with the St. Albans phase.

Blade-like Flake (Plate XXXVIa). A total of 63 flakes or flake fragments exhibited blade attributes in their measurements and flake scars. Ten of these, not classed as Sidescrapers Variant 2, showed localized areas of edge retouch or nibbling.

Size: Length: 18.0-59.5 mm, Mean 33.7 mm (53 artifacts); Width: 8.0-24.0 mm, Mean 14.1 mm (53 artifacts); Thickness: 2.0-10.5 mm, Mean 4.4 mm (53 artifacts).

Illustrated specimens a1 and a2 are the only blades from soil horizon X B22b in the Kirk horizon and are exceptional in their size. The small sample of blade-like flakes relative to the total cryptocrystalline flake sample suggests that this artifact class, as far as the LeCroy and St. Albans phases are concerned, was merely an accidental biproduct of the flaking activities. As White (1963:8) has observed, blade-like flakes occur in almost any assemblage and the use of the term blade should be restricted to the products of a systematic flaking technique.

Unidentified Worked Cryptocrystalline. A total of 48 chipped cryptocrystalline artifacts were unidentifiable as to form or funciton.

Utilized Flakes. A total of 141 amorphous flakes exhibited localized retouch on one or more edges and did not fit into any of the above defined categories. Five of these are bipolar flakes.

Utilized Chunky Core. One chunky core fragment from the LeCroy horizon exhibited use on one of its edges.

Bipolar Lithics

Bardon and Bouyssonie (1906) in their research on the Old World Paleolithic were the first to describe the bipolar flaking technique. The first published recognition and discussion of the technique in North America does not appear, however, until Binford's and Quimby's (1963) research on chipped stone material from the northern Lake Michigan area. Their work was a short time later supplemented by recognition of the technique in Texas and New Mexico (Honea 1965), in Louisiana (Gagliano 1967), in Nova Scotia (MacDonald 1968), and in Arkansas (Morse 1973). Perhaps the most detailed recent study of the techniques is by Kobayashi (1974).

The technique is quite simple. A flint or chert nodule is held in one hand and placed on a large stone. With the other hand another stone is brought down, smashing the nodule. The effect is to remove flakes from the core originating from primary and secondary bulbs of percussion at the top and bottom of the nodule. As MacDonald (1968: 69) observed, the technique enables the utilization of materials too small to be worked by other techniques. The technique is not the best way to produce flakes for subsequent use as they are frequently small and irregular. Quentin Bass (Personal communication) has, however, replicated LeCroy and St. Albans type points using bipolar flakes derived from nodules similar in size to those found at Rose Island. There is disagreement whether the bipolar cores are merely cores or whether they are core tools and the end products of the knapping process (Binford and Quimby 1963:356; Ruthann Knudson, personal communication). Morse (1973:29) observed that it was difficult, if not impossible, to distinguish between the pièces esquillées, cores, and flakes.

Pièces Esquillées

This artifact class is the most common tool type and the end product of the bipolar technique. D. de Sonneville-Bordes and J. Perrot (1956:552) define the artifact as a "...*pièce généralement rectangulaire ou carrée présentant sur les deux bouts, plus rarement sur les quatre cotés, des esquillements parfois* bifaciaux *obtenus par percussion violente*..." This "*percussion violente*" is either produced by the manufacturing process, the position favored here, or, as Tixier (1963:147) suggests, the use of the tools created the battering through such activities as pounding the artifact into a hard surface like bone or wood. Replication experiments by the author, as well as linear percussion marks in the cortex of many cobbles (see Pitted Cobbles below) from Rose Island suggest, as the cobbles and *pièces esquillées* at the Debert site did to MacDonald (1968:105), that the *pièces esquillées* are associated with Pitted Cobbles and were being deliberately produced for use as tools.

The function of this artifact is pretty much speculation. MacDonald (1968:88-90) considered some functional alternatives including use as wedges and slotting tools for use in the groove and splinter technique of working bone, antler, and hard wood. The columnar fractures of manufacture create a burin-like edge which in the apparent absence of real burins at Debert and Rose Island as well, yielded a tool well suited for bone work.

A total of 555 *pièces esquillées* were recovered from the Early Archaic horizons at Rose Island. They have been subdivided into classes following Binford's and Quimby's (1963) classification of bipolar cores. It is felt that these divisions probably do not reflect a deliberate production choice, but instead reflect variables such as quality of material, direction and force of blow, type of material used--ie. flake, nodule, chunky core fragment, and fracture patterns. The divisions were retained for descriptive and classificatory purposes. The distributions of the bipolar lithics are presented in Tables 17-19.

Opposing Ridge Pièces Esquillées (Plate XXXVIIa). This is the most numerous type and the most typical of the defined artifacts. Square or rectangular, the artifact exhibits extensive percussion on opposing ends or occasionally on three or all four sides. It may be either a reduced core or a flake. One example (Plate XXXVIIb) is made from a fragment of a Kirk Corner Notched point. A sample of 200 (16.7%) of this class were measured.

Size: Length: 9.0-39.0 mm, Mean 18.5 mm, Width: 7.0-30.5 mm, Mean 16.7 mm; Thickness: 2.5-11.5 mm, Mean 5.8 mm.

Most of the pièces esquillées from the Debert site were of this type and were slightly larger (Mean Length: 25.5 mm; Mean Width:19.7 mm; Mean Thickness: 7.1 mm) (MacDonald 1968:Table 9). A comparison of the Rose Island opposing ridge pièces esquillées with those of the Middle Woodland horizon at the Icehouse Botton site (Chapman 1973) shows a close correlation (Mean Length: 19.0 mm; Mean Width: 18.0 mm; Mean Thickness: 5.6 mm) that suggests size differences between sites may be principally due to available raw material.

Table 17. Distribution of bipolar lithic artifacts by archaeological horizon, Units A and C.

Category	VII A No.	VII B No.	VII C No.	VII D No.	VII E No.	VII F No.	VII G No.	VIII No.	XI No.	TOTALS No.
	Archaeological Horizon									
Opposing Ridge *Pièces Esquillées*	60	34	74	6	12		2	5	1	194
Ridge Area *Pièces Esquillées*	25	9	19	1	3		2	2		61
Ridge Point *Pièces Esquillées*	15	3	24	5	3			1		51
Broken *Pièces Esquillées*	7	4	8					1		20
Total *Pièces Esquillées*	107	50	125	12	18		4	9	1	326
Psuedo-blade	1		3	1						5
Psuedo-burin Spalls			1							1
Psuedo-cores	84	49	75	6	6		1	5		226
Other Débitage	39	13	25	8	7		1	4		97
Total Bipolar Lithic Artifacts	231	112	229	27	31		6	18	1	655

Table 18. Distribution of bipolar lithic artifacts by archaeological horizon and excavation level, Units B and H.

Category	Archaeological Horizon and Excavation Level									
	V 1 No.	V 2 No.	VII 3 No.	VII 4 No.	VII 5 No.	VII 6 No.	VII 7 No.	VII 8 No.	VII 9 No.	TOTALS No.
Opposing Ridge *Pièces Esquillées*		3	7	21	20	10	9	4	2	76
Ridge Area *Pièces Esquillées*		1	2	3	8	5	1		1	21
Ridge Point *Pièces Esquillées*	1	2	2	7	3	3	1	3		22
Broken *Pièces Esquillées*			1	1			1	1		4
Total *Pièces Esquillées*	1	6	12	32	31	18	12	8	3	123
Psuedo-blade			1							1
Pseudo-burin Spalls		1	2	1	1		2		1	8
Psuedo-cores	3	6	5	28	23	4	13	7	2	91
Other Débitage		2	3	10	9	6	3		1	34
Total Bipolar Lithic Artifacts	4	15	23	71	64	28	30	15	7	257

Table 19. Distribution of bipolar lithic artifacts by archaeological horizon and excavation level, Unit D.

Category	Archaeological Horizon and Excavation Level								
	VII 1 No.	VII 2 No.	VII 3 No.	VII 4 No.	VII 5 No.	VII 6 No.	VII 7 No.	VII 8 No.	TOTALS No.
Opposing Ridge <u>Pièces Esquillées</u>	6	9	13	12	8	11	5	1	65
Ridge Area <u>Pièces Esquillées</u>	1	3	2	2	1	1	2		12
Ridge Point <u>Pièces Esquillées</u>		5	5	6		2	2		20
Broken <u>Pièces Esquillées</u>	1	1	3			2	1	1	9
Total <u>Pièces Esquillées</u>	8	18	23	20	9	16	10	2	106
Psuedo-blade	1	1		1			1		4
Psuedo-burin Spalls									
Psuedo-cores	9	13	18	10	18	4	8	2	82
Other Débitage	4	8	9	6	5	4	2	1	39
Total Bipolar-Lithic	22	40	50	37	32	24	21	5	231

Plate XXXVII. Bipolar Lithics, Pièces Esquillées

a. Opposing Ridge Pièces Esquillées

b. Opposing Ridge Pièce Esquillée on a Kirk Corner Notch Projectile Point/Knife Variant

c. Ridge Area Pièces Esquillées

d. Ridge Point Pièces Esquillées

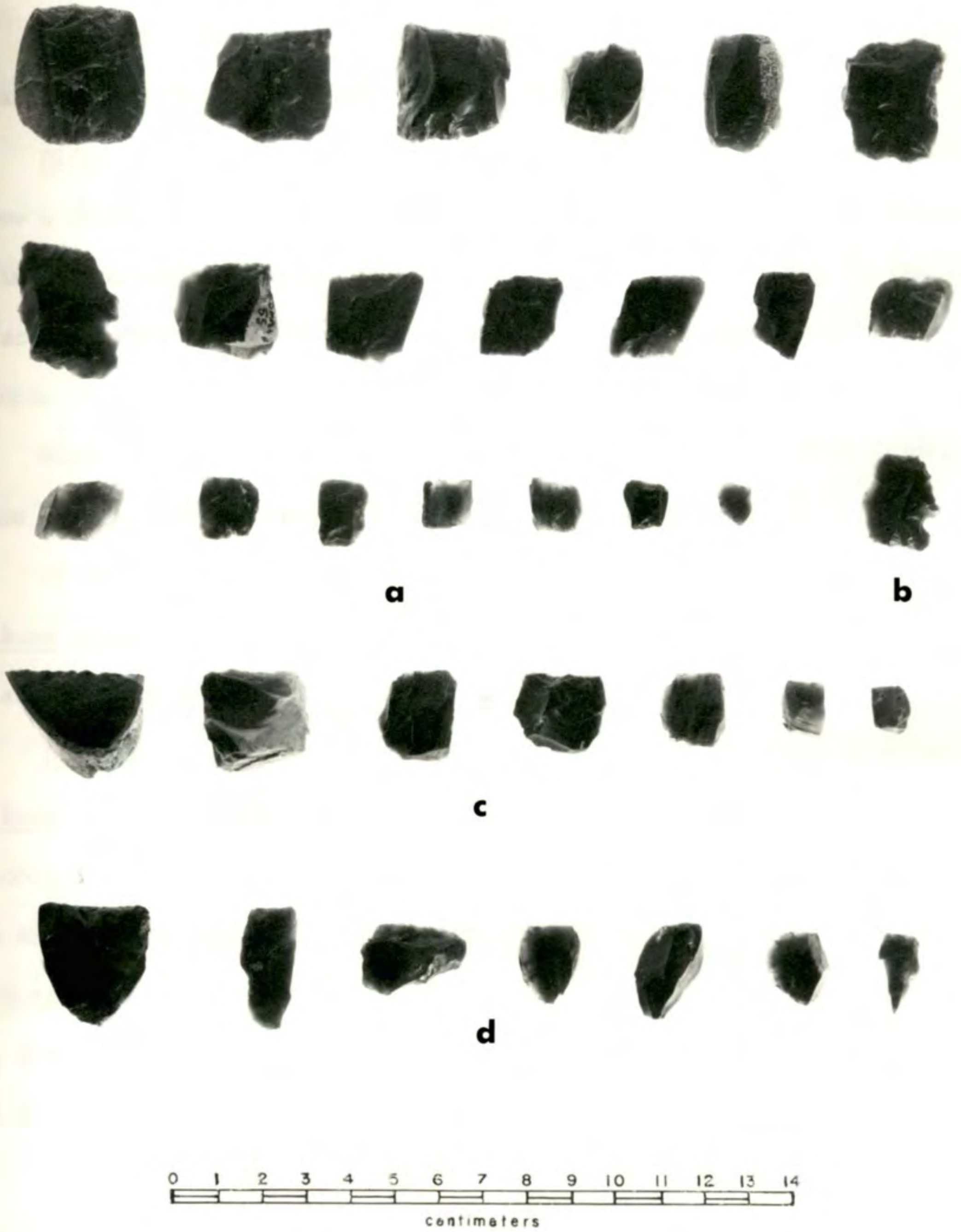


Plate XXXVII

Ridge Area Pièces Esquillées (Plate XXXVIIc). These artifacts are characterized by a single percussion crushed ridge opposite a blunt base formed by cortex or a fracture plane. A sample of 50 (64.9%) of this class were measured.

Size: Length: 11.0-32.0 mm, Mean 19.0 mm; Width: 9.0-33.5 mm, Mean 19.1 mm; Thickness: 4.0-13.5 mm, Mean 7.3 mm.

Ridge Point Pièces Esquillées (Plate XXXVIId). These artifacts have a ridge of percussion opposite the basal zone which is a battered point. The configuration of many of these is probably due to the fracture pattern, one side splitting diagonally to form a point. A sample of 50 (52.6%) of this class was measured.

Size: Length: 9.0-29.0 mm, Mean 20.5 mm; Width: 7.0-26.0 mm, Mean 15.4 mm; Thickness: 3.5-11.5 mm, Mean 7.1 mm.

Of the measured samples of all three classes only six (2%) of the pièces esquillées were of cryptocrystalline material other than local black or gray chert.

Discussion of Pièce Esquillées. MacDonald (1968:90) observed that pièces esquillées at the Debert site clustered significantly on living floors and around hearths as opposed to chipping areas. Unfortunately, no significant correlations were discerned at the Rose Island site. Pièces esquillées were more numerous in Units A, C, and D than in B and H, but the intensity of occupation was also greater. The artifact seems to have been in widespread use on the site at all times.

Data concerning the distribution of pièces esquillées in the eastern United States are lacking basically because the artifacts have gone unrecognized. This is not to say that they occur everywhere; abundant chert resources apparently reduce their frequency. Re-examination of the débitage of many sites would probably turn up examples of bipolar flaking. Cridlebaugh (n.d.a) in her survey of the literature found 19 sites in the United States with reported pièces esquillées, but not in all cases recognized as that (cf. strike-a-lights, Winters 1969). No bipolar material was reported from the St. Albans site (Broyles 1966, 1971) but the débitage has not been analyzed. Examination by the author of a surface sample of the débitage from the LeCroy site in Tennessee identified 19 pièces esquillées. Interestingly, although there is abundant, less fine grained, tan and gray chert present, 16 (84.2%) of the pièces esquillées were manufactured from similar black or gray chert as that of Rose Island. Examination by the author of the Early Archaic assemblage from Staten Island identified one large opposing ridge pièce esquillée (35.5 mm x 22.0 mm) from the LeCroy horizon at Ward's Point. There were six bipolar psuedo-cores in the assemblage from the Richmond Hill site.

Psuedo-blades (MacDonald 1968:182) (Plate XXXVIb). Ten bipolar flakes were recovered that resembled blades in their attributes. They were apparently produced as a columnar fracture in the manufacture of pièces esquillées.

Size: Length: 21.5-38.5 mm, Mean 29.8 mm; Width: 4.0-15.5 mm, Mean 9.8 mm; Thickness: 3.0-7.5 mm, Mean 5.3 mm.

Psuedo-burin Spalls (MacDonald 1968:182) (Plate XXXVIc). This class consists of nine bipolar flakes that have been removed from the edges of pièces esquillées. These take their name from the burin-like nature of the corners of many pièces esquillées created by the removal of flakes.

Size: Length: 15.0-26.5 mm, Mean 21.4 mm; Width: 5.0-7.0 mm, Mean 5.8 mm; Thickness: 2.0-5.0 mm, Mean 3.8 mm.

Psuedo-cores (MacDonald 1968:182) (Plate XXXVIII). This class consists of bipolar cores that lack an apparent working edge at either end. All exhibits degrees of percussion at opposing ends and resemble in many cases, expended cores from blade production. The artifacts are not, however, cores for the production of flakes, but represent various stages and attempts at the production of pièces esquillées. The flake scars are columnar fractures. The small size of some of these are striking and illustrate the use of the bipolar technique for working small nodules. A total of 204 were recovered and they occurred in all cultural phases. A sample of 100 was measured.

Size: Length: 15.0-44-5 mm, Mean 24.5 mm; Width: 5.5-31.0 mm, Mean 16.1 mm; Thickness: 4.5-30.0 mm, Mean 10.9 mm.

Other Bipolar Débitage. This category is a catch-all for flakes and shatter of the bipolar technique. Diagnostic attributes are primarily opposing bulbs of percussion and crushed striking platforms. There are 174 artifacts in this class.

Other Worked Stone

The distribution of other worked stone are presented in Tables 20-22.

Worked Hematite (Goethite) (Plate XXXIX). A total of 152 pieces of this ferromagnesian mineral with ground and faceted surfaces was recovered from the Early Archaic horizons. David Dunn, Department of Geology, University of North Carolina, Chapel Hill, examined samples of the mineral and concluded that the quality was such that it would be better classed as goethite. Some specimens are highly fossiliferous and Dunn suggests their origin may be in the Mississippian period Price Formation. Exami-

Table 20. Distribution of other worked stone artifacts by archaeological horizon, Unit A and C.

Category	Archaeological Horizon									
	VII A No.	VII B No.	VII C No.	VII D No.	VII E No.	VII F No.	VII G No.	VIII No.	XI No.	TOTALS No.
Worked Hematite (Goethite)	40	11	26	2	9			4		92
Unworked Hematite (Goethite)	922	187	514	67	53	35	4	44		1826
Chopper/Scraper	3		4	1	1		1			10
Pitted Cobble	23	6	10	2	4		4	1		50
Hammerstone	23	3	5	1	3			2	1	38
Mano	5									5
Metate	5		2		1		1	2		11
Unclassed, Broken Ground Slate	3	2	1							6
Total Other Worked Stone Artifacts	1024	209	562	73	71	35	10	53	1	2038

Table 21. Distribution of other worked stone artifacts by archaeological horizon and excavation level, Units B and H.

Category	Archaeological Horizon and Excavation Level											
	V 1 No.	V 2 No.	VII 3 No.	VII 4 No.	VII 5 No.	VII 6 No.	VII 7 No.	VII 8 No.	VII 9 No.	VII 10 No.	VII 11 No.	TOTALS No.
Worked Hematite (Goethite)		1	3	3	4	1	2	3				17
Unworked Hematite (Goethite)	31	44	167	320	285	192	87	70	24	6	2	1228
Chopper/Scraper			2	2	5	2	1	2				14
Pitted Cobble	3	2	8	3	12	4	5	3				40
Hammerstone	1			5	5	1	2					14
Mano				1		1	2					4
Metate		2	1	1	1	2						7
Unclassed, Broken Ground Slate					1		1					2
Total Other Worked Stone Artifacts	35	49	181	335	313	203	100	78	24	6	2	1326

Table 22. Distribution of other worked stone artifacts by archaeological horizon and excavation level, Unit D

Category	Archaeological Horizon and Excavation Level									
	VII 1	VII 2	VII 3	VII 4	VII 5	VII 6	VII 7	VII 8	VII 9	TOTALS
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Worked Hematite (Goethite)	2	2	9	8	5	7	3	1	2	39
Unworked Hematite (Goethite)	84	148	134	116	93	83	55	27		740
Chopper/Scraper			1	1	1				1	4
Pitted Cobble	1	2	5	4	1	1	1			15
Hammerstone	4	1								5
Mano		4	1	1						6
Metate				1						1
Total Other Worked Stone Artifacts	91	157	150	131	100	91	59	28	3	810

Plate XXXVIII. Bipolar Lithics, Psuedo-cores

Plate XXXIX. Other Worked Stone Artifacts, worked hematite (Goethite)

Plate XXXVIII

Plate XXXIX

nation of a mineral resources map of the area (Hardeman and Miller 1959) showed potential source areas for this mineral to be fairly numerous and eight were in a 24 mi^2 area.

The mineral was apparently an important part of the assemblages of the Early Archaic horizons at Rose Island. In addition to the specimens exhibiting grinding, 3792 unworked pieces were recovered; these were mostly small fragments, but a few large chunks weighed over one kilogram. It is suggested that the importance of this mineral in the assemblages was as a pigment source. It is possible that a few of the well-worked artifacts may have functioned as fetishes, valued for their relative density, but this is merely speculation. One worked piece of hematite was recovered from the LeCroy horizon at the Ward's Point site on Staten Island.

Mineral pigments, especially those yielding a reddish color, have a long association with man in prehistory. In North American Paleo-Indian sites, red ochre appeared on a Clovis burial at the Anzick site (Lahren and Bonnichsen 1974), pyrolusite, a soft grey-black mineral, occurred at Debert (MacDonald 1968:107), and graphite occurred at the Bull Brook site (Byers 1954:350). At the St. Albans site Broyles (1971: 42) reported many large lumps of hematite with several exhibiting one or more ground surfaces. These appeared in association with each of the projectile point zones but were most numerous in the Kirk zones 16 and 18 (Ibid.:Table 1). At Rose Island, the majority of the examples of this mineral occurred in the bifurcated point horizons. Lewis and Lewis (1961:74) reported 28 occurrences of red and yellow ochre occurring in all components at the Eva site.

Of the early sites in North America, Rose Island and the St. Albans site appear to stand out with their large samples of ferromagnesian minerals. This may have certain settlement pattern implications, such as an exploitive range. It should also be realized that waterscreening at both sites increased the sample.

One large chunk of red ochre was recovered from the LeCroy horizon at Rose Island.

Choppers/Scrapers (Ritchie and Funk 1971:47, 52, 54, 57)(Plate XL and XLI). This is a distinctive class of artifacts not to be confused with the more common use of the term chopper in referring to large chert bifaces (cf. Lewis and Lewis 1961:59). The term here is employed to describe ovate and oblong, flat slab and cobble spall artifacts that are bifacially chipped on the peripheries. Six complete specimens are made from thin slabs or spalls of slate (Plate XL a,b,d). Use wear is evident on the bits of four of these, on the lateral edges on two, and on the butts on three. Illustrated specimen b2 has grinding on the flat surfaces. There were six fragments of slate choppers/scrapers recovered also.

Plate XLI illustrates choppers/scrapers manufactured from other materials. Of the complete specimens, two were of conglomerate, four of quartzite, three of fine sandstone, one of coarse sandstone, and one of limestone. Of the fragments, two were of quartzite, four of sandstone, and two of siltstone.

A total of 31 complete and fragmentary choppers/scrapers was recovered and the artifact type appears to be associated with both the LeCroy and St. Albans phases.

Plate XL. Other Worked Stone Artifacts, Choppers/Scrapers

a. Choppers/Scrapers, Slate

b. Choppers/Scrapers, Slate

c. Celt

d. Choppers/Scraper, Slate

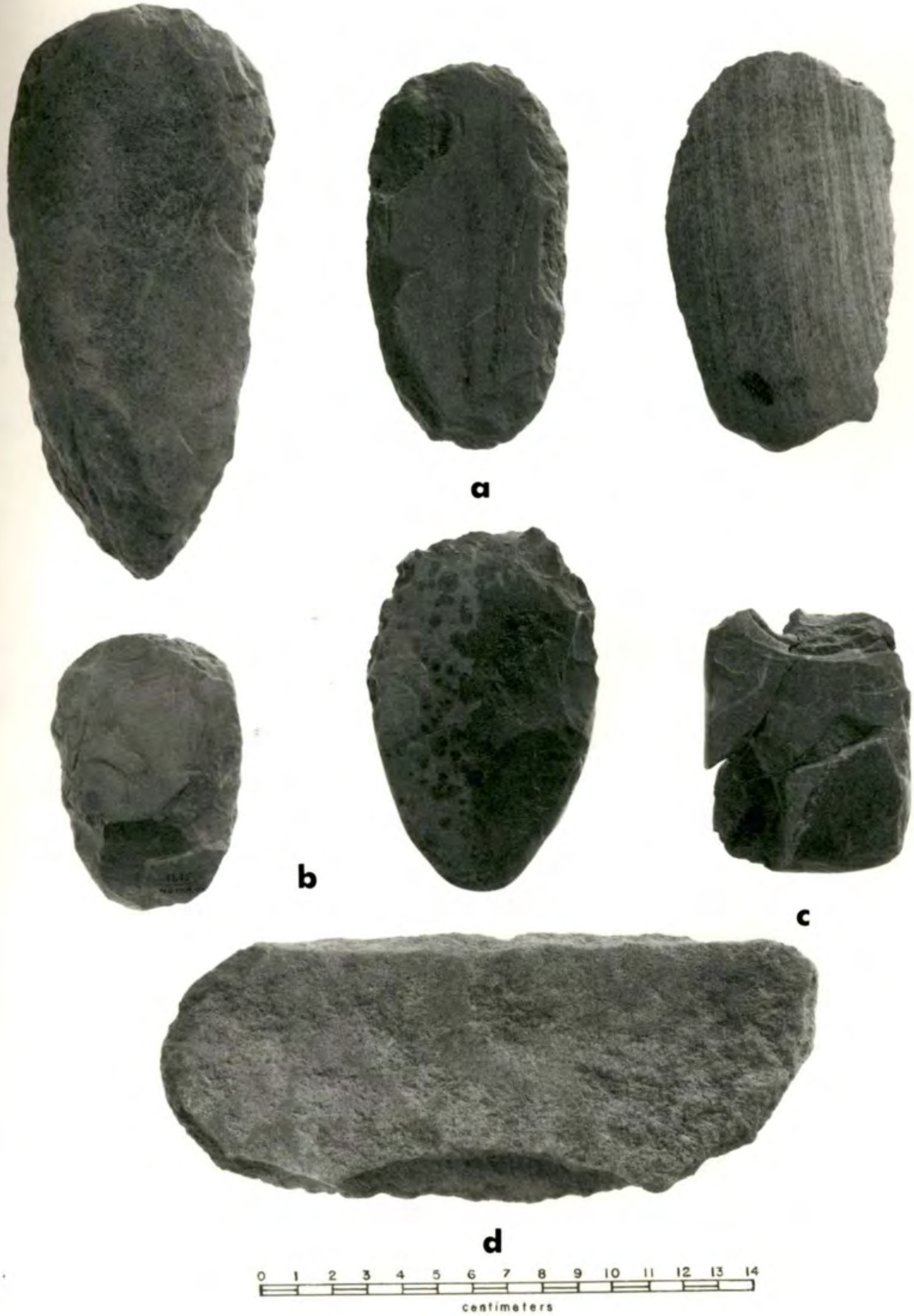


Plate XL

Plate XLI. Other Worked Stone Artifacts, Choppers/Scrapers

a. Chopper/Scraper, Sandstone

b. Chopper/Scraper, Quartzite

c. Chopper/Scraper, Conglomerate

d. Choppers/Scrapers, Sandstone

e. Chopper/Scraper, Conglomerate

f. Chopper/Scraper, Limestone

g. Chopper/Scraper, Quartzite

a b c d e f g

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
centimeters

Plate XLI

Size: Length: 69.5-165.0 mm, Mean 114.7 mm (17 artifacts); Width: 51.5-112.0 mm, Mean 74.4 mm (16 artifacts); Thickness: 7.0-21.0 mm, Mean 14.2 mm (17 artifacts).

