AN INTRODUCTION TO THE MORTUARY PRACTICES OF THE HISTORIC SARA

by

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LIANE NAVEY. An Introduction to the Mortuary Practices of the Historic Sara (Under the direction of Roy S. Dickens, Ph.D.).

Eighty-seven burials excavated at an historic Sara Indian village in Stokes County, North Carolina, were examined for variability reflecting a differentiation of social status. This entailed an integrated study of the archeological and demographic data from the burials. The age and sex profiles of the mortuary sample were shown to be representative of a living population with the exception of neonates. When the burial patterns were then studied using the variables of age and sex, it was found that these variables did not explain the variability observed. A further study of references to status distinctions in the ethnohistoric record did not support such a model.

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INTRODUCTION

Excavations at historic Sara Indian Village site have been carried out each summer since the summer of 1972 by personnel from the Research Laboratories of Anthropology at Chapel Hill, North Carolina, under the direction of Joffre L. Coe. The site, designated $Sk^{V}1a$, is located near the junction of the Dan River and Town Fork in Southeastern Stokes County, North Carolina (Figure 1.). This site

> is one of a cluster of sites producing historic materials located on the bottom lands within the immediate vicinity. The site of $Sk^{V}1a$ occupies a sandy-clay loam levee of the Dan River, which lies to the west. An old roadbed adjoins the site to the south. These bottom lands have been in cultivation for over 200 years (Wilson 1977: X).

An impetus to begin excavations at this site in 1972 was an increasing rate of vandalism. More importantly, however, the archeological investigations at this site are a continuation of interest by the Research Laboratories in the Sara occupation of the Dan River drainage, and in general a continuation of Siouan archeology of the Piedmont that was begun in the 1930s and 1940s by Joffre L. Coe (1964). During this period Coe identified and investigated several seventeenth-and eighteenth-century Siouan village sites. One of the sites, $Rk^{V}1$, located on the Dan River 30 miles to the east of $Sk^{V}1a$, and excavated in 1938, was identified as the site of a seventeenth-century Sara Indian village (Coe

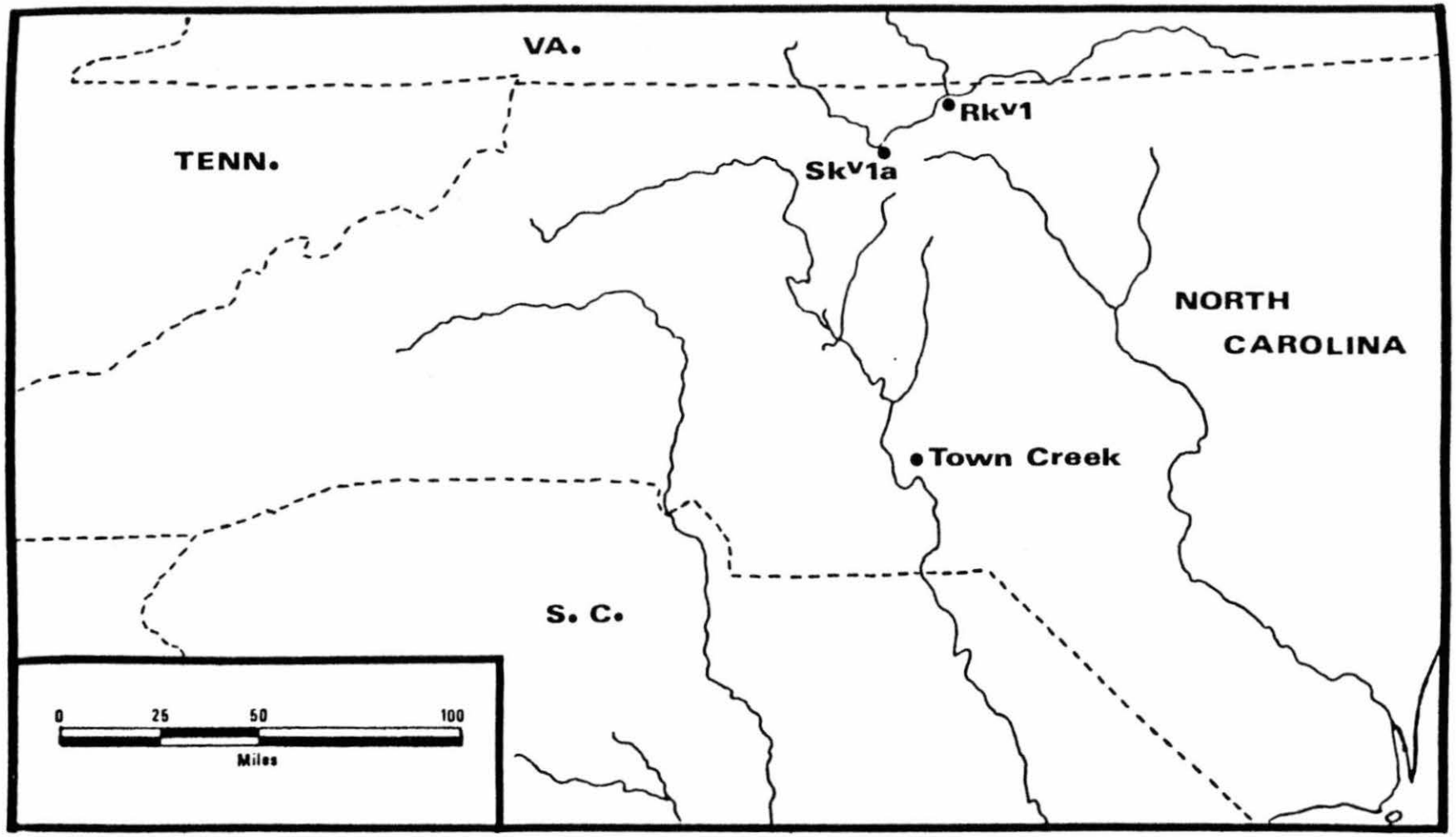

Figure 1. Geographic location of $Sk^{V}1a$, with other culturally similar sites indicated.

1964: 6).

Historic accounts and eighteenth-century maps that identify $Rk^{V}1$ as a Sara village also provide information about the site of interest to this study, $Sk^{V}1a$, located 30 miles west of $Rk^{V}1$. Maps of 1725 and 1775 showed white communities named after "old Indian fields." The earlier map indicated that there was an "Upper Sauro Town" at the location of $Sk^{V}1a$. Later, in 1775, an "Upper Sauro Town," a "Lower Sauro Town," and a "Sauro Town Mount" were indicated (Lewis 1951: 29). The "Lower Sauro Town" is at the location of $Rk^{V}1$ in Rockingham County, and the "Upper Sauro Town" location is the same as indicated on the map of 1725, that of $Sk^{V}1a$. The "Sauro Town Mount" can be identified today as a small east-west range to the north of $Sk^{V}1a$, still known locally as the Sauro Town Mountains. For nearly a century after this, maps continue to show one or both locations using different spellings. Swanton (1946) suggested that the "Upper Sauro Town" was a later Sara occupation than "Lower Sauro Town," but his reasons for this interpretation were not given (Lewis 1951: 29).

Historic accounts by William Byrd of his surveys between North Carolina and Virginia in the early 1700s also provide information about the location of the Sara and dates of their occupation of the Dan River drainage. In a Journey to the Land of Eden, Byrd described how he came upon a Sara site while surveying near the junction of the Dan and Irwin (Smith) Rivers in 1733 (Lewis 1951: 26). While traveling

close to the river

> on a sudden the scene changed, and we were surprised with an opening of large extent, where the Sauro Indians once lived, who had been a considerable nation. But the frequent inroads of the Senecas annoyed them incessantly, and obliged them to remove from this fine situation about thirty years ago. They then retired more southerly, as far as the Pee Dee River, and incorporated with the Keyauwees where a remnant of them is still surviving (Van Doren 1928: 289-290).

If Byrd is correct, the Sara left the Dan River in 1703 to join the Keyauwees along the Pee Dee River. Along with the above account, he provided a description of the site and map of land he was surveying with a "conventional representation" of the former Sara village (Lewis 1951: 26-27). In addition, the earliest date of the Sara along the Dan River comes from Byrd's account. Byrd and his party while traveling along the Dan River to the northeast crossed a number of streams, one of

> which was called Hatcher Creek, from two Indian traders of that same name, who used formerly to carry goods to the Sauro Indians. Near the banks of this creek, I found a large beech tree with the following inscription cut upon the back of it, "JH, HH, BB, lay here the 24th of May, 1673" (Van Doren 1928: 292).

According to Byrd, it was not difficult to fill in the names of the traders. Since Byrd was at Lower Sauro Town "it would seem that the traders were heading for Upper Sauro Town" (Wilson 1977: xiv).

In the Spring of 1938, Joffre L. Coe followed Byrd's route and found a site at the exact location of the former Sara village given by Byrd in A Journey to the Land of Eden.

Excavations the same year showed that in all probability, it was the Sara village that Byrd had described (Lewis 1951: 206). From the archeological evidence, and in light of what was known from the historic accounts, the Sara were thought to have occupied the site in strength by 1650. A thick occupation layer, thicker than the deposits of other seventeenth- and eighteenth-century Siouan sites indicated a relatively long occupation. The pottery, closer to and showing a long development within the Uwharrie tradition, was older than the pottery of other Siouan sites. Pee Dee sherds at the site (and Dan River ceramics at Town Creek) indicated a "somewhat extended contemporaneity" with the Muskogean speaking Pee Dee peoples who were thought to have left the Pee Dee River Valley in the early 1600s (Lewis 1951: 291-292).

With continued investigation of the Sara occupation of the Dan River Drainage at $Sk^{V}1a$, the date of occupation of the Sara village described by Byrd ($Rk^{V}1$) has been reexamined. Excavations to date at $Sk^{V}1a$ of over 15,000 square feet have yielded a wealth of archeological evidence. A portion of a stockade line, 5 house patterns and portions of 5 more house patterns, 111 burials with associated aboriginal and European artifacts, and 150 features indicate that this Sara site was a major historic community. Two spoons give the earliest dates provided by the archeological record (Wilson 1977: xiv). The spoons, one found with Burial 1, and the other with Burial 54, are identical to spoons found at

Jamestown, Virginia dated at 1624 and 1650 (Joffre Coe: Personal Communication in Wilson 1977: xiv).

It is now thought that Lower Sauro Town or $Rk^{V}1$, predates the 1600s and that, as previously stated, the 1673 traders mentioned by Byrd were on their way to $Sk^{V}1a$ rather than the earlier Sara site, $Rk^{V}1$. According to Wilson, the occupation of $Sk^{V}1a$ probably dates to 1670, intermediate to the historic sites in the vicinity, until 1708, the first date given in an historic account of the Sara after their removal from the Dan River (Jack Wilson: Personal Communication).

The archeological evidence from excavations at $Sk^{V}1a$ provide an opportunity to fill in many details of the culture history of the Sara. The time the site was occupied was a period of interaction with Europeans, as evidenced by the great quantity of European trade goods, and there is an interest in the effects of this contact upon Sara culture. The potential of what can be learned about the Sara from the archeological record at $Sk^{V}1a$ can be contrasted with what is known about their earlier occupation of the Dan River drainage and what is known about their history after they departed from the Dan River in the early 1700s. It is the contrast with what is known of their later history from historic accounts and archeological investigations that gives special importance to the archeological record at $Sk^{V}1a$.

The historic accounts of the Sara after they left the Dan River present a picture of decline from the participation

in the Tuscarora War in 1711-1712 and the Yamassee War in 1715-1717, repeated attacks by Iroquois from the North, and smallpox epidemics. The last mention of them as a tribe is in 1768, when 50 or 60 Saras were living with the Catawba (Mooney 1894: 61). By the 1800s, the tribal identity of the Sara was lost with only a few individuals remaining. This picture of gradual decline is also reflected in the archeological record by the difficulty in locating Sara villages from information and maps given in historic accounts (Lewis 1951: 309-310). Only one site has been identified with certainty as a Sara occupation.

A census account of 1715 (Milling 1946) placed 510 Sara, 170 miles from "Charles Town," South Carolina. Milling interpreted this location as being somewhere along the border of North and South Carolina. (Milling 1956: 220). The location suggested by archeological evidence is the Town Creek site, located on the Little River, a tributary of the Pee Dee River in lower North Carolina. Shaft-and-chamber burials with European trade goods, Sara-like ceramics, and the location of Town Creek (170 miles from Charleston, South Carolina) is conclusive evidence of a Sara occupation (Lewis 1951: 307-308; Wilson 1977: xiii). The identity of other Sara locations occupied between the time they left the Dan river and settled at Town Creek, and the verification archeologically of locations given in historic accounts of later locations in South Carolina, has met with little success. According to Lewis, (1951: 313-314) the difficulty in identi-

fying eighteenth-century Sara sites from ceramic or other cultural remains is very difficult, as it was a period of cultural disruption and amalgamation with other Siouan groups.

To date, there have been two studies of the archeological record at $Sk^{V}1a$. Wilson (1977) analyzed the charred ethnobotanical remains from a group of features, and, in conjunction with the ethnohistoric record, presents a picture of plant food subsistence and the use of non-food plants with an investigation in the effects of European contact. Ward (1980) studied the surface (plow zone) distribution of artifacts in relation to the subsurface distribution of features at $Sk^{V}1a$ and a Cherokee site of the Pisgah phase, $Bn^{V}29$. His study compared the patterns observed at sites having large excavated areas to the archeological methods of predicting subsurface features from surface distributions of artifacts.

Wilson found a good correspondence between the plant foods from the archeological features and those listed in the ethnohistorical record. According to Wilson (1977: 108), "both sources agree that the Sara had corn, beans, squashes, peaches, watermelons and sunflowers as cultivated plants." The majority of wild plant foods listed in the historic accounts were verified archeologically, but the ethnohistoric record contained much more detail regarding non-food plants (Wilson 1977: 107). In a summary of the plant food subsistence of the Sara and the effects of contact, Wilson

provides the important information that:

> It does not appear that the Sara were turning away from agriculture aided by gathered wild plant foods as their traditional, basic form of subsistence. If anything, it would seem that the Sara agricultural inventory was expanding. The interaction network that had been established with the Europeans was having a positive impact upon the Sara plant food subsistence (Wilson 1977: 116).

Like the features, the human burials and the cultural and biological data they contain offer much information about the Sara. All of the 111 excavated burials are primary interments, as evidenced by the articulation of skeletal remains, with the majority of them containing associated artifacts of aboriginal or European manufacture. The following study will attempt to describe the mortuary practices of the Sara from an analysis of the patterns in mortuary treatment observed in a sample of the $Sk^{V}1a$ burials, and to present some suggestions or interpretations of possible social meaning in these patterns.

It is important to note here that this study is greatly influenced by the careful methods employed in the excavation and laboratory processing of the $Sk^{V}1a$ burials by personnel of the Research Laboratories of Anthropology. The manner in which the burials were recovered in the field and processed in the laboratory reflect a recognition of the potential information that can be obtained from their study. Although the methods used at $Sk^{V}1a$ have improved over the years, the interest in burial study began in the 1950s with the first excavation of a Siouan burial at Keyauwee by Joffre L. Coe.

At the same time in recent years, there has been an expanding interest by archeologists and physical anthropoligists in the studies of burials both in the cultural data and the biological data they present. Archeologists have examined patterns in mortuary practices and have inferred social meaning from their studies such as social organization from the differential treatment of the disposed individuals represented (Binford 1971; Brown 1971; Larson 1971; Pebbles 1971; Rothschild 1979; Saxe 1971). There have been improved methods of analysis and added knowledge in areas of skeletal biology such as in studies of paleodemography, biological distance, cultural alterations of bone, and pathology. A few studies such as Buikstra (1976) and Bass, Evans and Jantz (1971) have integrated biological data in their studies of mortuary practices with insightful results.

Although much of what can be learned about the mortuary practices and the skeletal biology of the Sara is beyond the scope of the present study, an effort will be made to present an initial model upon which further biological and cultural studies of Sara mortuary practices can be built.

CHAPTER I

RESEARCH METHODS

Sample Description

The total number of burials excavated to date at $Sk^{V}1a$ could not be included in this study because of the time involved in processing and analyzing the biological and cultural data from each burial. Instead, the sample analyzed here is comprised of the first 88 burials from the 1972 through and including the 1977 field seasons. As stated in the introduction, all the burials are primary and single interments except Burial 45, which is a primary interment of two individuals. One pit designated Burial 60, with no human bone or associated artifacts recorded, has since been determined to be part of Feature 113.

It is unfortunate, and a limiting factor, to this study that 22 of the burials or 25 percent of the sample has been vandalized by modern day "pothunters". Three additional burials were disturbed, but they were intruded by other pits at the time the site was occupied. Although some of the burials had been extensively disturbed, it is important to note that in two burials the "potholes" did not reach the skeletons; the majority of disturbed burials had undisturbed portions; and good amounts of human bone and artifacts were recovered from most of the disturbed burials. Disturbances by tree roots, "pothunter" probes and rodents were also

present but were less extensive.

In addition to the above limitation, the majority of skeletons removed from the $Sk^{V}1a$ burials are poorly preserved. The soils in which they are found generally have a high acid content and skeletal remains rarely show good preservation in this type of soil. Only 12 adult and 4 subadult skeletons are well preserved. An additional 7 adult and 3 subadult skeletons are in fair condition. Of the skeletons in good condition, it is unfortunate that the 4 subadults and all but 3 of the adults are fragmented due to the activities of vandals. This association between good bone preservation and vandalism in some instances may be explained in the manner in which "pothunters" locate burials. Holes from metal probes have been discovered in a number of burials showing poor bone preservation that otherwise were undisturbed. Recognizable bone found in a probe by a vandal may have been the evidence used in locating a burial. The vandalism and generally poor bone preservation can be greatly limiting or discouraging to an effort to delineate any patterns in mortuary treatment. There are limitations, but there are also a number of factors that have bearing upon the mortuary data present and the appropriateness of this sample for a description and delineation of burial patterns. As will be seen, every effort, including specialized field and laboratory techniques, has been employed to recover as much information as possible from disturbed as well as undisturbed burials. Even with poor

bone preservation, the presence of dental remains for all but 4 of the burials has provided the criteria necessary for age estimates of the subadults and additional criteria for aging adults. The presence of copper salts from copper and brass artifacts in more than 30 percent of the burials has preserved portions of skeletons and organic materials in their proximity, adding considerable information to this study. The presence of some good bone in burials otherwise poorly preserved is important to note. Details about the types of associated artifacts, body preparation, and body ornamentation are possible from the preserved cane matting, leather, cloth, string, wood, and shell that have been preserved by copper salts.

Because of the above characteristics of the sample, and to facilitate further research, a detailed description of each burial will be presented. Each description will include an inventory of skeletal remains, state of preservation, the extent of disturbances, estimates of age and sex where the data permit, any pathologies or anomalies observed, and the details of mortuary treatment of the disposed individual.

Burial Classification

A description of the burials and the delineation of any patterns or associations in mortuary treatment of the disposed individuals in this sample require adequate field data and a classificatory scheme. The field records, in the form of photographs, drawings, and detailed notes are adequate for this study. The dimensions of mortuary treatment

described in the field records follow traditional classifications of mortuary data in the archeological literature. An exception is a typology of burial pits. The types of pits described are the "shaft-and-chamber", and "central-chamber" which reflect differences in pit construction. This typology was first used by Joffre L. Coe to describe Siouan burials at Occaneechi and Town Creek (Coe 1952). Shaft-and-chamber and central-chamber burial pits have since been described not only for $Sk^{V}1a$ but for Pisgah Cherokee sites and at other sites of unidentified cultural affiliation in the Southern Appalachians (Egloff and Reed 1980; Dickens 1976).

The field burial descriptions are generally consistent in the terminology and criteria used in classifying the dimensions of mortuary treatment. There is some inter-observer variability, however, and there is additional information about body position and deposition, and the types and placement of artifacts, for those burials that were processed as burial blocks or pedestals in the laboratory. The dimensions of mortuary treatment therefore, will be re-classified following the classificatory scheme of Sprague (1968) and the typology of burial pits in Dickens (1976) and Lewis (1951).

Sprague (1968), from a study of the "classic" burial classificatory schemes, presents an outline of "burial patterns" that encompasses a wide variety of mortuary practices without "non-mutually exclusive categories" and a

precise nomenclature." The criteria and terminology used in burial descriptions in Sprague's scheme do not differ significantly from the burial descriptions in $Sk^{V}1a$ field records, but his scheme is comprehensive and can be used as a standard for comparative studies. In addition, the specialized typology of burial pits is in keeping with Sprague's outline of burial patterns. According to Sprague (1968: 480) descriptive terms are necessary to identify the "vehicle of disposal," as the variability in "containers" is too great to include them in a classificatory scheme.

Aging and Sexing, and the Representativeness of the Mortuary Sample

In addition to a meaningful classificatory scheme, there are two methodological considerations that are important in studies of burial patterns. Accurate determinations of age and sex in mortuary populations is a methodological consideration that has received new emphasis in recent years, not only in paleodemographic studies that estimate total population size and mortality rates, but in studies of mortuary practices. Evidence of differential mortuary treatment by age group or sex is often the evidence used in inferring social organization or status (Buikstra 1976; Larson 1971; Pebbles 1971; Rothschild 1979; Saxe 1971). Not all of these studies, however, determine the representativeness of the mortuary population to a living population, a methodological consideration fundamental to paleodemographic studies.

The importance of this consideration in studies of mortuary practices, especially in those studies that infer social organization from mortuary data, can be illustrated by presenting some of the difficulties cited in paleodemographic studies in determining the representativeness of a mortuary sample to the group studied. It is often stated that complete mortuary populations are rarely recovered by archeologists, and that poor preservation may preclude age or sex determinations of some of the disposed individuals. The archeological evidence may suggest that a mortuary site has been completely excavated, but circumscription and contemporaneity of the group or groups represented are often difficult to determine (Howells 1960: 280). These difficulties are complicated in the New World by a "tremendous" cultural variation in mortuary practices (Ubelaker 1976: 6). Factors such as "selective cremation," "trophy taking," "death away from the village," and "differential status," listed by Ubelaker (1976: 6), may limit the likelihood that the full scope of a mortuary complex will be known and that the mortuary sample will be complete.

From the above, it can be seen that inferences about the mortuary practices of a particular group can be biased in a mortuary sample. The basic approach used by anthropologists who have attempted to determine the representativeness of their samples in studies of mortuary practices follows the approach used by paleodemographers. Simply stated, the

mortality profiles of the groups studied are compared to mortality data from living populations (Buikstra 1976; Saxe 1971) or to the mortality data from other studies of mortuary populations (Bass et al. 1971; Rothschild 1979). Additional insights can be gained from data on the genetic make-up of a mortuary population, from the study of epigenetic traits (Buikstra 1976) or metric traits (Bass et al. 1971), and information from historic accounts about population size and mortality rates (Buikstra 1976; Bass et al. 1971).

In this study, the condition of the bone and the sample size preclude a detailed demographic analysis. The mortality data (the numbers of adults sexed and the age groups represented) are, however, thought appropriate for comparison with the mortality data in Buikstra (1976), Bass et al. (1971), and other studies of mortuary populations.

Burial Patterns

First, the patterns in mortuary treatment of the disposed individuals in this sample by age and sex (although limited by the numbers of adults sexed) will be presented. This will be followed by observations on additional patterns in mortuary treatment. In interpreting social meaning from the patterns observed, two approaches will be used, one checked against the other.

The first approach follows in most respects, the theoretical orientation that typifies "processual" studies of mortuary practices. In these studies the variability or

patterns in mortuary treatment in a population are explained by the organizational properties of the group studied. The assumptions underlying this approach are outlined by Binford (1971). Because Binford's assumptions are shared by or cited by a number of archeologists and bioarcheologists, and will be tested in this study, it is important to outline them here.

First, Binford proposed that the mortuary treatment of an individual reflects that individual's "social persona" (a term borrowed from Goodenough, 1965). Social persona "is a composite of the social identities maintained in life and recognized as appropriate for consideration at death" (Binford 1971: 17). Briefly, age, sex, social position, and membership in a segment of the socio-cultural unit are social identities that serve for status differentiation and should be recognized by differential mortuary treatment (Binford 1971: 17).