Four sites on Staten Island, New York, are the only other Early Archaic period contexts yielding similar choppers/scrapers in the eastern United States (Ritchie and Funk 1971). Examination by the author showed the Staten Island choppers/scrapers to be identical to those at Rose Island. They were made of siltstone and sandstone, and found in association with point types ranging from Stanly Stemmed to Palmer Corner Notched. Radiocarbon dates are of a similar age to those at Rose Island.

Ritchie (1965:36-79) has identified similar artifacts in the Late Archaic assemblages in the northeast, especially the Lamoka phase. Ritchie and Funk (1971:52) suggest that the Late Archaic types served as heavy hide scrapers rather than as chopping implements, and believe the Staten Island Early Archaic examples served a similar function. The author is inclined to view the Rose Island examples, especially those of siltstone, sandstone, and conglomerate, as scrapers rather than choppers. The artifacts may have served as some type of grubbing tool, similar to a hoe, but the paleobotanical remains (Chapter V) lend no support to this. The concentration of this artifact type is Unit B and H, excavation level 5 may suggest an activity area, perhaps that of hide preparation (Fig. 13).

No artifacts of this type were reported from the St. Albans site or from the early components investigated by Coe. Broyles (1971:39) describes three chert bifaces from the St. Albans site as grubbing tools or hoes. One is from the St. Albans zone and one from the Kirk zone exhibit "soil polish". The third hoe has ground edges and polished faces, almost obliterating the chips. These appear to be more similar to the Dalton adz (Morse and Goodyear 1973) (see below). Although their cultural association is unknown, one complete and two fragments of sandstone choppers/scrapers were observed by the author in the University of Tennessee LeCroy collection. Size of the complete specimen was 134.0 mm long, 85.5 mm wide, and 22.5 mm thick.

Celt (Plate XLc). One ground slate celt was recovered in three restorable pieces from Unit B excavation level 4. The artifact was chipped and subsequently ground with a sharp bit. Some of the unclassed ground slate fragments recovered in the excavation may be similar fragments.

Size: Length: 76.0 mm; Width: 58.0 mm; Thickness: 15.5 mm.

The earliest use of ground stone in the southeast has traditionally been associated with the Middle Archaic and the Stanly complex (Coe 1964: 122). Evidence is accumulating that suggests earlier beginnings of stone grinding in the eastern United States. Morse and Goodyear (1973: 319) have defined a distinctive tool type, the adz, which has heavy grinding on the butt and lateral edges and is associated with the Dalton complexes in southeast Missouri and northeast Arkansas. Celts and choppers exhibiting grinding occur in Early Archaic contexts on Staten Island (Ritchie and Funk 1971). A bifacially ground celt fragment was recovered from a horizon dated 6920 B.C. at Sheep Rock Shelter (Michels and Smith 1967). Atlatl weights and grooved axes were reported to be present at the Ferry site and dated at 6201 B.C. (Fowler 1957). A hematite adz occurred in the lower level of Graham Cave dated 7700 B.C. (Logan 1952).

<u>Pitted Cobbles</u> (Plate XLII). Artifacts of this class consist of water smoothed cobbles with a single small depression on one face or single depressions on opposing faces produced by percussion. In addition, many exhibited abrasion on the edges and/or abrasion on one or two faces. A total of 106 pitted cobbles and fragments was recovered from the Early Archaic horizons. There were 78 complete specimens which break down into the following categories: 10 artifacts exhibit a single pit on one surface; one artifact exhibits a single pit and abrasion on one surface; four artifacts exhibit a single pit on one surface and abrasion on the edge; two artifacts exhibit a single pit and abrasion on both the edge and face; 19 artifacts are bipitted on opposing faces; one artifact is bipitted and has surface abrasion; 33 artifacts are bipitted and have edge abrasion; six artifacts are bipitted and have surface and edge abrasion; one artifact exhibits pitting on three sides and has edge abrasion.

Size: Length: 71.3-146.2 mm, Mean 101.8 mm; Width: 50.9-115.6 mm, Mean 80.6 mm; Thickness: 31.6-68.1 mm, Mean 101.8 mm; Gram Weight: 175.4-1289.9 g, Mean 532.4 g.

The pitted cobble is a ubiquitous artifact in eastern United States prehistory. It has been called a nutting stone, anvil stone, and pitted hammerstone. It is probably a multipurpose tool, but one of its functions appears to be in the bipolar flaking technique. MacDonald (1968:69,85,105) suggested these stones were being employed as anvils in the production of <u>pièces esquillées</u>. Evidence for this appeared as linear scars in the stone which matched the length of the crushed edges of the <u>pièces esquillées</u>. Examination of the top row of cobbles in Plate XLII will show a similar situation exists with the Rose Island samples. Replication experiments by the author demonstrated

Plate XLII. Other Worked Stone Artifacts, Pitted Cobbles

Plate XLII

that these linear scars are produced quickly in production of pièces esquillées. Morse (1973:29) suggests a similar use of pitted cobbles with the Dalton complex.

Hickory nuts and acorns were apparently a significant part of the diet at Rose Island during the Early Archaic (see Chapter V). Certain acquaintances have casually observed that if one is breaking nuts between two rocks, it is much easier (and safer too!) when the anvil stone is pitted such that the nut is held in place and does not ricochet out upon impact.

The abrasion on many of the specimens is smooth and extensive, and they appear to have functioned as manos as well as anvils. The illustrated specimen, top right, could well be classed as a pestle. Precisely what they were used to grind is unknown. Paleobotanical analysis suggests hickory nuts and acorns as a possibility; quite possible goethite was being ground for pigment. Morse (Ibid.:29) described a type of edge ground cobble which he suggests was used in the Dalton Complex to prepare the edges of cores and preforms for knapping. Morse (Personal communication) is now convinced that the edge abraded cobbles are food processing hand tools of some sort. Battering occurs on edges of a few Rose Island specimens which suggests a hammerstone function as well. Undoubtedly the pitted cobble was a multifunctional tool.

At the St. Albans site, Broyles (1971:39) recovered 16 "hammerstones" from the Kirk and bifurcated point horizons that were battered around the edges and usually pitted on one face, some bipitted. Coe (1964:79) recovered both pitted and unpitted water worn cobbles with edge and face abrasion at the Hardaway site. The entire sample (157 artifacts) of his Type II and Type III were recovered from the surface and may therefore be more characteristic of the later Archaic occupations. Coe suggests a dual function of these as hammerstones and manos. Neither Broyles nor Coe identified any bipolar lithics.

Hammerstones (Plate XLIII). A total of 59 sandstone and quartzite cobbles and cobble fragments exhibited one or more areas of pecking that suggest the function of hammerstone. Illustrated specimen, second row-left, was recovered from Feature 218 in Stratum XI. Battering on the edge has removed several flakes.

Manos (Plate XLIV). As discussed above, many pitted cobbles served also as manos. All illustrated specimens except the cobble in the lower right have various degrees of pitting on the obverse side. Illustrated specimen, middle row-left, is bipitted and extensively edge and bifacially ground such that it resembles a biconcave discoidal in appearance. It and the pestle-like pitted cobble in Plate XLII were part of the activity area of Feature 185 (Plate LIV; Fig. 11). A total of 12 artifacts were classed as manos since they exhibited abrasion only.

Metates (Plate XLV and XLVI). This category consists of large water worn slabs that show abrasion and pecking on one or both sides. Larger than the pitted cobbles and manos, these stones apparently served a dual purpose of anvils and grinding surfaces. Three of these (Plate XLVa and b) were associated with Feature 83 (Plate LIII;Fig. 10) and may represent an activity area. Three specimens exhibit a black stain in the area of the most work. Artifact b in Plate XLVI was found adjacent to the Kirk period Feature 212 (Plate LVIII;Fig. 12). A total of 12 complete metates and eight fragments were recovered.

Plate XLIII. Other Worked Stone Artifacts, Hammerstones


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Plate XLIV. Other Worked Stone Artifacts, Manos


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
centimeters

Plate XLV. Other Worked Stone Artifacts, Metates

a. Metate, Feature 83

b. Metate, Feature 83

Plate XLV

Plate XLVI. Other Worked Stone Artifacts, Metates

a. Metate

b. Metate, Feature 212

Plate XLVI

Size: Length: 160.0-325.0 mm, Mean 230.0 mm; Width: 115.0-240.0 mm, Mean 175.4 mm; Thickness: 31.0-76.0 mm, Mean 53.2 mm.

Coe (1964:80) found 78 shallow mortars on the surface at the Hardaway site and one in the Stanly level at the Doerschuk site. As with the manos, these are assigned a later Archaic association. Broyles found nothing comparable at the St. Albans site. Funk (1973:Plate 16: 1,3) illustrates two similar artifacts that he calls anvil stones from the Paleo-Indian West Athens Hill site in New York.

Unclassed, Broken Ground slate. Eight fragments of slate exhibiting grinding on one or more surfaces were recovered. These were probably parts of celts or choppers/scrapers.

Other Stone. This class is comprised of scattered pieces of unidentified worked stone or aberrant material. Two fragments of a conglomerate with white stone in a black matrix were recovered. There were three fragments of worked sandstone and one of siltstone. Five fragments of Carolina Slate were recovered and there were five columnar shaped pieces of siltstone. Two fragments of schist had a copper-colored sheen. These were scattered through all the horizons.

Features

A total of 196 Early Archaic features were recorded at Rose Island. Table 23 summarizes the feature categories and their distributional frequencies in the Early Archaic horizons. Table 24 presents the feature data. Some features are multiple, consisting of several units such as a fired area and an adjacent pit, or two fired areas together, yet having a single feature number. Some of the artifacts associated with features are presented in Table 25. The débitage, hematite (goethite), and bipolar lithic counts are not presented for each feature.

Table 23. Early Archaic feature types.

Category	Phase: Un-known No.	Kanawha No.	LeCroy No.	St. Albans No.	Kirk No.	Total
Fire Areas	1	1	16	39	1	58
w/basin or pit			3	6	1	10
w/rock conc.			1	3		4
w/depression			1	1		2
w/stain			3	6		9
w/reflector				1		1
w/basin w/rock				1		1
w/globular pit				2	1	3
w/activity area				2		2
Total Fired Areas	1	1	24	61	3	90
Globular Pits			3	38	3	44
Basins			5	7		12
w/some rock			2	5		7
w/much rock			4	3		7
w/surf. conc. of rock			1			1
Total Basins			12	15		27
Depressions				7	2	9
Surf. Conc. of Rock			1	5	1	7
w/stain					2	2
Total Surf. Conc. of Rock			1	5	3	9
Pits			2	10		12
stump?				3		3
Total Pits			2	13		15
Shattered Core					1	1
Slate Conc.					1	1
Total Features	1	1	42	138	13	196

Table 24. Feature data, Early Archaic.

Feat No.	Category	Excavation Unit	Square	Excavation Level	Archaeological Horizon	Cultural Association	Dimensions L W	Depth or Thickness
1	Depression	H	180R215	8	VII	St. Albans	5.6 x 3.0	0.56
2	Fired Area	TP 12	-	-	VII	?	1.0 x 1.0	0.15
5	Depression	TP 11	125R260	-	VII	St. Albans	2.5 x 2.4(int)	0.32
6	Basin with some rock	TP 11	130R260	-	VII	St. Albans	2.4 x 2.2(int)	0.73
8	Basin with some rock	TP 11	130R265	-	VII	St. Albans	1.2 x int	0.58
22	Fired Area	H	180R215	3	VII	LeCroy	1.6 x 1.6	0.10
25	Fired Area	G	30R260	1	VII A	LeCroy	1.0 x 1.9	0.05
27	Fired Area	H	180R210	4	VII	LeCroy	1.2 x 1.0	0.05
28	Fired Area	H	180R215	4	VII	LeCroy	1.4 x int	0.05
29	Fired Area	H	180R210	4	VII	LeCroy	1.8 x 1.4	0.10
30	Pit	G	30R260	1	VII A	LeCroy	1.5 x 1.0	0.90
33	Fired Area	G	30R260	2	VII B	St. Albans	1.4 x 1.2	0.10
34	Fired Area	G	30R260	3	VII C	St. Albans	1.5 x 1.5	0.05
35	Basin	G	30R260	3	VII C	St. Albans	1.1 x 1.0	0.50

Table 24. (continued)

Feat. No.	Category	Excavation Unit	Square	Excavation Level	Archaeological Horizon	Cultural Association	Dimensions L W	Depth or Thickness
36	Fired Area	G	30R255	3	VII C	St. Albans	1.8 x 1.4	0.05
37	Globular Pit	G	30R260	3	VII C	St. Albans	0.8 x 0.7	0.30
38	Globular Pit	G	30R255	4	VII D	St. Albans	1.1 x 1.0	0.60
39	Fired Area	G	30R260	4	VII D	St. Albans	?	?
40	Globular Pit	G	30R255	4	VII D	St. Albans	0.6 x int.	0.07
41	Fired area and Depression	H	185R210	4	VII	LeCroy	1.6 x1.0(Fire) 4.0 x 4.0(int) (Pit)	0.05 0.40
42	Basin	H	185R215	5	VII	St. Albans	2.8 x 2.4	0.48
43	Fired Area and Rock Conc.	H	185R220	7	VII	St. Albans	1.1 x 1.0	0.10
44	Fired Area	G	30R260	4	VII E	St. Albans	1.4 x 1.3	0.10
45	Basin	H	185R225	7	VII	St. Albans	1.6 x 0.9	0.27
46	Depression	H	185R225	7	VII	St. Albans	2.4 x 2.4(int)	0.80
47	Globular Pit	H	180R210	6	VII	St. Albans	1.1 x 1.0	0.75

Table 24. (continued)

Feat. No.	Category	Excavation Unit	Square	Excavation Level	Archaeological Horizon	Cultural Association	Dimensions L W	Depth or Thickness
48	Pit	H	180R220	7	VII	St. Albans	1.1 x int.	0.85
49	Fired Areas	G	30R255	5	VII G?	St. Albans	1.2 x 1.0(Fire) 1.8 x 1.8(Fire) 3.0 x 2.0(Stain)	0.05 0.05 -
50	Fired Area	G	30$255	5	VII E	At. Albans	1.2 x 1.0	0.05
52	Globular Pit	H	185R220	8	VII	St. Albans	1.1 x 1.0	0.46
53	Fired Area	H	185R215	5	VII	St. Albans	0.8 x 0.7	0.05
55	Globular Pit	H	185R215	6	VII	St. Albans	1.0 x 0.5	0.52
56	Fired Area	G	30R255	6	VIII	Kirk	2.0 x int.	0.05
57	Fired Area	H	185R230	5	VII	St. Albans	1.1 x 1.0	0.05
59	Depression	G	30R255	6	VIII	Kirk	5.0 x 3.8(int.)	0.35
60	Basin	H	185R235	7	VII	St. Albans	2.1 x 1.9	0.30
61	Pit	H	185R210	10	VII	St. Albans	1.3 x int.	0.50
62	Fired Area	H	180R225	1	VII	LeCroy	2.7 x 2.5	0.10
63	Pit	C	50R270	5	VII C	St. Albans	1.4 x 1.0	0.60
64	Fired Area	C	50R270	4	VII A	LeCroy	0.3 x 0.3	0.05

Table 24. (continued)

Feat. No.	Category	Excavation Unit	Square	Excavation Level	Archaeological Horizon	Cultural Association	Dimensions L W	Depth or Thickness
65	Fired Area and Basin	H	185R230	7	VII	St. Albans	1.3 x o.8(Fire) 2.0 x int.	0.05 0.70
66	Globular Pit	H	185R225	9	VII	St. Albans	0.5 x 0.5	0.30
67	Fired Area and Stain	H	180R225	4	VII	LeCroy	1.4 x 1.2(Fire) 3.6 x 2.4(Stain)	0.05
68	Fired Area and Stain	C	50R270	6	VII C	St. Albans	2.0 x 1.5 2.5 x 2.0(int.)	0.1 0.65
69	Fired Area and Basin	H	180R225	6	VII	St. Albans	1.8 x 1.6(Fire) 2.4 x 2.4(Pit)	0.10 0.80
70	Fired Area and Basin	H	180R230	5	VII	St. Albans	1.8 x int(Fire) 2.0 x int (Basin)	0.15 0.70
71	Pit	C	55R270	8	VII D	St. Albans	0.9 x 0.3(int)	0.55
73	Fired Area and Stain	A	70R240	1	VII A	LeCroy	1.6 x 1.2(Fire) 4.2 x 4.0(Stain)	0.05 0.10
76	Fired Area	B	170R220	1	VI	Kanawha	1.3 x 1.0	0.05
77	Fired Area and Basin	A	70R250	1	VII A	LeCroy	2.0 x 1.4(Fire) 1.6 x 1.4(Basin)	0.05 0.35

Table 24.(continued)

Feat. No.	Category	Excavation Unit	Square	Excavation Level	Archaeological Horizon	Cultural Association	Dimensions L x W	Depth or Thickness
78	Fired Area	A	60R260	2	VII A	LeCroy	1.1 x 0.7	0.10
79	Fired Area	B	175R210	4	VII	LeCroy	1.2 x 1.0	0.15
81	Basin	B	175R210	4	VII	LeCroy	1.6 x 1.3	0.33
82	Basin with some Rock	A	60R265	2	VII A	LeCroy	2.2 x 1.8	0.23
83	Basin and Activity Area	A	75R255	2	VII A	LeCroy	2.8 x 2.0	0.35
84	Fired Area	A	60R255	3	VII A	LeCroy	0.4 x 0.3	0.10
85	Basin	A	60R250	3	VII A	LeCroy	1.8 x dest.	0.30
86	Fired Area	A	75R240	3	VII A	LeCroy	0.7 x 0.5	0.20
87	Concentration of Rock and Basin	B	170R195	3	VII	LeCroy	3.2 x int(Basin) 2.2 x 2.0(Rocks)	0.32
88	Basin with Rocks	A	65R250	3	VII A	LeCroy	4.0 x 3.7	0.49

Table 24. (continued)

Feat. No.	Category	Excavation Unit	Square	Excavation Level	Archaeological Horizon	Cultural Association	Dimensions L W	Depth or Thickness
89	Fired Area and Siltstone Reflector	A	60R240	5	VII C	St. Albans	2.0 x 1.0	0.45
90	Basin with some Rock	A	70R240	3	VII A	LeCroy	2.8 x 2.6	0.38
91	Globular Pit	A	60R255	4	VII A	LeCroy	0.8 x 0.6	0.40
92	Fired Area	B	175R215	4	VII	LeCroy	0.8 x 0.4	0.05
93	Fired Area and Basin	B	175R210	4	VII	LeCroy ?	1.2 x 1.0(Fire) 2.6 x 2.2(Basin	0.10 0.59
94	Fired Area	A	60R245	8	VII C	St. Albans	2.2 x dest.	0.20
95	Fired Area	A	60R240	4	VII A	LeCroy	1.9 x 1.8	0.10
96	Fired Area	B	170R195	5	VII	St. Albans	1.6 x 0.7	0.10
97	Basin with some Rock	B	175R205	5	VII	St. Albans	2.6 x 2.4	0.52
98	Globular Pit	A	70R255	4	VII A	LeCroy	0.8 x 0.7	0.31

Table 24. (continued)

Feat. No.	Category	Excavation Unit	Square	Excavation Level	Archaeological Horizon	Cultural Association	Dimensions L W	Depth or Thickness
99	Shallow Basins	B	165R200	5	VII	St. Albans	2.4 x 2.0 2.6 x 1.9	0.42 0.40
100	Basin with Rocks	A	65R250	5	VII B	St. Albans	2.4 x 2.4	0.20
101	Basin	A	65R240	4	VII B	St. Albans	1.3 x 1.2	0.23
102	Fired Area	A	75R240	4	VII A	LeCroy	0.6 x 0.4 0.8 x 0.4	0.05 0.05
103	Globular Pit	B	175R220	6	VII	St. Albans	1.0 x 0.9	0.45
105	Fired Area	B	170R220	6	VII	St. Albans	0.6 x 0.3	0.05
106	Concentration of Cobbles	B	170R200	7	VII	St. Albans	0.8 x 0.8	-
107	Globular Pit	A	65R265	5	VII B	St. Albans	0.8 x 0.6	0.26
108	Fired Area	B	165R220	8	VII	St. Albans	1.1 x 1.0	0.10
109	Pit (Stump?)	B	175R215	8	VII	St. Albans	1.7 x 1.6	0.64
110	Surface Concentration of Rock	B	170R205	7	VII	St. Albans	2.4 x 2.4	-
111	Fired Area and Surface Concentration of Rock	A	60R255	4	VII A	LeCroy	1.0 x 0.8	0.10

Table 24. (continued)

Feat. No.	Category	Excavation Unit	Square	Excavation Level	Archaeological Horizon	Cultural Association	Dimensions L W	Depth or Thickness
112	Globular Pit	A	65R240	7	VII C	St. Albans	0.7 x 0.5	0.41
113	Fired Area Surface Conc. of rock, Basin ? Stain	B	165R210	7	VII	St. Albans	0.6 x 0.4 (Fire) 1.2 x 1.2 (Rock) 3.0 x 2.0 (Stain)	0.10 0.38 -
114	Fired Area, Basin with rock	B	170R215	8	VII	St. Albans	1.2 x 0.8 (Fire) 1.4 x 1.2 (Basin)	0.10 0.30
115	Fired Area and and Stain	A	60R255	5	VII A	LeCroy	1.5 x 0.8	0.18
116	Basin with rock	A	75R250	5	VII C	St. Albans	2.0 x 1.8	0.48
117	Oval Depression	B	165R210	7	VII	St. Albans	4.0 x 1.6	0.60
118	Fired Area and Surface Conc. of rock	A	60R250	5	VII C	St. Albans	1.2 x 0.7 (Fire) 1.0 x 0.6 (Rock)	0.50
119	Fired Area	A	60R260	6	VII B	St. Albans	1.4 x 1.0	0.10
120	Pit	B	170R215	9	VII	St. Albans	1.0 x 1.0	0.60
121	Fired Area	A	65R265	5	VII B	St. Albans	1.4 x 0.9	0.10
122	Fired Area	A	65R245	6	VII C	St. Albans	1.7 x 0.8	0.20

Table 24. (continued)

Feat. No.	Category	Excavation Unit	Square	Excavation Level	Archaeological Horizon	Cultural Association	Dimensions L W	Depth or Thickness
123	Globular Pit	A	60R265	6	VII B	St. Albans	0.8 x 0.8	0.48
124	Pit	A	65R265	6	VII B	St. Albans	1.4 x 1.3	0.79
125	Fired Area, Basin, Pit, Stain	A	60R250	6	VII C	St. Albans	1.8 x 0.9(Fire) 2.4 x 2.0(Basin) 1.5 x 1.0(Pit) 11.0 x 8.0(Stain)	0.05 0.23 0.60 0.42
126	Fired Area	A	75R265	7	VII C	St. Albans	0.6 x 0.4	0.10
127	Globular Pit	A	65R265	6	VII B	St. Albans	1.1 x 1.0	0.83
128	Globular Pit	A	60R260	6	VII B	St. Albans	1.1 x 1.0	0.41
129	Globular Pit	A	75R260	7	VII C	St. Albans	0.7 x 0.7	0.37
130	Basin with rock	D	85R270	1	VII	LeCroy	2.2 x 1.6	0.48
131	Fired Area	A	60R250	9	VII C	St. Albans	0.6 x 0.45	0.10
132	Fired Area	A	60R255	7	VII C	St. Albans	0.7 x 0.5	0.10
133	Basin with rock	A	65R240	8	VII E	St. Albans	2.6 x 2.2	0.48
134	Fired Area	A	60R260	7	VII C	St. Albans	2.2 x 1.1	0.12

Table 24. (continued)

Feat. No.	Category	Excavation Unit	Square	Excavation Level	Archaeological Horizon	Cultural Association	Dimensions L W	Depth or Thickness
135	Fired Area	A	60R260	7	VII C	St. Albans	1.6 x 1.5	0.19
136	Basin with rock	C	50R255	1	VII A	LeCroy	2.0 x 1.9	0.38
137	Surface Conc. of rock-Activity Area ?	C	40R270	3	VII A	LeCroy	4.0 x 2.0	-
138	Globular Pit	D	85R275	3	VII	LeCroy	0.9 x int.	0.48
139	Fired Area and Basin	C	50R260	3	VII A	LeCroy	0.7 x 0.6(Fire) 1.4 x 1.2(Basin)	0.04 0.17
140	Fired Area	C	50R250	3	VII A	LeCroy	0.8 x 0.3	0.25
141	Basin	C	55R250	3	VII A	LeCroy	2.2 x dest.	0.30
142	Fired Area	D	80R260	4	VII	St. Albans	1.1 x 0.7	0.07
143	Fired Area	A	70R265	7	VII C	St. Albans	1.5 x 0.9	0.05
144	Globular Pit	A	65R250	7	VII C	St. Albans	0.85 x 0.6	0.23
145	Globular Pit	A	70R260	7	VII C	St. Albans	0.9 x 0.7	0.32
146	Fired Area and Pit and Activity Area	D	85R260	L4	VII	St. Albans	1.2 x 0.8(Fire) 1.1 x 1.1(Pit)	0.10 0.44

Table 24. (continued)

Feat. No.	Category	Excavation Unit	Square	Excavation Level	Archaeological Horizon	Cultural Association	Dimensions L W	Depth or Thickness
147	Fired Area	D	80R270	L4	VII	St. Albans	1.0 x int	0.06Dest.
148	Globular Pit	C	45R260	L4	VII B	St. Albans	0.9 x 0.9	0.72
149	Globular Pit	A	60R265	L8	VII C	St. Albans	1.1 x 0.9	0.28
150	Fired Area and Globular Pit	A	60R255	8	VII C	St. Albans	0.6 x 0.4 (Fire) 1.0 x 0.8 (Pit)	0.10 0.41
151	Fired Area and Globular Pit	D	85R275	5	VII	St. Albans	1.0 x 0.9 (Fire) 0.9 x 0.75 (Pit)	0.20 0.30
152	Fired Area	C	50R260	5	VII B	St. Albans	1.3 x 0.8	0.10
153	Surface Conc. of rock	C	55R260	5	VII B	St. Albans	1.0 x 0.7	-
154	Globular Pit	D	80R260	5	VII	St. Albans	0.5 x 0.4	0.20
155	Fired Area	C	40R270	5	VII C	St. Albans	1.5 x 1.1	0.05
156	Globular Pit	D	80R265	6	VII	St. Albans	1.1 x 1.0	0.61
157	Globular Pit	C	55R265	6	VII C	St. Albans	0.5 x 0.5	0.20
158	Globular Pit	A	65R265	8	VII C	St. Albans	0.7 x 0.5	0.37

Table 24. (continued)

Feat. No.	Category	Excavation Unit	Square	Excavation Level	Archaeological Horizon	Cultural Association	Dimensions L W	Depth or Thickness
159	Globular Pit	C	50R260	6	VII B	St. Albans	0.6 x 0.6	0.25
160	Fired Area	C	45R255	6	VII C	St. Albans	1.0 x 0.9	0.10
161	Fired Area	C	45R260	6	VII C	St. Albans	1.4 x 1.2	0.10
162	Surface Conc. of rock	D	80R265	7	VII	St. Albans	1.0 x 1.6	-
163	Pit	D	80R265	7	VII	St. Albans	1.2 x 1.0	0.41
164	Fired Area	C	40R255	6	VII C	St. Albans	1.5 x int.	0.05
165	Fired Area	C	40R270	6	VII C	St. Albans	1.4 x int.	0.03
166	Fired Area and Depression	C	50R250	7	VII C	St. Albans	0.9 x 0.6(Fire) 5.4 x 3.1(Dep.)	0.10
167	Globular Pit	D	85R260	8	VII ?	Kirk ?	0.8 x 0.7	0.40
168	Globular Pit	A	60R260	9	VII C	St. Albans	0.8 x 0.9	0.35
169	Pit	D	80R265	8	VII	St. Albans	1.6 x 1.5	0.50
170	Globular Pit	A	60R250	9	VII E	St. Albans	0.8 x 0.7	0.20
171	Shattered Tabular Core	D	85R260	9	VII	Kirk	2.0 x 1.0	0.30

Table 24. (continued)

Feat. No.	Category	Excavation Unit	Square	Excavation Level	Archaeological Horizon	Cultural Association	Dimensions L W	Depth or Thickness
172	Globular Pit	C	40R270	8	VII C	St. Albans	0.85 x 0.80	0.55
173	Fired Area and Activity Area	C	40R260	7	VII C	St. Albans	0.20 x 0.20	0.10
174	Fired Area and Stain	A	60R250	9	VII E	St. Albans	2.0 x 1.7(Fire) 1.4 x 1.0(Fire) 4.8 x 4.0(Stain)	0.10 0.10 0.17
175	Fired Area	C	50R260	6	VII C	St. Albans	0.6 x 0.5	0.05
176	Fired Area	C	50R260	7	VII C	St. Albans	1.50 x 0.40	0.01
177	Basin	C	55R265	7	VII C	St. Albans	1.43 x Dest.	0.37
178	Fired Area	C	40R265	8	VII C	St. Albans	0.8 x 0.8	0.05
179	Fired Area	C	50R250	8	VII C	St. Albans	0.8 x 0.6	0.08
180	Globular Pit	C	40R260	8	VII C	St. Albans	0.6 x 0.5	0.52
181	Fired Area and Pit	D	90R265	5	VII	St. Albans	1.4 x 1.4(Fire 1.1 x 1.0(Pit)	0.10 0.54
182	Globular Pit	A	75R265	9	VII C	St. Albans	0.9 x 0.8	0.45

Table 24. (continued)

Feat. No.	Category	Excavation Unit	Square	Excavation Level	Archaeological Horizon	Cultural Association	Dimensions L W	Depth or Thickness
183	Basin with rock	D	90R260	1	VII	LeCroy	2.7 x 2.4	0.46
184	Slate Fragments	A	75R255	9	VII ?	Kirk ?	5.0 x 2.0	0.20
185	Fired Area and Activity Area	A	65R240	9	VII E	St. Albans	1.6 x 1.0	0.05
186	Globular Pit	C	50R265	9	VII G	St. Albans	0.5 x int.	0.50
187	Basin	D	80R255	2	VII	LeCroy	1.9 x 1.8	0.26
188	Fired Area	A	70R240	10	VII G	St. Albans	1.9 x 1.6	0.13
189	Oval Depression	A	75R265	9	VII C	St. Albans	6.6 x 2.8	0.57
190	Globular Pit	D	90R265	6	VII	St. Albans	1.1 x 0.8	0.44
191	Pit - Stump ?	D	90R265	6	VII	St. Albans	1.2 x 1.0	0.51
192	Oval Depression	A	60R250	10	VII E	St. Albans	6.0 x 1.8	0.50
193	Globular Pit	C	50R250	9	VII D	St. Albans	0.9 x 0.7	0.49
194	Globular Pit	C	50R255	10	VII D	St. Albans	0.9 x 0.7	0.48

Table 24. (continued)

Feat. No.	Category	Excavation Unit	Square	Excavation Level	Archaeological Horizon	Cultural Association	Dimensions L x W	Depth or Thickness
195	Globular Pit	C	40R260	10	VII D	St. Albans	0.8 x 0.8	0.44
196	Basin with some rock	C	40R255	9	VII C	St. Albans	1.2 x 1.0	0.28
197	Globular Pit	C	40R260	9	VII C	St. Albans	0.9 x 0.7	0.80
198	Surface Conc. of Rock	C	40R255	10	VII D	St. Albans	0.7 x 0.6	-
199	Pit	C	45R250	9	VII C	St. Albans	1.8 x 1.4	0.55
200	Basin with	C	45R260	10	VII C	St. Albans	2.5 x 2.0	0.18
201	Globular Pit	D	90R260	5	VII	St. Albans	1.1 x 0.7	0.25
202	Globular Pit	D	90R260	7	VII	St. Albans	0.7 x int	0.17
203	Fired Area and Pit	D	80R255	8	VIII	Kirk	0.8 x 0.5(Fire) 1.7 x 1.6(Pit)	0.03 0.40
204	Fired Area	D	80R250	6	VII	St. Albans	0.7 x 0.5	0.05
205	Basin with rock	D	90R255	2	VII	LeCroy	2.7 x 2.0	0.34
206	Fired Areas and Stains	C	50R255	12	VII E	St. Albans	1.1 x 1.0(Fire) 0.6 x 0.5(Fire) 1.1 x 1.1(Fire)	0.15 0.20 0.15

Table 24. (continued)

Feat. No.	Category	Excavation Unit	Square	Excavation Level	Archaeological Horizon	Cultural Association	Dimensions L W	Depth or Thickness
207	Fired Area	A	70R245	10	VII G	St. Albans	1.9 x 1.6	0.15
208	Fired Area and Basin	D	80R245	7	VII	St. Albans	1.3 x 1.1(Fire) 1.6 x 1.6(Basin	0.13 0.40
209	Fired Area and Stain	C	40R255	12	VII E	St. Albans	1.6 x 1.5(Fire) 2.2 x 1.7(Stain	0.15 0.26
210	Fired Area	D	85R255	5	VII	St. Albans	1.2 x 1.0	0.10
211	Globular Pit	C	45R270	4	VII B	St. Albans	0.9 x 0.8	0.53
212	Surface Conc. of rock	A	60R260	16	VIII	Kirk	3.3 x 3.1	-
213	Pit	D	85R255	3	VII	LeCroy ?	2.3 x 2.3	0.69
214	Globular Pit	C	40R270	10	VIII	Kirk	0.6 x 0.5	0.34
215	Fired Area	D	85R255	4	VII	St. Albans	0.6 x 0.4	0.04
216	Depression	C	40R250	14	VIII	Kirk	4.0 x 3.0 int.	0.76
217	Pit (Stump?)	D	85R245	4	VII	St. Albans	2.2 x 2.0	1.1
218	Surface Conc. or rock and Stain	A	70R265	25	XI	Kirk	3.0 x 2.1	

Table 24. (continued)

Feat No.	Category	Excavation Unit	Square	Excavation Level	Archaeological Horizon	Cultural Association	Dimensions L W	Depth or Thickness
219	Surface Conc. of rock and Stain	A	65R265	25	XI	Kirk	3.7 x 2.2	
220	Globular Pit	D	85R250	6	VII	St. Albans	1.0 x 0.9	0.66
221	Depression	D	85R245	10	VII	St. Albans	2.3 x 1.8(int)	0.57
222	Pit	D	85R275	5	VII	Kirk	2.0 x int	1.00
223	Globular Pit	D	85R275	10	VIII ?	Kirk ?	1.0 x 0.5	0.50
225	Fired Area and Globular Pit	D	85R250	12	VIIl	Kirk	1.7 x 1.5(Fire) 0.8 x 0.7(Pit)	0.20 0.65
226	Fired Area	D	90R245	5	VII	St. Albans	0.9 x 0.7	0.10

Table 25. Artifact categories associated with features. N (N) = Feature and number of artifacts.

Category	Provenience
St. Albans Type Point	78(1), 125(2), 181(2), 185(2), 189(1)
Bifurcate Variant 1	155(1)
Kirk Variant 1	146(1)
Kirk Variant 2	174(1), 203(1)
Kirt Variant 4	216(1)
Biface Variant 1	155(1)
Biface Variant 4	164(1)
Biface Variant 6	88(1)
Sidescraper Variant 1	206(1), 209(1)
Sidescraper Variant 2	68(1), 93(1)
End Scraper Variant 3	83(1)
Spokeshave	92(1)
Perforator	147(1)
Chopper/Scraper	92(1), 174(1)
Pitted Cobble	70(2), 83(1), 87(1), 88(1), 93(1), 100(1), 106(2), 113(1), 114(1), 137(1), 146(1), 147(1), 153(1), 160(1), 173(1), 183(1), 185(2), 206(2), 222(1)
Hammerstone	88(2), 93(1), 106(1), 113(1), 130(3), 137(1), 166(1), 185(2), 198(1), 206(1), 212(2), 218(1)
Mano	78(1), 146(1)
Metate	83(3), 133(1), 134(1), 137(1), 146(1) 173(1)

In most cases little or no material was directly associated; this was especially true in the case of fired areas, which as remnant surface fires, would have material scattered in the area surrounding the feature. There were only 1338 flakes, 106 blocky core fragments, and 124 fragments of unworked hematite associated with the features. The artifacts have been included in Tables 11-22 in the level or horizon with which the feature was associated.

The excavation procedure on all pits, basins, and depressions was to excavate by trowel one half of the feature so that any internal stratigraphy might be seen in the profiled second half. A sample of the fill was taken for flotation and the remainder of the fill was gently waterscreened through one-sixteenth inch mesh. In the cases of fired areas and surface concentrations of rock the soil matrix was carefully removed and waterscreened leaving the burned area or rocks *in situ*.

Feature Categories

Fired Areas (Plates XLVII-L). This was the most frequent feature type comprising 45.9% of the features. These features were identified by a red-orange fire stain surrounding an area of hard baked soil. The hard baked area ranged in its preservation from a few lumps of hard fired soil to a hard surface over two feet in diameter.

Size: Length: 0.2-2.7 ft, Mean 1.2 ft (92 features); Width: 0.2-2.5 ft, Mean 0.9 ft (85 features); Thickness: 0.01-0.45 ft, Mean 0.10 ft (92 features).

All of the hard areas exhibited weathered cracks or had been reduced to isolated chunks. There was some concern over the potential past disturbances that this might represent, in that the fired areas

Plate XLVII. Features 78 (left) and 115 (right), Fired Areas, LeCroy Phase

Plate XLVIII. Feature 174, Fired Area, St. Albans Phase

Plate XLVII

Plate XLVIII

Plate XLIX. Feature 181, Fired Area, St. Albans Phase

Plate L. Feature 134, Fired Area, St. Albans Phase

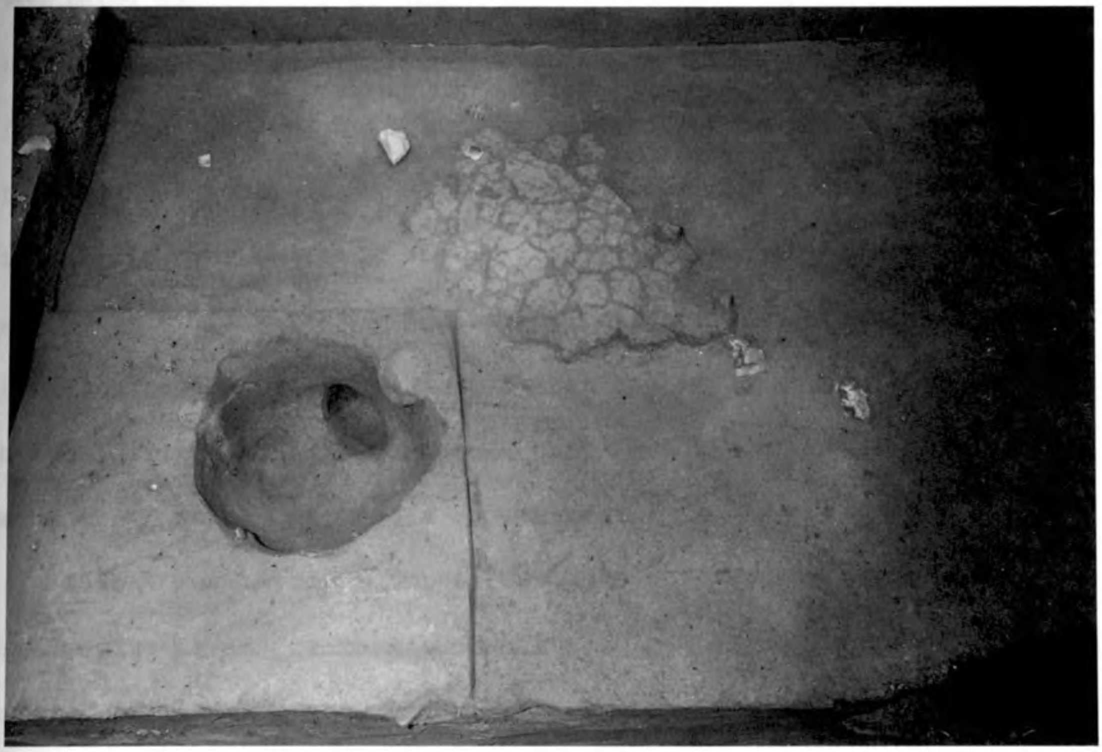


Plate XLIX

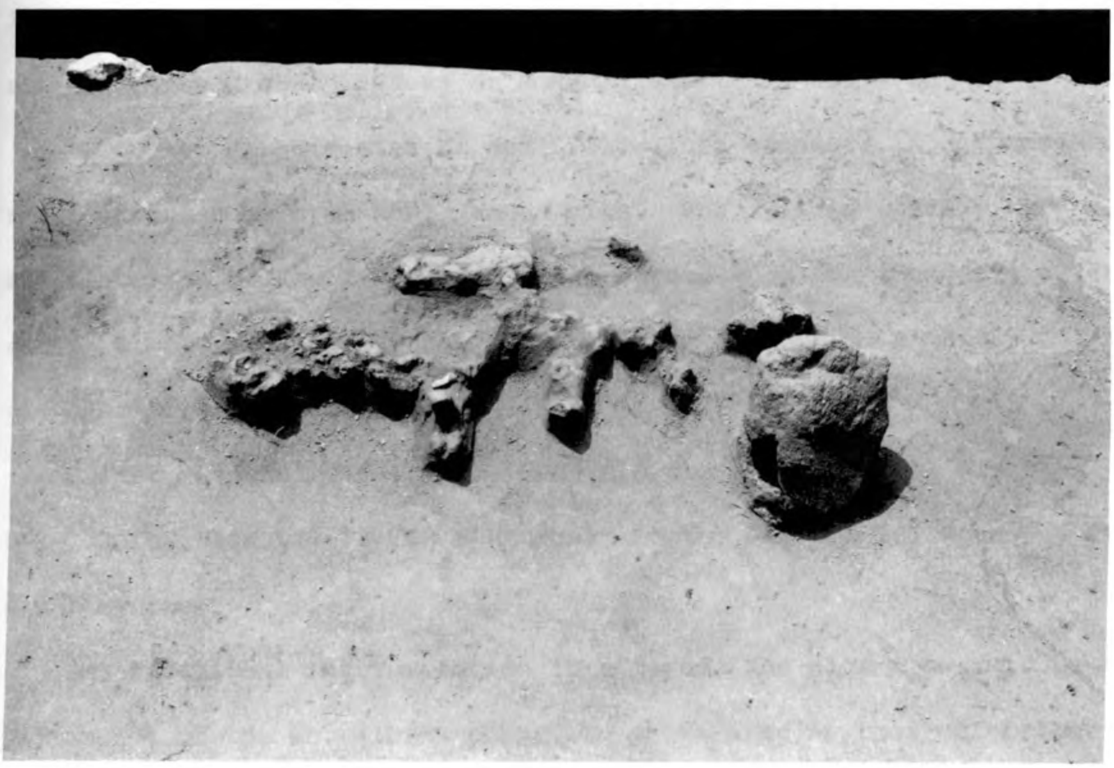


Plate L

were being sampled for archaeomagnetic dating. Replication experiments were performed to ascertain the firing properties of the soil. A small fire of pine wood was built on the surface. From this it was determined that the fine sandy loams of the Early Archaic horizons would fire hard in a little over one hour yielding an irregular red-orange hard fired area quite similar to the archaeological examples. Dessication or firing cracks appeared in the heated area and it is suggested that it was the weathering along these cracks that gave the archaeological fired areas their chunky or eroded appearance.

Almost one-third of the fired areas occurred in association with a basin, pit, stain, or rock concentration. This may reflect something of the activities around the hearth, perhaps stone heating for baking purposes. One fired area (Feature 89) included a slab of siltstone (2.0 x 0.5 ft) placed on its edge and exhibiting firing on both sides. It may have functioned as a reflector. Fired areas are associated with all the Early Archaic phases at Rose Island.

Globular Pits (Plates LI and LII). This category is comprised of small circular or oval bowl shaped pits. The fill is usually very dark, but flotation of the fill generally produced only small amounts of charcoal. Lithic material within the feature was scarce. A total of 49 globular pits were recorded.

Size: Length: 0.5-1.1 ft, Mean 0.8 ft (46 features); Width: 0.4-1.0 ft, Mean 0.7 ft (42 features); Depth: 0.2-0.8 ft, Mean 0.4 ft (46 features).

No functional interpretation is offered. The pits appear to be a phenomenon of the St. Albans phase. No patterning in their distribution has been discerned at this time, but some type of post hole has not been dismissed.

Plate LI. Feature 180, Globular Pit, St. Albans Phase

Plate LII. Feature 151, Globular Pit, St. Albans Phase

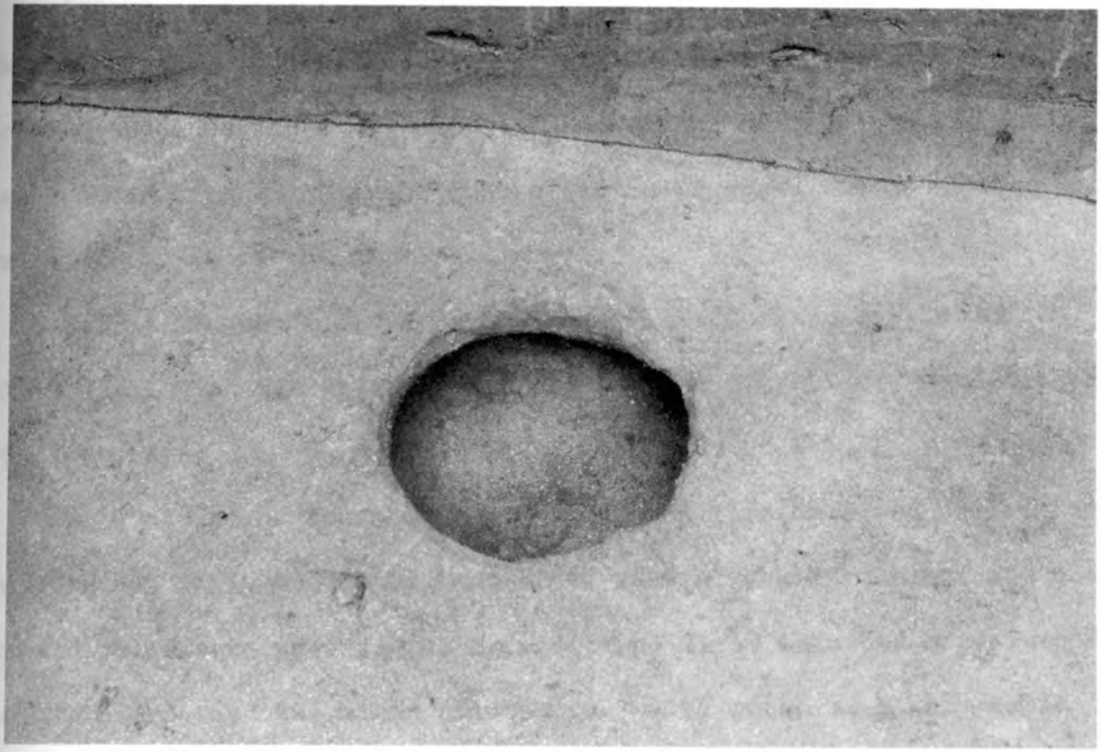


Plate LI

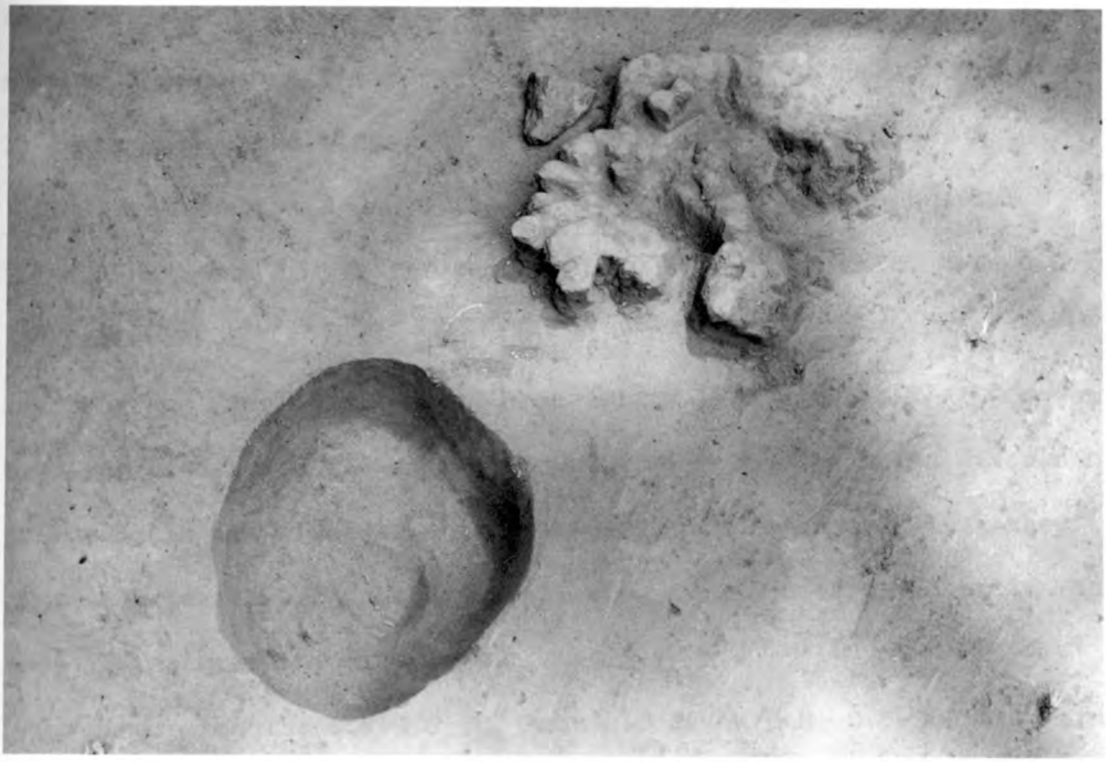


Plate LII

Basins (Plate LIII, LV, LVI). The features in this category have been subdivided into basins without rock, basins containing some fire-cracked rock, basins containing a large amount of fire-cracked rock, and a basin with an adjacent concentration of rock. This category comprises 13.8% of the features.