In tests of the above proposition in a sample drawn from the Human Relations Area Files, Binford found a lack of adequate ethnographic data both regarding the dimensions of mortuary treatment and the "status systems." He felt, however, that there was enough information to determine that characteristics of the social persona were differentiated in mortuary ritual and instead of measuring social complexity by "status systems" he used forms of subsistence (Binford 1971: 18) Binford concludes that:

> the greater number of dimensional distinctions employed by settled agriculturists is viewed as

> evidence confirming the general propositon that there should be a direct correlation between the structural complexity of mortuary ritual and status systems within socio-cultural systems (Binford 1971: 18).

A second propositon that Binford tested was also related to "mortuary ritual structure." He proposed that the dimensions which serve for status differentiation in the simple to complex societies described in Service (1962) should correspond with the dimensions of mortuary ritual (Binford 1971: 18-19).

> ...Age and sex should serve more commonly as bases for mortuary distinction among hunter and gatherers; while among agriculturalists, social position as varying independently of age and sex as well as subgroup affiliation, should more commonly serve as the basis of mortuary treatment (Binford 1971: 20).

The "striking differences" between mortuary ritual in hunter-and-gatherer and agricultural societies is to Binford, "confirmatory evidence" for acceptance of this proposition. Although a "crude confirmation," because of the characteristics of the sample, his study "puts an axe" to the assumptions in historical interpretations. Rather than explaining variability by the flow or exchange of ideas, variability in Binford's view must be understood in terms of the organizational properties of the cultural system itself (Binford 1971: 20).

In a second approach to interpreting social meaning in the mortuary practices of the Sara, patterns in mortuary treatment will be compared with ethnographic data in historic accounts of Siouan-speaking groups of the Carolinas.

There is ethnographic data about social organization and status that will serve as a check upon the inferences of the first approach. This informaton comes primarily from John Lawson's account of his travels through the Carolinas in 1701, which is titled History of North Carolina and was first published in 1709. Lawson's account contains more ethnographic data than any historic account of Siouan groups, it is from the time period of interest in this study, and it has proven reliable in previous studies where it was compared with the archeological record (Lewis 1951; Wilson 1977).

The comparison of the burial patterns in the $Sk^{V}1a$ sample to additonal ethnographic data from John Lawsons's account is made to explore possible historical meaning in the mortuary practices as well as process. This type of comparison is at odds with the theoretical orientation of Binford's approach. Ethnographic data from historic accounts or a "specific comparative analogy" according to Binford, is said to be useful for framing hypotheses but not for an explantion of process. For explanation, Binford favors the use of "general comparative analogies" (Willey and Sabloff 1974: 206). The view of historical interpretations in traditional archeological studies, was "put to the axe," as was pointed out previously.

The assumptions in this study of the $Sk^{V}1a$ burials can best be characterized by the following statement:

> given the uncertainties that surround any archeological record of the past, we will

> come to grips with process in greater certainty by the fullest possible utilization and comprehension of specific historical contexts, both archeological and ethnographic, in conjunction with both general comparative and specific comparative analogies. The most meaningful hypotheses of explanation will be framed in this light (Willey and Sabloff 1974: 207).

CHAPTER II

AGE AND SEX COMPOSITION OF THE SAMPLE

Determinations of Sex

Sex determinations of subadult (before the age of eighteen) skeletal remains are rarely attempted in studies of mortuary populations. There is a scarcity of documented subadult skeletal samples for study (Stewart 1979: 126), and those studies that have been carried out have not provided the accuracy needed for demographic analyses (Ubelaker 1974: 41). An exception cited by Krogman (1962), Stewart (1979), and Ubelaker (1974), (1978) is a study by Hunt and Gleiser (1955). Hunt and Gleiser (1955), by comparing radiographs of dental development and skeletal maturation (Stewart 1979: 126), sexed a sample of Boston children, aged 2, 5, and 8 years, with an accuracy of 73, 76, and 81 percent respectively (Ubelaker 1974: 41). Since dental development does not differ significantly between the sexes, as does skeletal maturation, distinctions could be made. This method can be used to sex subadults from mortuary samples but unfortunately it is often precluded as it is in this study, because it requires excellent preservation and recovery of the small bones of the hand (Stewart 1979: 127; Ubelaker 1974: 41).

At about age 18, however, the sex of a skeleton can readily be determined. Differences in the pelvis, with the

modification of the female pelvic girdle for childbearing, provide the most accurate criteria for determining sex. Trained researchers using traditional subjective observations of pelvic features can sex skeletons with an accuracy of 90 to 95 percent (Krogman 1962: 149). With additional observations, described by Phenice (1969), of the ventral arc, subpubic concavity, and medial aspect of the ischio-pubic ramus, the accuracy of sexing by pelvic features is improved to 96 percent. Pelvic measurements have also been utilized in a number of studies, but objective methods have not proven to be any more accurate than subjective.

After the pelvis, observations of differences in size and configuration of male and female crania and mandibles are the most reliable for determining sex. Generally, male skulls are larger and more rugged while female skulls are smaller, more gracile and retain pedomorphic characteristics. Using subjective observations of the skull alone the accuracy for trained observers is from 80 to 90 percent (Ubelaker 1974: 41).

In contrast to measurements of the pelvis, objective methods or the use of discriminant functions derived from cranial and/or mandibular measurements may improve the accuracy of determining sex. Studies by Giles and Eliot (1963) and Giles (1964) are cited most often. Giles and Eliot (1963) derived discriminant functions from cranial measurements of male and female black and white Americans of known sex in the Terry and Todd collections. Using the

discriminant functions they achieved an accuracy of 80 to 89 percent. Giles (1964) determined discriminant functions from mandibular measurements of white and black Americans from the Terry collection and achieved an accuracy of 85 percent.

According to Giles and Eliot, the discriminant functions presented in their studies, if applied to other populations, are "likely to be successful," but they also suggest that new sectioning points based upon the sample means in question may be needed (Giles 1964: 134).

There has, however, been some criticism of the use of the discriminant functions presented by Giles and Eliot for determining sex in other populations, with the recommendation that discriminant functions should be derived from the population being studied (Bass 1969: 460).

In addition to the skull and pelvis, differences in the size and structure of many of the postcranial bones, particularly the long bones, have been studied for their value in discriminating between the sexes. Generally, observations of size, ruggedness, muscle-marking, and structural features are helpful as additional criteria, but the overlap between the sexes reduces their accuracy for determining sex (Ubelaker 1978: 43,-44).

However, measurements of the maximum diameter of the humeral head and of the femoral head are frequently employed and are considered fairly accurate indicators of sex. In addition, Giles (1970) achieved a high degree of accuracy in determining the sex of blacks and whites from the Terry

collection by using discriminant functions derived from a number of measurements of long bones in conjunction with pelvic measurements. This method, however, requires measurements that may not be possible if skeletal remains are poorly preserved, and, as previously stated, discriminant functions derived from one population may not be applicable in another population.

The above criteria are present in sufficient amounts to sex 23 adults in the $Sk^{v}1a$ sample. The sexed adults, 11 males and 12 females, are presented in Table 1 by burial number and by age.

Table 1

Sex Determinations by Age and Burial Number

Age	Female Burials:	Male Burials:
18-30	1*, 65, 77*, 56*	2*, 3, 4*, 24, 62, 68*
31-40	58*, 14	6, 67, 74*
40+	17, 18*, 19, 51*, 79, 87*	73*, 75

* Sex determinations primarily by pelvic criteria.

Twelve of the adults (those with an asterisk in Table 1) were sexed by subjective observations of the pelvis, cranium, mandible, and long bones, with the pelvis given the most weight, followed by the skull. Most of the criteria employed are found in Krogman (1962), but a few additional

observations were possible. The accuracy of the determinations of sex of Burials 1, 4, 18, and 58 could be improved by the following visual observations of the os pubis described by Phenice (1969): the medial aspect of the ischio-pubic ramus, the subpubic concavity, and the ventral arc. Parturition scars described by Stewart (1979), also a criterion in determining sex and of interest, are present in the preauricular grooves of the ilia of Burial 18.

The majority of males and females in this small sample of twelve adults show significant differences in the size and configuration of the pelvis, skull, and long bones. The degree of sexual dimorphism observed in the skulls of most of the adults can be seen in the skulls of Burial 1 (a female) and Burial 73 (a male) (Plates I and II). In all cases, there is agreement in the determinations of sex by pelvic criteria and by additional criteria, but there is some overlap in the size and structure of cranial and postcranial features. For example, Burial 51 was determined to be a female by observations of pelvic features and the majority of cranial and mandibular features. In comparison with the other females in the sample, however, this female is larger and shows some rugged features.

Less criteria were available to sex the remaining eleven adults included in Table 1. Differences in the size and configuration of the skulls and long bones could be observed in all eleven. Fragmented innominates are present in five of the eleven adults (Burials 14, 17, 65, 67, and 74), but only

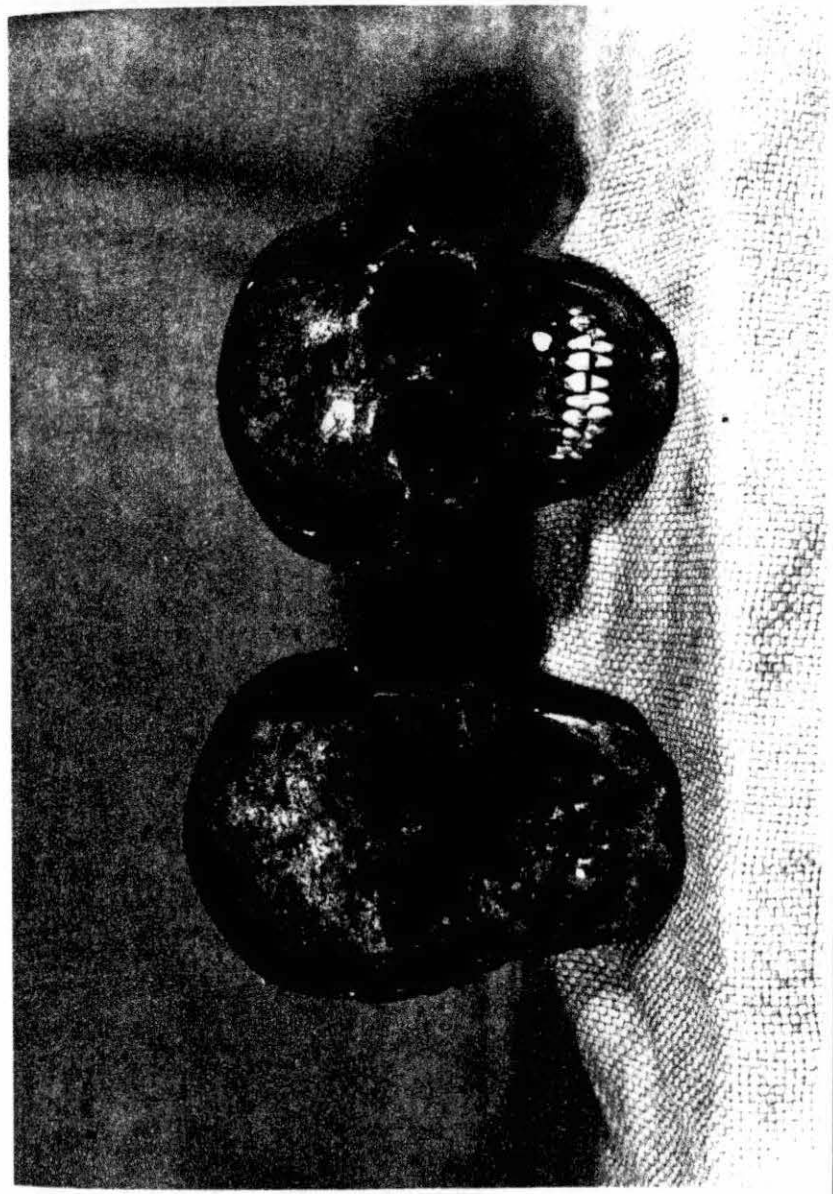

Plate I. Front view of Burial 1, a female aged 17 to 21 years (on the right) and of Burial 73, a male aged 40+ years.

Plate II. Side view of Burial 1, a female aged 17 to 21 years (on the right) and of Burial 73, a male aged 40+ years.

the width of the sciatic notch could be observed.

Again, there was an agreement in the criteria employed and sexual dimorphism observed in the crania, mandibles, and long bones. The accuracy of the sex determinations of the five adults, with observations of the width of the sciatic notch may be improved, but the value of this feature has been questioned because of the possible overlap in width between the sexes (Buikstra 1976: 8; Stewart 1979: 115). To improve the accuracy of these determinations of sex and to provide comparative data for further research with Sara skeletal remains, some objective observations were utilized.

The measurements chosen are presented in Tables 2A and 2B. The measurements of the mandible follow Stewart (1952) and are the same as those used by Giles (1964) for discriminating between the sexes. They are included here for comparison within the sample and to test the sex determinations of those with enough measurements against discriminant functions presented in Giles (1964).

The marked posthumous deformation and fragmentary condition of the majority of the adult crania in the sample limited the number of measurements possible. Only one cranial measurement, the length of the mastoid process, is included here. This measurement, following Keen (1950), was employed by Giles and Eliot (1963: 56) for its "ease in taking" and "potential sex-discrimination power."

The additional measurements of the maximum diameter of the head of the humerus and of the maximum diameter of the

TABLE 2A

MEASUREMENTS USED IN SEXING FEMALE ADULTS*

	Burial Number:	1	14	17	18	19	51	58	65	77	79	87	$\bar{X}$
1.	Symphysis Height	30.0	33.0		35.0		34.0	29.0	31.0	R 28.0	33.0		31.63
2.	Body Height	R 23.5 L 23.5			L 33.5			R 29.5 R 29.5	R 28.0 R 28.0	R 24.0 L 24.0			27.70
3.	Body Length	96.0								89.0			92.50
4.	Body Thickness	R 15.0 L 15.0	L 14.0		L 16.0			R 16.0 L 15.5	R 14.0 L 13.5	R 13.0 L 13.5			14.63
5.	Ramus Minimum Length	R 33.0 L 34.0	R 33.5 L 33.0	R 33.5		L 28.0			R 33.5	L 31.0			32.08
6.	Ramus Maximum Breadth	L 44.0	R 40.0 L 41.0	R 40.5		L 36.0				R 40.0 L 39.0			40.10
7.	Ramus Height	R 55.0 L 56.0	L 58.0	R 54.0	R 57.00	L 59.0			R 57.0	R 56.0 L 56.0			56.64
8.	Bigonial Diameter	98.0	99.5		86.00					99.0			95.63
9.	Bicondylar Breadth	128.0								116.0			122.00
10.	Mastoid Length	R 23.5 L 23.5	L 23.0	R 28.0 L 28.0	R 28.0	L 26.0		R 28.0		R 22.0 L 22.0	R 23.0 L 23.0		25.19
11.	Maximum Diameter Head	R 38.5								R 34.0			36.30
12.	Maximum Diameter Femoral Head	L 39.5		R 38.5 L 38.5			R 42.0	L 40.0		L 36.0			39.20

* Measurements are in millimeters.

TABLE 2B

MEASUREMENTS USED IN SEXING MALE ADULTS*

	Burial Number:	2	3	4	6	24	62	67	68	73	74	75	$\bar{x}$
1.	Smyphysis Height	31.0		35.5	32.5					32.0	33.0		32.80
2.	Body Height		L 33.0	R 29.0 L 29.0	L 30.0	R 30.0							30.50
3.	Body Length	98.5		104.5						101.5			101.50
4.	Body Thickness	L 15.0	L 15.0	R 15.5 L 15.0	L 13.0						L 14.5		14.55
5.	Ramus Minimum Length	R 33.0		R 40.0 L 40.5	R 36.0	L 32.0		L 35.5 L 35.0	R 33.0	R 34.0 L 33.5		L 33.5	34.59
6.	Ramus Maximum Breadth	R 43.0 L 43.0		R 49.0 L 49.0				L 45.0	R 43.0	R 46.5 L 46.0		L 44.0	45.04
7.	Ramus Height	R 66.5 L 66.0	L 65.5	R 68.0 L 68.0				L 69.0	R 64.0	R 65.0 L 66.0			66.42
8.	Bigonial Diameter	104.0		101.0						108.5	106.0		104.75
9.	Bicondylar Breadth	124.5		111.5							134.0		124.67
10.	Mastoid Length	L 28.5		R 30.0 L 30.0			R 31.0	R 35.0 L 35.0		R 36.0 L 36.0	R 31.0		31.92
11.	Maximum Diameter Numeral Head			R 46.0					R 45.5		R 45.0		45.50
12.	Maximum Diameter Femoral Head	R 42.0	R 44.0	L 43.0					L 44.0	L 47.5	R 48.0		44.50

* Measurements are in millimeters.

head of the femur are included. The measurements follow Bass (1977), and as previously stated they are considered to be fairly accurate in discriminating between the sexes.

As can be seen in Tables 2A and 2B, because of the generally poor bone preservation, only a few measurements were possible for the majority of adults. The comparative data present, however, are helpful as additional criteria for determining sex, especially in those adults lacking pelvic criteria. Hopefully, this data also will be useful for future research.

Although there is some overlap in the male and female ranges, overall, the sexual dimorphism observed visually is also indicated by the measurements. The male means exceed the female means in all measurements except mandibular body thickness. The greatest differences, in order, are in ramus height, bigonial diameter, diameter of the head of the humerus, and mandibular body length.

With such a small sample, it can only be suggested that these measurements are significant in differentiating between the Sara males and females. But Giles (1964) in his study of white and black populations from the Terry collection also found the above mandibular measurements to be significant in differentiating between the sexes, with the greatest difference being in ramus height (Giles 1964: 131). In addition, humeral head diameters, according to Stewart (1979: 121) differentiate between the sexes better than femoral head diameters.

The mandibular measurements of three males (Burials 2,4, and 73) and of three females (Burials 1, 18, and 77) were entered in the discriminant functions 1, 2, and 3 presented by Giles (1964). The three functions only require measurements of symphysis height, ramus height, and bigonial diameter.

Function 1 was derived from the above measurements of the white sample, function 2 from the black sample, and function 3 from the two samples combined.

There are slight differences in the means of the three mandibular measurements when the Sara are compared to the above samples (Giles 1964: 131). Ramus height is smaller, bigonial diameter is slightly greater, and unlike the samples from the Terry collection there is little difference between the Sara males and females in symphysis height. When the measurements are entered into the three discriminant functions, however, the resultant scores are consistent with the sex determinations by subjective observations. The formulae for the functions, the male and female black and white means, the sectioning points presented by Giles (1964), and the scores for the Sara are presented in Appendix A.

The mandibular discriminant functions presented by Giles appear to be applicable to the Sara and may be useful for further research. Giles may be correct in stating that the "sexual dimorphism of the human mandible outweighs racial differences" (Giles 1964: 134). Further research with Sara skeletal remains, including cranial, mandibular and post-

cranial metrics, may shed some light on the question of population differences.

Age Estimates of Subadults

Stages of calcification and eruption of decidous and permanent teeth, the union of epiphyses (secondary ossification centers), and measures of long bone size without epiphyses, are the criteria most often used in estimating the chronological age of subadult skeletal remains. Additional observations of the appearance of ossification centers or the union of primary centers of ossification (see Krogman 1962 or Stewart 1979) are used infrequently.

Of the criteria used most often to age subadults, dental development is the least affected by environmental factors, such as disease or malnutrition (Ubelaker 1974: 45), and it is considered the most accurate criterion to age subadults less than 12 years of age (Stewart 1979: 140). From about 12 years to about 20 years, age estimates by observations of dental development and measures of long-bone lenghth are of "limited value" (Ubelaker 1978: 52). The union or non-union of epiphyses provide the most reliable criteria for aging subadults in this age group.

In the $Sk^{V}1a$ sample, the subadult skeletal remains are generally poorly preserved. Fortunately, however, dental remains of 33 subadults were preserved, with 29 of the subadults aged as less than 12 years by dental development. It is also fortunate that observations of epiphyseal closure were possible in three of the four subadults aged by dental

development to be 12 or more years of age. With the variability in dental development in subadults, 12 years and older, the observations of epiphyseal closure allowed for closer age estimates.

In addition to the above subadults aged by biological criteria, there were four burials that appeared to be subadults. There was little or no bone preserved in these burials but evidence will be presented for their determinations as sub-adults, following a discussion of the biological standards employed in aging the majority of subadults in this sample.

Most of the standards of dental development in the literature, such as the widely used Schour and Massler (1944) dental formation and eruption chart, are derived from white populations. The few studies[1] that include data from American Indian groups "suggest that eruption of at least the posterior teeth occurs slightly earlier in Indian and other non-white groups" (Ubelaker 1974: 48). The use therefore of white standards to age American Indian subadult skeletal remains may result in higher age estimates (Ubelaker 1974: 48).

Although the above is an important consideration in employing white standards to age American Indian subadults, Ubelaker (1974; 1978) has pointed out additional problems.

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[1]Ubelaker (1974:45) lists the studies by Steggerda and Hill (1942), Hurme (1948), Garn and Moorrees (1951), Dahlberg and Menegaz-Bock (1958), and Hrdlicka (1908) as including data on dental development in American Indians.

The data presented in the studies of American Indian dentitions include only the eruption times of permanent teeth (Ubelaker 1978: 46), and there is disagreement among the researchers as to what ages various teeth erupt (Ubelaker 1974: 45). There are no data about the eruption of deciduous teeth, nor are there data about the calcification of deciduous and permanent teeth, which are more accurate criteria for aging than dental eruption (Ubelaker 1978: 46). Ubelaker, therefore, has compiled a chart (Ubelaker 1978: 47) showing stages of dental formation and eruption of deciduous and permanent teeth that is more applicable for aging American Indian subadult dentitions. This chart is used in the present study. He utilized the published data for eruption of the permanent teeth of American Indians. For the eruption of deciduous teeth and the calcification of deciduous and permanent teeth, Ubelaker used white standards (primarily U.S. whites) but the "early end of published variation" (Ubelaker 1978: 46). The data for the sexes are combined with the recommendation that observations of the canine (variable in development between the sexes) be avoided and the variation in development for each age be given as a plus or minus factor (Ubelaker 1978: 46).

The subadult dentitions in this sample were compared to Ubelaker's (1978) chart. For each dentition, an assessment of dental development (by averaging the development of the teeth present) was possible, and the use of radiographs to determine the stages of formation of unerupted teeth was not

necessary. In the majority of subadults, unerupted teeth were visible in eroded crypts, or the teeth were loose allowing for the more accurate observations of tooth formation. Eruption, however, or the emergence of the teeth through the gum line, as defined by Ubelaker (1978: 46) and others, could not always be observed. Instead, a number of loose teeth were judged as fully erupted by interproximal and/or occlusal wear facets.

As previously stated, 29 subadults were estimated to be less than 12 years and one burial (Burial 33), was aged about 12 years by dental development. Observations of dental development also indicated that three subadults were 12 or more years of age, but observations of epiphyseal closure allowed for closer age estimates. The standards of epiphyseal closure in Krogman (1962) and Stewart (1979) were employed. Since sex could not reliably be determined, the standards for males and females were combined.

The age estimates of each of the 33 subadult burials aged by biological criteria are presented in the burial descriptions (Chapter IV). The age estimates in broad categories are presented in Table 3.

The age estimated by additional criteria for four subadults, having very little or no bone preserved, are also presented in Chapter IV and Table 3. These individuals are included because of the importance of determining the representativeness of the sample to a living population.

Table 3

Age Estimates of Subadults

Age	B-1	2-5	6-11	12-17	B-17	Total
Biol. Criteria	3	16	10	4	0	33
Add. Criteria	2	0	0	0	2	4
Total	5	16	10	4	2	37
% Each Age Group	13.51	43.24	27.03	10.81	5.41	100.0

Subadults Aged by Additional Criteria

Burial 64 was a small burial; the pit measured 2.74 feet by 2.37 feet. No bone or teeth were preserved but strands of beads were found along the pit floor that appear to be the remains of a small beaded garment. The area of the beaded garment was pedestaled in the field and brought to the laboratory for cleaning. (The pedestaled area is shown before cleaning in Plate III). Successive cleanings revealed two layers of beads in some areas, with the final cleaning uncovering the bottom layer of beads shown in Plate IV. As can be seen in Plate IV, the garment appears to have a cap, sleeves, and wristbands. Strands of small beads in the chest and abdominal areas are bordered by large beads. In addition, a triangular brass pendant and brass bells are present in the thoracic area, and beads were found in what appears to be the area of the feet.