Size: Length: 1.1-4.0 ft, Mean 2.2 ft (38 features); Width: 0.9-3.7 ft, Mean 1.9 ft (31 features); Depth: 0.2-0.7 ft, Mean 0.4 ft (38 features).

None of the basins show any evidence of fire hardened soil. For this reason it is suggested that these served as baking ovens and that heated rocks were transferred from surface fires into the basin, food stuffs added, and the basin covered over with grass or bark. Basins were recorded only in the LeCroy and St. Albans horizons.

Depressions. Features that were large irregular or oval depressions were placed in this category. Whether these were dug or were natural depressions filled with darker midden is unknown. There are 11 features in this class.

Size: Length: 2.3-6.6 ft, Mean 4.4 ft (11 features) Width: 1.6-4.0 ft, Mean 2.7 ft (11 features); Depth: 0.3-0.8 ft, Mean 0.5 ft (10 features).

Surface Concentrations of Rock (Plate LVII and LVIII). Concentrations of cracked and uncracked water worn cobbles in no discernable pit or basin are placed in this category. It is assumed that they represent hearths, although not all show evidence of fired soil. There were 13 features in this class.

Size: Length: 0.7-4.0 ft, Mean 2.0 ft; Width: 0.6-3.1 ft, Mean 1.5 ft.

Plate LIII. Feature 83, Basin and Activity Area, LeCroy Phase

Plate LIV. Feature 185, Fired Area and Activity Area, St. Albans Phase

Plate LIII

Plate LIV

Plate LV. Feature 183, Basin with Rock, LeCroy Phase

Plate LVI. Feature 136, Basin with Rock, LeCroy Phase

Plate LV

Plate LVI

Plate LVII. Feature 113, Surface Concentration of Rock, St. Albans Phase

Plate LVIII. Feature 212, Surface Concentration of Rock, Kirk Phase

Plate LVII

Plate LVIII

Pits. Features that were larger and more irregular than the globular pits were classed separately. Three of these are probably stump holes.

Size: Length: 0.9-2.3 ft, Mean 1.5 ft (19 features); Width: 0.3-2.3 ft, Mean 1.3 ft (16 features); Depth: 0.4-1.1 ft, Mean 0.6 ft (19 features).

Other Features. Two Kirk phase features are in this class. One was a concentration of chunky core fragments and flakes representing a single shattered nodule. The other was a concentration of slate fragments, perhaps the remnants of the production of a slate chopper/scraper.

Activity Areas

One of the goals for the *in situ* excavations in Units A and B was the hoped for recognition of activity areas such as chipping stations and food processing areas as evidenced by the distribution of artifacts, features, and other cultural debris. Hemmings (1969) has suggested that it might be in alluvial basins that living floors are preserved, and the preservation of the context of artifacts might enable the archaeologist to infer specific behavioral events that are localized in space and restricted in time. Unfortunately, the intensive use of the site, even though stratified, for over 500 years has obscured single occupation floors on which such analysis could take place. Working areas apparently overlap and the vertical accumulation of soil and debris combined with aboriginal and natural mixing have disturbed much of the horizontal distribution.

Another problem was how to excavate such that single occupation floors, if present, would be exposed. With the exception of Stratum VII-E, none of the archaeological or soil horizons contained a single horizontal distribution of cultural material. The excavation method employed (Chapter II) was to remove the soil in 0.2 ft thick cuts, plotting all rocks, features and artifacts. Exact elevations relative to an arbitrary bench mark were recorded for all artifacts, features and excavation levels. It was readily apparent that even in 0.2 ft cuts the excavation was only approximating occupation levels when there were rocks at the top, middle, and bottom of the cut. The exact proveniences of most of the artifacts will enable three dimensional distributional studies in the future.

This paper will not attempt to reconstruct all the potential living floors from the artifact proveniences and plot sheets. Future analysis will attempt to employ three dimensional computer graphic simulation of the distribution of features and artifact types. Applications and modifications of the current research in spatial association should also be tried if the variables of occupational overlap and mixing can be accounted for (cf. Ammerman and Feldman 1974; Dacey 1973; Schiffer 1973; and Whallon 1973, 1974). For the present, samples of the distribution of material from the LeCroy, St. Albans, and Kirk horizons in Units A and C are illustrated in Figs. 10-12. Excavation level 5 in Unit B is illustrated in Fig. 13. Some preliminary observations can be made concerning potential areas of activity in these figures.

Unit A, Stratum VII-A, Excavation Level 2, LeCroy Phase (Fig. 10). Three possible areas of activity can be distinguished at this level. One, in the area of Feature 83 (Plate LIII), is distinguished by a decrease in chippage and the presence of three metates and several other artifacts adjacent to a basin. The area to the north of Feature

Fig. 10. Plot sheet, Unit A, Stratum VII A, excavation level 2, LeCroy phase.

Key to symbols

Projectile point

Metate

Hammerstone

Pitted cobble

Flake

Utilized flake

Bipolar psuedo-core

Piéce _esquillée_

Unworked hematite (goethite)

Worked hematite (goethite)

Sidescraper

End scraper

Biface

Perforator

Unidentified worked chert

Fired area

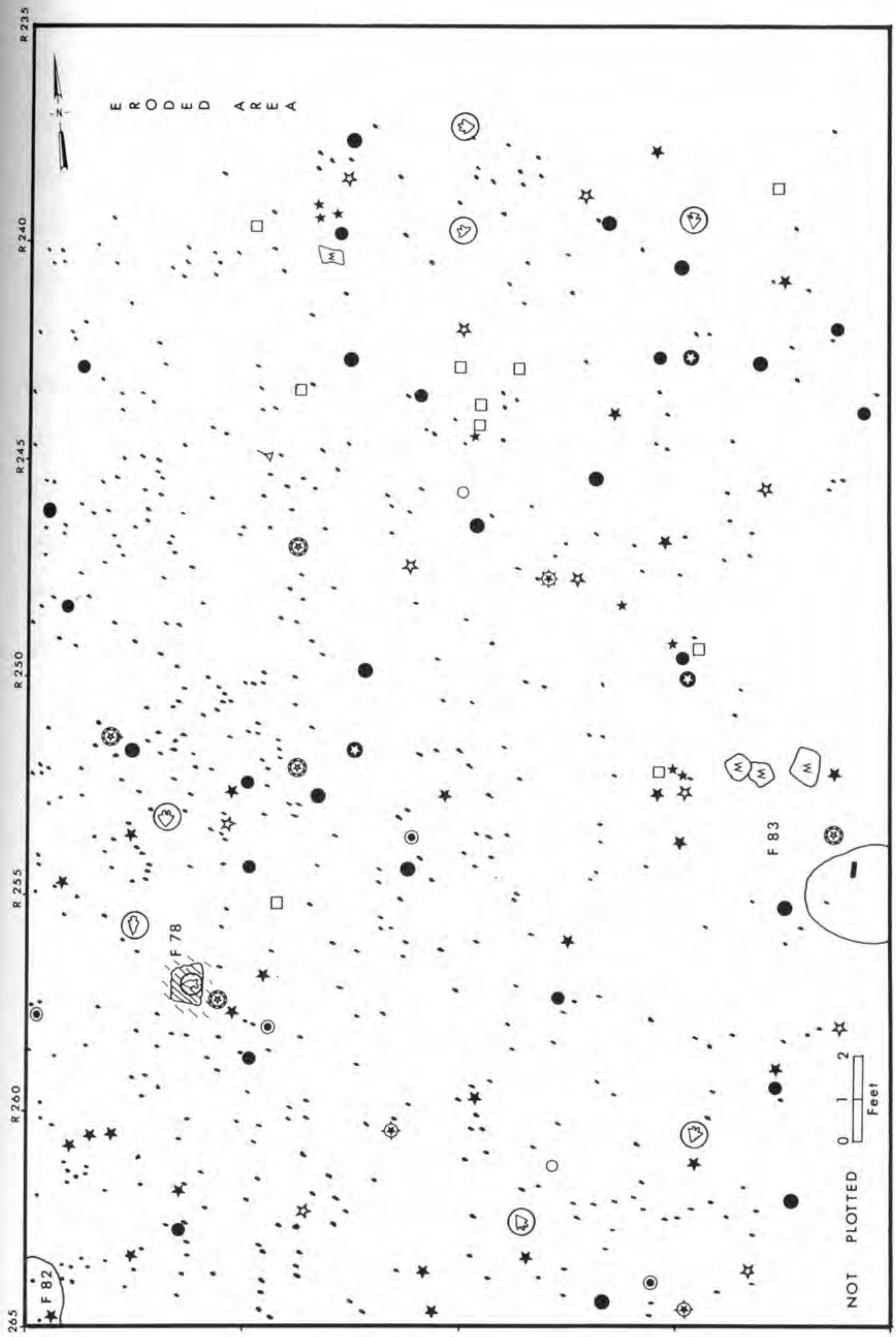

R 235
R 240
R 245
R 250
R 255
R 260
R 265
60
65
70
75
80
N
ERODED AREA
F 82
F 78
F 83
NOT PLOTTED
0 1 2
Feet

Fig. 10

78 shows an increase in chipping debris and tools and is associated with a fired area. A third possible concentration is in the area bounded by the R 245 and R 235 lines, and the 65 and 72 lines. A total of 842 cobbles and cobble fragments were plotted in this excavation level but have been omitted to better illustrate the tool and chippage distributions.

Unit A and C, Stratum VII-E, St. Albans Phase (Fig. 11). The fired areas in this horizon represent four distinct areas of activity that are closely related, if not contemporary. Feature 185 (Plate LVI) includes a fired area and tool cluster. Feature 133 may be associated or slightly later. Feature 174 (Plate XLVIII) is a large and intensively fired area that may be associated with the total activity encompassing Feature 206.

Unit A, Stratum VIII, Kirk Phase (Fig. 12). Feature 212 (Plate LVIII) and the large metate adjacent, form an activity area. Material was extremely scattered in this horizon but several tools were situated in the vicinity of the feature.

Unit B, Stratum VII, Excavation Level 5, St. Albans Phase (Fig. 13). Isolation of occupation floors was even more difficult in Unit B and H due to the lack of stratigraphic separation. Excavation level 4 and 5 yielded the largest number of artifacts with the shift from St. Albans to LeCroy type points occurring within them. Level 5 was chosen for illustration because of the concentration of choppers/scrapers in the southern section of Unit B that may suggest hide working activities. There were over 300 cobbles and cobble fragments plotted in this excavation level but they have been omitted from the figure.

Fig. 11. Plot sheet, Units A and C, Stratum VII E, St. Albans phase.

Key to symbols

Projectile point

Flake

Bipolar psuedo-core

<u>Piéce</u> <u>esquillée</u>

Utilized flake

Pitted cobble

Hammerstone

Worked hematite (goethite)

Unworked hematite (goethite)

Unidentified worked chert

Fired area

Charcoal

River cobble or cobble fragment

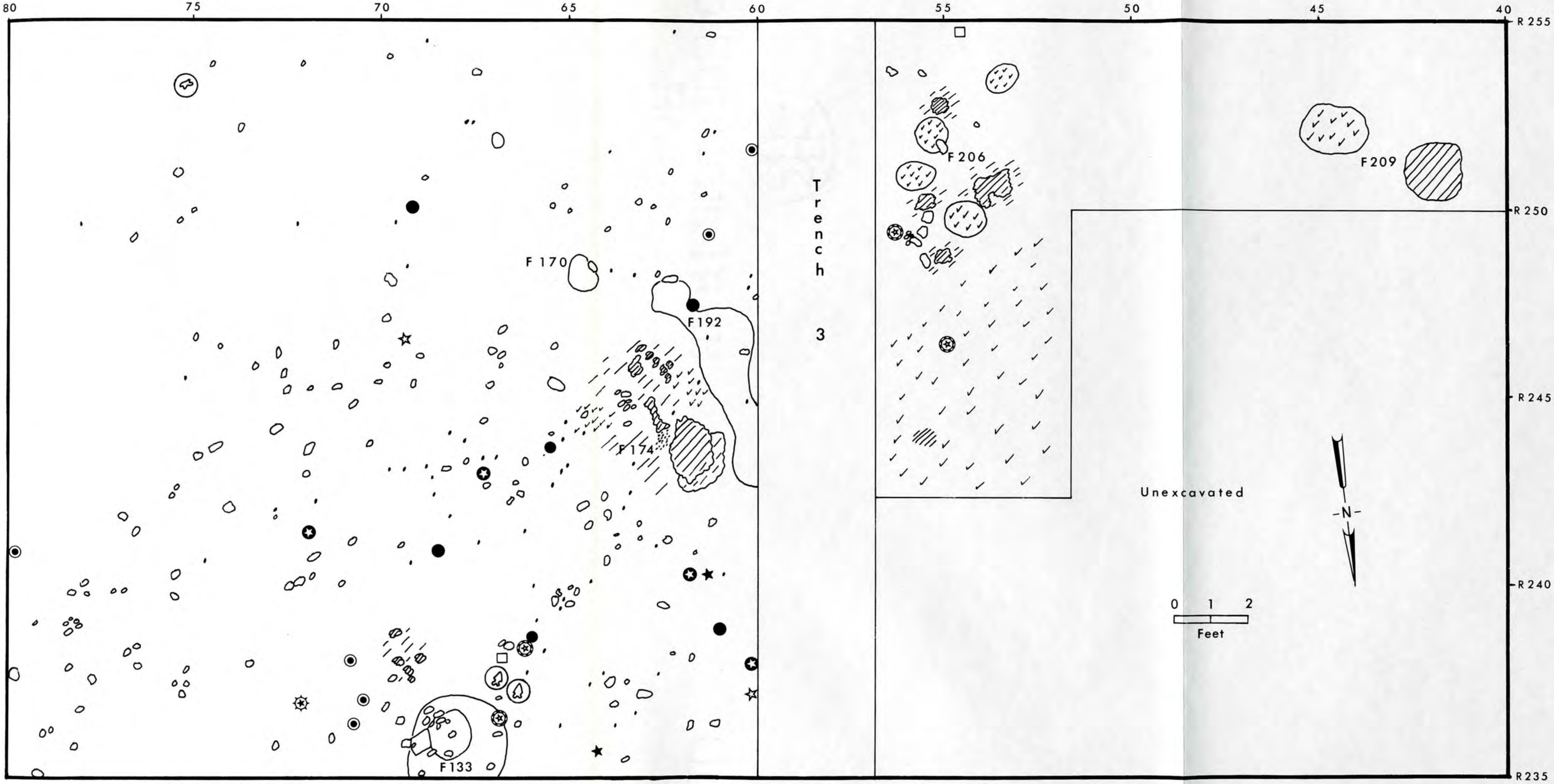

80
75
70
65
60
55
50
45
40
R 255
R 250
R 245
R 240
R 235
Trench
3
F 170
F 192
F 174
F 133
F 206
F 209
Unexcavated
-N-
0 1 2
Feet

Fig. 11

Fig. 12. Plot sheet, Unit A, Stratum VIII, Kirk phase.

Key to symbols

Projectile point

Flake

Metate

Hammerstone

Pitted cobble

Perforator

River cobble or cobble fragment

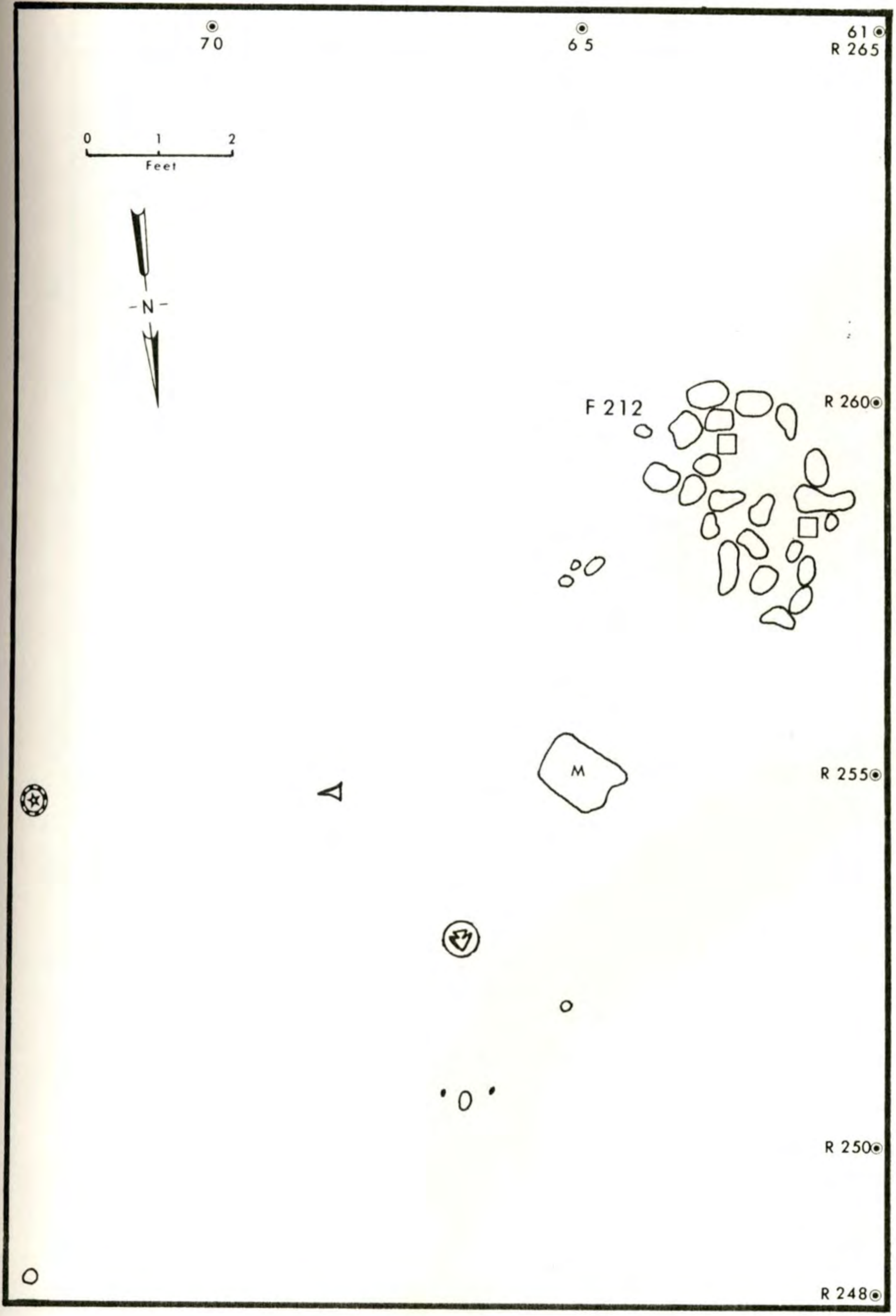
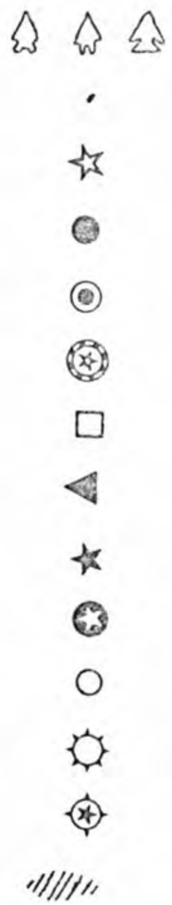


Fig. 12

Fig. 13. Plot sheet, Unit B, Stratum VII, excavation level 5, St. Albans phase.

Key to symbols



Projectile point

Flake

Utilized flake

Bipolar psuedo-core

Piéce esquillée

Pitted cobble

Hammerstone

Chopper/scraper

Unworked hematite (goethite)

Worked hematite (goethite)

Biface

Spokeshave

Sidescraper

Fired area

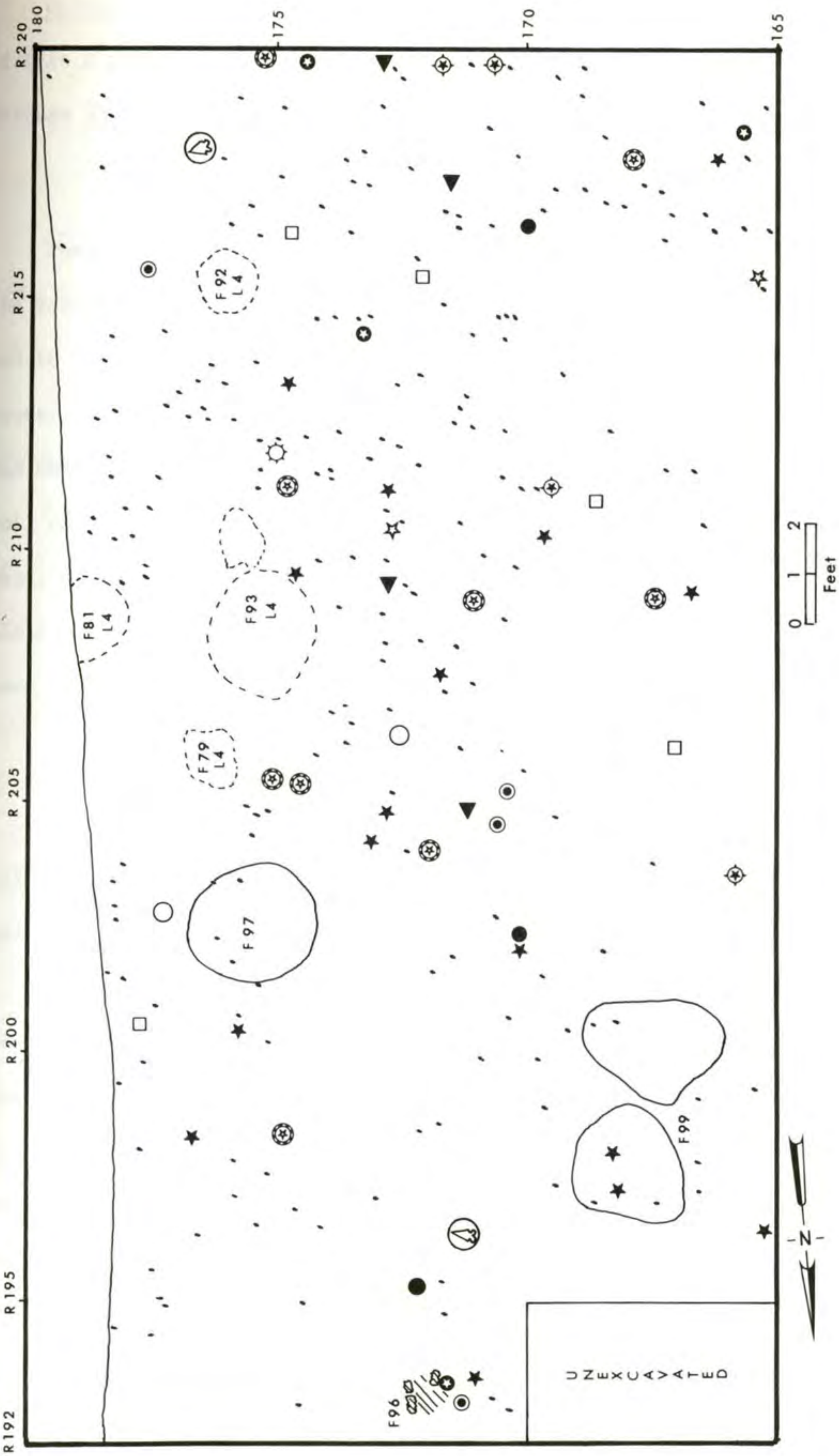

R 220
R 215
R 210
R 205
R 200
R 195
R 192
180
175
170
165
F 92
L 4
F 93
L 4
F 81
L 4
F 79
L 4
F 97
F 99
F 96
UNEXCAVATED
0 1 2
Feet
N

Fig. 13

Other Possible Activity Areas. Feature 137 in the LeCroy horizon of Unit C may represent an activity area centering around a large metate. Feature 173 is a similar situation.

Post Holes

There were five small discolorations classed as post holes during the Season I excavations. No patterning or clustering was apparent and it is felt that the majority of these were root or rodent disturbances. Post Hole 44 appears now to be in the class of globular pits. The absence of post holes is both disappointing and interesting. The soil coloration and ease in which other intrusions were observed is such that, post holes, if present, should have been discerned. It is possible that no structures were present or that lean-tos or simple shelters were such that their evidence has not been recognized.

Radiocarbon Dates

Reference has been made earlier in the text to radiocarbon dates. All dates assayed from the Rose Island site are presented and discussed below.

Eight samples of carbonized material from the Early and Middle Archaic horizons at Rose Island were submitted to Kruger Enterprises, Inc., Geochron Laboratories Division, for radiocarbon age determination. As pretreatment, selected charcoal fragments were cleaned of foreign material, including rootlets or other contaminating material that could be observed. They were then digested in hot dilute HCl and in hot dilute NaOh to remove chemical contaminants prior to combustion and analysis. The dates reported were based upon the Libby half-life (5570 yr) for C14, and the age was referenced to the year A.D. 1950.

Table 26 presents the radiocarbon age determinations received for each of the cultural phases dated. The date based on the 5730 yr half-life is also presented and was derived by multiplying the Libby half-life date by a factor of 1.030 (Ralph, Michael, and Han 1974:2).

The samples were recovered observing accepted practice and care. Charcoal fragments were removed upon exposure using tweezers, were place in fresh aluminum foil, folded, and sealed in a polyethelene bag. Effort was made to avoid contamination and to insure that the sample was associated with that which was intended to be dated.

Kirk samples GX3565 and GX3564 appear to be acceptable dates for the Kirk period (see discussion of Palmer Corner Notched above). Each of the two samples were large and the errors relatively small. Sample GX3565 was comprised of wood charcoal and a few carbonized hickory nut shell fragments. The sample was removed from the fire stained area around and among the cobbles of Feature 219. Sample GX3564 was comprised of wood charcoal with a few carbonized hickory nut shell fragments. The sample GX3169 is a questionable date. It was comprised of scattered carbonized hickory nut shell from the lowest culture bearing horizon in square 30 R 260 during Season I. The horizon appears to correlate with Stratum VIII in Unit C and should therefore be a date for the Kirk phase. The sample was, however, small, and this is reflected in the large error. Only at the two sigma level is the sample within the range of the other Kirk samples.

The three dates for the St. Albans phase cluster and correlate nicely with the dates for the St. Albans zones at the St. Albans site. Each sample was comprised of carbonized hickory nut shell and a minor amount of wood charcoal. Sample GX3167 was recovered from the base of

Table 26. Radiocarbon Dates, Rose Island.

Phase	Provenience	Sample No.	Radiocarbon Dates: 5570 Yr. Half Life		Radiocarbon Dates: 5730 Yr. Half Life	
			B.P.	B.C.	B.P.	B.C.
Kirk	Feature 219	GX3565	9110 ± 145	7160 ± 145	9383 ± 149	7433 ± 149
Kirk	Feature 212	GX3564	9330 ± 250	7380 ± 250	9610 ± 258	7660 ± 258
Kirk (?)	30 R 260, Stratum VIII	GX3169	8060 ± 350	6110 ± 350	8302 ± 360	6352 ± 360
St. Albans	Feature 168	GX3598	8660 ± 180	6710 ± 180	8920 ± 185	6970 ± 185
St. Albans	Feature 42	GX3168	8700 ± 300	6750 ± 300	8961 ± 309	7011 ± 309
St. Albans	180 R 210, Stratum VII, base, Level 4	GX3167	8800 ± 270	6850 ± 270	9064 ± 278	7114 ± 278
LeCroy	Unit A, Stratum VII-A, Level 2	GX3597	8920 ± 325	6970 ± 325	9188 ± 335	7238 ± 335
Early Middle Archaic	Unit B, Stratum IV	GX3563	8020 ± 190	6070 ± 190	8261 ± 196	6311 ± 196

excavation level 4 in Unit H. Level 4 is associated with the LeCroy type points. The lack of stratigraphic separation in Unit H, however, prevents clear separation of the cultural material. In that St. Albans type points predominate in level 5, sample GX3167 is believed to be associated with the St. Albans phase.

Sample GX3597 does not appear to be a good date for the LeCroy phase except at the two sigma level. Archaeomagnetic dates (Chapter II) suggest that the date is in the range of 6300 B.C., as the LeCroy zone was dated at the St. Albans site. The sample was comprised of carbonized hickory nut shell.

Sample GX3563 was obtained from a large sample of carbonized hickory nut shell and appears to be a good date. Its significance is discussed in Chapters II and III.

Summary

The Early Archaic cultural assemblages at Rose Island span over 1100 years and are representative of four, perhaps five phases. Except for changes in the projectile point/knife styles, little change is apparent in the assemblages over time.

Palmer and Kirk Phases

The presence of a Palmer phase is indefinite. It was suggested that on the basis of the presence of Palmer type points, Palmer type attributes on some points in the Kirk Corner Notched cluster, and the clustering of radiocarbon dates from sites with Palmer material and those of Rose Island, that little time separates the Kirk phase from the Palmer.

The Kirk phase was distinguished by a corner notched cluster of projectile points and was situated in Strata VIII and XI. Two radiocarbon dates suggest an average date of 7270 B.C. ± 198 yr (Libby half-life). The bipolar flaking technique, resultant pièces esquillées, and associated pitted cobbles are present and continue throughout the subsequent phases. Stone slab metate/anvil stones are present and continue through the Early Archaic horizons along with worked and unworked hematite (goethite). Hammerstones are also included in the assemblage. Chipped stone artifacts include sidescrapers, end scrapers, a drill, a unifacial perforator, a graver, and utilized flakes. The possible production of blades is suggested by two large blade-like flakes. Feature types include fired areas, globular pits, depressions, surface concentrations of rock and of chert and slate; all of the feature types were present except the basin and pit that appear in the next phase.

St. Albans Phase

The diagnostic artifact of this period is the small bifurcated base projectile point/knife defined as the St. Albans Side Notched type. Several undefined variants of the bifurcated base types were also present. The other artifact types present in the Kirk phase continue and increase in frequency and variety. Ground stone appears in the form of celts and a distinctive chopper/scraper occurs, used, perhaps, in hide working. Bifaces in various stages of manufacture are also present. A curious, small, globular shaped pit is common only during this phase. Radiocarbon dates suggest an average date of 6770 B.C. ± 250 yr.

LeCroy Phase

By the time of this phase (c. 6300 B.C.) the bifurcated base point has evolved into a bifurcated stemmed variety defined as the LeCroy Bifurcated Stem type. The remainder of the artifact assemblage continues essentially unchanged.

Kanawha Phase

This appears to be the last phase of the bifurcated projectile point/knife tradition and is poorly represented at the Rose Island site. Two Kanawha Stemmed type points were diagnostic of the horizon. The bipolar technique and the use of hematite (goethite) were still important. A graver, biface, and two sidescrapers were present, but the assemblage is too small for comparative purposes. A date of c. 6200 B.C. would be a good estimate for this phase.

V. PALEOENVIRONMENT AND SUBSISTENCE

Tellico Reservoir Area Today

During the last 40 miles of its course the Little Tennessee River leaves the mountains to the east and flows through a valley of narrow flood plain and rolling hills to its confluence with the Tennessee River. The present-day ecosystems of the area are considerably different from those that existed before the nineteenth century. Fifteen hydroelectric generating developments on the Little Tennessee River system have altered the characteristics of the river. Before the completion of Fontana Dam, the river downstream from Mile 60 was a fairly typical east Tennessee warmwater stream, populated by bass, catfish, suckers, and other warmwater species (TVA 1972:I-1-14). With the construction of the Aluminum Company of America's Chilhowee Dam, the last stretch of river became controlled by upstream discharge, and with cold water from the bottom of the upstream reservoir, it now supports a large trout population.

Prior to the upstream dam projects, the area was subject to periodic floods. The computed average annual stream flow just above Rose Island, and considered typical of long term conditions prior to the dams, amounts to about 5820 cfs. Large prerecord floods, thought to have been in excess of 100,000 cfs, occurred in May 1840, March 1867, February 1875, March 1886, October 1898, and March 1902.

The peak discharge of the March 1867 flood is estimated to have been 153,000 cfs (TVA 1972:II-1-7,8). Over one-half of the floods recorded downstream at Loudon occurred during the three winter months (McCollough and Faulkner 1973:6). The sight of Rose Island completely submerged is within the memory of many of the local residents.

East Tennessee lies in the region of prevailing westernly winds and much of the weather originates in the interior portion of North America. The Gulf of Mexico is the primary source of moisture which is brought in from the southwest of the region. The area, therefore, has a Humid Mesothermal type of climate characterized by a definite seasonal rhythm. Due to the hilly or mountainous terrain, the topography has a strong local influence on the weather and climate (Fribourg et al. 1973: 5).

Precipitation over a 15 year period on Rose Island has averaged 53.46 inches (Hiwassee Land Company records). July rainfall frequently exceeds the precipitation of any other month. September and October are usually the driest months and winter is the wettest season. Average annual snowfall is strongly dependent upon topography ranging from about four inches per year in southern parts of the Great Valley to more than 12 inches on the Cumberland Plateau, and 24 inches or more at high elevations in the mountains (Fribourg et al. 1973:5).

Temperatures in east Tennessee generally remain somewhere between 10^{o}-80^{o} F throughout the year. Daily averages are normally near 35^{o} F in January and about 75^{o}-80^{o} F in July. The growing season ranges from over 200 days in the Valley to 150 days or less in the northern part of the Plateau and in the mountains (Ibid.:6).

Rose Island is situated in a zone of transition between a mixed mesophytic forest (tulip-deer-oak faciation) and an oak-chestnut forest (oak-deer-chestnut faciation) (Shelford 1963:19,37). It is doubtful that the area represented a true ecotone in the sense that the pinelands of South Carolina and Georgia showed transitions to oak-hickory maritime and magnolia forests (Ibid.:19), but it is important in evaluating the subsistence potential to realize that the Indian inhabitants had access to a number of micro-environments, perhaps made more varied by two deciduous forest zones.

Even with the encroachments of man and his pollution the area is still rich in plant and animal resources. A TVA forest inventory recorded 68 species of trees and woody shrubs (TVA 1972:II-12-19,20). McCollough and Faulkner (1973:Table 1) recorded 61 species of food plants that might be expected to occur in recent alluvial terrace, older alluvial terrace, and upland ridge environments in the vicinity of the Higgs site. The role of the chestnut (Castanea dentata) and its significance in prehistoric times is in question. Prior to the chestnut blight the tree is reported to have been quite common on the older alluvial terraces and upland ridges (Martin 1971). Carbonized remains of the nut are, however, extremely rare in the paleobotanical samples from archaeological sites in the eastern United States (Richard A. Yarnell, personal communication). Two interpretations are possible. The first is that the chestnut was not as common in the prehistoric forest as it was in the nineteenth century, and the nut was, therefore, of minor importance. The second interpretation is that the general absence of carbonized remains is due to differential preservation. It is possible that the leathery involucres were discarded in the field and only the enclosed seeds were returned to the living site, thus leaving no waste to be carbonized. Support is given to the second interpretation in that chestnut was fairly common in the pollen profile from Shady Valley Bog, Johnson County, Tennessee, after 9500 B.P. (Barclay 1973:Fig. 1).

Animal resources today are also abundant. In the lower Little Tennessee River valley TVA (1972:II-12-1-19) recorded 37 species of game animals, 78 species of fish, 58 species of amphibians and reptiles, 25 species of ducks and waterbirds, 26 species of shore and wading birds, and 102 resident and migrant avian predator and song bird species. Of the animals the list is only partial.

Some idea of the abundance of natural resources in the lower Little Tennessee River area is given by eighteenth century European visitors. DeBrahm (Williams 1928:193) referred to it as the American Canaan with the "...richest soil equal to manure itself, impossible in appearance to wear out;..." Lt. Henry Timberlake (Williams 1927: 68,72) described the region as having vast amounts of game including fish, otters, beavers, buffalo, bears, deer, panthers, wolves, raccoons, oppossums, turkeys, geese, ducks, partridges, and pheasants. The woods abounded with plants and plant foods, and the soil was "...so remarkably fertile, that the women alone do all the laborious tasks of agriculture...."

The natural environment described by DeBrahm and Timberlake was, even in the eighteenth century, one that had felt the hand of man. Much of the bottomland had been cleared by the Cherokee for fields; fields which probably had been cleared earlier by the Mississippian period occupants of the valley. Areas of open or disturbed land apparently existed in the area at least from the Late Archaic period. Paleobotanical data from the Higgs site in adjacent Loudon County suggest that sunflower cultivation was practiced during the Terminal Archaic period. The seeds occurred with red cedar charcoal (Juniperus virginiana), a tree that suggests second growth, perhaps indicative of previous clearance of the flood plain (Brewer 1973:142). The author's analysis of the Late Archaic remains at the nearby Icehouse Bottom site (Chapman 1973) showed the presence of cleavers (Galium Aparine), carpetweed (Mollugo verticillata), chenopod (Chenopodium sp.) and bearsfoot (Polymnia uvedalia) that suggest the presence of disturbed habitats at this time period.

Rose Island Paleobotanical Remains

One of the most significant aspects of the Rose Island Early Archaic horizons was the presence of large amounts of carbonized plant remains. This afforded an opportunity to identify and quantify plant remains from a period of time in which few paleobotanical remains have been recovered and none analyzed. The paleoenvironmental and subsistence data are presented below.

Recovery and Analysis Procedure

Carbonized plant remains were recovered from the Early Archaic horizons in two ways. A sample of the fill from each feature was subjected to flotation or water separation (Struever 1968). This technique was applied only to those features that were basins, pits, or depressions; fired areas had no distinguishable fill. Flotation was performed during the field season using a large tub with a fine mesh bottom, a tea strainer with .05 mm mesh as a scoop, and the adjacent Little Tennessee River as a water source. The tub was submerged half-way in the water, the feature fill was then added, and while the tub was agitated, the light fraction (charcoal and occasional small flakes) were skimmed from the surface and near surface. The soil passed out throught the bottom of the tub and care was taken so that the tub was never lifted out of the water while containing a sample in order that no small carbonized material would get sucked through the bottom.

The second means of recovery was by waterscreening. Feature fill not processed by flotation was placed in a screen box and gently hosed through one-sixteenth inch mesh. This recovery method was intended primarily for the recovery of small artifacts but recovered the majority of the carbonized plant remains as well. All midden soil was waterscreened through one-fourth inch mesh under considerable water pressure. Under these conditions only the larger, less friable nutshell fragments and wood charcoal fragments were recovered. It must be emphasized that for paleobotanical recovery waterscreening is by no means a substitute for flotation.

Quantified analysis of the flotation samples was conducted by the author and followed basically the procedure outlined by Yarnell (1974:113-114). Each sample was weighed and then divided into 11 parts by careful sifting through a series of 10 standard laboratory screens ranging in size from 6.35 mm to 0.21 mm. Each resulting sample fraction was composed of particles approximately the same size which facilitated the separation of various components. Each fraction was weighed and examined under low magnification (7x to 30x). Only the fractions with particles retained in the 2.38 mm screen or larger were entirely sorted and quantified by weight. The material in the smaller screens was examined for weed and grain seeds and the percentages of plant remains were calculated on the basis of quantities determined for materials not passing through the 2.38 mm screen.

Wood charcoal analysis was conducted by Richard A. Yarnell on samples of fragments 6.3 mm or larger from both Early Archaic and Early Woodland contexts. The Early Archaic sample was derived from the waterscreened midden soil from Unit H, excavation level 4 and from the flotation samples of Features 1 and 41. The sample is representative of the bifurcated projectile point phases, especially the LeCroy. The Early Woodland sample was derived from the waterscreened midden sample of Stratum II in squares 110 R 295, 150 R 300, 150 R 295, 240 R 225, and 250 R 225, and from the flotation sample of Feature 21. Identification of wood types was under low magnification (30x) and was to genus and species where possible. The mean frequency between the midden sample and the feature sample of each wood type was computed and is felt to be representative of the types present.

There are a number of possible errors inherent in interpretations made from wood charcoal. Differential preservation and sampling error are factors here as they are with plant foods. It is also quite possible that some of the wood being utilized was secondarily deposited prior to use, such as driftwood conveyed downstream. Ethnographic data show repeatedly in area of abundant wood that there was a deliberate selection of certain wood types for their burning properties. Asch et al. (1972:6) suggest that trees which are poor self-pruners will be underrepresented in an archaeological sample if dead or fallen branches were collected in preference to green wood.

Wood Charcoal Analysis and the Paleoenvironment

Fig. 14 presents the spectra of wood types identified from the wood charcoal analysis. Of the 12 categories of wood types identified as present in the Early Archaic horizons at Rose Island, the oaks (Quercus sp.) were the most frequent. Almost as common is the category of diffuse porous woods; included but not specifically identified would be types such as dogwood (Cornus sp.), maple (Acer sp.), and cherry (Prunus sp.). Unknown and unidentifiable pieces comprise the third largest category; the unidentifiable category included undiagnostic fragments sush as pieces of carbonized knots or joints. Hickory (Carya sp.), mulberry (Morus rubra), elm (Ulmus sp.), honey locust (Gleditsia triacanthos), beech (Fagus grandifolia), walnut (Juglans sp.), sweetgum (Liquidambar styraciflua), sassafras (Sassafras albidum), and ash (Fraxinus sp.) are present in that order. The spectrum is typical of the native forest community one would expect on the rich alluvial soils of Rose Island and the neighboring ridges. What is noticeably lacking is any evidence of coniferous trees.

About 6000 years later the spectrum of wood types has changed. Discounting the large number of unknown and unidentifiable fragments in the Early Woodland sample, hickory predominates and oaks are still well represented. The coarse diffuse porous woods have declined greatly in frequency and many of the tree types represented in the Early Archaic sample are not represented in the Early Woodland sample. Significantly,18% of the sample was comprised of pine (Pinus sp.) charcoal.

As mentioned before, red cedar was identified in a Terminal Archaic context at the Higgs site in adjacent Loudon County. White

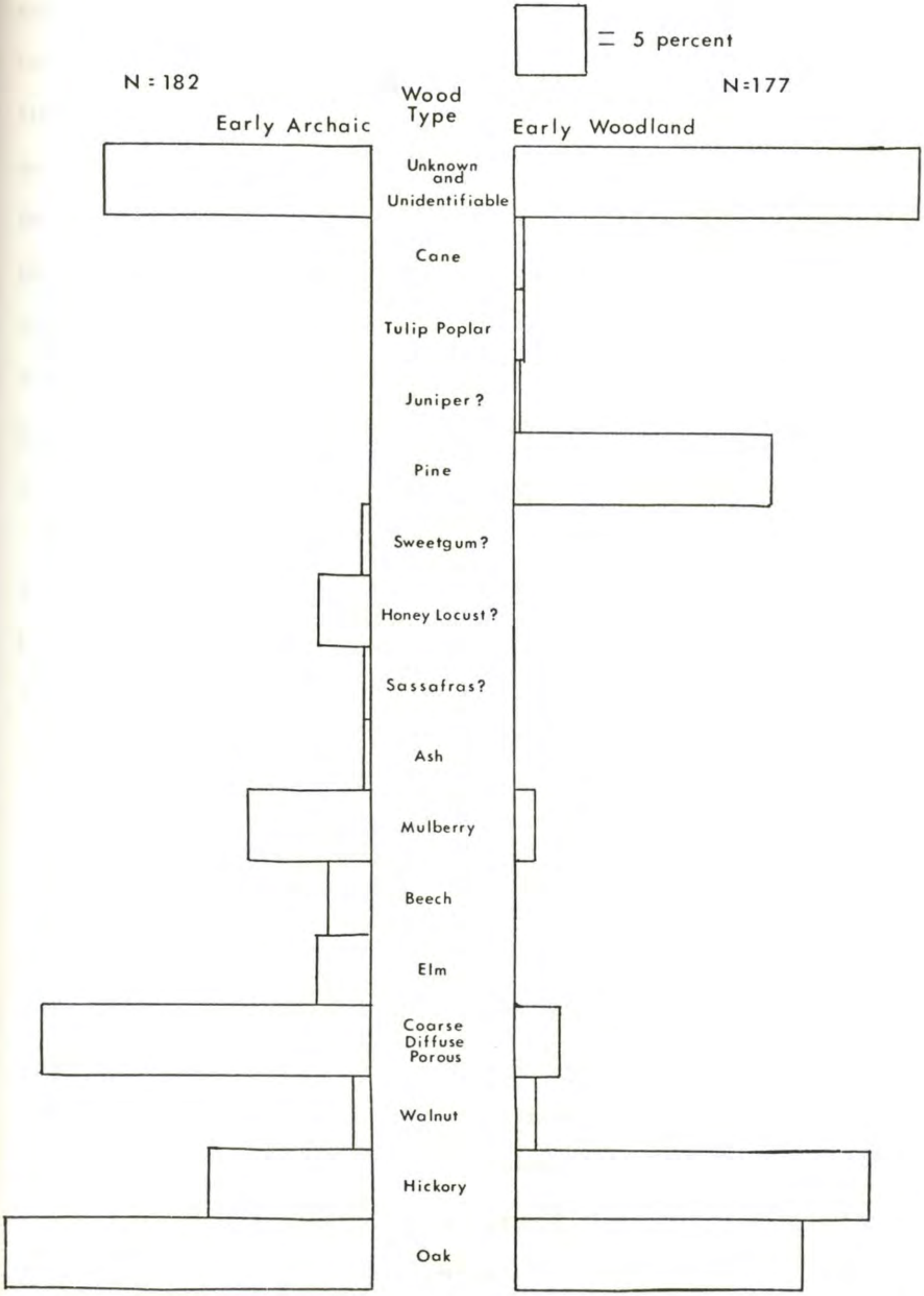


Fig. 14. Percentage of wood type frequencies present in Early Woodland and Early Archaic period wood charcoal samples.

pine (Pinus strobus) was identified in the Early Woodland zone at the same site (Brewer 1973:142-143). Pinus and Juniperus are both characteristic of second growth and edaphic climax conditions. What the limited amount of evidence from the Higgs and Rose Island sites suggests is that a shift occurred in the vegetation of the area between the Early Archaic and the end of the Late Archaic period. During the seventh millenium B.C. it is postulated that a climax or near climax mixed mesophytic forest covered the area. During the succeeding millenia, increased human activity and concomitant climatic change, produced the changes in vegetation one sees reflected in the paleobotanical remains.

Such a model is in line with the present palynological evidence from Virginia, North Carolina, and northern Georgia. Victor A. Carbone (1973:88-93) in reconstructing the paleoenvironment of the Shenandoah Valley, has examined the evidence for shifting vegetation as presented by Watts (1970), Whitehead (1965), Craig (1969), and Maxwell and Davis (1972). In summary, the time span from maximum glaciation to present can be divided into 3 periods: Full Glacial (25,000-15,000 B.P.), Late Glacial (15,000-10,000 B.P.), and Post Glacial (10,000 B.P.-present). During the Full Glacial, pines dominated in southeast North Carolina; in northern Georgia, forests were predominantly coniferous. During the Late Glacial period oak and hickory increased in percentage and the general trend was towards a hardwood forest. During the Post Glacial period Carbone (1973:90) observed that most profiles show an intervening oak maximum before the establishment of modern oak-pine, oak-hickory, and oak-chestnut communities. The Early Archaic wood charcoal spectrum from Rose Island suggests a hardwood forest community that is comparable to those suggested for the early Post Glacial period.

Pollen Studies

The use of wood charcoal types to reconstruct a paleoenvironment of an area is tenuous at best. For example, at the Koster site the botanical remains provided no evidence for the dryer Hypsithermal Interval (5600-2500 B.C.) that was, however, evident from palynological evidence (Asch et al 1972:19). In order to obtain a check on the frequency of wood charcoal types, an attempt was made to isolate pollen grains in soil samples from Rose Island.

The study was conducted by Charles R. Bagnell, Jr. in consultation with Norton A. Miller at the University of North Carolina, Chapel Hill (Bagnell 1974). Two groups of samples were analyzed; two different methods of analysis were tried on the first group and a third method was used on the second group. The results suggest that pollen preservation in the alluvial soils is very poor. Only Stratum II contained any pollen at all--five pollen grains that are possibly gum (Nyssa sp.). A few spores were also isolated, but no spores or pollen were isolated in the Early Archaic horizons.

Bagnell believes that further attempts to isolate pollen in these alluvial soils will not be fruitful. Sampling of nearby sink holes is planned for the future in hopes of recovering a well preserved pollen record that can serve as a check and a supplement to wood charcoal frequencies.

Plant Food Remains

Table 27 presents the analysis to date of the Early Archaic period plant remains in quantified samples. Most of the analysis was

Table 27. Early Archaic period plant remains in quantified samples.

Sample	Cultural Phase	Total gram Weight of Plant Remains	Wood Charcoal		Hickory Nut (*Carya* Sp.)		Acorn (*Quercus* Sp.)		Honey Locust (*Gleditsia triacanthos* L.		Unident	
			Wt.	%	Wt.	%	Wt.	%	Wt.	%	Wt.	%
F41	LeCroy	11.39	4.46	39.2	4.82	42.3	2.10	18.5	0.01 (1)	-		
F88	LeCroy	34.43	3.48	10.1	30.33	88.1	0.62	1.8				
F 1	St. Albans	25.08	17.10	68.2	3.72	14.9	4.24	16.9	0.01 (1)	-	0.01	-
F 5	St. Albans	1.56	0.96	61.8	0.30	19.1	0.30	19.1				
F 35	St. Albans	6.23	4.50	72.2	1.73	27.8	-	-				
F 37	St. Albans	7.37	6.77	91.9	0.59	8.0					0.01	-
F 40	St. Albans	0.31	0.14	45.9	0.16	52.5	0.01	1.6				
F 42	St. Albans	30.25	6.09	20.1	23.76	78.6	0.40	1.3				
F 60	St. Albans	28.79	15.64	54.4	9.28	32.2	3.87	13.4				
F 63	St. Albans	10.47	9.18	87.7	1.28	12.2	0.01	0.1				
P-M 44	St. Albans	0.63	0.30	47.6	0.33	52.4						
F 203	Kirk	27.62	0.87	3.2	7.65	27.7	19.10	69.1				
Total	LeCroy	45.82	7.94	17.3	35.15	76.7	2.72	5.9	0.01	-		
Total	St. Albans	110.69	60.68	54.8	41.15	37.2	8.83	8.0	0.01		0.02	
Total	Kirk	27.62	0.87	3.2	7.65	27.7	19.10	69.1				
Total Plant Remains		184.13	69.49	37.7	83.95	45.6	30.65	16.6	0.02	-	0.02	

done after the first season of excavation and before the LeCroy, St. Albans and Kirk phases were isolated. For this reason, there is not an even distribution of analysis of features from each phase. Any trends between phases inferred from this data should be viewed with caution.