The length of the garment from the top of the cap to and

including the beads in the feet area (not completely shown in Plate III and IV) measured approximately 18 inches. Allowing for some flexure of the legs, the length of the body was probably no greater than 25 inches. Because newborns average about 20 inches in length at birth (Bass 1971: 14) and the size of this beaded garment is similar in size to beaded garments found in Burials 23 and 57 (aged as infants by dental development), it is probable that this burial also was that of an infant. Burial 64, therefore, is included in Table 3 in the Birth-to-1 year category.

Burial 71 was smaller than Burial 64. The pit measured 2.36 feet by 1.95 feet. Only minute fragments of bone were preserved. Organic stain was present, however, and like Burial 64 the remains of what appeared to be the garment of an infant was found along the pit floor. This beaded area was also pedestaled in the field and brought to the laboratory for cleaning. Plate V shows the pedestaled area before cleaning, and Plate VI shows the final cleaning with a bottom layer of beads and a square brass pendant revealed.

The beaded garment or cloth may have been wrapped around the body as layers of bead strands were found to be meeting above and beneath the brass pendant. The beaded area measures 1.1 feet at its greatest length, which is only .3 foot less than the pit floor. Because of the small size of the beaded garment, the size of the pit floor, and the size of the pit, this burial is also considered to be that of an infant burial, and consequently is included in the Birth-to-1

Plate III. Pedestaled portion of Burial 64 before cleaning in the laboratory.

Plate IV. Pedestaled portion of Burial 64 after cleaning in the laboratory. The beads appear to have been sewn on a garment. A brass pendant and brass bells were in the chest area.

year category in Table 3.

No bones or artifacts were found in a small pit measuring 2 feet by 1.6 feet but the pit was designated Burial 32 in the field by the shape of the pit, the pit fill, and presence of organic stain along the pit floor. This is the smallest burial pit in the sample. Because of its small size, it may be the burial of an infant, but without additional information, it is classified as subadult and included in the Birth-to-17 years category in Table 3.

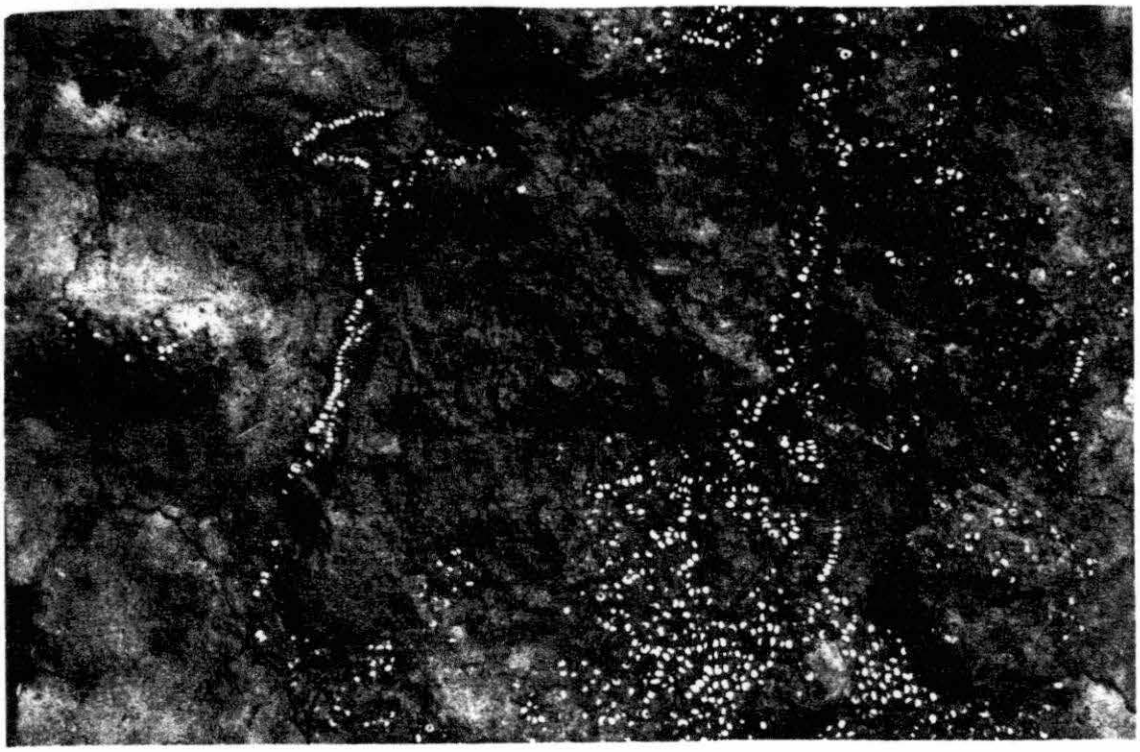
Burial 84 is also a small burial. The burial pit measured 3.25 feet by 2 feet. Organic stain, the remains of what appears to be a beaded necklace with a crescent-shaped pendant, and a beaded wrist or arm band were found along the pit floor. The greatest length of the body, which appears from the position of the bead work and organic stain to have been flexed, was 2.5 feet. This measurement compares well with other measurements from field plot sheets of subadult flexed burials in the sample. Therefore this burial is also considered a subadult burial, and it is included in the Birth-to-17 years category in Table 3.

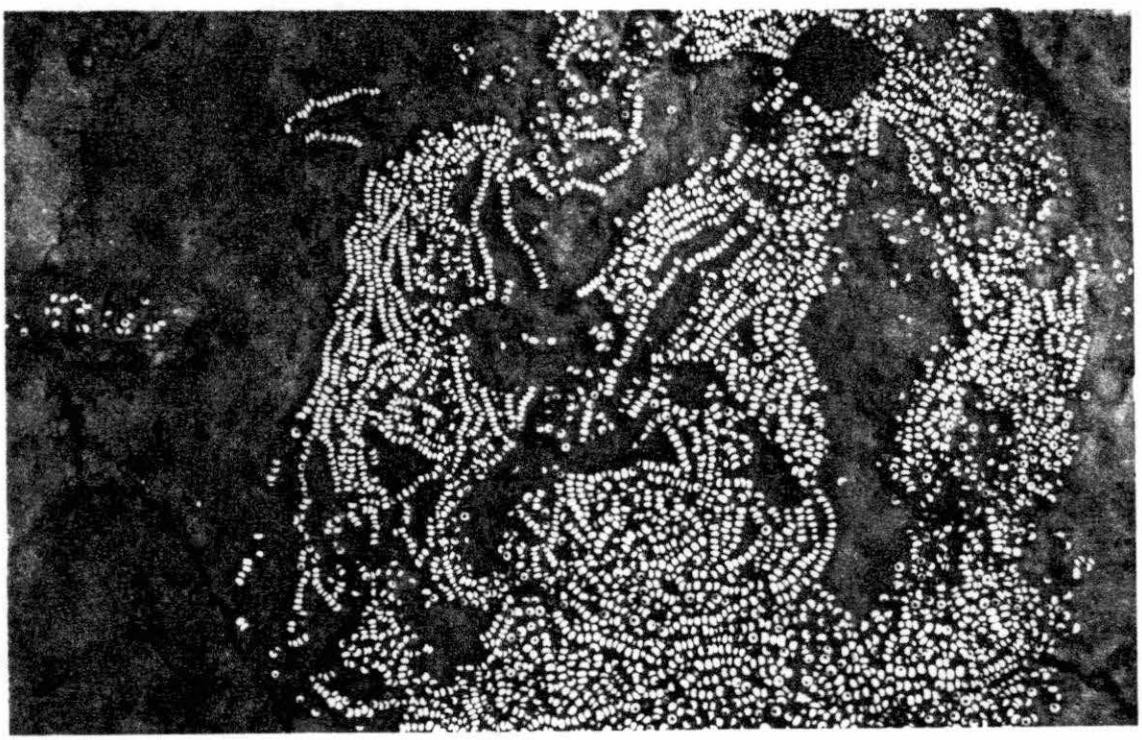
Age Estimates of Adults

Most often, adult skeletal remains are aged by criteria that are macroscopic, or observed visually, with the most accurate of these being metamorphic changes in the face of the pubic symphysis (Ubelaker 1978: 53). Less often, microscopic examination of cortical remodeling of long bones, or microscopic examinations of the structure of teeth, are employed

Plate V. Pedestaled portion of Burial 71 before cleaning in the laboratory.

Plate VI. Pedestaled portion of Burial 71 after cleaning in the laboratory. The beads appear to have been sewn on a garment. The brass pendant probably was in the neck area.





for more accurate results. These latter methods of aging, however, involve some destruction of the specimen, and they require special training and equipment (Ubelaker 1978: 64-67).

Because of the small number of adults in the $Sk^{V}1a$ sample that were in good condition, microscopic means to determine age were not feasible. Such means of aging are recommended, however, for further research with larger Sara samples. The criteria employed here are visual criteria, and they are limited by the fragmentary condition of many of the adult remains.

Pubic symphyses of only two adults, Burial 4 (a male) and Burial 58 (a female), were in good enough condition to allow observations of metamorphic changes of the symphyseal faces. Burial 4 was aged as 25 to 30 years by the male standards of Todd (1920) and McKern and Stewart (1957) in Krogman (1962), Stewart (1979), and Ubelaker (1978). Burial 58 was aged by the more variable female standards of Gilbert and McKern (1973) as 22 to 40 years of age. Additional criteria, that will be presented, were employed for a closer estimate at ages 31 to 40.

From about ages 18 to 21, closure of the spheno-occipital synchondrosis,[2] and from ages 18 to 25, epiphyseal closure and eruption of the third molar can provide fairly accurate age estimates of young adults with pubic symphyses

[2]The spheno-occipital synchondrosis has also been referred to as the "basilar suture," but this is "erroneous" terminology (Stewart 1979: 139).

that are not preserved. In the present sample, age estimates of five adults, two of which were tentative, were possible from observations of one or more of the above criteria.

The standards of epiphysal closure employed are in Krogman (1962) and Stewart (1979). When sex was not determined, the standards for males and females were combined.

Burial 1, a female, was aged at 17 to 21 years by a closed spheno-occipital synchondrosis, unerupted third molars and epiphyseal closure. Burial 45-B, of indeterminate sex, was aged by epiphyseal closure and unerupted third molars at 18 to 25 years. An observation of the eruption of the third molars alone, was used to estimate the age of Burial 13 as a young adult (18-30). The third molars of Burial 13 appear to have erupted, but the wear of the cusps is from almost no wear to very slight wear. In comparison to other adults in the sample, this is the slightest wear observed.

The skeletal remains of two burials, Burial 56 (a female) and Burial 62 (a male), were badly fragmented by vandals, which limited observations of aging criteria. It appears that the first sacral segment in both burials is open, but the fragmented condition of the sacra makes tentative the determination that these are young adults. Additional criteria, to be presented in following sections, also were employed.

For the remainder of the adults in the sample, the third molars had erupted and were worn, and epiphyses were closed.

The criteria available to age these adults are cranial suture closure and the degenerative changes of the skeleton: dental attrition and vertebral osteoarthritis. Studies (McKern and Stewart 1957; Moorrees 1957) have shown that these criteria are generally unreliable because of the variability in such degenerative changes within, and especially between, populations.

By employing the following however, the above criteria are thought appropriate to obtain an indication of the adult age groups represented in this mortuary sample: 1) the age estimates fall only in the broad categories of 18 to 30, 31 to 40, and 40+, or simply "adult" when there are insufficient criteria; 2) the Todd and Lyon (1924) standards of endocranial suture closure are used, but, because of the variability in this means of aging, they are used only as a check against additional criteria; and 3) observations of dental attrition and vertebral osteoarthritis are standardized within the sample and these observations are presented in detail.

The age estimates of the adults in the broad categories of 18 to 30, 31 to 40, 40+, and adult, are presented in Table 4. Adults aged by more accurate criteria are also included in Table 4. Individual age estimates are presented in the burial descriptions (Chapter IV).

Vertebral Osteoarthritis

Observations of degenerative changes in the joints are included by a number of researchers as criteria useful to

Table 4

Age Estimates of Sara Adults

Age	18-30	31-40	40+	Adult	Total
N	18	9	10	11	48
%	37.50	18.75	20.83	22.92	100.00

generally indicate age (Bass 1971; Krogman 1962; Stewart 1979; Ubelaker 1978). Most often, vertebral osteoarthritis or "lipping" (the formation of new bone growth along the margins of vertebral centra) is observed and Stewart (1958) is cited. Stewart (1958) investigated the relationship of age and vertebral lipping in a sample of Korean War dead and in a group of males and females from the Terry Collection. According to Stewart (1979; 178), vertebral lipping is not an accurate means to estimate the age of an individual, although there is a "clear intensification" of vertebral osteoarthritis at about age 40.

In the $Sk^{V}1a$ sample the presence or absence of lipping in at least one vertebral region could be noted in one-third of the adults. In about half of this group, a high degree of lipping was observed and it is thought to be an especially helpful aging criterion.

The stages of lipping observed in the sample of adults for each vertebral region, are categorized from 0 to ++++,

TABLE 5

STAGES OF OSTEOARTHRITIS OF ADULTS

			Vertebral Osteophytosis			Osteoarthritis
(age)	Bu. #	Sex	Cervical	Thoracic	Lumbar	Joints
18 to 30	1	F	O	O	O	
	2	M	O	O	O	
	3	M	O	-	-	
	4	M	+	O	+++	Talo-calcaneal
	56	F	+	-	-	
	65	F	O	O	O	
	77	F	O	-	-	
31 to 40	14	F	+	+	-	
	74	M	-	-	+++	
40+	17	F	++	-	-	
	18	F	+++	-	+++	
	51	F	-	++	+++	Sacro-iliac
	66	M	+++	-	-	
	73	M	+++	+++	+++	Costo-chrondral
	75	M	++	-	-	
	79	F	++	-	-	

(Table 5). These categories, following Stewart (1958), are also presented in Ubelaker (1978). However, Stewart's method of averaging the stages of lipping from each side of a vertebral centrum, and then obtaining an average of a vertebral region, was not applicable to this sample. With some vertebrae fragmented or missing in a region in most of the adults, the presence of lipping could be noted but observations of complete absence or averages of lipping were not possible. Each stage of lipping presented in Table 5, therefore, is the greatest stage of lipping observed in a vertebral region, and absence of lipping could be observed only in a few individuals.

The ages given in Table 5, by burial number, were estimated by comparing the stages of vertebral osteoarthritis to the additional criteria -- endocranial suture closure and dental attrition -- except in Burials 1, 4, and 56. In Burials 1 and 4, especially, stages of vertebral osteoarthritis could be compared to more accurate aging criteria. In Burial 56, dental attrition could not be observed, as no dental remains were found with this vandalized burial, but the additional observation could be made of possible non-union of the first sacral segment.

Overall, the age estimates by observations of the development of vertebral osteoarthritis and by additional criteria are consistent. Those adults aged 40+ with Stages ++ or +++ lipping are also those adults showing severe dental attrition, premortem tooth loss, and endocranial suture

closure.

Two males, Burials 4 and 74, however, are aged less than 40 years, even though both show Stage +++ lipping of lumbar vertebrae (Plate VII shows lipping in the fourth and fifth lumbar vertebrae of Burial 4). Burial 4 also shows Stage + lipping of the second, third, and fourth cervical vertebrae, as well as evidence of a herniated intervertebral disc or "Schmorl's node"[3] in the inferior surface of the body of the fifth lumbar vertebra (Plate VIII). This evidence of a herniated disc may in part explain the presence of Stage +++ lipping in this young adult. Jaffe (1972: 627-628) points out that herniation of a vertebral disc is particularly likely to occur under the influence of special strain from arduous labor or from vigorous activity in sports during the second decade of life."

An observation of the above condition was possible in Burial 4 because the vertebral column is nearly complete. But in Burial 74, only some fragmented vertebrae are present, since the burial had been subjected to the activities of vandals. The bodies of lumbar vertebrae present, however, do show considerable lipping along the margins. With this observation, observations of endocranial suture closure, and observations of dental wear that is median wear by comparison to the other adults in the sample, this individual was aged

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[3] A Schmorl's node is herniated tissue that has become "a bulbous mass of extruded tissue" (Jaffe 1972: 628). Evidence of a Schmorl's node in Burial 4 is found in "collapsed" areas of the vertebral body shown in Plate VIII.

Plate VII. Stage +++ lipping of the fourth and fifth lumbar vertebrae of Burial 4, a male aged 18 to 30 years.

Plate VIII. The inferior surface of the body of the fifth lumbar vertebra (Burial 4) showing evidence of a Schmorl's node. Note the pitting and depressed surface of the body.

31 to 40.

Additional arthritic changes were noted in other joints of three of the adults, Burials 4, 51, and 73 (Table 5). The evidence of additional osteoarthritis in these adults is described in Chapter IV. As previously discussed, because of the fragmentary condition of the majority of the adult skeletons, the absence of osteoarthritis in the joints of other adults in the sample cannot be assumed. Research on a larger sample may provide information about some causative factors of the osteoarthritis observed, and about the frequency of this degenerative change among the Sara.

Dental Attrition

Dental attrition has been and is frequently employed as an aging criterion when skeletal remains are poorly preserved, as in this mortuary sample. With dental remains present for all but two adults (Burials 44 and 56), stages of dental attrition served as aging critria in more adults than any other means of aging.

The definition of dental attrition used in this study is the one most frequently used in dental and anthropological journals. It is defined as the loss of enamel and dentine resulting from natural mastication. It is important, however, to point out that a number of studies (e.g., Anderson 1965 and Molnar 1972) have been carried out to investigate uses of the teeth for purposes other than chewing that produce dental wear. This is an important consideration when one uses dental attrition as an aging criterion.

To standardize the observations of dental attrition, each adult tooth in the $Sk^{V}1a$ sample was given an attrition rating following Graham (1973) who presents a dental attrition classification (adapted from Murphy 1959) that allows for finer wear distinctions than most schemes in the literature. Nine attrition ratings, (Figure 2) are given for each of the four tooth groups, maxillary and mandibular. The attrition ratings for the 4 tooth group are defined briefly as follows:

1. All teeth: from no visible wear to slight wear on one or more cusps.

2. Incisors and canines: thin horizontal line of dentine exposed in occlusal surface enamel.

   Premolars and molars: A small patch of dentine exposure on one cusp.

3. Incisors and canines: a widened slit in occlusal surface enamel.

   Premolars and molars: dentine exposed on two cusps.

4. Incisors and canines: increased dentine exposure with a reduction in crown height.

   Premolars: dentine patches widen.

   Molars: dentine exposed on third cusp.

5. Incisors and canines: increased reduction in crown height with more wear on the lingual surface.

   Premolars: patches of dentine begin to coalesce.

   Molars: increased dentine exposure of three cusps or exposed dentine on fourth cusp.

6. Incisors and canines: crown height is nearing cingulum.

   Premolars: increased coalescence of dentine

exposure.

Molars: patches of dentine exposure on two cusps, usually the lingual cusps, coalesce.

7. Incisors and canines: the enamel remaining is a tooth rim.

   Premolars: the enamel remaining is a tooth rim.

   Molars: all areas of dentine exposure on the lingual cusps and a third cusp, usually the mesio-buccal cusp, coalesce.

8. Incisors and canines: the crown height is reduced to near the gum line, the enamel rim remains only on the buccal surface of the tooth.

   Premolars: the enamel rim remains only on the buccal surface of the tooth.

   Molars: all areas of dentine exposure coalesce and only a small island of enamel and an enamel rim remain.

9. Incisors and canines: no enamel remains and the tooth is worn to the gum line.

   Premolars: no enamenal remains and the tooth is worn to the gum line.

   Molars: only an enamel rim remains or the tooth is worn to the gum line with only dentine and the root remaining.

Each adult tooth in the sample was given an attrition rating according to the wear category in Figure 2, and to the attrition ratings from Graham (1973). With the teeth in the sample given ratings 1 through 9, those dentitions judged complete enough for evaluations of dental attrition, 36 in all, were grouped into the age categories 18 to 30, 31 to 40, and 40+ by the mean wear observed. The age estimates by dental attrition were then checked against aging criteria. The above can best be illustrated by reference to Table 6.

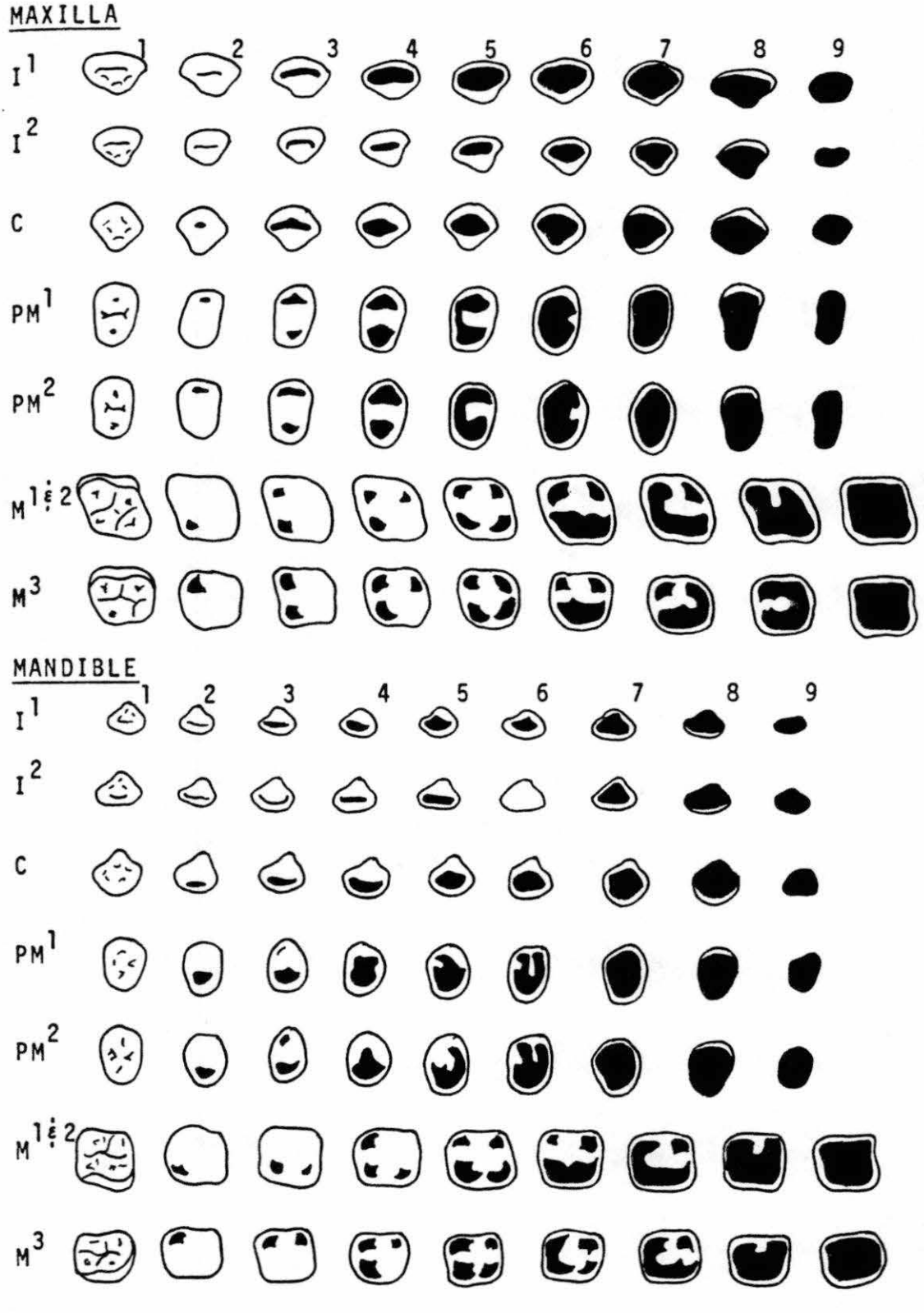


Figure 2. Numerical classification of maxillary and mandibular patterns of dentine exposure. Maxillary and mandibular lingual tooth surfaces are opposed. [In: Graham (1973)].

Table 6 presents the mean attrition scores for the maxillary teeth, and the mean attrition scores for the mandibular teeth, of 18 complete or nearly complete adult Sara dentitions grouped by age. Four of the adults represented in the table, Burials 1, 4, 45-B, and 58 were aged by accurate criteria (changes in the face of the pubic symphysis or epiphyseal closure). In ten of the adults, dental attrition was compared to stages of vertebral osteoarthritis and endocranial suture closure. In three other adults, only endocranial suture closure could be compared to dental attrition. And, in the remaining adult, only dental attrition and eruption of the third molars served as aging criteria; however, as previously discussed, this adult shows the least dental wear among the adults with third molars erupted.