Hickory nut (Carya sp.) and acorn (Quercus sp.) comprise over 99% of the plant food remains represented in the sample. Of the two, however, hickory nut predominates comprising 92.8% of the plant foods in the LeCroy phase samples and 82.3% of the plant foods in the better represented St. Albans phase. The single Kirk phase feature contained mostly acorn shell and it is unknown if this is typical.

Two interpretations of the hickory nut/acorn frequency can be made. The first, is that hickory nut was the primary plant food and was only supplemented by acorns. This is the interpretation favored by Asch et al. (1972:27) from similar frequency results in the paleobotanical remains from the Archaic horizons at the Koster site. They see the hickory nut as a "first-line" wild plant food. As a single plant food on which to rely, hickory nuts would be the best. They are high in fats and crude protein and require no special processing to render them edible. Hickory nuts also provide over three times the food energy in calories per 100g than acorns supply (Ibid.:Table 5)). Acorns and other plant foods need be tapped only when food was scarce.

On the other hand, the relative gram weights of the two nutshells can be misleading. Acorn shell is less dense, and is lighter than hickory nut shell. There is also more available meat per shell in an acorn. For example, 100 lb of cleaned shell bark hickory (Carya laciniosa) nuts yields 15-25 lb of meat. For shag bark hickory (Carya ovata) this figure is 25-38 lb of meat. White oak acorns

(*Quercus alba*), however, yield 60-90 lb of meat per 100 lb (USDA 1948:110,301). With the difference in shell weight it is suggested that to derive the food equivalence of acorn to hickory nut in the archaeological sample, the weight of the acorn shell must be multiplied by a factor of 10-20. With this adjustment, it is possible that acorn meat comprised at least as large a portion of the diet as did hickory nuts.

Hickory nuts and acorn complement one another in nutritional value in that acorn is high in carbohydrates. Heizer (1958:20-21) has observed:

> "Compared to corn meal and wheat flour, acorn meal is in no way inferior as a food. As against 1.9% of fat in corn meal and 1.0% fat in wheat flour acorn meal contains 25.31% fat. In protein, acorns with 4.5% fall below corn meal with 9.2% and wheat flour with 11.4%. In carbohydrate, wheat flour is highest with 75.4% and corn meal next with 74.4% and acorn meal with 62.0%."

It is the position here that acorn and hickory nuts formed the "first-line" plant food staples at Rose Island during the Early Archaic.

Apparently walnut (*Juglans nigra*) and butternut (*Juglans cinerea*) were only occasionally collected. No fragments appeared in the analyzed samples and only five fragments of butternut were observed in the large quantities of waterscreened samples. Asch et al. (1972:27) point out that walnut trees tend to be widely spaced throughout a forest. In addition, walnuts, in contrast to hickory nuts, retain their hulls which must be removed by hand.

Three carbonized honey locust (*Gleditsia triacanthos*) seeds were recovered from the Early Archaic horizons. One occurred in the LeCroy phase Feature 41, one in the St. Albans phase Feature 1, and the third was recovered in waterscreening the soil of Stratum VII-G adjacent to Feature 188. Honey locust trees occur on rich bottom lands, mountain slopes, and along watercourses (Harrar and Harrar 1962:369), and would not be unexpected in the postulated forest community of the Early Archaic period. The seed itself is not edible, but in long pods they are surrounded by a thin pulp which remains sweet for some time after the pod ripens and the pulp is quite good to eat (Fernald and Kinsey 1958:243; Core 1967:208).

The absence of weed and grain seeds in the analyzed samples should be noted. In addition to the quantified samples in Table 27, microscopic (7x) examination of the flotation samples from Feature 77,85,124, and 127 failed to reveal any seeds. This phenomenon may be due to differential preservation (Munson et al. 1971:427), cultural preference, lack of disturbed habitats conducive to weed growth, late fall or winter occupation at a time when weed seeds would not be frequent, possible sampling error, or a combination of these factors. The lack of quantified paleobotanical data from the other sites of this time period prevents determining if this situation is typical. In the Middle and Late Archaic horizons at the Koster site, carbonized seeds occurred in such low quantities that it is not even certain they were eaten (Asch et al. 1972:25). The lack of weed seeds from the Rose Island Early Archaic lends support to the evidence from the wood charcoal of a climax forest with little disturberd area.

The St. Albans site (Broyles 1966, 1971) is the only Early Archaic site with carbonized plant remains that has been published. Unfortunately, the analysis is only preliminary. Snider (1971:94) reported the presence of carbonized nutshell and wood charcoal, but neither quantified the remains nor identified the genera. On the basis of a single photograph of nutshells (Ibid,:Fig. 2) it appears that both hickory nut and *Juglans* sp. were present in Kirk zone 18.

Faunal Remains

Four badly preserved, small fragments of bone were recovered from Feature 206 and 207. They were examined by Paul Parmalee at the University of Tennessee, Knoxville, who could conclude no more than the pieces were unidentifiable bone fragments, possibly mammal. It is interesting that with the good preservation and abundance of carbonized plant remains, no carbonized or calcined bone was observed in the water-screen or flotation samples.

Subsistence Systems and Primary Forest Efficiency

Evidence for the reconstruction of the subsistence pattern is unfortunately incomplete due to poor bone preservation. One may assume, however, on the basis of the large amounts of carbonized nuts, that occupation occurred during the availability of nuts--September-November. Whether occupation also occurred at other times is unknown.

Projectile points, scrapers, *pièces esquillées*, and other tools suggest that hunting and game processing activities were also conducted during the Early Archaic phases at Rose Island. The site is adjacent to upland hills and ridges that rise 100-200ft above the valley floor. The typical forest community on these ridges in recent times was dominated by the white oak and chestnut oak (*Quercus prinus*) along with hickory (McCollough and Faulkner 1973:11). Wild turkey, bear, and white tailed deer were all attracted to the mast of the upland forest in the fall. Ruff (1938:28), in a study of the white tailed deer in the nearby

Pisgah National Forest, observed:

> "Thence when the mast and fruit season begins (usually after the first week in September), a very definite movement towards the mast producing types (the oak-chestnut types) of the higher slopes and ridge tops is evident. Heavy use of these areas continues to the beginning of the rutting season in early November..."

Harrar and Harrar (1962:166) state that the nuts from the beech tree contain a high percentage of oil and are consumed in vast quantities by small game animals and birds. A similar situation may have existed in Early Archaic times and the Early Archaic people of Rose Island were hunting as well as gathering.

In this area of rich resources the Rose Island site may have served as a seasonal base camp for a hickory nut-acorn-possible white tailed deer procurement system. Such a system would have involved seasonality and consequently a degree of scheduling by the Early Archaic bands (Flannery 1968:74-76). Seasonality and scheduling apparently maintained a high level of procurement effectiveness such that there was little pressure for change. This deviation reducing effect is reflected throughout most of the Archaic period. Asch et al. (1972:28) demonstrated that a narrow range of resource exploitation continued until after 2500 B.C. at the Koster site.

What "deviation amplifying" processes occurred towards the end of the Archaic period in Eastern North America is uncertain. Flannery (1968:79ff) suggested that in Meso-America it was a series of genetic changes which took place in one or two species of plants which were of use to man. Asch et al. (1972:29) constructed a Malthusian model of large populations exerting pressure on the system such that alternative food sources were tapped, a situation apparent in the paleobotanical samples from Late Archaic and Early Woodland sites (cf. Struever and Vickery 1973). The transition from Archaic to Woodland and the diversification of plant food exploitation is, however, beyond the scope of this paper.

During the Archaic period in eastern North America Joseph Caldwell (1958:vii) suggested there was:

> "...an increased efficiency in exploiting the forest, manifested in the development of ambush hunting, seasonal cycles, and the discovery of new sources of natural foods. This trend was progressive in the sense of being an increasingly successful adjustment to the eastern forest environment. It seems to have culminated in Late Archaic times, at the beginning of the second millenium B.C., in what we have called the establishment of primary forest efficiency."

The successful adjustment to the forest environment involved a gradual shift from the utilization of a wide range of foods to the emergence of food specializations and transhumance during the Late Archaic (Caldwell 1965:67). The discovery of the times and places where wild foods were most effectively secured would be part of the achievement of primary forest efficiency (Caldwell 1958:12). In the centuries following the Archaic, "An economy leaning heavily on acorns, hickory nuts and other forest seeds, stored in subterranean pits, arose within the deciduous forest south of the Prairie Peninsula" (Ibid.:21). Asch et al. (1972:25ff) have observed that this sequence is not supported by the Koster paleobotanical data. It appears that from 5000-2000 B.C. there was a very narrow range of plant foods utilized. Such resource specialization does not apparently represent forest inefficiency or ignorance, in that evidence of other plant foods were present in the paleobotanical samples. The long term stability of the resource system goes counter to the expectations of Caldwell's model.

The procurement system proposed for the Rose Island Early Archaic shows an earlier resource specialization than that of Koster, and suggests that quite likely primary forest efficiency, reflected in the exploitation of a narrow, yet nutritious spectrum of plant foods, was attained very early in the prehistory of the southeastern United States. Certainly innovations did occur during the Archaic period and these are reflected in the artifact assemblages. But the procurement systems were controlled by seasonality and scheduling, and remained conservative throughout the Early and Middle Archaic periods. During the Late Archaic certain changes began to occur in the subsistence base and models such as that of Asch et al. (1972) may be a better explanation of the dynamics of prehistoric change than that of Caldwell's.

Settlement Patterns

Transhumance is implied within the seasonality and scheduling of the procurement system at Rose Island. The discussion and reconstruction of settlement patterns of the LeCroy, St. Albans, and Kirk phases must be based on the distribution of sites and comparative material. It is felt that this could be done best after examining the distribution and cultural position of the bifurcated point tradition in the eastern United States, as will be done in Chapter VI. As will be developed there, the Rose Island site is viewed as a seasonal base camp in a central based transhumance system.

Summary

Analysis of the paleobotanical remains from the Early Archaic horizons at Rose Island has suggested that there was an exploitation of a narrow spectrum of plant foods. Large quantities of hickory nuts and acorns were gathered, and it is assumed that deer, bear, and turkey, attracted by the mast were hunted as well. Analysis of the wood charcoal lends support to a paleoenvironmental reconstruction of a near climax mixed mesophytic forest with little evidence of disturbed habitats. Certain changes occurred in the vegetation of the area over time due both to the activities of man and to climate change. Finally the data from the Rose Island site, along with that from the Koster site, suggest that primary forest efficiency, reflected in the exploitation of a narrow range of nutritious plant foods and transhumance, was attained very early in the prehistory of eastern North America.

VI. THE BIFURCATE TRADITION AND CONCLUSIONS

Background

Projectile points and other American Indian artifacts in the eastern United States have been collected as antiquities or curios, and have stimulated speculation from the eighteenth century to the present. Early efforts to collect and publish archaeological data can be found in the Transactions of the American Philosophical Society (cf. Sargent 1799) and other compilations of regional and state antiquities. The principal foci, however, of the nineteenth century archaeological investigations were the widespread mounds whose presence spawned theories of lost races and Moundbuilders. Towards the middle of the nineteenth century, archaeological endeavors departed from speculation and engaged in classifying and describing the archaeological data (Wiley and Sabloff 1974). Typology and the classification of the enormous quantities of artifacts that had been, and were being recovered arose around the turn of the century. In the eastern United States one of the founders of this trend was William Henry Holmes.

It is in Holmes' (1897:Plate XLII) analysis of the artifacts from the Potomac-Chesapeake area that there is the first recognition of a distinct class of projectile points with bifurcated bases. Although grouped with other points of "eccentric shapes",Holmes illustrates 16 points of the bifurcate tradition. Interestingly, two other books were published in the same year which suggested a wide distribution for the style. Thruston (1897:219, Fig. 119) observed that projectile points with "double or forked shanks" are not uncommon in the section of middle and eastern Tennessee. Beauchamp (1897) recorded the presence of bifurcated points in New York state and referred to them as triple notched points.

Not until a half century later did bifurcate points and their cultural associations become an issue. In 1947 Kneberg (1952: Fig. 110G) illustrated bifurcated base projectile points as typical of the Mouse Creek focus in eastern Tennessee. The point type was by association late; the Mouse Creek phase is now regarded as a sixteenth century occupation in the area (Garrow 1974). Attention was drawn to the point as a potential type in 1952 by Lewis and Kneberg (1952a:36) in a note published in the Tennessee Archaeologist that urged finders of similar points to notify the editors. In the following issue (Lewis and Kneberg 1952b:60-61),the responses to the request suggested a wide distribution of bifurcate points east of the Mississippi River. It was also apparent that the points did not occur in large numbers anywhere, which Lewis and Kneberg interpreted as implying a nomadic group that wandered over a number of the eastern states. A late association was continued and the points were ascribed to the Yuchi through an application of the direct historic approach.

By 1955 Lewis and Kneberg (1955:81) were convinced that the small bifurcated base points constituted a definite type, but the cultural association was still unknown; they were, however, beginning to move away from a late Mississippian association. In 1956 the point was given formal type status and named the LeCroy Bifurcated Stem (Kneberg 1956: 27-28). Two variants were now recognized--larger variants which occurred occasionally on Archaic sites and smaller variants which were associated with Woodland occupations. An age estimate was 1500 B.C.-A.D. 500 (Ibid.). The principal impetus for the point's type status was the large sample contained in the A.L. LeCroy collection derived from a site in the Chickamauga reservoir (Lewis and Kneberg 1955, 1956; see below).

The possibility of two variants, an Archaic and a Woodland, continued into the 1960's. At the Camp Creek site (Lewis and Kneberg 1957), small bifurcated points, along with what are now classed as Hardaway, Palmer, and Kirk types, were all placed in the Early Woodland time period. At the Eva site in western Tennessee, a large variety LeCroy type point was found in association with Eva type points in Stratum IV and dated at 5200 B.C. (Lewis and Lewis 1961). At the Rohr rock shelter in West Virginia, Dragoo (1959:179) reported the presence of several small bifurcated stemmed points at the lowest level which dated 3352 B.C. $\pm$ 90 yr.

Lewis' and Kneberg's interpretations along with the apparent widespread distribution of the point type, led Fitting (1964) to suggest that bifurcated stemmed projectile points might serve as a horizon marker in the eastern United States. These horizon markers, he suggested, were of two types: a larger projectile point which was thought to be older than 5000 B.C. and a smaller projectile point that appeared to be more recent. Prufer and Sofsky (1965:32) in their analysis of the small bifurcates from the McKibben site in Ohio, suggested, on the basis of Fitting and Dragoo's observations, that the points could be safely placed in the Laurentian Tradition.

Stratified Archaic sites are scarce and those that were found became crucial in Archaic studies. The Hardaway, Doerschuk, and Gaston sites (Coe 1964) became models for the typological sequence for much of the Archaic period. Unfortunately there were no radiocarbon dates from these sites for the Early Archaic material, nor were bifurcated points contained in the sequences.

Then in 1966 Broyles (1966, 1971) published her data on the St. Albans site in West Virginia. Although core drilling suggested the site is even deeper, Broyles defined 41 zones in the top 18 ft. Significantly, each type of projectile point was confined to one or two zones, which were separated from the zones above and below by bands of sterile clay or sand. Bifurcated base points were present and stratigraphically separate from other types. More importantly there were variations within the bifurcate point sample that were stratigraphically separate and the point variants were radiocarbon dated to span much of the seventh millenium B.C. On the basis of the St. Albans data, it became possible to recognize MacCorkle Stemmed, St. Albans Side Notched, LeCroy Bifurcated Stem, and Kanawha Stemmed type points in the assemblages of bifurcated points from other areas. Bifurcate points after this time became time markers of the Early Archaic in sites throughout the east.

The St. Albans site projectile point sequence and chronology were confirmed by similar and additional finds at the Rose Island site (see Chapter IV). In that a temporal span and evolution of bifurcate points can be demonstrated in two areas of the eastern United States, a re-examination of the bifurcate point tradition in the east is appropriate.

Other Bifurcate Points

Before attempting to ascertain the distribution of bifurcate projectile points, it is important to examine the type names in use to describe the same, as well as different, points in the tradition. Two general trends have occurred in the last 20 years as bifurcate points have become more recognized. One is the continued lumping of all bifurcated base points under the type name LeCroy. Kneberg (1956), in establishing the type, lumped together as one type points which Broyles later defined stratigraphically as Kanawha Stemmed, LeCroy, St. Albans Side Notched, and MacCorkle Stemmed. Bell (1960:64-64) following Kneberg, illustrates as LeCroy points both LeCroy types and St. Albans Side Notched types. In the third printing of Handbook of Alabama Archaeology, Cambron and Hulse (1969) place the bifurcate points in the Early Archaic, but continue to lump them under the LeCroy type.

The second trend, stimulated partly by Broyles' data, has been to ascribe additional type names to bifurcate points in the east. These point types are discussed below and their similarity or dissimilarity to type names used in this paper will be emphasized.

Lake Erie Bifurcated Base Points

This type was named and defined by Prufer and Sofsky (1965:31-32) to distinguish the northern bifurcated forms in the Ohio, northern Indiana, and Michigan areas, from the LeCroy points and its variants in Tennessee and Alabama. The points as described are small and thin. The blades are essentially straight-sided triangulars with both short-broad forms and long-narrow forms. They have thin, broad stems, generally straight, but sometimes flaring and the bases are deeply notched.

Serrations occur frequently on the blade edges and no basal or lateral grinding has been noted. An attribute that often occurs on this type point is a burin-like break or fracture on both sides of the bifurcated stem.

Geistweit (1970:129) observed that burin blows were not confined to Lake Erie Bifurcated Base Points nor was it diagnostic of any one point type. She examined 131 bifurcate points of this type from Ohio and suggests that the type, with the exception of the burin blows, is virtually identical to the LeCroy type with which it probably forms a single population. On the basis of the St. Albans site data, she suggests the type is associated with the Early Archaic, and not the Laurentian Tradition as Prufer and Sofsky suggested.

The author agrees with Geistweit and her classification of these points in the LeCroy type; her illustrated specimens (Geistweit 1970: Plate 10B) appear to be in the LeCroy range. Prufer's and Sofsky's (1965:Fig. 4-0,p,u-x) illustrated specimens, with the exception of one probable St. Albans Side Notched, appear also to be LeCroy.

Size Comparisons: (Range, Mean. in millimeters)

Lake Erie	LeCroy (St. Albans)	LeCroy (Rose Island)
L:22.0-38.0, 30.0	19.0-35.0, -	16.0-35.5, 26.4
W:16.0-20.0, 21.0(sic)	16.0-28.0, -	17.5-26.0, 20.7
T: 3.0- 6.0, 4.3	4.0- 6.0, -	2.5- 7.0, 4.8
SL:7.0-14.0, 10.0	-	4.0-13.5, 8.5
SW: -	-	12.0-20.0, 15.8
BD:2.0-10.0, 4.0	-	2.0- 6.0, 3.1

Ohio Bifurcate Base

Geistweit (1970:151) defined this type for central Ohio and Michigan based on a sample size of 82. It is a small, triangular bladed point with an expanding bifurcated stem. She observed that it differed from the LeCroy type in having a narrower stem in relation to blade width, and a blade length/stem length ratio of 3/1 to 4/1 against 1/1 to 2/1 for LeCroy.

The Ohio Bifurcate Base points are very similar to the Rose Island Bifurcate Variants 3 and 4 which are assumed to be assoicated with the St. Albans phase. As such, they may be variants on the St. Albans Side Notch type. Having only four illustrated specimens of the Ohio type to work with, the author is reluctant to assign the type to the St. Albans site sequence. It should be noted that at least one of the illustrated Ohio specimens (Geistweit 1970:Plate 12A, left) may not belong to the bifurcate tradition, but instead be a stemmed point of the Stanly (Coe 1964) or Neville tradition (Dincauze 1971).

Nottoway River Point

Floyd Painter (1970:21-26) published this type for the Mid-Atlantic states a year before Broyles (1971) published the second preliminary report on the St. Albans site in which she gave type status to the MacCorkle Stemmed. The author suggests that the Nottoway point can be classed in the type category MacCorkle Stemmed and, in that Broyles defined the type tentatively in 1966, the Nottoway type should be dropped from use.

Painter described the points as having wide, thin triangular blades with serrated edges. The bases are bifurcated or "bilobed", and the lobes are separated by a deep rounded concavity usually ground smooth. These attributes are similar to those of the MacCorkle Stemmed which Broyles suggests is transitional from the Kirk to the St. Albans Side Notched type. It is doubtful that this point type is contemporary with the Hardaway Side Notched type as Painter (1970:21) suggests. Perhaps in reference to Nottoway points, Broyles (1971:71) observed that a few specimens from Virginia may be MacCorkle Stemmed points.

Size Comparisons: (Range, in millimeters)

	Nottoway	MacCorkle Stemmed (St. Albans)
L:	32.0-78.0	40.0-63.0
W:	22.0-42.0	22.0-35.0
T:	4.0-7.0	3.0-6.0
SL:	-	12.0-17.0
SW:	-	18.0-26.0

Truncated Barb Points

Truncated Barb points were first reported from southern Wisconsin (Ritzenthaler 1961) and northeastern Illinois (Palmer and Palmer 1962). Munson and Downs (1966) have studied samples of Truncated Barb points and samples of bifurcated base points form central Illinois and have concluded (Ibid.:205):

> "...that the similarities between these two forms are sufficient to suggest that they represent no more than varieties within what is essentially one type, a suggestion which gains some additional support from the fact that in the central Illinois collection both forms are typically recovered from the surfaces of the same sites."

The bifurcated base points Munson and Downs illustrate are all LeCroy Bifurcated Stem type points except one which is apparently a St. Albans Side Notched type. The Truncated Barb points are indeed related to the bifurcated base samples. Many of them are classic examples of the Kanawha Stemmed type, a type evolving from the LeCroy type in the bifurcate tradition. All of the points have incurvate blade edges that create a pronounced, flaring shoulder. They have short expanding stems which in most cases have concave bases.

The position here is that the term Truncated Barb be dropped in favor of the type name Kanawha Stemmed. Munson and Downs followed Fitting (1964) and placed the Truncated Barb type intermediate between the large and smaller forms of bifurcated points, and ascribed a cultural placement of Middle to Late Archaic. The author suggests that the point is associated with the Kanawha phase and is associated with the late Early Archaic.

Size Comparisons: (Range, Mean. in millimeters)

	Truncated Barb	Kanawha (St. Albans)	Kanawha (LeCroy)
L:	24.0-50.0, 36.0	19.0-48.0	19.0-38.0, 26.3
W:	19.0-35.0, 27.0	19.0-37.0	15.0-33.0, 22.3
T:	3.0-7.0, 4.5	3.0-7.0	4.0- 7.5, 5.7
SL:	7.0-10.0, 8.5	-	5.0- 9.5, 6.7
SW:	10.0-17.0, 14.0	-	8.0-15.0, 11.5

Bifurcates, Eccentrics, and Bifurcated Base Points

In some areas, particularly the northeast, type status has not been granted to bifurcated base points, and they are classed as a group on the basis of their most prominent attribute, stem bifurcation. Based on illustrations and actual examination of these points, it is apparent that the same varieties are present that are present elsewhere in the eastern United States.

A Proposed Classification of Bifurcate Points

One of the chief drawbacks to the classification of bifurcate points in the past has been the lack of an adequate sample in a stratigraphic context. With the sequence from the St. Albans site and now from Rose Island, it appears that there is spatial and temporal consistency in the stylistic changes of the bifurcate points. This consistency carries over to the widespread samples of bifurcate points in the east. Although most are from surface or disturbed contexts, their continued association with other side-notched and corner notched points of the Early Archaic period suggests an Early Archaic affiliation. Points of the types described below have not in any analysis been associated with any later culture period east of the Mississippi.

A classification of these Early Archaic projectile points is proposed here that follows the ideas of tradition and phase developed in Chapter I. The manufacture of bifurcated base points is seen as a tradition commencing in the early seventh millenium B.C. and continuing for 500-700 years. In spite of emerging regional cultural traditions (cf. Tuck 1974) the tradition of bifurcation was widespread in eastern North America. A stylistic and putatively functional tradition such as bifurcation will have changes within it from its commencement, until the tradition can be said to no longer exist. These have been referred to earlier as phases. As discussed in Chapter IV, only the artifacts classed as projectile points/knives reflected this change over time.

Projectile points reflecting a phase within the bifurcate tradition and having wide spatial distribution will be referred to here as groups. The groups take their names from the type names applied to the projectile points at the St. Albans site. The term group is chosen because it reflects the variation in the projectile points that results from available raw materials for lithic manufacture and regional cultural adaptations in different parts of eastern North America. The groups are presented from the earliest to the latest in the bifurcate tradition. In any continuum, there are examples that conveniently fit no category; these are fortunately few at the group level.

MacCorkle Stemmed Group

The MacCorkle Stemmed point was a tentative type in Broyles' (1966) first report on the St. Albans site. The type was based on only two specimens, one from Zone 14 and one from Zone 16, and it was suggested that the type was transitional between the Kirk and St. Albans type points. In her second preliminary report, Broyles (1971:71) established the point as a type on the basis of 14 points; only three of these were from the St. Albans site, the others were from surface contexts in West Virginia. The point type however, is more frequent and widespread (see below).

The points in the MacCorkle Stemmed Group are medium in size with a triangular blade with straight to excurvate edges. The stem is broad and bilobed created by a concave base that is frequently ground. The point is similar to, but larger than the St. Albans type and the blade is generally wider and more ovate. The Bifurcate Variant 1 from Rose Island is probably in this group.

St. Albans Side Notched Group

The St. Albans type has been described above in Chapter IV. It has frequently been lumped with the LeCroy type in the past, but it is temporally older in the continuum of the bifurcate tradition. Bifurcate Variants 2-6 may be included in this group.

LeCroy Bifurcated Stem Group

Points of this group were described in Chapter IV. Basically the difference in them and the earlier St. Albans Side Notched type lies in the clearly discernable straight stem, pronounced shoulders, and short, triangular blade.

Kanawha Stemmed Group

Points in this group are the latest in the bifurcate tradition and in some cases, lack even vestigial bifurcation. The point type is apparently, as Coe suggests, the predecessor of the Middle Archaic Stanly type and other stemmed points. The points are distinctive in their triangular blade with incurvate to recurvate edges and expanded, or expanded barbed, shoulders. The stem is short and expanded usually with an incurvate or bifurcated base, occasionally with a straight base. The size range is great, with the Rose Island specimens at the small end of the scale.

The Bifurcate Tradition: a Horizon Marker

In the 10 years following Fitting's (1964) suggestion that bifurcated base projectile points might provide a horizon marker in the east, archaeological data have increased to support this hypothesis with some changes. The evidence now suggests that there is a bifurcate tradition that was present during the latter part of the Early Archaic period and had a geographical extent over much of eastern North America. During the course of the tradition, certain stylistic changes occurred which are reflected in the varieties of bifurcated projectile points. These varieties are widespread geographically, and there appears to be an internal consistency in the phases of the tradition.

James Tuck (1974) has proposed three Early Archaic horizons in eastern North America. Tuck (Ibid.:73) used the term horizon as did Willey (1945:55) as "...horizontal stringers by which the upright columns of specialized regional development are tied together in the time chart." The "specialized regional developments" were interpreted by Tuck as "local Archaic sequences or cultures." Each of the three horizons--the Dalton horizon, the Big Sandy horizon, and the Kirk horizon--took its name from the projectile point style characteristic of it.

It is proposed here that there was possibly a fourth Early Archaic horizon in eastern North America, although not quite as widespread nor as prolific as evidenced by the abundance of artifacts. The horizon style was the bifurcate tradition. The distribution of this horizon will be discussed below and it will be readily apparent that, although widespread, the diagnostic artifacts are not abundant. Tuck (Ibid:78) has suggested that by about 8000 years ago regional distinctions have emerged. He believes that there is a valid, distinctive Middle Archaic tradition along the Atlantic slope north of Georgia with a westward extension across the Appalachians into at least Ohio and Pennsylvania. The extent of the bifurcate distribution is only slightly larger than this area and the bifurcated base point is the last of the horizon or time markers of the Early Archaic in the east. It was not until the Hopewellian florescence that artifactual time markers were so widespread.

Using the integrative model of Willey and Phillips (1958:Fig. 1) the concept of a bifurcate horizon style is presented in Fig. 15.

Distribution of the Bifurcate Tradition

Such a model as Fig. 15 is based on the widespread distribution of the bifurcate point groups in eastern North America. The distributional analysis and data are by no means complete. Each states' institutions and private collectors would have to be visited to approach actual distributional awareness. The distributions discussed below are based primarily on regional and state publications, personal communications with collectors and professionals, and, in some cases, actual examination of the material. The writer acknowledges the possible errors in interpretation that can occur in dealing with photographs and drawings, but feels confident that a familiarity with many actual specimens has increased the accuracy of his judgement. The distributions are presented by states or regions for convenience, realizing that political and prehistoric cultural boundaries seldom coincide. A line representing the approximate distributional extent of bifurcate points in eastern North America is presented in Fig. 16. The ecological significance of this distribution and the distribution of bifurcate points elsewhere in North America will be discussed later.

Tennessee. The A.L. LeCroy collection provided the type material from which Kneberg (1956) described the LeCroy Bifurcated Stem type. The primary interest in the site from which the collection came, lay in the Paleo-Indian material (Lewis and Kneberg 1955, 1956). There was, however, a large sample of bifurcated base points from the site. Examination of the collection at the University of Tennessee, Knoxville,

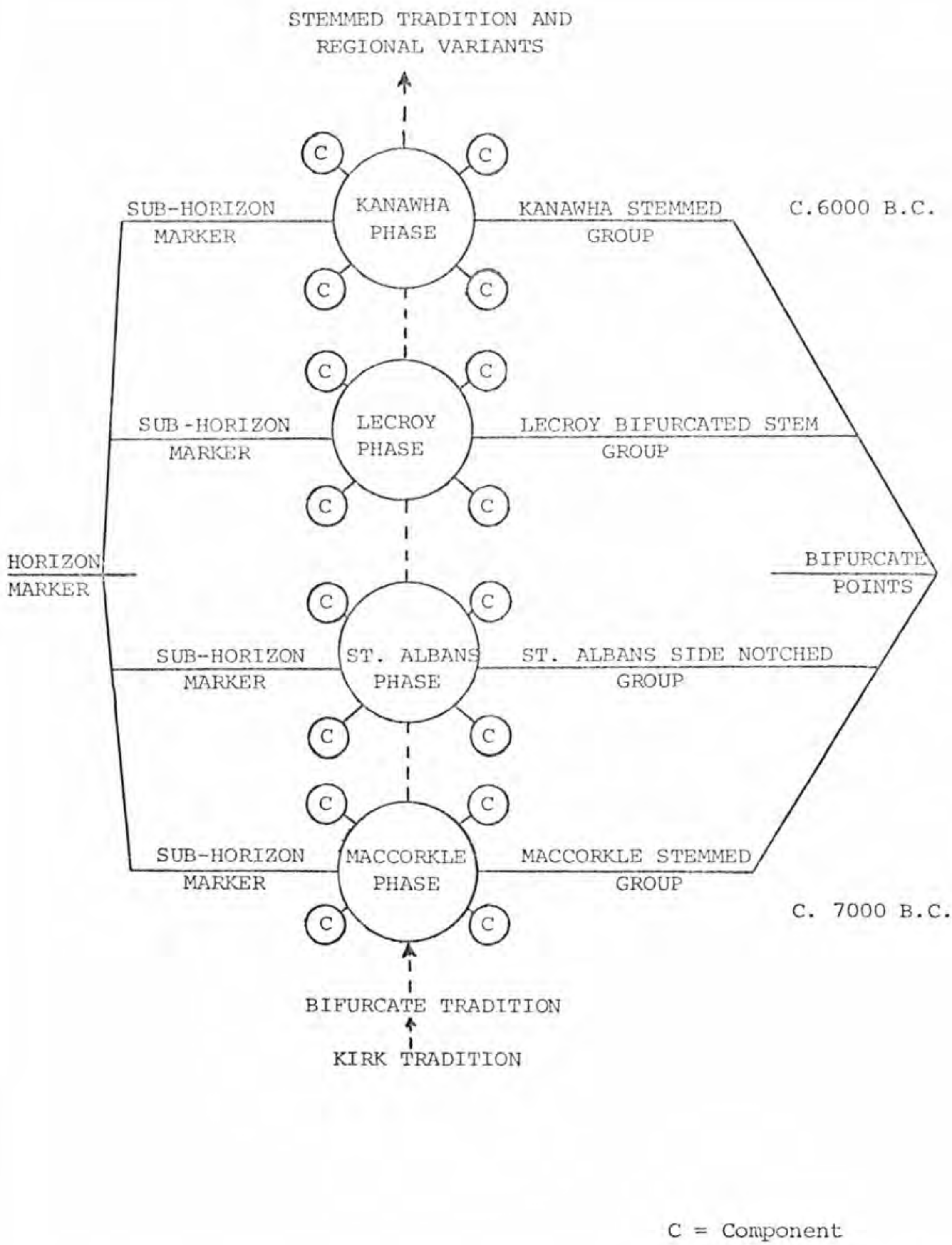


Fig. 15. Integrative model of the Bifurcate Tradition and the Bifurcate Horizon style.

Fig. 16. Approximate distribution of the bifurcate tradition and the potential vegetation (simplified, after Küchler 1964; Hosie 1969) in eastern North America.

a. Southern mixed forest (Fagus-Liquidambar-Magnolia-Pinus-Quercus)

b. Oak-hickory-pine forest (Quercus-Carya-Pinus)

c. Blackbelt (Liquidambar-Quercus-Juniperus)

d. Appalachian oak forest (Quercus)

e. Mixed mesophytic forest (Acer-Aesculus-Fagus-Liriodendron-Quercus-Tilia)

f. Oak-hickory forest (Quercus-Carya)

g. Beech-maple forest (Fagus-Acer)

h. Elm-ash forest (Ulmus-Fraxinus)

i. Beech-maple-black walnut, hickory-oak forest (Fagus-Acer-Juglans nigra-Carya-Quercus)

j. Northern hardwoods (Acer-Betula-Fagus-Tsuga)

k. Transition between Appalachian oak forest and northern hardwoods

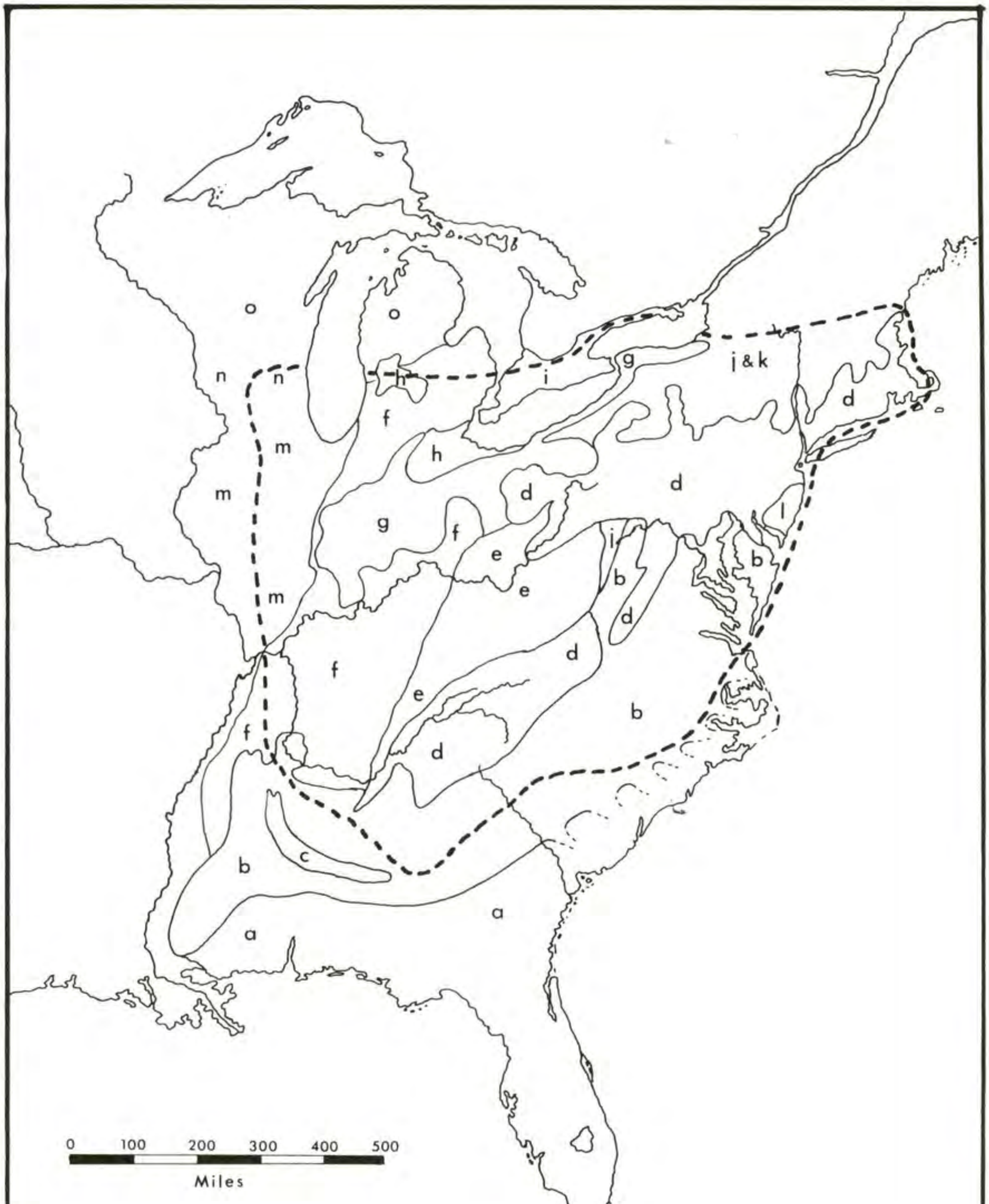
l. Northeastern oak-pine forest (Quercus-Pinus)

m. Mosaic of Bluestem prairie (Andropogon-Panicum-Sorghastrum) and oak-hickory forest

n. Oak savannah (Quercus-Andropogon)

o. Great Lakes pine forest (Pinus)

▬ ▬ ▬ ▬ Limits of bifurcate tradition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f
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c
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a
0
100
200
300
400
500
Miles

Fig. 16

identified one MacCorkle Stemmed, 31 St. Albans Side Notched, 32 LeCroy Bifurcated Stem, and 56 Kanawha Stemmed type points. Unfortunately, the site is within the Chickamauga reservoir and erosion had left material from all culture periods scattered on the beach surface. In 1936 before flooding, the site was surveyed and recorded as a "shop site", some 100 x 500 ft in size, that had suffered from much cultivation and erosion (University of Tennessee, Knoxville, site survey files). Whether or not the site was stratified and could have provided a sequence from the Paleo-Indian period is unknown.

Except for Rose Island, the frequency of bifurcate points on other sites is limited to one to ten examples. The points of this tradition occur in the foothills of the Smoky Mountains (George F. Fielder Jr., personal communication) and are frequent in the eastern part of the state. They do not, however, occur in the high elevations of the Smoky Mountains (Charles Faulkner, personal communication). They become less frequent in Middle Tennessee and apparently do not occur beyond the Tennessee River in western Tennessee.

In their survey of the J. Percy Priest reservoir near Nashville, Morse and Morse (1964) recovered no bifurcate points. Bifurcate points are rare in the Normandy reservoir area on the Duck River (Faulkner and McCollough 1974 and Charles H. Faulkner, personal communication). A LeCroy type point and a MacCorkle Stemmed point were the only two bifurcates recovered in a survey of the Buffalo River valley (Miller and Miller 1965). In the western Tennessee River valley reference to only 12 bifurcate points could be found (Lewis and Lewis 1961; Lewis and Kneberg 1960; Sims 1971).

Other References: Lay site--40 Mi 20 (Faulkner and Graham 1966b);

Westmoreland-Barber site--40 Mi 11 (Faulkner and Graham 1966a); Hoover-Beeson rockshelter--40 Cn 4 (Butler 1971); Doughty site--40 LO 46 (McCollough and Faulkner 1973); Mill Creek overhang--40 Dv 33 (Dowd 1969); Nickajack Dam area (Bachman 1966); Maury County (Yeatman 1964); Camp Creek (Lewis and Kneberg 1957); Interior Low Plateau Province (Cridlebaugh n.d.b).

Mississippi. No reference to the occurrence of bifurcate points in Mississippi could be found. If the distribution is correlated in western Tennessee with the Tennessee River, then examples might be expected to occur in the northeast corner of the state. Brookes and McGahey (1974), however, report no bifurcate points from an Early Archaic site that produced over 250 Big Sandy and Decatur type points. Also, among the Early Arcahic projectile point types observed by Brain (1970) from the Yazoo Basin in west-central Mississippi, there were no bifurcate points.

Alabama. Bifurcated points are numerous in Alabama but apparently occur only in the northern third of the state, especially in the drainage of the Tennessee River. As in Tennessee, the points occur on a number of sites, but no single site produced over 14 points. Points from each of the groups occur and when present, are accompanied by other Early Archaic type projectile points. One site in the Pickwick reservoir is reported (Hubbert 1961), on the basis of a surface collection, to have contained, with the exception of one Greenbrier type point, all bifurcates (apparently of the MacCorkle and St. Albans Groups).

Other References: Quad site (Cambron and Hulse 1960a); Paint Rock Valley site (Duncan and Brosemer 1964); Cave Springs site (Moebes 1974); Wright site (Wright 1972); Jude Hollow (Huntsville-Madison 1961);

Stanfield-Worley bluff shelter (DeJarnette et al. 1962); Flint Creek rock shelter (Cambron and Mitchell 1958; Cambron and Waters 1959 and 1961); a site in northeastern Alabama (Kleine 1953); Pine Tree site (Cambron 1956); Stone Pipe site (Cambron 1955).

Areal Surveys: Madison County (Mahan 1954,1955); northern Alabama and southern Tennessee (Cambron and Hulse 1960b); Sugar Creek-Limestone County (Travis et al. 1960).

Georgia. Bifurcate points are apparently rare in Georgia and occur above the fall line. Wauchope (1966) in his survey of north Georgia illustrates one St. Albans type and two possible points of the MacCorkle Group. He does not, however, in his detailed descriptions of the points recovered, mention anything about bifurcated base points. In the salvage operations in the Oliver Basin just above the fall line on the Chattahoocee River, McMichael and Kellar (1960) recovered six points described as having bifurcated bases. More information on the northern section is needed.

Florida. Bifurcate points of the above defined groups do not occur in Florida. The closest approximation is the Arredondo type point that is "guess" dated to about 6000 B.C. (Ripley P. Bullen and Barbara Purdy, personal communication).

South Carolina. George Stuart (Personal communication) reports that in the numerous collections from South Carolina that he has examined, bifurcate points are virtually absent. Robert L. Stephenson (Personal communication) concurs with this observation. No reference to points in the tradition could be found in the literature. A collector, Jimmy D. Sweezy (Personal communication) reports finding some in Chesterfield County.

North Carolina. Joffre L. Coe (Personal communication) reports that bifurcate points occur from the mountains to the coastal plain. The frequency decreases as one moves from the piedmont east, and the material from which the points found on the coastal plain are made, appears to be derived from the piedmont. It is interesting that no bifurcate points occurred at the Hardaway or Doerschuk sites (Coe 1964). This may be explained by the fact that the Doerschuk sequence began with Stanly and the undisturbed sequence at the Hardaway site ended with Kirk. It would seem, unless there was a cultural discontinuity, that bifurcate points should have occurred in Zone 1 at the Hardaway site along with the material from the subsequent occupations after Kirk.

Virginia. In response to Lewis' and Kneberg's (1952a) request for data on bifurcate points, Ben McCary (Lewis and Kneberg 1952b) reported that the points were widely scattered in Albemarle County, but never occurred in large numbers. As discussed above, Holmes (1897) observed earlier the occurrence of points that could be classed at St. Albans, LeCroys, and Kanawhas from the Potomac-Chesapeake area. The widespread occurrence of the MacCorkle Group is apparent in Painter's (1970) Nottoway point type discusses above. C.G. Holland (1970) observed that bifurcate points are present all over Virginia, and illustrated both LeCroy and St. Albans types in his survey of the southwestern part of the state.

A good possibility exists that stratigraphic separation of Kirk from the bifurcate tradition, and the bifurcate tradition from the Stanly type is possible at the Habron site (44 Wr 1). Rodgers (1968) reported on the 1966 excavations by the Archaeological Society of Virginia in which deposits of 5-6 ft were found and projectile point types from Early to Late Archaic were recovered. A radiocarbon date of 5440 B.C. ± 100 yr (Ibid.:94) was obtained from a hearth that is thought to be associated with the Stanly type points. Recent excavations (Harrison 1974) employing finer vertical and horizontal controls are continuing, but are hampered by ground water.

Other References: Creek sites, Isle of Wright County (Lane 1964; Peak 1970); Shannon site, Montgomery County (Wyant 1967); Limeton site, Shenandoah valley (Wilkison and Leslie 1967).

Maryland, Delaware and New Jersey. Bifurcate points of all the Groups appear to be scattered throughout this area (Richard Regensburg and Stephen Potter, personal communication). Bifurcate points in the collection of Robert Flammer (1965) and found in central New Jersey contain examples of all four bifurcate groups. Bifurcated points comprised 1.2% of the projectile points recovered from the Pedricktown site, Salem County (Caesar 1963).

Pennsylvania. Bifurcate points occur throughout Pennsylvania. In his survey of the West Branch of the Susquehanna River, Turnbaugh (1973) recovered eight MacCorkle, 11 St. Albans, 14 LeCroy, 15 Kanawha, and 11 unclassed bifurcate type points. Vernon and Leslie (1953:48) observed prior to the temporal placement of the bifurcate tradition, that "Archaic pattern sites which are either of the Laurentian or the Lamoka may be expected to produce occasional stemmed or notched points with bifurcated bases." Examination by the author of 12 bifurcate points from a site on the Delaware River near Yardley, placed three in the MacCorkle, two in the St. Albans, six in the LeCroy, and one in the Kanawha Groups.

Other References: Venango County (Michener 1954); Kent-Hally site, Bare Island (Kinsey 1959); Kojnoc site--36 Al 24 (George 1964); Sheep Rock shelter, Huntingdon County (Michels and Smith 1967), Chartiers and Alleghany valleys (Broyles 1969b).

New York. Ritchie (1961), in preparing a typology of New York state projectile points, recorded 48 bifurcated base points within an untyped group of 917 points. Among the illustrated points (Ibid.: Plate 34) there appear to be MacCorkle, St. Albans, LeCroy, and Kanawha types. There are three large bifurcates similar to the Rose Island Variant 2 that may be some transitional form between MacCorkle and St. Albans.

Ritchie and Funk (1973:38) have observed that Early Archaic point types such as Kirk Stemmed, Kirk Corner Notched, and Eva are very sporadically represented in upstate New York and New England, but that bifurcate points are more common, though still a minority in total collections.

Several important sites have been located on Staten Island that have produced tool types and bifurcate points similar to those of Rose Island (see Chapter IV). Examination by the author of the collections of Don Hollowell and Albert Anderson identified bifurcate points belonging to all four groups. Staten Island is adjacent to New Jersey and should be viewed as the northern part of the area formed by the Chesapeake-Potomac-Delaware River system.

Other References: Brewerton site (Ritchie 1940); Bannerman site (Ritchie 1958).

New England. Dena Dincauze (1974:44) observed that bifurcate points occur in very small numbers at most major multicomponent sites and that these are typically located adjacent to large water bodies such lakes and modern estuaries. Elsewhere (Ibid.) they occur as isolated finds across southern New England north to Lake Winnipesaukee in central New Hampshire. There is a concentration of the points in the Narragansett basin of Rhode Island and in southern Massachusetts.

William B. Taylor has the largest collection of points from this apparent concentration. In personal communications with the author, Taylor reports that there are five major sites in the Titicut area located along a one-half mile stretch of the Taunton River and within one-fourth mile of these, two minor sites. Narragansett Bay is about 25 miles to the southwest. Taylor has collected 67 bifurcate points from these sites but on none of the sites did the bifurcate points predominate.