In the total of eighteen adults, the groupings by age from observations of dental attrition were, for the most part, consistent with the age estimates by additional criteria. There is a general progression of dental attrition with age, and only with a few exceptions, which will be discussed, there is a similar wear pattern in the three age groups.

A general progression of wear (Table 6 and Plate IX) can be seen in the three age groups. In the young adults, dentine has been exposed in some teeth, but in comparison to the adults aged 31 to 40 and 40+, this wear is slight. The attrition progresses in the next two age groups each time by

TABLE 6

ATTRITION RATINGS OF COMPLETE OR NEARLY COMPLETE ADULT DENTIONS BY AGE

		Maxillary								Mandibular							
	Age:	(18 - 30)		(31-40)		(40+)		Total			(18-30)		(31-40)		(40+)		Total	
	R & L	N	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	R & L	N	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$
Teeth	I_1	15	3.67	8	5.86	7	8.29	30	5.33	I_1	10	3.40	4	4.75	8	7.75	22	5.23
	I_2	14	3.36	8	5.63	5	8.40	27	4.96	I_2	13	3.54	5	4.40	9	7.78	27	5.11
	C	16	3.13	8	5.25	6	7.83	30	4.63	C	18	2.72	7	4.14	10	6.30	35	4.03
	PM_1	17	1.94	8	3.88	4	7.75	20	3.21	PM_1	17	1.88	5	2.60	7	5.86	29	2.97
	PM_2	17	1.47	6	3.50	29	6.67	29	2.97	PM_2	15	1.73	5	2.40	5	5.60	25	2.64
	M_1	17	3.29	6	5.83	4	6.25	27	4.30	M_1	15	3.40	6	5.33	2	7.50	23	4.26
	M_2	18	1.56	5	2.80	3	3.33	26	2.00	M_2	16	2.25	7	4.14	3	6.67	27	3.15
	M_3	11	1.00	7	1.00	5	2.00	23	1.28	M_3	11	1.09	5	1.80	5	4.80	21	2.14
Total:		125	2.43	56	4.22	40	6.25	221	3.59		115	2.50	44	3.70	49	6.53	209	3.69

Plate IX. Dental attrition in three Sara adults. A. Burial 2, aged 18 to 30 years. B. Burial 6, aged 31 to 40 years. C. Burial 18, aged 40+ years.

B C

A

about two attrition ratings. By age 40+ the wear is considerable, with some teeth worn to the gum line and with little enamel remaining.

It can also be observed from the attrition scores (Table 6 and Plate IX) that there is a general pattern of wear in these eighteen adults. The teeth in each age group that show the greatest wear are those teeth first to erupt -- the first molars, the incisors, and the canines. Although these teeth show the greatest wear, the rate of wear with age for each tooth group does not differ significantly. Dietary factors, such as abrasives in the food or the eating of tough fibrous foods, are suggested as the primary casuses for this pattern and the progression of wear observed. Further study, however, to investigate the relationship of the dental attrition observed in these adults to the diet and food preparation techniques of the Sara, is suggested.

Even though there is a general pattern in dental attrition, there also are a few adults that show "unusual" wear, which was considered in evaluations of the mean wear observed in these dentitions. In the dentitions of two burials, Burial 4 (a male) and Burial 20 (of indeterminate sex), the maxillary incisors show differential wear. The wear of the upper right incisors of Burial 4 is similar in degree to the wear of the first molars and lower incisors, but the upper left central incisor is considerably worn and has the pulp exposed. In addition, the left lateral incisor was lost before death. It may be that this tooth also was

considerably worn and a pulp exposure may have been related to its loss.

In Burial 20, the difference in dental wear between the maxillary incisors and other teeth in the dentition is even greater. The upper central incisors show Stage 6 attrition and the left upper lateral incisors show Stage 5 attrition, whereas the other teeth in the dentition were given ratings of 1, 2, or 3.

The dental wear in these two adults may suggest uses of their teeth other than in chewing, such as the use of the incisors as tools. An unusual wear plane in the left upper central incisor of Burial 4 was produced by more wear of the mesio-buccal occlusal surface, whereas the incisors of Burial 20 are worn flat. A more detailed study, which would include comparisons of this sample with the dental wear patterns observed in other American Indian groups, might shed some light upon these examples of "unusual wear".

There are also some examples of differential wear among the adults aged 40+, but this differential wear appears to be related to premortem tooth loss. In the five adults aged 40+ (Table 6) a total of 41 teeth were determined to have been lost before death. In most of these adult dentitions, the remaining teeth (without ones in occlusion) show less wear than the other teeth in the dentitions.

Aside from the above examples of differential wear, overall the standardization of wear in these 18 adults was not difficult, therefore, the attrition in 18 additional

adults with incomplete dentitons was evaluated and used as an aging criterion. Again, these dentitions were grouped into three adult age categories according to the wear observed, and these age estimates when checked against additional aging criteria. In nine of the adults (Burials 19, 45-A, 62, 67, 68, 70, 81, 82, and 87), the dental attrition observed was compared to endocranial suture closure. In three adults (Burials 3, 66, and 75), both endocranial suture closure and stages of vertebral osteoarthritis served as additional aging criteria.

In six adults, however, only observations of dental attrition were possible. The dentitions of four of these individuals (Burials 27, 36, 38, and 49) show slight wear, one (Burial 29) shows median wear, and one (Burial 25) shows severe wear, with a number of teeth lost before death. Because of the importance of determining the representativeness of the sample to a living population, and because five of the above adults show extremes in wear, it is considered more accurate to include these six adults in the adult age groups than to exclude them.

Sara Burials Aged Solely as Adults

Eleven burials, although too fragmentary to estimate age, had enough evidence to determine that they are adults. Erupted third molars, as evidenced by occlusal and mesial wear facets, are present in seven of the burials (Burials 10, 12, 28, 37, 41, 42, and 50). In Burial 39, there is a dental wear facet on the upper right second molar, which is evidence

that the adjacent molar had erupted.

In Burial 44, no bone or teeth were preserved. This burial however, was determined to be an adult by the size of organic stain outlining the body (Plate X), and the size of the burial pit (4.6 by 3.4 feet).

Only three burials (Burials 31, 34 and 59) in the sample could not be aged at least as adult or subadult burials. These burials were extensively vandalized and only small fragments of bone remained. From the size of the bone fragments and the pits, these may have been adults but there is also the possibility that they were burials of adolescents. Therefore, the ages of Burials 31, 34 and 59 are considered indeterminate.

Plate X. Burial 44. The size and pattern of organic stain that outlined the body, provided information about age, body position, body deposition, and body orientation.

CHAPTER III

REPRESENTATIVENESS OF THE MORTUARY SAMPLE

Archeological data that provide information about the "contemporaenity," "circumscription," and completeness of a mortuary sample are fundamental to studies of mortuary practices or "mortuary behavior." Also, as pointed out in Chapter I, considerations of "demographic parameters" (Buikstra 1976) are important in such studies.

Traditionally, demographic variables have been used in descriptions of mortuary practices. In recent years, however, selectivity in burial treatment by age and sex is said to reflect the social organization of the particular socio-cultural group studied (Binford 1971; Brown 1971; Buikstra 1976; Larson 1971; Pebbles 1971; Rothschild 1979). The importance of accurate determinations of age and sex of skeletal remains, whether one is describing burial patterns or inferring data about social organization, can easily be seen. The importance, however, of demographic data goes beyond the recognition of burial treatment by age and sex. A study of the demographic profile, or in other words, a study of the representativeness of a mortuary population, should be a fundamental methodological consideration in studies of mortuary practices. Is a mortuary population, in Buikstra's (1976; 21) words, "a typical graveyard population?" Or in

the words of Bass, Evans and Jantz (1971: 160) how does the cemetery "relate to the social group it served?"

Those bioanthropologists and archeologists who have addressed the problem of "representativeness" or "typicalness" have done so by using comparative data. The age and sex profile of the mortuary sample in question is compared to the demographic profiles of other mortuary samples in the literature (Bass et al. 1971; Rothschild 1979) or to the demographic profiles obtained from studies of living populations (Buikstra 1976). General demographic patterns may be expected (e.g., a high infant mortality rate) in the light of particular historical and environmental processes.

The $Sk^{V}1a$ mortuary sample presents some limitations to a study of "demographic parameters." The data presented in Chapter II, however, are thought sufficient to obtain a reasonable indication of the representativeness of the Sara mortuary sample. Some general and some specific comparisons will be made with demographic patterns in the literature. The results of these comparisons will be integrated with the archeological data presented in the introduction and further archeological data, to be presented in the following chapters.

Sex Ratio

The life span of contemporary women in the United States and other industrialized societies, which has developed over the last four generations, is more than twice that of prehistoric groups (Angel 1969: 430). In the past, male

longevity was greater than that of females. The most common explanation for greater male longevity is that a higher percentage of females died in their young adult years as the result of childbearing (Angel 1969: 430; Blakely 1971: 46).

This pattern is reflected in prehistoric, or in many cases historic, mortuary populations by a sex ratio of 50:50, but with more female young adults represented. When the sex ratio or male and female longevity differs from the above pattern, explanations such as in the following examples may be presented.

Angel found significantly more females at the early Neolithic site of Catal Huyuk, as well as at a few other prehistoric East Mediterranean sites. The most "probable" explanation given by Angel (1969: 430-432) for this greater percentage of females is that males may have been absent from the sample due to deaths on hunting, trading or military expeditions.

On the other hand, males and females from the Libben site, a Late Woodland ossuary and habitation site in Northern Ohio, were determined to be equally represented. The males, however, show a higher mortality "throughout most of the adult lifespan" (Lovejoy et al. 1971: 292). Lovejoy and others state that this pattern "is in sharp contrast to most skeletal populations, and is possibly relatable to high levels of warfare" (Lovejoy et al. 1977: 292).

Although the explanations in the above examples are similar, it can be easily seen that the differences in

representation of the sexes significantly influence the demographic picture of the mortuary samples. Also, it is important to realize that the representativeness of the sexes at the above sites would also influence the picture of mortuary behavior.

In the present study, the Sara sample of sexed adults is too small to present information such as in the above examples. A few observations, however, can be made. The 23 burials determined as to sex (about half the total number of adults), were presented in Table 1 according to age and burial number. As can be seen by referring back to the table, the ratio of males to females (11 males to 12 females), is nearly 50:50. In addition, males and females are represented in each adult age group.

From the available data, it cannot be stated that in the total Sara cemetery area, males and females were equally represented. It can only be suggested that the sample studied is not biased and the pattern observed indicates that males and females were equally represented. Hopefully, with additional Sara burials excavated and analyzed, more can be learned both about the representation of the sexes in the mortuary population, and about male and female longevity.

Age Composition

With the subadults accurately aged by dental development, and with good information on adult age groups represented more specific comparisons of the Sara age profile, than with the sex profile, can be made with mortality data in

the literature. The studies chosen for comparison are Bass, Evans, and Jantz (1971) of the historic Arikara from the Leavenworth site, South Dakota, and with additional information about the protohistoric Arikara from the Sully site; Blakely (1971) of the Illinois Middle Mississippian Dickson Mound Series and the Illinois Archaic and Hopewell series from the Pete Klunk Mounds; Buikstra (1976) of the Illinois Hopewell from the Gibson and Klunk sites; and Ubelaker (1974) of two Late Woodland ossuaries (Nanjemoy I and Nanjemoy II), possibly the ancestors of the Algonquian-speaking Conoy or Pistcataway.

There are a number of reasons for choosing the above studies. They are all of Amerindian populations, which together span time periods from the Archaic (Blakely 1971) to the historic (Bass et al. 1971). Hopefully, such a comparison of groups subject to different historical and environmental processes will offer a broader understanding of demographic patterns. Also, the problem of representativeness is addressed at least implicitly by comparisons with expected demographic patterns. And, finally, the mortality data in each study are presented in age intervals that, for the most part, facilitate comparisons with the Sara mortality data.

With the exception of the Nanjemoy I and II mortality data (Ubelaker 1974) and the mortality data presented for Sully (protohistoric Arikara) in Bass et al. (1971), the percentages of neonates (Birth to 1 year) are presented in

each study. This age interval, as will be seen, is thought to be important and will be included in this study. Because it is not included in two studies, however, the age interval 0 to 4.9 years will also be employed.

The ages for the remaining children are presented in all the comparative studies in at least 5-year intervals. And, the ages for adolescents and adults are presented in at least ten-year intervals. In order to compare the Sara age profile to the age profiles of the other studies, the Sara subadult ages are presented in four-year intervals, the adolescent ages in a ten-year interval and the Sara adult ages 18 to 30, and 31 to 40, in ten-year intervals. With the difficulty of aging older adults in this sample because of poor preservation, however, the age category 40+ years remains unchanged.

The percentages of those dying in the above age intervals for the Sara mortuary sample and for the comparative mortuary samples are presented in Table 7. And, information from the table is presented in the form of mortality curves, (Figures 3, 4, and 5) to aid in a comparison. From an examination of the table and the mortality curves differences in the percentages of those represented in the various age groups can be observed. Nevertheless, there is also, with only a few exceptions, an overall similar pattern. This general pattern, and the exceptions to this pattern, will be presented first, to be followed by a closer examination of the percentages in each age group of the Sara mortuary sample.

Similarities in the mortality curves, constituting the general pattern observed in the comparative studies, are a high infant or early childhood mortality rate, a decline in later childhood and adolescent mortality, an increase in the death rate of young adults and middle-aged adults, and a decline in the mortality rate of older adults. This pattern is noted by each researcher (Table 7). Its presence in the light of comparative data in Bass et al. (1971) and in Buikstra (1976) is explicitly given as evidence as the "typicalness" or representativeness of their respective mortuary samples. Although Ukelaker (1974) and Blakely (1971) do not explicitly address the question of representativeness in their analyses of demographic data, representativeness can be assumed from their studies.

As stated, there are a few exceptions to the general demographic pattern. In comparing the Illinois Archaic, Hopewell, and Middle Mississippian skeletal series, Blakely noted for the Archaic sample a high percentage of those 0 to 19.9 years and a low percentage of those aged 20 to 39.9 years and 40+ years. To Blakely (1971: 49), "these deviations may reflect sampling errors, or conceivably differences in the levels of subsistence and technological understanding of childbearing."

In the studies of the Illinois Hopewell--the Klunk series by Blakely (1971) and the Gibson--Klunk series by Buikstra (1976)--two additional exceptions to the general

TABLE 7

COMPARATIVE MORTALITY DATA

	Age	(0-0.9)	(1-4.9)	Total	(5-5.9)	(10-19.9)	(20-29.9)	(30-39.9)	(40-49.9)	(50+)
Group	N	%	%	%	%	%	%	%	%	%
Sara	72	6.9	20.8	27.8	9.7	12.5	23.6	12.5	13.9	---
1. Illinois Hopewell-Klunk		8.5	12.1	20.6	6.5	6.7	11.8	18.0	15.9	20.4
1. Illinois Hopewell-Gibson		15.4	14.7	30.1	2.6	9.0	12.8	7.7	17.3	20.5
2. Illinois Archaic	49	18.0	16.0	34.0	14.0	11.0	7.0	11.0	12.0	11.0
2. Illinois Hopewell	82	8.0	13.0	21.0	7.0	8.0	13.0	14.0	19.0	18.0
2. Illinois Middle Mississipian	169	15.0	16.0	31.0	4.0	9.0	15.0	16.0	14.0	11.0
3. Leavenworth	284	39.1	10.4	49.5	7.7	9.9	15.3	12.1	5.5	0.0
3. Sully		-	-	45.5	5.8	8.9	14.8	12.7	12.3	0.0
4. Nanjemoy, Ossuary I	124	-	-	29.0	11.3	6.5	15.3	23.4	12.9	1.6
4. Nanjemoy, Ossuary II	173	-	-	32.4	6.9	12.1	10.4	20.2	11.6	6.4

1. Buikstra (1976). 2. Blakely (1971) 3. Bass et al. (1971). 4. Ublaker (1974).

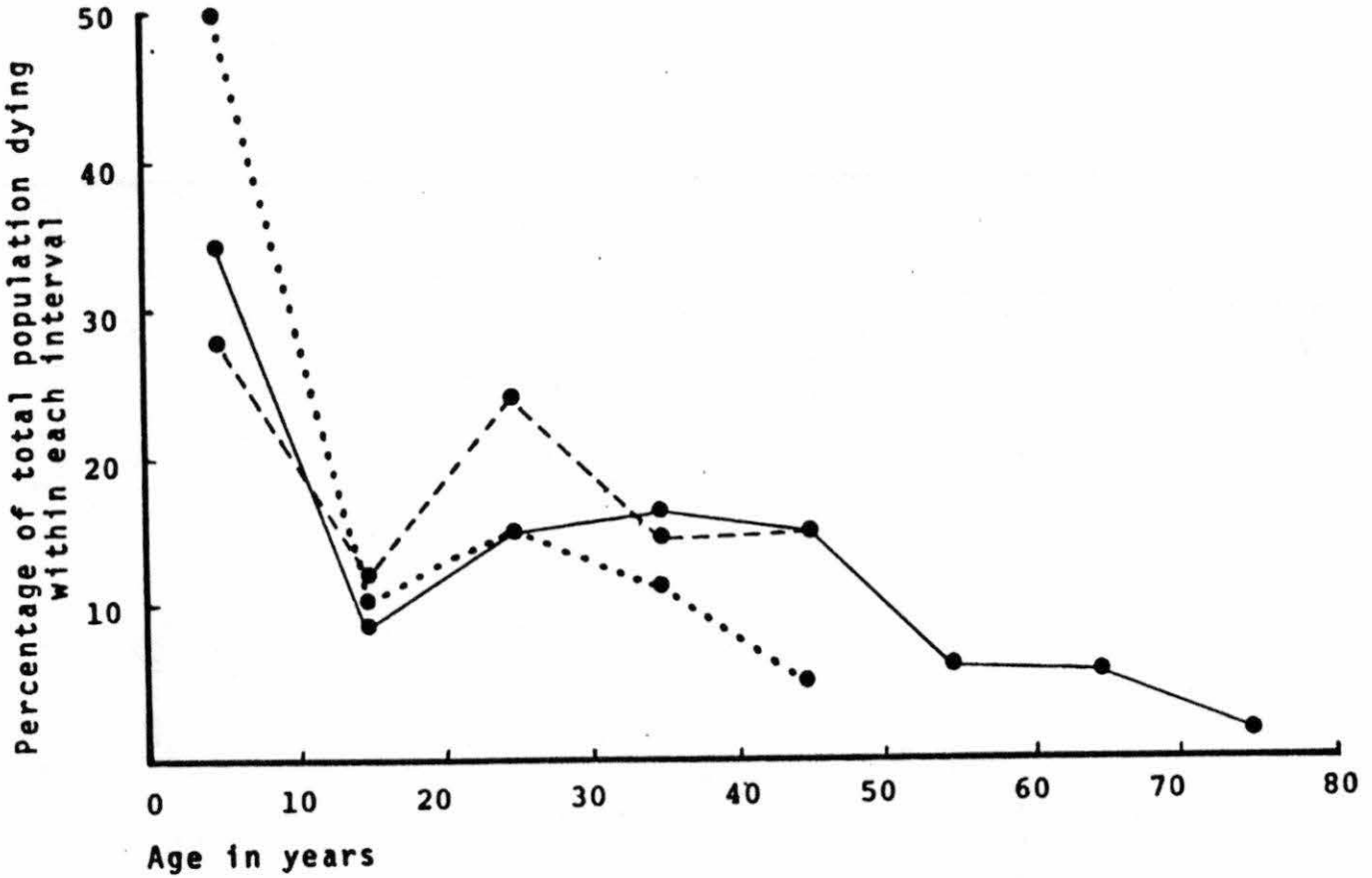


FIGURE 3. Mortality profiles of the ---- Sara, ... Leavenworth (Bass et al., 1971), and ——— Middle Mississippian (Blakely, 1971) samples (sexes combined).

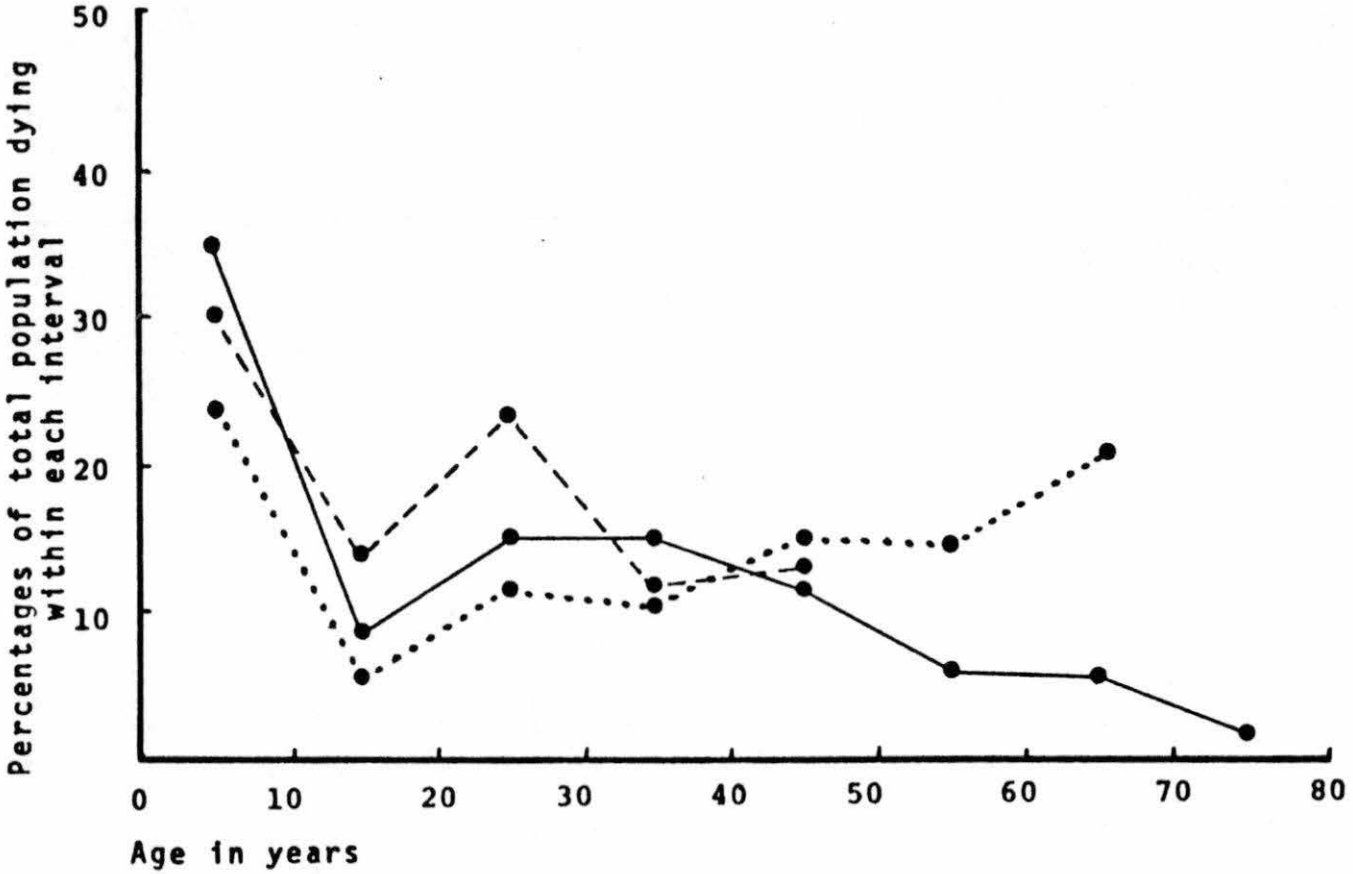


FIGURE 4. Mortality profiles of the ---- Sara, ... Illinois Hopewell (Buikstra, 1976), and ——— Middle Mississippian (Blakely, 1971) samples (sexes combined).