Plate LIX is a copy of a photograph of 16 points that Taylor suggests are representative of the bifurcate points in the Titicut area. Lacking the actual specimens, certain observations can be made. First, the points are, in general, larger than the Rose Island examples. Points as large or larger, have, however, been recovered in North Carolina (Randolph County) and the size may be partly correlated to available raw material. Secondly, the LeCroy Group is present and is represented by illustrated specimens b, c, d, e, g, m, and o. The Kanawha Group is represented by specimens j, k, and l; specimen i is probably also in this group. A group of points similar to specimen i was observed in the A.L. LeCroy collection in Tennessee, but whether they are associated with the Kanawhas is unknown. Illustrated specimens a and f combine

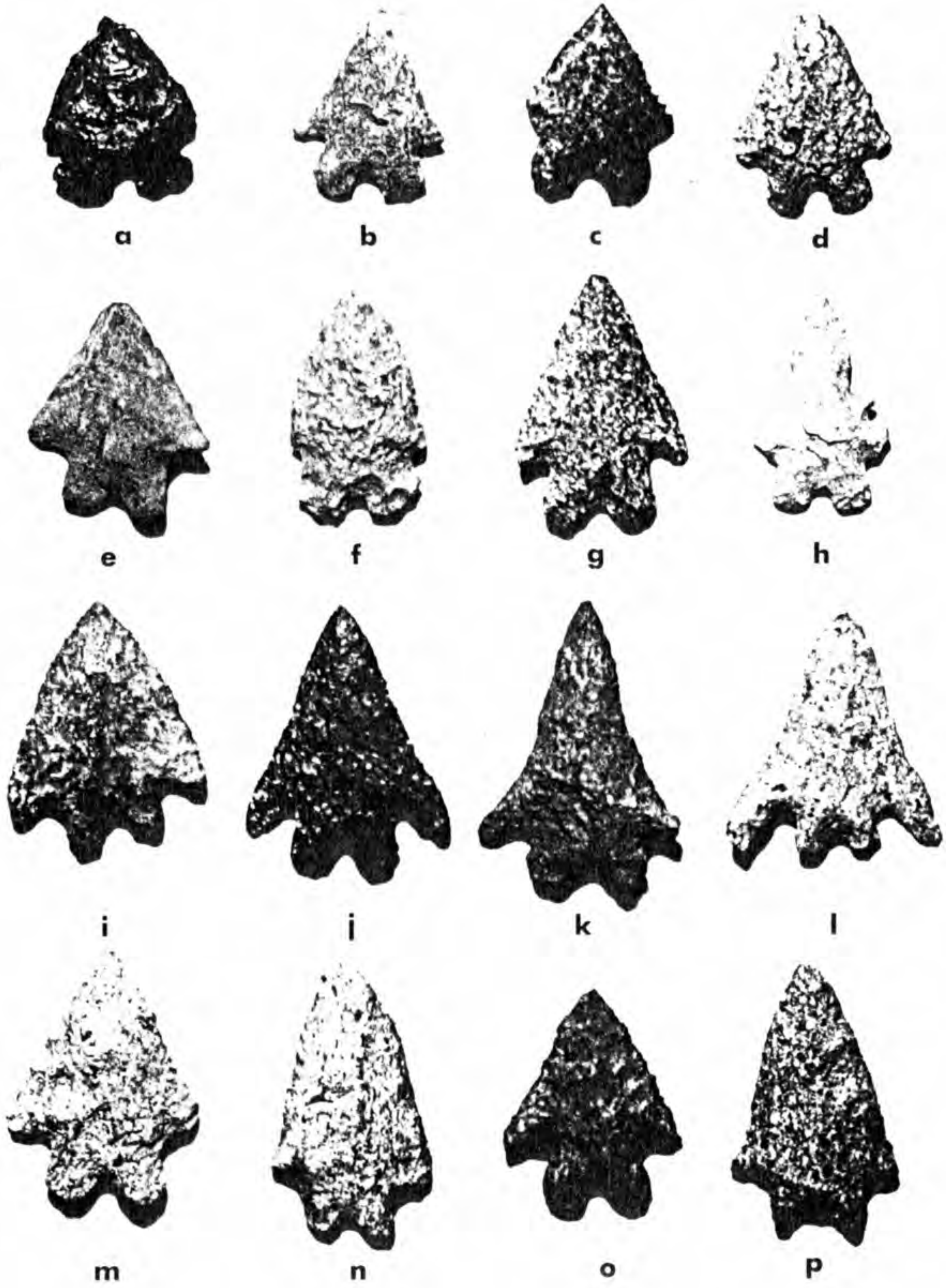

Plate LIX. Bifurcate Points from the Titicut Area, Massachusetts. William B. Taylor Collection attributes of the MacCorkle and St. Albans Groups and may be an intermediate style between the two. Specimen h has been referred to as an eccentric object (Fowler 1973:Fig. 12:26), but appears to be merely a reworked LeCroy. Specimens n and p may or may not belong to the bifurcate tradition.

One fragment of a bifurcate point was recovered from the Neville site in Manchester, New Hampshire (Dincauze 1971, 1974). The Neville complex shows significant relationships to the Stanly complex in North Carolina and there is widespread evidence of the Middle Archaic Neville type point in New England. If the Stanly/Neville type evolved from the bifurcate tradition, as has been suggested, a cultural continuum similar to the southeast can be postulated for New England.

Other References: Hopkins site--6 Lf 1, Connecticut (Thompson 1973); Charles River Esturary, Massachusetts (Dincauze 1973); New England Projectile Points (Fowler 1974).

Canada. Two examples of bifurcate points were recovered from the Tusket Falls site in Nova Scotia (Stephen Davis, personal communication). The isolation of this find, with no intervening finds in Maine, suggests that they are accidental parallels.

J.V. Wright (Personal communication) observes that bifurcate points are relatively common along the north shore of Lake Erie and the northwest shore of Lake Ontario.

Michigan. Lewis and Kneberg (1953) in response to their early inquiries concerning bifurcate points, reported that five percent of the small points in the area of Roseville, Michigan conform to this type. Fitting (1964:Fig.1) illustrated bifurcate points in the LeCroy and MacCorkle Groups from the Holcombe Beach site in Macomb County, from the Warner School site, from Washtenaw County, and from the Welti site in

Monroe County.

Ohio. Bifurcate points occur in fair numbers in Ohio. Barbara Geistweit's (1970) thesis on the Archaic manifestations in Ohio and the Ohio valley consolidated and summarized the occurrences of bifurcate points in the state. Geistweit (Ibid.:Table 5) observed 134 MacCorkle Stemmed (29 counties), 150 St. Albans Side Notched (31 counties), 119 LeCroy Bifurcated Stem (27 counties), 131 Lake Erie Bifurcate Base (16 counties), 82 Ohio Bifurcate Base (16 counties), and 88 Kanawha Stemmed (24 counties) type points in the collections of the Ohio Historical Society.

Other References: Hammerstone site, Maumee River (Walters 1973); Cufr site, Fulton County (Cufr 1970); McKibben site, Trumbull County (Prufer and Sofsky 1965); Ohio River valley (Broyles 1969b).

Indiana. All of the bifurcate point groups were observed to be present in a limited survey of the Indiana Historical Bulletin. One MacCorkle, one St. Albans, two LeCroy, and three Kanawha types were present in collections from Porter County (McAllister 1932). From Randolph County collections, Setzler (1931) illustrated five MacCorkle, three St. Albans, five LeCroy, one Kanawha, and two unclassed types. One LeCroy point was recovered from the lowest level of the Rouch site in Marshall County (Bellis 1975). Faulkner (Personal communication) suggests that the stemmed projectile points with concave or notched bases described in his (1961) survey of Marshall County were bifurcated points; he also observes that bifurcate points are widespread in Indian.

Illinois. Winters (1967) observed triangular and lanceolate bladed bifurcated base points in a survey of the Wabash valley. Two LeCroy points were present in surface collections from three sites in the central Illinois River valley (Munson and Harn 1966). St. Albans, LeCroy, and Kanawha types were observed in a collection of 72 bifurcate points studied by Munson and Downs (1966) (see above).

It is interesting to note that no bifurcate points have been reported from the Archaic horizons at Koster (Luchterhand 1970; Houart 1971) or from the stratified sequence at Modoc (Fowler 1959). It appears that the limit of the distribution lies in Western Illinois, to the east of the Mississippi River.

Other References: Fielder site, Fulton County (Morse et al. 1953).

Wisconsin. On the basis of a survey of the Wisconsin Archaeologist, it appears that the bifurcate tradition did not enter southern Wisconsin until the Kanawha phase. Truncated Barb type points (see above) are found along the Fox River in northern Illinois and in southern Wisconsin.

Other Referencees: collections of Truncated Barb types (Anonymous 1964, 1966, 1974).

Kentucky. Much of the archaeoloigcal literature from Kentucky has been concerned with the "Shell Mound Archaic" and the Adena. Examination of many of the plates illustrating projectile points show Early Archaic components were also present, and among them bifurcate points. In his report on the C. and O. Mounds in eastern Kentucky, Webb, (1942) illustrated four bifurcate points, apparently of the Kanawha, St. Albans, and MacCorkle Groups. He (Ibid.:315) noted that "...the number of triangular points and the small points with concave base are much more abundant at this site than any heretofore found in Kentucky." In the Peter surface collection from the Peter Village site in the Mt. Horeb Earthworks, Fayette County, Webb (1943) reported 13 bifurcate points representing all groups. Rolingson (1967) observed two bifurcate points, that appear to be St. Albans types, in the Indian Knoll sample.

Rolingson and Schwartz (1966) in their study of late Paleo-Indian and Early Archaic manifestations in western Kentucky observed bifurcate points on the Henderson site (Ly 27)--one point, Roach site (Fr 10)--two points, Morris site (HK 49)--one point, Parrish site (HK 45)--one point.

Other References: Ohio River valley (Broyles 1969b).

West Virginia. The distribution of bifurcated points is well documented in West Virginia due to the research of Bettye Broyles and her excavations at the St. Albans site. Broyles (1969b, 1971) observed that the MacCorkle Stemmed type appears to be restricted to the Kanawha valley and on mountain top sites in Boone and Nicholas counties. The St. Albans Side Notched type is restricted so far to the St. Albans site and mountain top sites in Boone and Nicholas counties. The LeCroy type is the most widely distributed occurring in most counties in the Kanawha-New River Basin and in sites along the Monongahela, Cheat, and Buckhanon Rivers. It also occurs in sites near Huntington, Wheeling, and Petersburg. The Kanawha Stemmed type appears to have about as wide a distribution as the LeCroy type in the state.

Distribution of the Bifurcate Tradition West of the Mississippi River

At about the same time Lewis and Kneberg were developing a bifurçate type in the east, Robert Lister (1953) suggested that stemmed, indented base projectile points of the Pinto Basin type might form a horizon marker in the southwest and fill the gap between Folsom and recent horizons. In 1964, Henry Irwin (1964) proposed that some sort of cultural spread from the eastern United States to the southwestern United States may have taken place. The evidence cited for this was the close morphological resemblance of the Dalton type point in the southeast and the San José type point in the southwest.

Three stemmed point types in central Texas have bifurcated or indented bases and their similarities and dissimilarities to eastern examples have been noted (Fitting 1964). The type resembling some of the large eastern varieties is the Montell point (Suhm and Krieger 1954:452; Bell 1958:56). Resembling somewhat the LeCroy and Ohio Bifurcate types in the east is the Pedernales type point (Suhm and Krieger 1954:468; Bell 1958:72). Some examples of the Frio type points (Suhm and Krieger 1954:428; Bell 1960:48) resemble the eastern MacCorkle type. Although it is tempting to see the Texas bifurcate points and the Pinto Basin forms further to the west forming a continuation of the cultural spread proposed by Irwin there are three factors that tend to support a separate status to the eastern bifurcates.

First, there is a temporal difference. It has been established that the eastern bifurcate points are an Early Archaic type dating between 7000-6000 B.C. The dates for the three central Texas varieties are indefinite, but appear to be Late Archaic to Early Woodland (Suhm and Krieger 1954). There is dispute as to the age of the small indented base Pinto Basin points in the southwest; estimates range from 7000 B.C.-A.D.O.(Willey 1966:353).

A second factor is size and shape. There is a general consistency in size and shape among the eastern types of bifurcate points. The Texas varieties appear to be too large and the Montell point is the only type with attributes clearly approaching some of the eastern points.

The third factor is perhaps the most important. There appears to be a spatial gap in the distributions of the eastern bifurcate tradition and the bifurcate traditions of Texas and the southwest.

The evidence seems to support the eastern bifurcate tradition as a separate horizon marker. Questions of contact and diffusion must be kept open, but answers to these must await the consolidation of regional chronologies.

Distributional Significance

It was suggested in Chapter V that at the time of the bifurcate tradition, the forests were approaching their modern climax types. The distribution of bifurcate points in eastern North America appears to be associated with the eastern deciduous forests. Fig. 16 shows the approximate boundary of the distribution of bifurcate points along with a simplified distribution of the potential vegetation (Küchler 1964; Hosie 1969) in the area.

The southern boundary appears to be within the oak-hickory-pine forest zone. The precise southern penetration of the bifurcate tradition is uncertain. The occurrences at the fall line on the Chattahoochee River are the furthest south that were observed. To the east the bifurcate points are distributed to the coast. The relationship of bifurcate points to coastal or maritime adaptations of the seventh millenium are unknown due to coastal submergence.

In the northeast the limits of the bifurcate tradition lie within the zone of transition from the Appalachian oak forest to the northern hardwood forest (Acer-Betula-Fagus-Tsuga). In southern Canada the limits of the beech, maple, black walnut, hickory, oak forest correspond closely to the limits of the Canadian distribution of bifurcate points suggested by J.V. Wright (see above).

Bifurcate points appear to be restricted to the southern half of Michigan, the area predominantly within the oak-hickory forest. Penetration into southern Wisconsin was apparently late, during the Kanawha phase, and is assumed to be associated with zones of oak-hickory forest within the Bluestem Prairie (Andropogon-Panicum-Sorghastrum).

Various writers (Ritchie 1965 and 1969; Fitting 1968; Ritchie and Funk 1971; Turnbaugh 1973) have been concerned with the correlation of Paleo-Indian and Early Archaic remains in the northern midwest and northeastern United States, with the environmental potential in the post-glacial period. Ritchie and Funk (1971) are joined by Fitzhugh (1972) in placing the boundary of the bifurcate styles at the northern terminus of the Carolinian Biotic Province.

Unquestionably paleoenvironment was a factor in the distribution of the early groups of Indians, but local conditions and incomplete paleoenvironmental data suggest the picture was more complex. In the Great Lakes region Clelland (1966) suggests that by 7000 B.C. the earlier spruce-pine forest began to be replaced by a forest composed primarily of pine with a substantial deciduous element, and modern biotic communities were established shortly after 5000 B.C. It does not seem necessary, therefore, to have a sliding time scale for the bifurcate tradition at the northern boundary.

Increased prairie conditions may be responsible for the limits of the bifurcate tradition to the central and eastern parts of Illinois.

The frequency of forest to prairie in the seventh millenium is unknown. Asch et al. (1972:Fig. 4) show a map of the native vegetation in Illinois prepared by Anderson (1970) which shows that the prairie Peninsula extends into central and eastern Illinois and that it is in the southwestern and southern portions of the state that native forest vegetation was more frequent. What is important is that conditions did vary such that the cultural adaptation represented by the use of bifurcated points penetrated no further.

The western boundary of the bifurcate tradition appears to be along or approaching the eastern edge of the Mississippi River valley. Bifurcate points do not occur in Arkansas (Dan Morse, personal communication). In Missouri none were reported from the stratigraphic sequence of Graham Cave (Logan 1952; Klippel 1971). Bray (1968) found two bifurcated base points at the Broken Shin Cave in Christian County and suggested they are similar to Montell points. At the Seawright site, Morrison and Tong (1953) found one "radically different" point with a slightly excurvate stem and a pronounced basal concavity.

The distribution suggests a tradition of projectile point manufacture limited to the deciduous forest zones and occupying the greater portion of the eastern United States. Turnbaugh (1972:8) suggests that the bifurcate tradition originated from a Kirk horizon in the west Appalachian zone where it was, initially, a distinct regional develoment spreading later into southern New England and the central Atlantic regions. Whether this model is accurate will depend upon the discovery of stratigraphic dated sequences in other parts of the eastern United States. At present the similarity of the radiocarbon dates and cultural material from Staten Island, New York, St. Albans, West Virginia, and Rose Island, Tennessee, suggest this putative regional development became a horizon style very quickly with no suggestion of a time lag.

Functional Considerations

The possibility that bifurcated base points might be a special purpose tool occurred to the writer early in his research, and it formed part of the research design of the second season of excavation at Rose Island. As a special tool, the point could be considered a part of a total tool assemblage that might have included one or more implements that are classed as Early Archaic type projectile points. In this scheme, the bifurcate tradition would be a part of a culture complex whose diagnostic artifact, if there is one, is unknown.

The bifurcated base can be considered a device to increase lateral stability of the hafted point. Such stability would be advantageous in cutting and scraping activities. Frequent examples of St. Albans and LeCroy type points with blades reworked to short stubs with an obtuse angled point could suggest cutting rather than penetration. It is more probable that they are broken or damaged points that have been reworked and employed in some other task. The use of the classificatory term projectile point/knife is obvious here.

The pronounced barbs on some of the bifurcate forms, especially the Kanawha group, led Fowler (1961:8) to suggest that bifurcate points were used as harpoon points. A bone harpoon holder tipped with a stemmed chipped stone (not bifurcated) point was recovered from Assowampsett Lake in Massachusetts. William Taylor (Personal communication) suggests that points in the Titicut area were used to spear alewives in the Taunton

River. Although harpoon tips cannot be ruled out, especially in the maritime areas, the distribution of Kanawha Stemmed points on mountain tops and ridges, as well as alluvial sites, suggests a more general function.

The stratigraphic separation of the bifurcate points at the St. Albans site was repeated at the Rose Island site. At neither site did the data suggest that the bifurcate points were anything more than the halfting style in popular usage at the time. It is interesting to observe the trend of diminuation of projectile point size during the seventh millenium B.C. The LeCroy and St. Albans type points presumably would have been hafted into foreshafts that were in turn inserted into thin, flexible shafts. One can only speculate that this trend from the larger points of the Kirk period to the smaller ones represented by the LeCroy and St. Albans types reflected some shift in the hunting patterns. It is interesting also that in many areas the points become larger after the bifurcate tradition during the Middle Archaic.

Settlement Patterns and Systems

One of the research designs of the Rose Island excavations and the bifurcate study was to identify and define the settlement and subsistence patterns and systems associated with the Early Archaic stage of the seventh millenium B.C. There are several analytical levels through which such a study passed. As will be seen below, analysis employing hard data is eclipsed quickly due to the paucity of stratified sites.

The first level of the Rose Island site analysis was to identify and to define the archaeological components present at the site. The artifact assemblages, feature types, and paleobotanical remains were defined for each of the components. Within each component, attempts, based on limited excavation, were made to establish how the remains articulated with one another with the view of establishing activity areas and ultimately the type of settlement that the site represented.

Winters (1969) provided a model for the Late Archaic in the Wabash valley by establishing first the geographical and physiographic relationships of a contemporaneous group of sites within a single culture. Next the settlement system was determined on the basis of the functional relationships among the sites contained within the settlement pattern. The functions of individual sites were determined by the ratios of certain classes of artifacts such as fabricating, processing, domestic, and weapons.

Unfortunately, any attempt to develop such a model for the Rose Island site and the bifurcate tradition is hampered by a lack of comparative data and differential preservation. Lithic artifacts, features, and carbonized plant food remains allowed certain interpretations, but the lack of bone refuse and bone tools limited subsistence and seasonality conclusions, and also prevented accurate ratios of artifact classes.

The assemblage of bifurcated base points on Rose Island is unique in the Little Tennessee River valley. Several Kanawha Stemmed points have been recovered from the Tellico Blockhouse site. From the McGhee place at the confluence of Hammontree Creek, Kanawhas and a few St. Albans types have been recovered along with a large collection of Palmer Corner Notched points. Both of the sites are ridge sites with no stratigraphy. One bifurcate fragment was recovered from the Hodge site.

Lacking, therefore, knowledge of the geographic and physiographic relationships of sites containing bifurcate points in the lower Little Tennessee River valley, theories concerning settlement pattern and settlement system must at this time remain speculation.

The St. Albans site is the only other stratified Early Archaic site that has produced a large assemblage of bifurcate points. In that the analysis is incomplete even less can be said about the site function; nor can much be said about pattern and system.

However, certain broad observations can be made, and a model proposed that, in time, can be tested. First, bifurcated base points of the MacCorkle Stemmed, St. Albans, LeCroy, and Kanawha Groups are widespread in the eastern United States. Although widespread, they seldom occur in any number on any site. The sites with occurrences include alluvial, ridge or hill, and mountain proveniences. Only four sites are known with large assemblages of bifurcate points: the LeCroy site, the Rose Island site, the St. Albans site, and the Seaver Farm site in the Titicut area (William Taylor, personal communication, reports that 44 bifurcate points have been recovered from this site). The LeCroy site was situated on an alluvial terrace within the flood plain of the Tennessee River. The Rose Island site is situated on an alluvial terrace at the downstream end of Rose Island. The St. Albans site was probably situated during the Early Archaic on the mainstream side of a large island (Barclay 1971). The Seaver farm is situated on a high terrace within the Taunton River valley. Thus the large sites discovered so far are situated on the alluvial terraces in river valleys. If this is the pattern of the large sites of this period, many others may be deeply buried in alluvial terraces.

With limited data, and acknowledging the speculative nature of the model, the following settlement pattern and system is proposed. The basic pattern in an area was a centralized base camp that served as a focus and an axis for seasonally controlled hunting and gathering camps elsewhere. Rose Island, therefore, served as a base camp for one or more bands. The diversity in the lithic assemblages suggests domestic and processing activities were occurring in addition to gathering and hunting. In this model the numerous occurrences of small numbers of points at the other sites represent numerous seasonally regulated exploitative stations in the areas of base camps. Such a settlement pattern can be termed a central based transhumance system.

It is unknown at this time whether there are other base camps in the Little Tennessee River valley. Likewise the seasonality of occupation is supported only for the fall season. It is possible that one or more bands gathered at Rose Island sometime in the summer and remained until early winter. Precipitation and the possibility of flooding may have necessitated splitting into smaller social groups and moving to dryer and more available resources during the winter and spring. It is unknown what effect the cyclicity of the nut bearing trees may have had on the annual occupation.

The LeCroy site, the St. Albans site, and the Seaver Farm site may have functioned in similar ways. Until more base camps are found and until the pattern is established in a defined area such as the lower Little Tennessee River valley, little more can be said of the settlement pattern and settlement system. Models such as that proposed by Morse (1970) for the Dalton complex, by Winters (1969) for the Riverton culture, and by McCollough and Faulkner (1973) for the eastern Tennessee

Early Woodland, all suggest forms of base camps and other seasonal settlements and each should be considered when more data on the bifurcate point horizons become available.

Summary and Conclusions

The Rose Island site was first occupied during the second half of the eighth millenium B.C. by Indians of the Early Archaic stage. Occupation continued fairly regularly, but seasonally, for the next 1500 years. During this time the site may have served as a summer-fall-early winter base camp within a central based transhumance system. Activities included the collection, processing, and consumption of large amounts of hickory nuts and acorns. Hunting activities are suggested by projectile points and cutting and scraping tools. Local cherts were exploited and tools were manufactured using percussion, pressure, and bipolar flaking techniques. Pebbles and cobbles of hematite (goethite) were brought to the site and were apparently ground for their red-brown pigment.

Several bands may have gathered at times, such as years of plentiful mast. Individual family units may have gathered around surface campfires at night; lean-tos may have provided shelter, but no evidence remains. Baking was possibly done at times using heated rocks that were placed in shallow basins. Some food stuffs were ground using manos and the edges of cobbles that were also pitted through use as anvils in the production of _pièces esquillées_ and bipolar flakes. Large slab metates served as milling surfaces as well as anvil stones. Hide working may have been carried out using large cobble spall choppers/scrapers.

During this 1500 year period some changes occurred, but the nature of the change in the culture of the people is only partially reflected in the archaeological record. A sensitive reflector of change during this period is the projectile point/knife. Stylistic changes occurred, especially in the hafting elements of the points. Archaeologically these changes are defined as phases and are identified by and named for, the projectile point type associated with each. There were five phases of the Early Archaic represented at Rose Island--Palmer, Kirk, St. Albans, LeCroy, and Kanawha. A sixth phase, the MacCorkle, is poorly represented but may be present between the Kirk and St. Albans phases. The phases are not viewed as different peoples, but as normative peaks in the stylistic changes of an important tool in use by the Indians in the area over time.

During the Early Archaic period there was a widespread homogeneity in the projectile points in use at any one time. Points similar to the Dalton, Big Sandy, and Kirk types comprise horizon or time markers during this period. Around 6800 B.C. points with bifurcated bases became widespread and can be viewed as a fourth horizon marker. Bifurcate phases similar to those on Rose Island can be recognized throughout most of the eastern United States.

After the LeCroy phase, Rose Island was only intermitantly visited for the next 4000 years. Around 350 B.C. Early Woodland period peoples settled on the island. They, too, exploited the forest mast, but this time changes had occurred in the forest composition and areas of second growth and disturbance allowed exploitation of weed and grain seeds. Ceramic vessels were manufactured using crushed limestone temper in some cases, and crushed quartz temper in others. Medium size triangular points were used to hunt game such as deer.

After the first centry A.D. the site again was only intermitantly visited. There is no evidence of occupation after around A.D. 1200.

The Rose Island site is an extremely important site because of its intensive and well preserved Early Archaic period occupations. Excavations and analysis have yielded information concerning the Early Archaic assemblages in use over a more or less continuous span of time.

This information has confirmed the projectile point types and sequences defined at the St. Albans site in West Virginia, and bifurcate points have been demonstrated to have temporal and spatial significance. On the basis of both the Rose Island sample and comparative and distributional studies, it is possible to speak of a bifurcate tradition that was a horizon style in much of eastern North America during the seventh millenium B.C.

Artifact classes such as cobble spall choppers/scrapers, pitted cobbles, manos and metates, worked hematite (goethite), and celts, have been shown to have greater time depth than previously thought. Except for projectile point types, little change was apparent in the chipped stone assemblages over time--an observation lending support to the conservative use of projectile points as diagnostic artifacts and time markers. The recognition of a bipolar flaking technique and the artifact class of pièces esquillées is significant. Only furture research and re-examination of lithic assemblages will determine if this phenomenon is unique to Rose Island an the lower Little Tennessee River valley or is something previously unrecognized.

The ubiquitous feature type of a concentration of fire cracked rock, either on the surface of in basins, has been shown to have great time depth on Rose Island. Fired areas in the Early Archaic horizons at Rose Island have allowed the application of archaeomagnetic dating to establish relative dates that could be used for establishing cultural and depositional time spans.

The preservation of large quantities of carbonized plant remains have permitted the determination of a series of radiocarbon dates spanning 1400 years, from the Palmer and Kirk phases to the end of the bifurcate tradition. Systematic recovery and analysis of the plant remains have enabled certain paleoenvironmental and subsistence reconstructions. "Primary forest efficiency" appears to have been achieved early in the prehistory of the southeast.

The discovery of the Rose Island Early Archaic horizons suggests that more early, stratified sites may be preserved in alluvial terraces. The site should serve to stimulate further exploration into alluvial sites. Until such time, sites such as Rose Island, St. Albans, and Hardaway will remain isolated samples of artifact assemblages. Processual and systemic interpretations and hypothesis testing can procede little beyond speculation. It is, therefore, hoped that future exploration in the Little Tennessee River valley will provide comparative data for the Rose Island site so that the interpretive potential that it provides can be fully exploited.

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