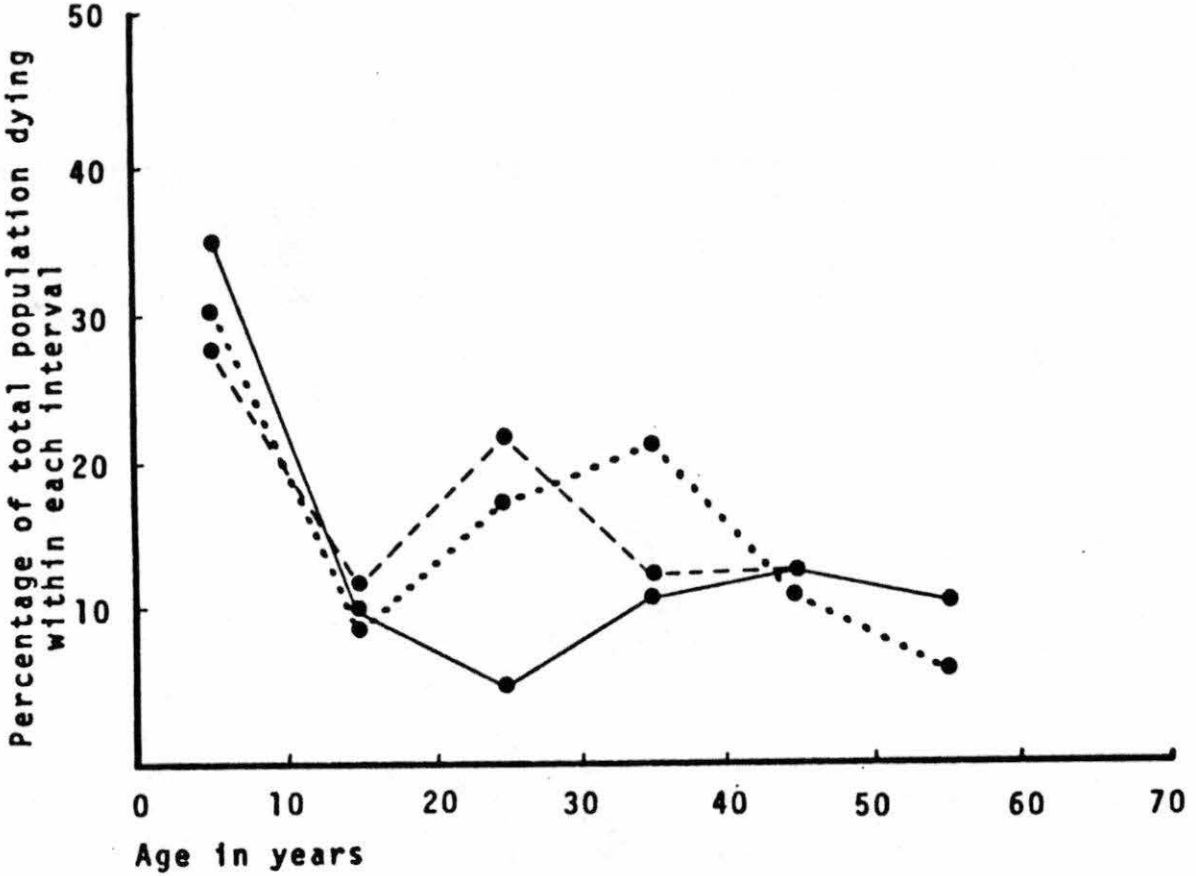


FIGURE 5. Mortality profiles of the ---- Sara, ... Nanjemoy I and II, (Ubelaker, 1974), and —— Archaic (Blakely, 1971) samples (sexes combined).

demographic patterns are noted. There is an unusually high percentage of adults aged 50 or more years and an unusually low percentage of neonates and young children. The explanations proposed by Blakely for the high percentage of adults aged 50+ years are the same as those he gives (above) to explain the mortality rates for the Illinois Archaic series (Blakely 1971: 49). Buikstra, however, points to an "inverse relationship between accuracy in skeletal aging criteria and increasing chronological age" (Buikstra 1976: 23).

For the low percentage of Illinois Hopewell neonates and young children, the most plausible explanation given by Buikstra (1976: 22-23) and Blakely (1971: 47) is that a number of infants and young children were not accorded the same mortuary treatment as the remainder of the population. These Illinois Hopewell age groups are the only age groups in the comparative studies stated as not being represented in the mortuary samples.

The Sara mortality curve also approximates the general demographic pattern, and this is taken as evidence that the Sara mortuary sample is, for the most part, also a representative sample. However, like the Illinois Hopewell series, there is a low percentage of neonates. In fact, the percentage of Sara infants aged 0 to 0.9 years, is the lowest in Table 7. Poor preservation may be a factor here. With the careful excavation techniques employed at the site, however, and with the effort to recognize infant burials by

such evidence as the size of the "beaded garments" (discussed in Chapter II), it is not thought that more than one or two infant burials could have gone unrecognized. As in the studies of the Illinois Hopewell (Bass et al. 1971; Buikstra 1976) it is thought that the Sara neonates were not accorded the same mortuary treatment as the remainder of the population.

As stated above, in the Sara mortuary sample, the expected age groups, with the exception of neonates, are thought to be represented. However, the Sara sample, in comparison to the mortuary samples in Table 7, also shows the highest percentages of those dying in the age intervals 1 to 4.9, 10 to 19.9, and 20 to 39.9 years. Two comparisons are made that may shed some light upon these high percentages.

The first comparison is to the Illinois Hopewell Gibson-Klunk (Buikstra 1976) and Klunk (Blakely 1971) series. Since both the Sara and Hopewell mortuary samples show a low percentage of infants, a comparison to the remaining age groups is simplified. From this comparison the higher Sara childhood, adolescent, and young adult mortality clearly can be seen. The difference in the mortality rate of the adults aged 20 to 29.9 years may be due, in part, to the difficulty in aging the adults. The percentages, however, of those represented in the age groups 1 to 4.9, 5 to 9.9, and 10 to 19.9 years is thought to be indicative of a higher mortality rate among the Sara.

The second comparison is to the historic Arikara

mortuary sample from the Leavenworth site (Bass et al. 1971). The Leavenworth series shows a high crude mortality rate. According to Bass, Evans and Jantz (1971: 160), this high mortality results from the large percentage of deaths prior to the age of 4 years. They state that "the value for Leavenworth is high, but not unreasonable, in view of the severe stresses of disease, warfare, and cultural disintegration resulting from increasing European contact."

The Sara group studied here also were an historic group and they were subject to similar stresses. In comparison to the historic Arikara, the Sara show higher percentages in all the age intervals except 0. to 0.9 years. If the percentages of Arikara neonate deaths is reduced to a value similar to the Sara, however, the percentages of children, adolescents, and adults would come closer to those of the Sara. These percentages, along with the Sara percentages, then would be among the highest in Table 7.

From the above comparisons, which take into consideration the presence or absence of neonates, the Sara age profile does appear to indicate a high death rate. As with the historic Arikara, a high mortality rate among the Sara is not surprising in light of what we know historically about the Siouan-speaking groups in the Carolinas. John Lawson, writing at the time the Sara were living on the Dan River in present day Stokes County, spoke of the depopulation of Siouan tribes from attacks by the Senecas to the north, small-pox epidemics, and the use of alcohol. In "An

Account of the Indians of North Carolina" Lawson states:

> The Small-Pox and Rum, have made such a Destruction amongst them that, on good Grounds, I do believe, there is not the sixth Savage living within two hundred Miles of all our Settlements, as there were fifty Years ago. These poor Creatures have so many enemies to destroy them, that it is a wonder one of them is alive near us (Lawson 1937: 238).

CHAPTER IV

BURIAL DESCRIPTIONS

The following are descriptions of each burial in the $Sk^{V}1a$ sample. Presented are an inventory and the condition of skeletal remains, the age and sex where possible, any pathologies, the dimensions of burial treatment, and any details of disturbances to the burial. Although such descriptions are frequently presented in studies of skeletal populations or burial patterns, they are considered to be especially important in this study.

As previously discussed, a number of the burials had been vandalized, and many others were in a poor state of preservation. However, because of careful excavation and laboratory techniques, much information from these burials has been recovered and utilized, as with the aging of infants from the size of beaded "garments" (discussed in Chapter II). The detailed burial descriptions were helpful in obtaining this type of data.

Burial 1. Two representatives from the Research Laboratories of Anthropology at Chapel Hill, while visiting $Sk^{V}1a$ in 1972, encountered an "amateur" in the process of vandalizing this burial. The amateur had shoveled into the burial destroying the area of the lower legs and feet. He was persuaded to leave and the archeologists excavated the remainder of the

burial. The excavation revealed that the burial pit was a Shaft-and-chamber type (Type II). Log fragments appeared to have extended from the floor of the shaft, across the chamber, to a position where they were propped against the chamber wall. The chamber floor appeared to have been lined with bark, and the presence of clumps of cane matting (preserved by copper salts) suggested that the body was wrapped in a cane mat.

The body was placed on its back with the legs semi-flexed and the knees apart. The right arm was extended, whereas the left arm was crossed over the pelvis. A line drawn from the center of the pelvis through the center of the skull points to the east. Associated with this burial was an unusually large quantity of artifacts, the largest in the mortuary sample.

Deer astralagi, a silver-plated brass[4] spoon (dated to 1624), two pairs of iron scissors, and three unidentified metal fragments were located to the right of the skull. A much larger quantity of artifacts appeared to have been used to ornament garments and parts of the body. Approximately 36,000 small glass trade beads ("seed" beads), many still in strands, were found in areas of the body. The pattern of these beads suggested a beaded garment that extended to the knees. The beaded garment also apeared to have had a hood, sleeves, and a beaded belt or sash.

[4]As previously discussed, the majority of European metal objects associated with Skʏla burials appear to be brass (an alloy of copper and tin) rather than pure copper (Joffre L. Coe: Personal Communication).

A number of brass artifacts may also have been attached to the garment. Four bells were found in the right ear region, and about 60 others extended across the chest and down the right side of the body. An additional 45 bells were found along the left side of the body, and 9 were found across the body in the area of the belt. In this same area were two brass conical beads and 15 triangular brass pendants.

Approximately 80 small columella shell beads ("wampum") were uncovered in strands in the area of the left ear. These may have been hung from the ear (Plate XII). An additional strand of wampum (about 60 beads) extended from the right shoulder to the right elbow. Larger columella beads (about 100) were found in strands around the neck and extending to a circular brass gorget on the right side of the skull.

More than 130 small brass beads were found near the left knee. Because of the disturbance by the vandal in this area, however, a specific use of these beads in ornamentation is not discernible. Finally, 200 additional small brass beads were recovered from washings of the disturbed and undisturbed fill.

The skeletal remains of this burial were of a female, aged 17 to 21 years. The skull was nearly complete and most of the postcranial skeleton was in fair condition. The tibiae and left fibula, however, were badly fragmented by the vandal, and the right fibula, the feet, and the patellae, were not recovered. In addition, the sacrum and the right

innominate were poorly preserved, but the left innominate was in fair condition.

A fragment of the right tibia (the superior portion of the shaft) shows extensive new bone deposition and pitting which is evidence of bone inflamation or periosteitis. The bone inflamation may have resulted from an injury.

The permanent dentition is complete with the exception of those teeth shown by asterisks in the following diagram. These teeth were determined by radiographs to be congenitally absent. In place of the lower central incisor and the lower second premolar, deciduous teeth were retained.

Rt.	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	Lt.
	*	7	6	*	4	3	2	1	*	2	3	4	5	6	7	8	

Burial 2. The burial pit was a Type I or Central-chamber type. Log fragments extended from the pit shelves across the chamber. The body had been placed primarily on its back but with the legs flexed on the right side. The arms were flexed toward the skull, and the orientation of the axis of the body, from pelvis to skull, was to the east. A strand of large columella beads and large trade beads were in the area of the waist. A chipped-stone projectile point was found under the sacrum, but there was no evidence of injury and a direct association with the burial may be questionable.

The skeletal remains are of a male, aged 18 to 30 years. The skull was in poor to fair condition, lacking most of the facial bones, and there was considerable posthumous deforma-

tion of the vault. The postcranial skeleton was in fair condition with some fragmentation of the hands, feet and bones in the thoracic and pelvic regions.

Nearly all the teeth were recovered <u>in situ</u> and were in good condition:

Rt.	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	Lt.
	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	

Burial 3. The skeleton was that of a male, aged 18 to 30 years. It was poorly preserved, with only cervical vertebrae, fragments of long bones, and organic stain remaining of the postcranial skeleton. The skull was partially preserved with a nearly complete frontal, fragments of the parietals, temporals, sphenoid, right malar, and mandible, and traces of the maxilla. Only the following teeth were present:

Rt.	8	7		5													Lt.
											3	4	5	6	7	8	

The burial pit was a Type 1 variant. Instead of parallel shelves, shelves were found above three sides of the chamber. The body was placed on its left side in a semi-flexed position with the arms crossed over the pelvis. The orientation of the body was to the southeast. More than 6,000 seed beads, many in strands extended from beneath the skull onto the chest and down the left side of the body. These beads probably were embroidered on a garment. In

addition, a crescent-shaped wooden object with copper or brass wire was found at the left shoulder and a broken ceramic elbow pipe was found near the left hand.

Burial 4. The burial pit was a Type I. The body was placed on its left side in a flexed position with the arms flexed toward the skull. The orientation of the axis of the body was to the east. No artifacts were found associated with this burial.

The skeleton is nearly complete and in good condition. It is of a male, and the age could be estimated as 25 to 30 years by observations of metamorphic changes of the pubic symphyses. Good preservation also allowed identification of considerable arthritic lipping of the left talocalcaneal joint, Stage 1 lipping of the cervical and thoracic vertebrae, and States 2 and 3 lipping of the lumbar vertebrae. Also, there was evidence of a herniated disc in the inferior surface of the body of the fifth lumbar vertebra (see Chapter II).

The following teeth were present:

Rt.	7	6	5	4	3	2	1		1		3	4	5	6	7	8	Lt.
	7		5	4	3	2	1		1	2	3	4	5		7		

Burial 5. The pit for this burial was a Type II or Simple-pit. Although there were no shelves, log fragments were found and their presence suggests that this type of burial pit somehow was also covered with logs. Fragments of cane matting also were found with this burial.

The skeletal remains were of a child, aged 4 years ± 12 months. The remains were fragmented and poorly preserved. Only fragments of the cranium, a nearly complete mandible, teeth, fragments of cervical vertebrae and the left tibia were present. The remainder of the skeleton was organic stain.

The following unerupted permanent and erupted deciduous teeth were present:

Permanent

Rt.												Lt.
	6		3	2	1	1		3		6		
	6		3	2	1	1	2	3	4	6		

Deciduous

Rt.								Lt.
	5	4			2	3	4	5
	5	4	3		2	3	4	5

From the position of the bones and organic stain, the body appears to have been placed on its back with the legs semiflexed and to the left side. The right arm position was not discernible, however, the left arm position could be determined as flexed toward the skull. The orientation of the body was toward the northeast. A bowl of the type Dan River Net-Impressed was found about 4 inches to the south of the skull. Approximately 35 large glass trade beads were found near the lower legs, and about 10 others were located near the left arm. A few brass beads were found below each ear and a small circular brass gorget was found beneath the

mandible.

Burial 6. Although this burial was disturbed by a vandal, the "pothole" did not reach the skeleton or disturb the pit walls. A vandal's proble holes also were found along the pit floor, one of which penetrated the skull.

The burial pit was Type I and fragments of logs were found along the chamber floor. The body was placed on the back with the legs semiflexed on the right side. The arms were placed toward the skull and the orientation of the axis of the body was to the northeast. A few strands of large glass beads, and a few thousand seed beads in the neck and chest areas, were evidence of a beaded garment.

The skeleton was that of a male, aged 31 to 40 years, only partially preserved and in poor condition. Fragments of the frontal, parietals, occipital, and temporals of the skull were preserved but there is considerable posthumous deformation. The maxilla and mandible were nearly complete. All of the long bones (except the fibulae) and the patallae were present.

A chipped-stone projectile point was embedded in the right femur at approximately midshaft on the posterior side. There was evidence of bone remodeling or healing around the projectile point.

All of the teeth were present with the exception of the lower incisors which were determined by radiographs to be congenitally absent.

Rt.	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	Lt.
	8	7	6	5	4	3	2	*	*	2	3	4	5	6	7	8	

Burial 7. Although this burial was extensively vandalized, undisturbed portions of walls and shelves indicated that it was in a Type I pit. The major pit axis was oriented east-west.

Only a few fragments of an adult skeleton were recovered from the disturbed fill: a fragment of the right mandible, the petrous portion of the right temporal, a right femoral shaft fragment, and one extremely worn anterior tooth with the pulp exposed. No artifacts were found in the disturbed or undisturbed burial fill.

Burial 8. Except for small portions of the pit, this burial was extensively vandalized, therefore the burial type could not be determined. However, fragments, of the skeleton of a child, aged 3 years $\pm$ 12 months in good condition, were recovered from the disturbed fill. The following were present: teeth, fragments of the parietals, most of the occipital, nearly half of the mandible, fragments of the maxilla, a nearly complete clavicle, fragments of the scapulae, most of the cervical vertebrae, the hyoid body, and traces of the ribs, innominates, and thoracic vertebrae.

Fragments of unidentified brass artifacts, five brass beads, six trade beads, five bone fragments and two chipped-stone projectile points also were found in the disturbed fill. Much of the bone was copper stained from the brass

artifacts.

The following teeth were recovered:

Permanent

Rt.											Lt.
	6		3	2			3			6	
			3	2	1	1		3	4	5	

Deciduous

Rt.									Lt.
	4			2			5		
5		3	2		1	2	3	4	5

Burial 9. The burial pit was Type III and log fragments were found along the pit bottom. The skeleton was positioned on the back with the legs tightly flexed, partially drawn up to the stomach, and partially on the right side. The right arm was crossed over the pelvis; the left wa flexed toward the skull. The orientation of the axis of the body was to the south. About 150 large glass beads in strands, possibly a necklace or garment decoration, were found around the neck. A few other beads were found in the pelvic region.

The skeleton was that of a child, aged 9 years $\pm$ 30 months, in fair condition. The skull was nearly complete except for some fragmentation of the face. In addition the cranial vault was deformed from soil pressure. Of the post-cranial skeleton, the diaphysis of the femora and tibiae, fragments of the remaining long bones, tarsal bones, and fragments of bone from the thoracic and pelvic regions were preserved.

The following permanent and deciduous teeth were

present:

Permanent

Rt.	8	7	6	5	4	3	2	1	1	2	3	4	6	7	8	Lt.
	8	7	6	5	4	3	2	1	1	2	3	4	6	7	8	

Deciduous

Rt.	5	4	3	2	3	4	5	Lt.
	5	4	3		3	4	5	

Burial 10. The pit was a Type I and log fragments were found along the pit floor. The skeleton was in very poor condition. A few cranial fragments, a fragment of the mandible, three maxillary molars, traces of long bones, and traces of the innominates were all that was preserved. An age of adult was based upon erupted maxillary third molars.

Body deposition and position could be determined from the bone present and from organic stain that outlined the body. The body appeared to have been placed on the right side in a tightly flexed position, with the arms flexed toward the skull. The orientation of the body was to the east. More than 1,000 seed beads were found in areas around the skull and in the right wrist area. About 50 seed beads were found in the chest area. Again these beads were probably a garment decoration.

Burial 11. Although this burial pit was intruded by Burial 10, it could be identified as a Type I pit. Portions of the northern and southern shelves were undisturbed.

Only the enamel caps of the teeth remained of the skeleton of a child, aged 7 years ± 24 months. Organic stain was present, but body deposition, position, and orientation were not discernible. However, the orientation of the major axis of the pit was determined to be east-west. No grave goods were found.

The following permanent teeth were present:

Rt.	7	6	5	4	3	2	1	1	2	3	4	5	6		Lt.
	7	6	5	4	3	2	1		2	3	4	5	6	7	

Burial 12. This burial was Type III. Only small fragments of the occipital and mandible, one erupted third molar, three fragments of molars, and fragments of the left femur remained of an adult skeleton. From the pattern of organic stain, however, it could be determined that the body was placed on the left side in a flexed position and oriented to the east. No artifacts were found.

Burial 13. The burial pit was Type I. Teeth, fragments of the temporals, and fragments of long bones were all that remained of an adult skeleton. From the position of the above bones and the pattern of stain, however, it could be determined that the individual was placed on its left side in a tightly flexed position and oriented to the east. The position of the arms could be determined as flexed toward the skull from bone fragments and strands of beads at what appear to be the wrist areas, and over 100 large glass beads were found around the neck and extending onto the chest area.

The following teeth were present:

Rt.	8	7	6	5	4	3	2	1	1	2	3	4	5		7		Lt.
	8		6	5	4	3					3	4	5		7	8	

Burial 14. The burial pit was Type I. Fragments of logs, some of which extended from the north shelf and others which had collapsed on top of the skeleton were uncovered. The body was placed on its right side in a flexed position, with the right arm along the side of the body and the left arm folded on the chest. The orientation of the axis of the body was to the east. No artifacts were found with this burial.

The partial skeleton of a female aged 31 to 40 years was in poor to fair condition. The skull was nearly complete, although some of the facial bones were missing and there was some posthumous deformation from soil pressure. Of the post-cranial skeleton, all the long bones were present but none were complete. Cervical and thoracic vertebrae were present and manifested Stage 1 lipping. Also, fragments in the thoracic and pelvic regions, and fragments of the hands and feet, remained.

The following teeth were present:

Rt.			5	4	3	2	1	1	2	3	4	5	6		Lt.
		6								3				7	8

Burial 15. This burial was that of a child, aged 4 years ± 12 months. The pit was Type I. The body appeared to have been placed on its back with the legs semiflexed on the right side. The orientation of the body was to the east. An

almost intact clay pot containing a turtle shell was found three to four inches to the south of the skull. Twenty-seven large brass conical beads and 18 porcupine quills were located at the back of the skull, temporal to temporal. Copper salts from the brass preserved pieces of cane matting and leather thongs or sinew. In addition, two large columella beads were located below the mandible, and a fragment of a columella bead was found below the left temporal.

The skull was nearly complete and in fair to good condition, although there was some warpage. The postcranial skelton was in poor condition. Only fragments of the tibiae, femora, right humerus, left clavicle, left scapula, ribs, and cervical vertebrae were preserved.

Nearly all the deciduous teeth were present, and some unerupted permanent teeth were visible in eroded crypts.

Permanent teeth:

Rt.											Lt.
	6				2	1					
	6							1			

Deciduous teeth:

Rt.											Lt.
	5	4	3	2	1		1	2	3	4	5
	5	4	3	2	1			2	3	4	5

Burial 16. A type II pit contained the partial skeleton of an adolescent, aged 13 to 15 years, in poor condition. The mandible and maxilla were nearly complete; only fragments of the remainder of the skull were present. Fragments of all

the long bones except the left clavicle, and fragments of ribs, vertebrae and innominates remained of the postcranial skeleton.

All the teeth were present.

Rt.	8	7	6	5	4	3	2	1		1	2	3	4	5	6	7	8	Lt.
	8	7	6	5	4	3	2	1		1	2	3	4	5	6	7	8	

The body was on the right side in a tightly flexed position, with the right arm folded on the chest and over the knees, and the left arm flexed toward the skull. The orientation of the axis of the body was to the southwest. The only associated artifact was a columella ear pin, located near the left temporal.

Burial 17. This burial was of a female, aged 40+ years. The pit was a Type II. The body was placed on its back oriented to the east, with legs flexed to the left side. The right arm appeared to have been crossed over the pelvis; the left arm position was not discernible. Numerous trade items were found, some utilitarian but the majority ornamental (Plate XIV).

An iron hoe, lying over a bone-handled knife, was found a few inches from the left side of the skull. Above these artifacts an iron object was found, possibly an iron nail.

The individual appeared to have been buried in a beaded garment, as about 10,000 seed beads were found all around the skull, in the chest and abdominal area, and in the areas of the arms. Some brass artifacts also were used as ornamenta-

tion. A brass gorget was found about the left elbow, three brass rings were found on the fingers of the right hand, two brass rings were located in the abdominal area, and three more were found in a row along the left temporal. Some fragmented brass rings also were found, two in the pelvic region, two near the feet, and two near the south pit wall.

The skeletal remains were in poor to fair condition. The skull was nearly complete, although the facial bones were fragmented and there was considerable posthumous deformation. Fragments of long bones, fragments of the innominates, traces of bone in the thoracic region, and fragments of vertebrae (mostly cervical) remained of the postcranial skeleton. The cervical vertebrae showed Stage 2 lipping.

The following teeth were present:

Rt.	6	5	8	Lt.
	5 4 3 2 1	1 2 3		

Burial 18. This burial pit was a variant of Type I. A shelf completely surrounds the chamber. This burial is also of a female, aged 40 years or more. The body was placed on the right side in a flexed position with the right arm flexed toward the skull and the left arm folded on the chest. The axis of the body was oriented toward the east. No artifacts were found with this burial.

Large portions of the maxilla and mandible were present, but only small fragments of the remainder of the skull were preserved. Fragments of the long bones, with the exception of the left clavicle and fragments of the hands, innomin-

nates, sacrum, vertebrae, ribs, right scapula and hyoid remained of the postcranial skeleton. The cervical vertebrae manifested Stage 3 lipping.

The following teeth were present:

Rt.													Lt.
	6	5	4	3	2	1	1		3	4	5		
		5	4	3	2			2	3			6	7	8

Burial 19. The burial pit was Type III. The skeletal remains of a female, aged 40 years or more were poorly preserved. Only fragments of the cranial vault (warped by soil pressure), the temporals, fragments of facial bones, and about half of the mandible remained of the skull. Of the postcranial skeleton only fragments of the humeri, femora, tibiae, right fibula, and right innominate were preserved.

The following teeth were present:

Rt.											Lt.
					2	3	4	5	6	7	
8	6	4	2		2	3	4		6	7	

The body was on the left side in a flexed position with the arms folded on the chest. The axis of the body was oriented to the east. Several hundred seed beads in the neck area appeared to have been sewn on a garment. In addition, about 10 long tublar brass beads were found around and under the skull. Copper salts from these artifacts preserved small pieces of cane matting.

Burial 20. The burial pit was Type I. Only small fragments, except for approximately half of the mandible, the teeth and

large fragments of the temporals, remained of the skull of an adult, aged 18-30 years. Fragments of the femora, humeri, tibiae, and fibulae, and traces of the innominates, left scapula, and vertebrae were also preserved.

The following teeth were present:

Rt.	8	7	6	5	4	3		1		1	2	3	4	5	6	7	8	Lt.
	8	7	6	5	4	3	2	1				3	4	5	6	7	8	

The body was placed on the right side in a semiflexed position and oriented toward the southeast. A strand of large columella beads was found around the neck.

Burial 21. This burial was almost completely disturbed by a vandal. However, the pit probably was a Type I, as a portion of a shelf above the southeast chamber wall was undisturbed. Fragments of bone of a skeleton of an adolescent, aged 12 to 15 years, were found in the disturbed fill. The bones recovered were a large portion of the mandible with the second molar present, a fragment of the right ilium, and fragments of the femora, left tibia, right humerus, and right fibula.

The only artifacts recovered from the disturbed fill were two seed beads.

Burial 22. This burial also was extensively disturbed, but a portion of a shelf to the south suggested that the pit was Type I. Fragments of the skeleton of an adolescent, aged 15 to 18 years, were recovered from the disturbed fill. Of the skull, a nearly complete occipital and left temporal, fragments of the parietals, frontal, right temporal, maxilla,

and sphenoid, and a large fragment of the mandible were present. Fragments of long bones, a fragment of the left scapula, traces of ribs and vertebrae and a phalan were all that were recovered of the postcranial skeleton. The following teeth also were recovered:

Rt.														Lt.
	8		6	5		3		1	1					
	8			5	4	3				2	3	4	5	6	7	

Because some of the bone was stained from copper salts and three long brass tubular beads were found in the fill, this individual probably was buried with associated artifacts. About 30 large glass beads also were found in the fill.

Burial 23. The burial pit was Type II. A few small wood fragments were found along the pit floor. Although no bone was preserved, one deciduous tooth, a fragment of a deciduous tooth, organic stain, and over 2,000 seed beads provide information about the age and burial treatment of this individual.

The teeth showed the development of an infant, aged Birth $\pm$ 2 months. The position of the teeth, organic stain, and beads around the skull, thoracic, and feet areas suggested that the infant was placed on its back in an extended position. Also, the orientation of the axis of the body probably was to the east.

The beads, as with two brass bells located in the stomach or right wrist area, probably were sewn on a garment.

Burial 24. The burial pit was Type III. The skeletal remains were of a male, aged 18 to 30 years. Only teeth, fragments of the cranial vault, temporals, mandible, maxilla, sphenoid, and ethmoid remained of the skull. And, only the diaphyses of the femora, fragments of the other long bones, the cervical vertebrae, and traces of bone in the thoracic and pelvic regions, remained of the postcranial skeleton.

The following teeth were present:

Rt.	8	7	6	5	4	3	2	1		2	3		5	6	7	8	Lt.
	8	7	6		4	3				2	3	4	5	6	7	8	

The body was flexed and on the left side, with the axis of the body pointing east. The right arm was crossed over the pelvis, and the left arm was extended along the left side of the body. Approximately 90 large glass trade beads were found beneath the cranium and mandible. They appeared to have been strung around the neck.

Burial 25. The burial pit was Type I. The skeletal remains were of an adult, aged 40 years or more. The skeleton was in poor condition. Only fragments of the cranial vault, mandible, and maxilla, and teeth remained of the skull. The postcranial remains were mostly long bone fragments.

The teeth present were as follows:

Rt.			6	5		3			3		5	6	7	8	Lt.
									2						

From the positions of the bones and organic stain, the body appeared to have been placed on the left side in a semi-flexed position. A line drawn from the area of the pelvis through the area of the skull points to the southeast. No artifacts were found with this burial.

Burial 26. This burial was excavated as a trashpit and not recognized as a burial until the remains of an infant were identified in the laboratory. It does appear that the pit was a Type III pit; it was small, shallow, and had no shelves. Two chipped-stone projectile points from the fill are of uncertain association.

The mandible, malars, three uncalcified deciduous teeth, and fragments of the sphenoid, right temporal, and occipital remained of the skull. The diaphyses of all the long bones (except the fibulae), the ilia, two metatarsals, some vertebrae, fragments of ribs, and the scapulae remained of the postcranial skeleton. An age of Birth $\pm$ 2 months was indicated by the development of the teeth.

Burial 27. The pit was Type I, but it was unusually long and narrow, measuring 6.75 by 3.25 feet. Only teeth and organic stain remained of the skeleton of an adult, aged 18 to 30 years by dental attrition.

From the position of the teeth and organic stain, the body appeared to have been placed on the back with the legs extended or slightly flexed. The orientation of the skull appeared to have been toward the east. A few long tubular

brass beads were located at each side of the skull.

The following teeth were present:

Rt.															Lt.
	8	7		5	4				2	3	4	5	6	7	8
			6	5	4		2	1					6	7	8

Burial 28. The burial pit was Type I. All that remained of the skeleton of an adult was organic stain and two erupted and worn third molars. The organic stain, however, gave a clear outline of the body. It was placed on the left side in a flexed position with the skull oriented toward the southeast. The right arm was crossed just above the pelvis.

Two small brass beads and five seed beads were found in the neck area. Also, red ochre was found in the area of the skull.

Burial 29. The burial pit was Type I. All that remained of the adult skeleton, aged 31 to 40 years by dental attrition, were fragments of long bones, organic stain, and the following teeth:

Rt.				Lt.
	8	4		
	8	3	3	8

From the position of the teeth and bones and the pattern of organic stain, the body appeared to have been placed on its left side in a flexed position, with the skull oriented toward the southeast. The right arm probably was folded across the chest, and the left arm flexed toward the skull. A clay elbow pipe was found between the knees, and

another broken clay elbow pipe was located a few inches from the pelvis.

Burial 30. The north wall of this burial pit was intruded by Feature 48, and the southeast portion of the burial was vandalized. The south wall, however, was undisturbed. Since it was parallel to the long axis of the pit and there was not a shelf above it, the pit probably was a Type III. Pieces of log covering were found along the pit floor.

The vandal had destroyed the area of the skull and only the following permanent teeth of a child aged 11 ± 30 months were recovered from the disturbed fill:

Rt.							Lt.
		2		1	2	3	
5		2	1	1	2		

The postcranial skeleton, although undisturbed, was in very poor condition. Only small fragments of long bones and some organic stain remained. From the above, however, the body appeared to have been placed on the left side in a flexed position. The orientation of the axis of the body was to the southeast. Even though no grave goods were found in the undisturbed areas, brass fragments of uncertain association were found in the disturbed fill.

Burial 31. Although the chamber of this burial was extensively vandalized, the pit walls and shelves were for the most part undisturbed, and the pit could be classified as Type I.

No bones were found in the disturbed or undisturbed

portions, and there was no additional evidence to suggest the age of the individual. Several artifacts, including a hammerstone, brass fragments, a few trade beads, and a few bone beads, found in the disturbed fill, were of indeterminate association.

Burial 32. This pit, Type III, was determined to be a burial by its shape, orientation (northeast by southwest), pit fill, and because organic stain was found on the pit floor. No bones, teeth or artifacts were found, but from the small size of the pit (2.0 by 1.6 feet), this burial was proposed to be that of an infant. Without further information, however, it was classified only as a subadult.

Burial 33. The burial pit was Type I. Only fragments of the cranial vault, and temporals, a fragment of the mandible, and the following permanent teeth of an adolescent aged 12 ± 30 months were preserved:

Rt.																Lt.
	8	7	6	5			1		1	2	3	4	5	6	7	8
		7	6	5	4		1		1	2	3	4	5	6	7	8

Although no postcranial remains were present, an outline of organic stain showed the body to be on its right side in a semiflexed position. The orientation of the axis of the body was to the east. Five long brass tubular beads were found beneath the occipital.

Burial 34. This burial was almost completely vandalized, except for the southeastern portion of the chamber and the

south and east walls. Since there were no shelves, it is thought that the pit was Type III.

Only fragments of the tibiae and femora were present and appeared to be undisturbed. From the size of long bones and the size of the pit, this probably was an adult burial. There is also the possibility, however, that it was the burial of an adolescent. The age of the disposed individual, therefore, is considered indeterminate.

From the position of the long bones, the body appeared to have been on the right side and oriented to the northeast. A variety of artifacts, such as chipped-stone projectile points and clay pipe fragments, were found in the disturbed fill. In the undisturbed fill, one trade head and one clay pipe fragment were of uncertain association.

Burial 35. The burial pit was Type II. No bone was preserved; only teeth and organic stain remained of the skeleton. The teeth showed the development of a young child, aged 2 years ± 8 months. The unerupted permanent teeth and the deciduous teeth, are shown below:

Permanent

Rt.							Lt.
	6					6	
	6		2	1	2	6	

Deciduous

Rt.					Lt.
	5			4 5	
	5	4		4 5	

From the position of the teeth, organic stain and trade beads, the orientation of the axis of the body appeared to have been east. Deposition and position, however, were not discernible.

The seed beads (more than 1,000) were found below and to the right of the chin and extending onto the chest. Some beads also appeared to be in the area of the feet. In addition, large glass trade beads were found near the right temporal and in the area of the left shoulder. These beads and seed beads probably were sewn on a garment.

Burial 36. The burial pit was Type I. Only a few fragments of bone and teeth remained of an adult skeleton, aged 18 to 30 years by dental attrition. Traces of the frontal bone and parietals, a left temporal fragment, and the right petrous process remained of the skull. Traces of the left arm and fragments of the femora, tibiae, and fibulae also were present.

The teeth below all were enamel caps:

Rt.	8	7				3	2	1		1			4		6	7	8	Lt.
	8	7		5	4							2	3			7	8	

The body was placed on the left side in a flexed position, with the orientation of the axis of the body to the east. The left arm appeared to have been folded on the chest. Approximately 500 seed beads and two large glass trade beads were found around the neck and in the chest area. Again, these beads probably were sewn on a garment. An iron

object, possibly an iron axe, was found about six inches south of the skull. Also a few small brass beads were found in the left knee area, the left wrist area, and under the skull. Copper salts in these artifacts preserved pieces of cane matting.

Burial 37. The burial pit was Type I. Only traces of bone, organic stain, and one enamel cap of a lower left third molar remained of the skeleton. Because the third molar had erupted, as evidenced by wear facets, this individual was aged as an adult.

From an outline of organic stain it appeared that the body was on the left side in a semiflexed position with an orientation to the east. The arms probably were folded on the chest. A polished stone celt and polished hammerstone were located next to the left arm.

Burial 38. This burial pit was Type I. Small cranial fragments, teeth, and some organic stain remained of the skeleton. An age of 18 to 30 years was indicated by the wear on the following teeth:

Rt.									Lt.
	8					6		8	
	8			4	5	6	7	8	

From the position of the cranial fragments, teeth, organic stain, and beads in the thoracic area, the body axis and skull appeared to have been oriented to the east. Body position and deposition were not discernible.

The trade beads, a few thousand seed beads and a few

hundred large glass beads, were primarily located in the neck and thoracic region, but many were scattered by the activities of roots or rodents.

Burial 39. The burial pit was Type I. No bone was preserved and only one tooth (an upper right second molar), a few small fragments of teeth, and organic stain remained of the skeleton. The upper second molar had a distal wear facet which indicated that the individual was an adult.

From the position of the organic stain, it could be proposed that the body was on its left side, in a flexed position, with the body axis and skull oriented to the southeast. The right arm appeared to have been crossed on the pelvis.

A circular area with a checked impression, probably from a basket, was found about one foot to the south of the skull. A brass bead was found in the pelvic region, about 50 seed beads were found in the skull area, and about 50 large glass beads were found in the chest area.

Burial 40. The burial pit appeared to be a Type III variant. The pit had a rectangular shape, with unusually straight walls and a flat bottom. The above information suggested that the pit was prepared with a shovel- or hoe-shaped tool. In addition the pit floor was covered with black organic stain. Jofre Coe (Personal Communication) suggested that the burial chamber may have been lined with wood.

Only teeth and some organic stain remained of the

skeleton of a child, aged 3 years ± 12 months. From organic stain showing the position of the legs, and from the position of the teeth, it is probable that the body was placed on the left side in a flexed position. The orientation of the axis of the body was to the east.

Approximately 25 large glass beads were found a short distance apart in a circular pattern below the knees and across the legs. This pattern suggested that they were sewn on a skirt or cloak. A few large glass beads also were found in the skull area.

The teeth recovered, and shown below, all were enamel caps:

Permanent

Rt.								Lt.
	6				2	3	6	
	6		2	1	1	2	3	6

Deciduous

Rt.					Lt.
	5			5	
	5		4	5	

Burial 41. The burial pit was Type I. Only organic stain, a maxillary right third molar, and a few small fragments of teeth remained of the skeleton. Since the third molar had erupted, the individual was classified as an adult.

Organic stain outlined the skull, vertebral column, and lower legs of the skeleton. From the pattern of this stain, the body appeared to have been placed on the left side in a flexed position with the body axis and skull oriented to the

east.

Approximately 5,300 seed beads were found in strands in the chest area, and approximately 100 others were found in what appeared to be the lower leg area.

Burial 42. The pit was Type I. Although a vandal had dug into the pit, the skeletal remains were not reached and only a portion of the chamber and the south pit shelf were disturbed.

The skeleton was very poorly preserved. The remains included organic stain, the lower left second and third molars, and fragments of the femora, tibiae, and fibulae. Since the third molar had erupted, this burial was considered to be that of an adult.

From the position of the organic stain, teeth, and bones, the body probably had been positioned on its left side, flexed and with the axis and skull oriented to the east. Approximately 10,000 seed beads were located in strands in the chest area, and approximately 1,000 others were found in the pelvic region. In addition, a straight clay pipe was found in the abdominal area, and red ochre was found in the chest area.

Burial 42. The burial pit was Type I. Teeth, a few small cranial fragments, small rib fragments, the distal portion of the left humerus, and organic stain that outlines the upper portion of the body remained of the skeleton. The development of the following permanent teeth indicated that

the remains were those of a child, aged 6 years ± 24 months:

Rt.	7	6	5	4	3	2	1	1	2	3		5	6	7	Lt.
	7	6	5	4	3	2	1	1	2	3	4	5	6	7	

From the position of the organic stain, bone, and beads, the orientation of the upper body and the skull was to the east. Body position and depositon were less definable.

Numerous trade items were found associated with this individual. A large cast brass bell with a metal object beneath it, was found at the left elbow. A brass gorget with preserved pieces of leather in its proximity was located beneath the mandible. A total of 15 brass tubular beads was located at each side of the skull, and two beads were beneath it. Three large glass beads extended in a line from one of the brass beads on the left side of the skull, and u-shaped brass pendant was found at each shoulder.

Approximately 1,000 seed beads and over 100 large glass beads were found in strands in the chest area. And, finally, copper salts from brass artifacts had preserved pieces of cane matting.

Burial 44. The burial pit was Type III. The skeleton was very poorly preserved. No teeth were present, and only traces of the occipital, temporals, femora, fibulae, and organic stain remained. From the bone fragments, the size of the organic stain (Plate X) and the size of the pit (4.6 by 3.4 feet), the skeletal remains were determined to be those of an adult.

The body appeared to have been placed on its left side in a semiflexed position, with the body axis and skull oriented to the east. A clay pot was found to the right of the skull, and a clay pipe was found near the right shoulder. A columella ear pin was found in the right abdominal area and a chipped-stone drill and an unidentified iron object were found in the chest area. A few brass beads were found in the pelvic region, and a piece of cord was preserved in one of these beads.

Burials 45-A and 45-B. This was a multiple burial. The pit was a large Type I or Central-chamber pit, measuring 5.6 feet by 4.8 feet. It was large enough to accommodate two adult skeletons. A large section of a log from the chamber cover was found on top of the legs of both skeletons.

The poorly preserved skeletons were positioned side by side. One, designated 45-A, was on the right looking east, and aged 31 to 40 years. The other, 45-B, was a young adult, aged 18 to 25 years by epiphyseal closure and unerupted third molars.

Small cranial fragments, a large fragment of the mandible, a few teeth (the right canines and the left upper first and second molars), and traces of long bones, cervical vertebrae, and innominates remained of 45-A. Most of the teeth (shown below), fragments of the cranial vault, traces of the right arm bones, fragments of the femora, traces of the tibia, fibulae and ribs, and fragments of the innomi-

nates remained of 45-B.

Rt.	8	7	6	5	4			1		1	2	3	4	5	6	7	8	Lt.
	8	7	6	*	4	3	2	1		1		3	4	5	6	7	8	

*A retained deciduous second molar.

Burial 45-A appeared to have been placed on its back, with the legs semiflexed to the left side. The right arm was placed on its left side in a semiflexed position with the right arm flexed toward the skull. The skulls and the axes of the bodies of both skeletons were oriented to the east.

Individual 45-A was found with a clay pipe at the right elbow and a chipped-stone projectile point at the left shoulder and under the left hand. Red ochre was found in an area along the upper right side of the body. Two chipped-stone projectile points were found near 45-B. One was in the left chest area, and the other was near the left innominate.

Burial 46. This burial was extensively disturbed. The burial pit type and body deposition, position, and orientation were not discernible.

Only fragments of a deciduous second molar and fragments of permanent teeth remained of the skeleton. The development of the teeth indicated an age of 2 years ± 8 months.

Approximately 3,000 seed beads were found along the pit floor, the majority clustered in the eastern portion. An additional 1,300 seed beads were found in the burial fill.

Burial 47. This burial, like Burial 46, was disturbed by the activities of rodents, and little of the skeleton was

preserved. The burial pit type, body deposition, and body position were not discernible. However, from the position of the teeth, organic stain, and bead work (though somewhat scattered), the orientation of the body axis and skull may have been to the east.

The development of the teeth (a deciduous lower left first molar and canine, and fragments of the permanent teeth) indicate an age of 6 years ± 24 months.

Approximately 1,800 seed beads, many in strands, were found in clusters along the pit floor. Another 1,100 beads were found in the burial fill.

Burial 48. This burial pit was Type III. Only teeth (enamel caps), two small cranial fragments, and some organic stain remained of the skeleton. The development of the teeth, shown below, indicated an age of 11 years ± 30 months.

Rt.	7	5	4	3	2	1	1	2	3	4	5	6	7	Lt.
	7	5	4	3	2		1	2				6	8	

Body deposition and position were not discernible. However, the position of the teeth, cranial fragments, and a few hundred large glass beads in what appeared to be the head and chest areas, indicated an orientation of the skull and body axis to the east or northeast.

Burial 49. This burial pit was Type I. The poorly preserved skeletal remains were of an adult, aged 18 to 30 years by dental attrition. Only teeth, small fragments of the cranial vault, traces of bone from the thoracic area, traces of leg

bones, and organic stain remained of the skeleton.

The following teeth were present:

Rt.													Lt.
	8		6					4	5		7	8	
	8	7	6	5	4	3			5	6	7	8	

The skeleton was on its left side in a semiflexed position, with the skull and body axis oriented to the southeast. The right arm was folded on the chest, and the left arm was extended along the left side of the body. A complete clay pot was located approximately three inches south of the skull, a clay pipe was next to the right elbow, and a few large brass tubular beads were found in the neck region.

Burial 50. The burial pit was Type I. Very little of this adult skeleton was preserved. Approximately half of the frontal bone, half of each temporal, small cranial fragments, three maxillary molars and two fragments of molars remained of the skull. The maxillary third molars had erupted and showed medium wear. Only small fragments of the left femur, tibia, and fibula and the diaphysis of the right femur remained of the postcranial skeleton.

It could be determined that the body was placed on the left side in a flexed position, with the skull and body axis oriented to the east. Over 10,000 seed beads in the chest area, and approximately 6,000 in the skull area, were suggestive of an extensively embroidered garment.

Burial 51. This burial pit was Type III. The skeletal

remains were those of a female, aged 40 or more years. The skeleton was in poor to fair condition. The skull was nearly complete and there were large fragments of the other long bones. Approximately three-fourths of the innominates and most of the sacrum, thoracic vertebrae, and lumbar vertebrae, also were present. However, only fragments of the scapulae and cervical vertebrae, and a few of the bones of the hands and feet were preserved.

The thoracic and lumbar vetebrae showed States 2 and 3 lipping, and there was evidence of arthritic changes in the left sacroiliac joint.

The following teeth were present:

Rt.																Lt.
	8			5		3	2	1	1	2	3	4	5	6	7	
	7	6	5	4	3	2	1		1	2	3	4			7	8

The body was placed on its right side in a semiflexed position with the skull and body axis oriented to the northeast. Both arms were flexed, with the hands toward the face. Eight brass bells were found in the neck area, along with two very large glass beads, a large columella bead, a brass ring, and 20 seed beads. In the left wrist area, a few strands of seed beads were found that may have been sewn on a garment or wristband. About 50 more seed beads were found between the pelvis and the left foot.

Burial 52. The type of burial pit was not discernible, as the entire pit had been vandalized. An estimate of age of the disposed individual, however, was possible since teeth

and fragments of well-preserved bone were recovered from the disturbed fill. Of the skull, approximately three-fourths of the mandible, cranial vault fragments, and small fragments of the temporals, sphenoid, and ethmoid were recovered. Of the postcranial skeleton nearly complete femora and a nearly complete right humerus were present. The diaphyses of the tibiae, small fragments of the fibulae, scapulae, ribs, vertebrae, and right innominate, and traces of foot bones also were recovered.

The development of the following unerupted and erupted permanent teeth indicated an age of 11 years ± 30 months:

Rt.														Lt.
	7	6	5	4	3	2	1	1		3	4			
										3	4	5	6	8

Two clay pipe fragments, one shell bead, one worked shell, two rolled-brass fragments, and thousands of seed beads were found in the disturbed fill. In addition, about 500 seed beads were found on the pit floor. Because these beads along the pit floor seemed not to have been disturbed, and because of the large quantity of other beads in the disturbed fill, it is proposed that the child was buried in a beaded garment.

Burial 53. The burial pit was Type I. Fragments of the log cover were found against the pit walls and on top of the leg bones. The skeleton that of a child, aged 4 ± 12 months, was in poor condition. The frontal, mandible, and sphenoid were nearly complete, and large portions of the temporals, left

parietal, and right malar were preserved. The remainder of the skull was in fragments.

Postcranically, the femora, tibiae, cervical vertebrae, and right clavicle were complete. Only fragments of the hyoid, arm bones, and bones in the thoracic area, however, were present.

The following unerupted permanent teeth and erupted deciduous teeth were present:

Permanent

Rt.								Lt.
	6		3 2 1		1 2 3		6	
	6				1 2 3		6	

Deciduous

Rt.							Lt.
	5 4 3				4 5		
	5 4 3 2			1 2 3 4 5			

The body was placed on its back in a semiflexed position, with the legs on their right sides. The arms were crossed over the pelvis, and the orientation of the skull and body axis was to the east. Approximately 80 large columella beads were found around the neck in two strands and thousands of seed beads in strands were found beneath the skull, around the neck, and down the chest. Brass bells and pieces of leather were found around the legs, in the areas of the calves. The bells appeared to have been attached to leather bands, as sinew or thongs were still tied to a few. The bells also preserved pieces of cane matting.

Burial 54. The burial pit was Type I. Log fragments that

had collapsed from the chamber cover were found against the pit walls and across the legs of the skeleton. The skeletal remains were of a child, aged 3 years ± 12 months, and they were in poor condition.

Cranially, teeth, a nearly complete frontal, one third of the mandible, small fragments of the parietals and occipital, and traces of facial bones were preserved. Only small fragments of the tibiae, left femur, left patella, right scapula, cervical vertebrae, thoracic vertebrae, and ribs remained of the postcranial skeleton.

Some deciduous teeth were present and permanent teeth were visible in eroded crypts:

Permanent

Rt.													Lt.
	6				1		1				6		
	6			3			1		3		6		

Deciduous

Rt.										Lt.
	4				1					
5	4	3	2	1		1				

The body was placed on its back with the legs semi-flexed and on the left side. The skull and body axis were oriented to the east. A brass gorget was found beneath the ribs, thoracic vertebrae, and strands of seed beads in the chest area, which is evidence that the child was placed on top of the spoon. The spoon was identical as one made by a British silversmith and dated at 1650 (Joffre Coe: Personal Communication).

A few thousand seed beads were found in the chest area

in two layers, below and above the vertebrae. And, concentrations of beads to the left and right of those in the chest area may originally have been sewn to sleeves. In the leg areas, a total of 10 brass bells and strands of seed beads were found around the calves. These beads and bells were probably sewn on leg bands. The brass bells preserved small pieces of sinew or thongs and cane matting.

Burial 55. The burial pit was Type I. Very little of the skeleton of a child, aged 3 years ± 12 months, was preserved. Teeth, a small fragment of the right parietal, nearly complete temporals, a small fragment of the sphenoid and most of the mandible remained of the skull. No postcranial bone was preserved.

The permanent upper central incisors, right upper canine, and right lower first molar were visible, and the following deciduous teeth were present:

Deciduous

Rt.			2	1						Lt.
	4	3	2	1		1	2	3	4	5

From the position of the skull and beads in the chest area, the child appears to have been placed on its back in either an extended or semiflexed position. The orientation of the axis of the upper body was to the east.

Approximately 7,000 seed beads were removed in the field while cleaning in the areas of the skull, chest, and feet. Thousands more seed beads remain <u>in situ</u> in a pedestaled area of the burial preserved at the laboratory (Plate XI).

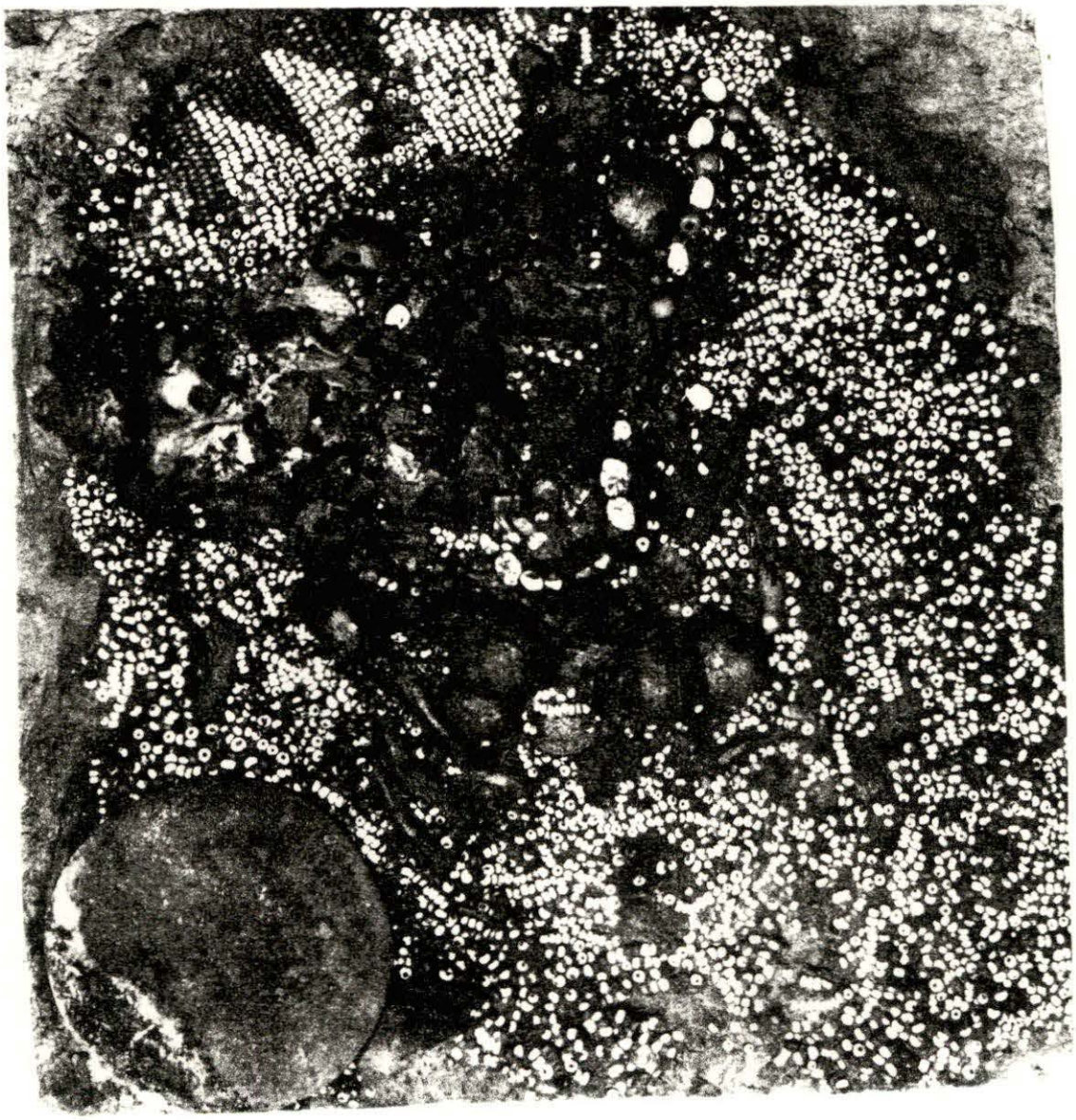
Cleaning in the laboratory revealed that the child was wearing a beaded garment with a hood. A chevron design of blue and white seed beads can still be seen in an area of the skull that appears to be the collapsed area of the hood, and a brass gorget and a "jews" harp were found in the right chest area.

Burial 56. This burial was extensively disturbed by a vandal. Although the pit type was not discernible, it does appear from the original pit bottom that the major axis was east-west. The fragmented skeletal remains of a female, aged 18 to 30 years, were recovered from the disturbed fill. No dental remains were present; the bone recovered however, was well preserved. Fragments of the cranial vault, some cervical vertebrae showing Stage 1 lipping, and large fragments of the humeri, tibiae, fibulae, ribs, and thoracic vertebrae were present.

Nearly 10,000 seed beads and a few large glass beads were found in the disturbed fill. These beads probably were originally associated with the burial.

Burial 57. The pit was Type II. A log fragment, possibly part of a covering was found on the pit floor. Only traces of the cranial vault and ribs, a metatarsal, and five uncalcified deciduous teeth were preserved. The teeth below showed the development of an infant, aged 9 months $\pm$ 3 months:

PLate XI. Pedestaled portion of Burial 55, aged 3 years ± 12 months. Cleaning in the laboratory revealed a beaded garment with a cup (the chevron design was still intact). A brass gorget and brass bells were in the chest area.



Rt.	4	3	5	Lt.
	5		5	

From the position of the teeth, bone fragments and beads in the skull and chest area, the infant appears to have been placed on its back in either an extended or semiflexed position. The orientation of the upper body and skull was to the east.

Approximately 10,000 seed beads were removed in the field, and a few thousand remain in situ in a pedestaled burial block housed at the laboratory. The beads were located primarily in the neck and chest areas. A brass pendant was located in the sternum area, and six brass bells were in the probable areas of the feet.

Burial 58. The burial pit was Type I. The skeletal remains of a female, aged 31 to 40 years, were in fair to poor condition. The cranial vault, the right temporal, the maxilla, and the mandible are nearly complete. The remainder of the skull was in fragments. Postcranially, the femora were nearly complete. The remaining long bones, with the exception of the left radius and ulna which were not preserved, were fragmented. Larger fragments of the innominates, including the right pubic symphysis, were present. (The metamorphic changes of the public symphysis served as the primary criteria used in aging this burial). Small fragments of bone in the thoracic area, and fragments of vertebrae, also were preserved.

The following teeth were present:

Rt.	8	7	6	5	4	3	2	1		1	2	3	4	5	6	7	8	Lt.
	8	7	6	5	4	3	2	1		1	2	3	4		6	7	8	

The body was placed on its back in a semiflexed position with the legs on the right side. The skull and body axis were aligned southeast, and the arms were flexed toward the skull.

A total of about 6,000 seed beads extended in strands from around the neck onto the shoulders. A number of additional seed beads were found in the area of the right wrist. Some seed beads may also have been in the area of the left wrist, but this area had become mixed with the beads in the neck and shoulder areas.

Burial 59. This burial was extensively vandalized. Only small portions of the pit (the north chamber wall and shelf) were undisturbed. The presence of the shelf suggests that the pit was Type I. Only a few fragments of long bones were recovered from the disturbed fill. From observations of the long bone fragments, and an estimation of the size of the pit, this probably was an adult burial. There is the possibility, however, that it was the burial of an adolescent. Therefore, the age of the individual is considered indeterminate.

A large quantity of seed beads (approximately 14,000) in the disturbed fill and the presence of seed beads (about 25) in the undisturbed fill suggested that the disposed

individual was buried in a beaded garment.

Burial 60. This pit was thought to be an unused burial pit by the excavator. However, according to Joffre Coe (Personal Communication), it probably was not a burial pit but part of Feature 113.

Burial 61. The burial pit is Type II. A log fragment was found along the pit floor. Only a few fragments of unerupted permanent teeth and a few small fragments of brass remained of the interment. The teeth showed the development of a child, aged 3 years ± 12 months. Body deposition, position and orientation were not discernible.

Burial 62. The burial pit was Type I. Although the burial pit walls and shelves were not disturbed, the burial chamber was extensively vandalized. Fragments of the skeleton of a male, aged 18 to 30 years and showing good preservation, were recovered from the disturbed fill. The calvarium was nearly complete, and fragments of the remainder of the skull were present. Postcranially, the right talus and calcaneus, small fragments of the humeri, fibulae, left femur and left tibia, and the shafts of the right femur and right tibia were recovered.

The following teeth also were recovered:

Rt.										Lt.
					1		3		7	
7		4	3	2	1	1		3	4	5

Approximately 2,500 seed beads were found in the

disturbed fill, and approximately 300 more were found in undisturbed portions of the burial. Again, it is probable that the beads were associated with the burial.

Burial 63. The burial pit was Type I. The skeletal remains were poorly preserved. The mandible and frontal bone were complete, but the remainder of the skull was in fragments. Only rib fragments and organic stain remained of the postcranial skeleton.

Development of the following erupted deciduous teeth and unerupted permanent teeth indicate an age of 2 years ± 8 months:

Permanent

Rt.								Lt.
	6	3	1	1	3	6		
	6					6		

Deciduous

Rt.										Lt.
	4						3		5	
	4	3	2	1	1	2	3	4	5	

Although body deposition and position were not discernible, the position of the skull and pattern of organic stain indicated that the skull and body axis were oriented to beneath the skull. Approximately 160 were removed in the field, and about 1750 were removed from the pedestaled block in the laboratory.

Burial 64. The burial pit was Type III. No bone or teeth were preserved. The remains of what appears to be a beaded garment, however, provided some information about the

disposed individual. The beaded garment appears to have had a cap or hood, sleeves, and wristbands. Beaded strands in the chest and abdominal areas are bordered by large glass beads (Plate IV). In addition, a small triangular brass pendant and brass bells were found in the thoracic area, and seed beads were found in the areas of the feet. The brass artifacts (copper salts) preserved pieces of cane matting.

From the size of the garment and the pit (2.74 by 2.37 feet), and from comparisons to other subadult and infant burials, this burial was aged as Birth to 1 year. Also, from the position of the beaded garment the infant appears to have been placed on its back in an extended or semiflexed position with the skull and body oriented to the east. The arms appear have been extended along the sides of the body.

Burial 65. The burial pit was Type I. The skeleton of a female, aged 18 to 30 years, was in poor to fair condition. Although the skull was nearly complete, the face was fragmented and the vault was warped by soil pressure. The vertebrae, fragments of long bones, the left innominate, fragments of bone in the thoracic area, and the metacarpals and phalanges, remained of the postcranial skeleton.

The following teeth were present:

Rt.																Lt.
	8	7	6	5	4	3			1	2	3	4		6	7	8
	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8

The body was placed on its back, with the legs semi-flexed and on the right side. The axis of the body through

the skull was to the east. The right arm was flexed toward the skull, and the left was folded on the chest. A few thousand seed beads and approximately 170 large glass beads were beneath the skull, around the neck and on the shoulders.

Burial 66. The burial pit was Type I. The poorly preserved remains are of a female, 40 or more years of age. Nearly half the frontal, a nearly complete mandible, the right temporal and sphenoid, and nearly complete nasal bones were present. The remainder of the skull was in fragments. Only four right mandibular teeth -- the molars and second premolar were present.

Fragments of the femora, right humerus, right tibia, right fibula, right scapula, and cervical vertebrae remained of the postcranial skeleton. The vertebrae showed Stage 3 lipping.

The body was placed on the left side in a flexed position, with the skull and body axis oriented to the east. Approximately 10 large glass beads and a few seed beads were found in a semicircle from a point above the pelvis to the lower limbs. The beads may have been sewn on the edge of a skirt or cloak.

Burial 67. The burial was Type III. The poorly preserved skeletal remains were of a male, aged 31 to 40. A nearly complete occipital, large fragments of the temporals, sphenoid, and mandible, and small fragments of the parietals, ethmoid, vomer and maxilla remained of the skull. Post-

cranially, traces of cervical vertebrae, the diaphyses of the femora, and fragments of the other long bones, except the left radius and ulna, were recovered.

The skeleton was primarily on its back in a semiflexed position, with the legs on the left side. The skull and body axis were oriented to the northeast, and the right arm was folded on the chest. No artifacts were associated with this burial.

Burial 68. This burial was vandalized. Approximately two-thirds of the chamber and a portion of the skeleton above the innominates were disturbed. The south shelf, however, was undisturbed, and its presence suggests that the burial pit was Type I. In addition, most of the disturbed portions of the skeleton were recovered, although in fragments. The calvarium was nearly complete, and fragments of the maxilla, right malar, and mandible were recovered.

Post cranially, the undisturbed portions of the skeleton --the right radius and ulna which crossed over the lower limbs, the sacrum, the innominates, the leg bones and the feet--were present. Fragments of the remaining postcranial bones, except the left ulna, right patella and left scapula, also were recovered from the disturbed fill.

The skeletal remains were of a male, aged 18 to 30 years. The following teeth also were present:

Rt.				4	2	1		2			6	8	Lt.
8	7	6	5	4					3	4	5	6	

From the position of the lower skeleton, and since the right arm was crossed over the lower limbs, the body appeared to have been placed on the right side in a flexed position. The axis of the body probably was oriented to the east.

Approximately 160 seed beads were found in strands at the right elbow, and approximately 6,300 others were found in the disturbed fill.

Burial 69. The burial pit was Type I. The poorly preserved skeletal remains were those of a child, aged 7 years ± 24 months. The burial appears to have been disturbed by rodents and the probes of vandals. The skull had collapsed, and the occipital was found to the right of the remainder of the skull. In addition, a probe hole had penetrated the frontal bone, the mandible had been moved about six inches to the west of the skull, and bones and beads in the thoracic area had been scattered.

Although the skull was nearly complete, the face was in poor condition and there was considerable posthumous deformation of the vault. Postcranially, fragments of the long bones, ribs, vertebrae, and innominates remained.

The following erupted and unerupted permanent teeth, and erupted deciduous teeth were present:

Permanent

Rt.	7	6		4	3	2	1		1		3	4	5	6	7	Lt.
	7	6	5	4	3	2	1		1	2	3	4	5	6	7	

Deciduous

Rt.	5	3	2	1	1	3	5	Lt.
	5	3	2		2	4		

The child had been placed on its right side, in a semi-flexed position, with the body axis and the skull oriented to the southeast. The left arm was folded on the chest. More than 9,000 seed beads were found primarily in the thoracic, abdominal, and knee areas, but as stated above, many of the beads had been scattered. About 10 large glass beads also appear to have been scattered, with the majority being in the neck area, and a few others in the chest area.

In addition, a large columella bead was found under the mandible, and 13 brass bells extended in a line from a point near the left elbow to the knees. Two brass bells also were found beneath the knees. The location of the bells and seed beads in the knee areas suggested that they were attached to leg bands. With the disturbance to this burial, however, this interpretation remains inconclusive.

Cane matting was preserved near the brass bells.

Burial 70. This burial was extensively vandalized on two occassions. Two holes had been dug, which together nearly obliterated the chamber, leaving only a small portion of the burial undisturbed. Thus, although the pit type was not discernible, the major axis of the pit appears to have been east-west.

Teeth, and bone fragments of an adult, aged 18 to 30

years, were recovered from the disturbed fill. The right temporal, left lacrimal, right palatine bone, fragments of the cranial vault, and the following teeth remained of the skull:

Rt.								Lt.
	8	7	6	4	3			
				4	3			
						5	7	8

Of the postcranial skeleton, one tarsal bone, one rib fragment, and fragments of the femora, tibiae, and innominates were recovered.

Approximately 700 seed beads were found in the fill of the first "pothole." This large number suggests that they were associated with the burial. Only two seed beads were found in the second "pothole," and a chipped-stone projectile point of uncertain association was found while cleaning the pit floor.

Burial 71. The burial pit was a small Type II. Only minute fragments of bone and organic stain remained of the skeleton. The small size of the pit (2.36 by 1.95 feet across the top), and pit floor (1.4 feet long), and the size of a beaded garment (1.1 feet long), indicated that this was most likely the burial of an infant, aged Birth to 1 year.

The beaded "cloak-like" garment was pedestaled in the field and brought back to the laboratory for further cleaning. (Plate III and IV in Chapter II). Bead strands met above and below a brass square pendant in about the neck area. From the position of the beadwork, the orientation of the body and skull probably was to the east.

About 800 seed beads were removed during field cleaning of the beaded area, and an additional 8 to 9,000 were removed after final cleaning and photographing in the lab. In addition, cane matting was found near the brass pendant.

Burial 72. The chamber of this burial was extensively vandalized. However, since the south wall and shelf, and most of the north wall and shelf, were undisturbed, a classification of the pit as a Central-chamber pit (Type I) was possible. In addition, the orientation of the major axis of the pit could be determined as east-west and a covering could be postulated from log fragments found extending from the south shelf into the pit fill.

Of the skeleton, two teeth (a maxillary molar and worn anterior tooth), the petrous processes of the temporals, one vertebral fragment, and fragments of long bones were recovered from the disturbed fill. From the bone fragments and the extremely worn anterior tooth, the disposed individual was determined to be an adult.

One large glass bead and 16 seed beads, all found in the disturbed fill, were considered of uncertain burial association.

Burial 73. The burial pit was Type I. The skeleton was of a male, aged 40 or more years, and in fair to good condition. The skull was nearly complete, but there was some fragmentation of the face (Plate I). The postcranial skeleton also was nearly complete, but with some fragmentation of nearly

all the bones.

The following teeth were present:

Rt.	8	6	5			1						7	Lt.
				4	3	2	1		1	2	3	4	8

This individual showed Stage 3 lipping in all three vertebral regions. The sternal articular ends of a few ribs and a metacarpal also showed evidence of osteoarthritis.

The body was placed primarily on its back in a semi-flexed position, with the legs on their right sides. The right arm was crossed over the pelvis, and the left arm was folded on the chest. The orientation of the axis of the body was to the southeast.

A clay pipe was found at the right elbow, inside the flexed arm. Additional information about the placement of associated artifacts comes primarily from cleaning the pedestaled area of the skull and chest in the laboratory. Approximately 700 seed beads, many in strands, were located around the head and extended down to the chest area. Also, twenty large columella beads, probably part of a necklace, were found in a line or strand from the left ear to the cervical vertebrae. At the left ear, 15 very small tubular brass beads were found adhered together in two rows forming a semicircle.

Burial 74. This burial, like Burial 70, was vandalized on two occasions. The original pit was obliterated except for a small area on the northeast side. The pit type was not

discernible.

A large amount of bone, well preserved and of a male, aged 31 to 40 years, was recovered in the disturbed fill. Some restoration of the calvarium was possible, and a nearly complete mandible and fragments of the face were present.

The following teeth were also present:

Rt.	8	7	6		4	3	2	1		1	2	3	4	5			8	Lt.
		7		5		3	2	1		1		3	4	5	6	7		

Postcranially, the long bones were nearly complete, except for the right radius and ulna and the right tibia and fibula, of which the diaphyses or shafts remained. Also, seven carpal bones, eight tarsal bones, and fragments of the innominates, vertebrae, sacrum, bones in the thoracic area, metacarpals, and phalanges were recovered.

The cervical vertebrae showed Stage 1 lipping and the thoracic vertebrae showed Stages 2 and 3 lipping.

Approximately 100 seed beads and 3 large glass beads, found in the disturbed fill, were thought to be associated with the burial.

Burial 75. This burial also was extensively vandalized with only two small areas undisturbed. To the southeast, there was what appeared to be a portion of a burial shelf. From this evidence, the burial pit was classified as Type I. To the southwest, a portion of the chamber and pit floor also was undisturbed, and a tibia and fibula were found still articulated.

In addition to the above bone, a large amount of well-preserved bone of a male, aged 40 or more years, was recovered from the disturbed fill. The calvarium was almost completely restored. Fragments of the face, half of the mandible, and the following teeth also were recovered.

Rt.								Lt.
		2			5	6	7	

Postcranially, the patellae and right talus were complete, and the femora, tibiae, and left talus were nearly complete. Fragments of the cervical vertebrae, humeri, fibulae, innominates, and calcani, and seven incomplete tarsal bones also were recovered. The cervical vertebrae showed Stage 2 lipping.

Approximately 1,300 seed beads, found in the disturbed fill, probably were associated with the burial.

Burial 76. The burial pit was Type III. Only teeth, traces of bone in the skull area, and some organic stain remained of the skeleton. The deciduous second molars (all were present) and the following unerupted permanent teeth showed the development of a child aged, 4 years ± 12 months.

Rt.								Lt.
	6	3	2	1	2	3	6	
	6	3	2	1			6	

Although body deposition and position were not discernible, the skull did appear to have been oriented toward the east. Approximately 400 seed beads were found in the skull area, and 30 large glass beads were found in two

strands, one near the skull and the other in the area of the neck.

Burial 77. This burial was a Type I variant. The chamber had shelves on three sides, .8 foot above the pit floor.

The skeletal remains were of a female, aged 18 to 30 years. They were in fair condition. The cranium and mandible were nearly complete, but some of the facial bones were fragmented and there was considerable posthumous deformation of the vault.

The following teeth were present:

Rt.	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	Lt.
	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	

Most of the postcranial skeleton was present, although some hand and foot bones were missing, and a number of the bones showed some fragmentation. The body was placed on the left side, in a semiflexed position. The arms were flexed toward the skull, and the orientation of the body axis through the skull was to the southeast.

Twelve large glass beads were found a small distance apart in a semicircle across the femora (this pattern was similar to that observed in Burials 40 and 66). Fifteen large glass beads, four large columella beads, and fragments of approximately 15 more large columella beads appeared to have been strung around the neck. In addition, a few small columella beads (wampum), and two small brass tubular beads were found at each ear.

Burial 78. This burial was partially vandalized. A "pot-hole" into the western portion of the chamber disturbed a portion of the postcranial area of a subadult skeleton. The walls and shelves of the Central-chamber pit (Type I) were not disturbed. In addition, log fragments were found to extend from the pit shelves to the floor and some had collapsed onto the body.

The skull, thoracic, and feet areas of the skeleton were undisturbed, but there was little bone preserved. Only teeth, traces of cranial bones, and organic stain remained. Four erupted deciduous molars (the right lower second molar, the left upper and lower second molars, and the lower left first molar) and the following unerupted permanent teeth were present:

Rt.								Lt.
	6				3		6	
	6		3	2	1	1	2	

The development of the teeth indicated a child, aged 3 years ± 12 months.

Body deposition and position were not discernible, but the orientation of the body and skull was to the east. Two large glass beads were found near the skull, one near the right arm, and two others in the undisturbed fill. Approximately ten square pendants of brass were found above and below the skull. These brass pendants may have been part of a head-dress.

Burial 79. The burial pit was Type II. The poorly preserved

skeleton of a female, aged 40 or more years, was found tightly positioned in a small chamber measuring approximately 3 by 1.4 feet. Large fragments of the calvarium, a nearly complete maxilla and mandible, and fragments of the sphenoid and right malar remained of the skull.

The following teeth were present:

Rt.	8		5		3	2	1		1	2	3	4		6	7	8	Lt.
	8		5	4	3	2	1		1	2	3	4	5			8	

Only fragments of the hyoid bone, long bones, innominates, ribs, vertebrae, left clavicle, left scapula, metacarpals, metatarsals, and phalanges remained of the postcranial skeleton.

The cervical vertebrae showed evidence of lipping but with the poor preservation only the presence rather than extent of lipping could be noted.

The body was placed on the back, with the legs tightly flexed and the knees drawn up to the chest. The right arm was flexed toward the skull, and the left arm was folded on the chest. The skull and body axis were oriented to the east. No artifacts were found with this burial.

Burial 80. The burial pit was Type I. Only teeth, fragments of temporals, and organic stain remained of the skeleton. The development of deciduous second molars and the following unerupted permanent teeth, indicated an age of 4 years $\pm$ 12 months:

Rt.								Lt.
	6						6	
	6		2	1	2	3	6	

Body deposition and position were not discernible, but the orientation of the skull appeared to be east. A ceramic "dipper" was found a few inches north of the skull. A total of nineteen large glass beads and one seed bead were found at each side and beneath the skull. Two hammerstones were found near the feet.

Burial 81. This burial was extensively disturbed by vandals. The walls and a small portion of the burial chamber, however, were undisturbed. The pit appears to have been Type III, with a major axis east-west.

Only teeth (shown below), and fragments of the skeleton of an adult, aged 31 to 40 years were recovered from the disturbed fill.

Rt.								Lt.
	8	7	6			4	5	
					5	6	7	

A few cranial fragments, a fragment of the mandible, the shafts of the femora, vertebrae fragments, small fragments of the arm bones, and fragments of the left innominate remained of the skeleton.

Approximately 250 seed beads and three large glass beads were found in the undisturbed fill. An additional 500 seed beads and a fragment of a brass bell were found in the disturbed fill.

Burial 82. This burial also was vandalized. However, sections of the chamber walls and portions of the pit shelves to the north and south were undisturbed, allowing a classification of the burial pit as Type I. The major axis of the pit was east-west.

Teeth and fragments of the skeleton of an adult, aged 31 to 40 years, were found in the disturbed fill. Small fragments of the cranial vault and left temporal, large fragments of the right temporal and mandible, and the following teeth remained of the skull:

Rt.			5						8	Lt.
	8			4	3			3	4	

Postcranially, the shafts of the femora and small fragments of the scapulae, humeri, tibiae, and fibulae were present. In addition, fragments of hand and foot bones, and two vertebrae fragments (one of which was stained by copper salts) were recovered.

A few seed beads, a pipe stem, and a fragment of a brass tubular bead were found in the disturbed fill. The presence of copper-stained bone and a brass artifact in the fill, suggests that there were ornamental objects associated with this burial.

Burial 83. The chamber walls of this burial were disturbed by tree roots. However, because there is a portion of a shelf to the southeast, the pit was considered to be Type I. Only teeth, small cranial fragments, small fragments of long

bones, and organic stain remained of the skeleton of a child, aged 5 years ± 16 months.

Both unerupted permanent teeth and erupted deciduous teeth were present.

Permanent teeth:

Rt.	7	6	5	4	3	2	1	1	2	3	4	5	6	7	Lt.
	7	6	5	4	3	2	1			3		5	6	7	

Deciduous teeth:

Rt.	5	4	3	2	1	1	2	3	4	5	Lt.
	5	4						3		5	

The child was placed on its right side in a flexed position, with the skull and body axis oriented to the east. From the position of the body and from a comparison of this burial to other burials in the sample, two aggregates of seed beads (in strands and numbering about 300 in each area) were thought to be the areas of the wrists. One group of beads was located southwest of the skull; the other was beneath the left temporal. Given the above position, the arms would have been flexed toward the skull.

Burial 84. The burial was Type III. A small portion of the east wall was disturbed by Feature 142. Although no bones or teeth were preserved, organic stain and bead patterns provided some information about the age and position of the individual.

Strands of large glass beads (about 200) probably in the chest and neck area, appear to have been sewn on a garment,

as the strands met at and surrounded a brass u-shaped pendant that preserved a piece of hide with attached fur. To the west of the beads and pendant, an aggregate of seed beads, in strands probably constituted a wrist band.

From the position of the above bead work and organic stain, it appears that the body was on its right side, oriented to the east. Also, the size of the beaded area and organic stain is small by comparison with the adult burials. This together with the small size of the pit (3.25 by 2.0 feet), suggests that this burial was that of a subadult.

Burial 85. Extensive disturbance to the chamber walls of this pit appears to have been done by the Sara themselves, rather than by modern vandals (Joffre Coe: Personal Communication). The pit type, and body deposition, position and orientation were not discernible.

Although no bone was present, three teeth, the right deciduous second molars, and an unerupted permanent first molar were found. The development of the teeth indicated an age of 3 years $\pm$ 12 months.

Over 3000 seed beads were found. The large number of seed beads suggests that they were associated with the burial. Also, copper stain on one of the teeth along with the presence of brass beads in the fill, suggests that these artifacts had been associated with the burial.

Burial 86. Only portions of the chamber walls were found. Like Burial 85, this burial also appeared to have been

disturbed at the time the site was occupied.

No bones or artifacts were recovered from the fill, but permanent teeth (not in anatomical position) were found in the eastern portion of the pit. the development of the following permanent teeth, indicated an age of 7 years ± 24 months.

Lt.				2	1			3		6	7	Lt.
	6	5		3	2	1	1		3		6	

Burial 87. The burial pit was Type I. The skeletal remains were of a female, aged 40 or more years. The skeleton was in poor condition. Although the calvarium was nearly complete, it showed considerable posthumous deformation. Large fragments of the sphenoid, mandible, and small fragments of the ethmoid, vomer and left malar were also preserved. Only four teeth were present--the lower right incisors and canine, and the upper left second molar. Fragments of the long, bones, innominates, ribs, vertebrae, sacrum, left clavicle, and scapulae remained of the postcranial skeleton.

The body was placed on its right side in a semiflexed position, and skull and body axis were oriented to the northeast. The right arm was flexed toward the skull and the left was folded on the chest. A ceramic pipe was located at the right elbow.

Burial 88. The burial pit was Type I. Only small cranial fragments, teeth, and organic stain remained of the skeleton. The development of the deciduous second molars and the

following permanent teeth indicated an age of 8 years ± 24 months.

Rt.	7	6	5	4	3	2	1	1	2	3	4	5	6	7	Lt.
	7	6	5	4	3	2	1	1	2	3	4	5	6	7	

From the position of bone and pattern of organic stain, it could be determined that the body was placed on the left side in a flexed position, with the skull and body axis oriented to the east. No associated artifacts were found.

CHAPTER V

BURIAL CLASSIFICATION AND PATTERNS

In broad outline, the scheme employed to classify the dimensions of mortuary treatment of the Sara burials follows Sprague (1968). A special classification scheme of burial pits essentially follows Dickens (1976).

Burial Location

The 87 burials studied here are located within a portion of the Sara village ($Sk^{V}1a$) excavated during the 1972 field season and up to and including the 1977 season. This area of the village, representing over 10,000 square feet, includes portions of three stockade lines, five complete house patterns, five incomplete house patterns, 87 burials, and 150 features. This area is thought to represent roughly one-fifth of the total village. And, as pointed out in the introduction, the occupation of this area was probably during periods from the late 1600's up to the first decade of the 1700's.

The burials, house patterns, and portions of the three stockade lines are mapped and identified in Figures 6 and 6A. In the figures, the burial numbers are given and the house patterns are indicated by the letters A through H. The portions of two stockade lines can be seen in square 250 R 50. And, the third stockade line is in squares 250 R 70 to

230 R 70.

As can be seen in Figures 6 and 6A, the burials are located within the village stockade lines and within or in the proximity of house patterns. The burials also appear to represent interments during different periods of house construction. Those burials located within a specific house structure may represent interments during the time that house was occupied. There were other burials, however, that appear to have been present before the construction of some of the houses, as evidenced by intrusive postholes. For example, Burial 2 was intruded by postholes of House J and Burial 73 was intruded by postholes of House E. There also appear to have been interments after certain of the houses were abandoned, as evidenced by burials that were intrusive into house patterns. For example, Burials 10, 11, and 13 were intrusive into the wall pattern of House C.

From the above, it can be seen that any association of particular burials with particular houses would be speculative. It can be stated with certainity only that the preferred burial locations of the Sara were within the village and in the proximity of houses. It also appers that, from the location of the burials and with data presented in Chapter III regarding the representativeness of the mortuary sample, there is (with one exception) no obvious segregation in the cemetery area according to age and/or sex. The one exception is the absence of neonates in the cemetery area. Only five neonate burials, which represents a very low

percentage of those expected, were present. The remaining subadult age groups and adults of both sexes were represented in expected proportions, and they appear to be randomly distributed through the cemetery area. Subadults and adults of both sexes were found within and in the proximity of house structures.

Individuality and Articulation

All the burials in the sample, except one, contain the remains of one individual (they are single interments). The exception, Burial 45 is a multiple burial. Two adults of indeterminate sex were interred in a large central-chambered pit (this burial pit variety is described below).

All of the burials also appear to be primary burials. Although the majority were poorly preserved, there was no evidence of disarticulation from "reduction processes" (Sprague 1968: 480) prior to interment.

Vehicle of Disposal - Burial Pits

The Sara graves described in the field notes as simple, central-chambered, or shaft-and-chambered (side-chambered) pits. These varieties of burial pits have been described at other Siouan sites of the North Carolina Piedmont, at Pisgah and Qualla sites of the Southern Appalachians, and at a number of sites of possibly different cultural affiliations in the Southern Appalachians.

In describing Pisgah phase (prehistoric Cherokee burials) at the Warren Wilson and Garden Creek Mound I and II

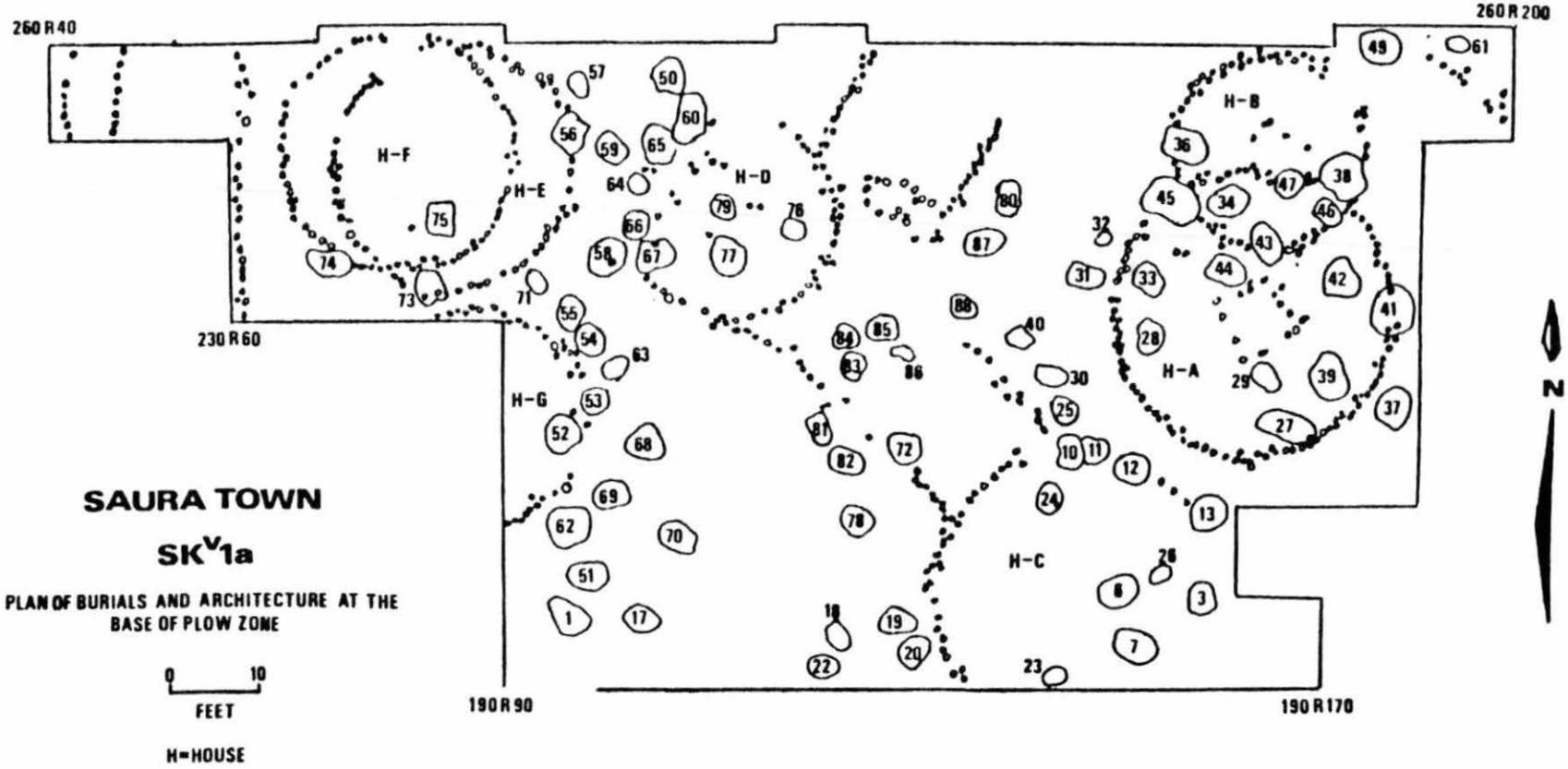


FIGURE 6. Plan of burials (by number) and architecture at the base of the plow zone.

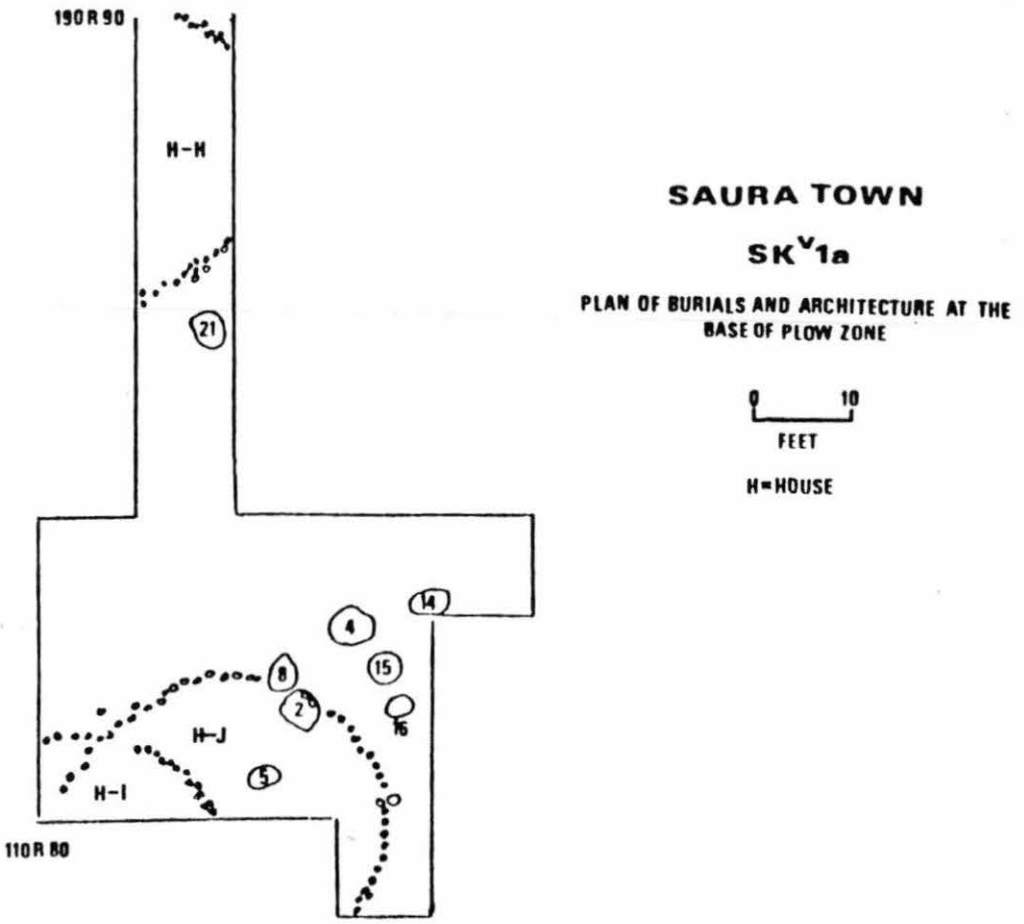


FIGURE 6a. Plan of burials (by number) and architecture at the base of the plow zone continued.

sites, Dickens (1976: 103) classifies the varieties as follows:

> The first was in simple pit, which usually was oblong in plan and had rather straight sides and a flat bottom. The second was a central-chamber variety, in which the initial pit had a smaller excavation in the bottom to contain the corpse, and the resulting shelf was used to support a log covering. In a third variety, the initial pit was either oblong or circular and had a chamber recessed in the base of one of the walls. The floor of the chamber was slightly deeper than the floor of the shaft, and there was usually evidence for a slanted covering, either of logs or in the one case of flat stones. This latter variety was referred to as a side-chamber burial.

The above classification agrees with one used in the field to describe most of the Sara burials. The Sara burials were similarly prepared, and there was evidence of log coverings in 19 of the burials (Chapter IV). Of these burials with fragments of a log cover preserved, each pit type is represented and they are both adult and subadult burials. Examples of the three types of Sara burial pits are shown in Figure 7.

Some Sara burials, however, were not classified as to type in the field records. These were disturbed burials and five burials that differed in pit preparation from the descriptions and figures presented in Dickens (1976) and in Figure 7. Of the disturbed burials, seven had chamber walls, shelves, or shafts that were extensively disturbed, which precluded a classification of pit type. The remaining disturbed burial pits could be classified from undisturbed portions (Chapter IV).

The five burial pits that differ in construction from the other Sara burial pits and the descriptions presented by Dickens (1976), can be classified as variants of two of the existing pit types. One is a variant of a simple pit, whereas the other four are variants of the central-chamber type.

The four central-chambered pits vary in the following manner. Burials 3 and 77 have shelves above all the chamber walls except the east wall, whereas the shelf of Burial 18 completely surrounds the burial chamber. Burial 27 has parallel shelves, like the majority of central-chambered pits, but the shape and dimensions of the pit are unusual. On the average, the pit is about 2 feet longer than the other burials in the sample and the Warren Wilson burial pits described by Dickens (1976). The pit measures 6.75 feet by 3.25 feet, which suggests that the disposed individual (dental remains indicate an adult) was placed in an extended position. This cannot be stated with certainty, however, as only teeth and a small amount of organic stain remained of the skeleton.

The remaining variant is of a simple pit. The chamber walls of Burial 40 were unusually straight, and the floor of the pit was covered with a dark stain. Joffre Coe (Personal Communication) suggested that this burial pit may have been lined with wood or bark.

The above five burials and 72 of the disturbed and undisturbed burials, classified as to pit type are

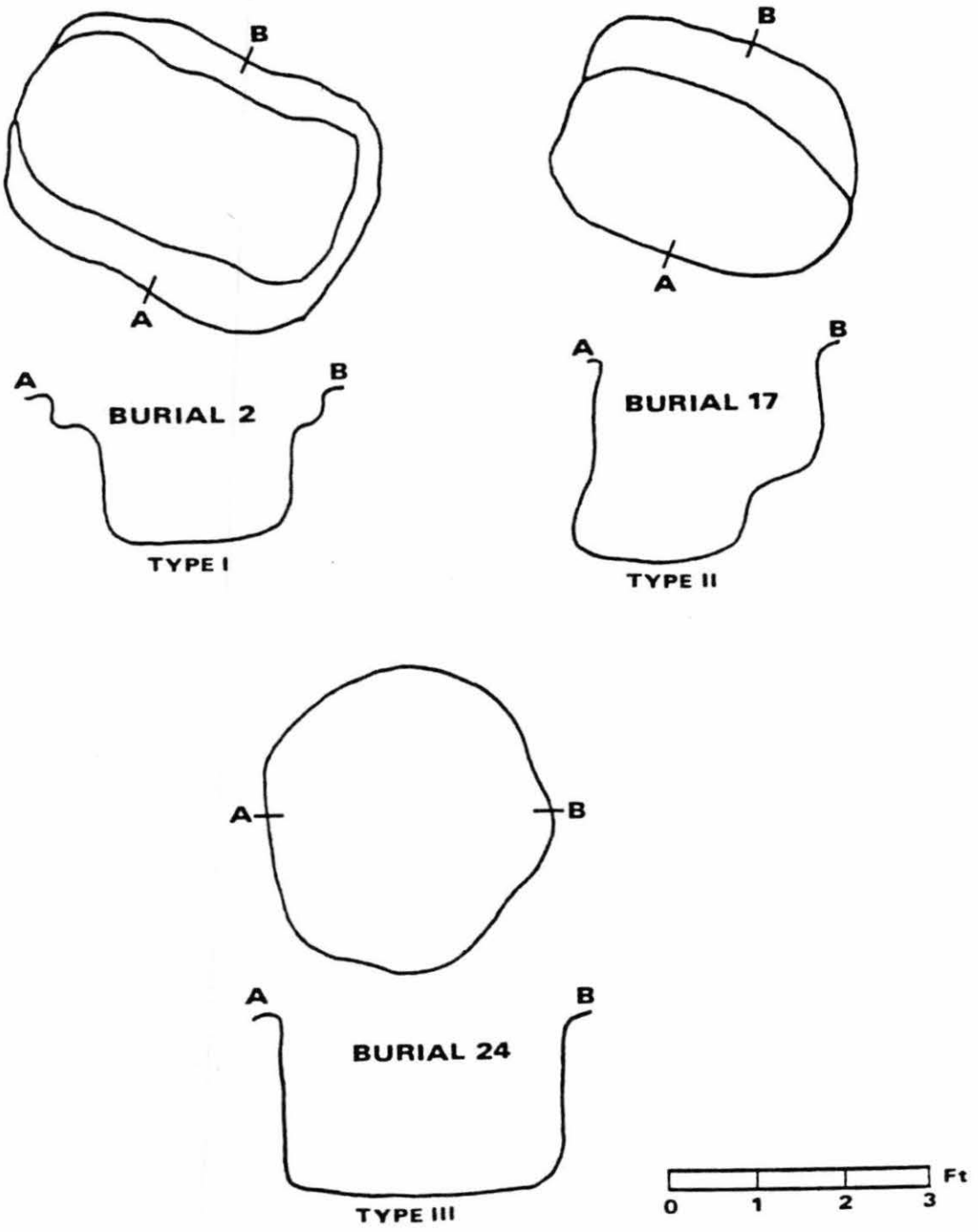


Figure 7. Pit types found at $Sk^{V}1a$. Burial 2 is a central-chamber (Type I); Burial 17 is a shaft-and-chamber (Type II); and Burial 24 is a simple pit (Type III).

presented by age group (adult vs. subadult) and sex (21 adults) in Table 8. Only three burials, classified as to pit type could not be presented according to age of the disposed individuals. All three are central-chamber burials.

TABLE 8

PIT TYPES BY AGE AND SEX

Pit Type	I	II	III	Total
Adults:	No. %	No. %	No. %	No. %
Male	8 (17.8)	0 (0.0)	2 (4.4)	10 (22.2)
Female	6 (13.3)	3 (6.7)	2 (4.4)	11 (24.5)
Ind.	21 (46.7)	0 (0.0)	3 (6.7)	24 (53.3)
Total	35 (77.8)	3 (6.7)	7 (15.7)	45 (100.0)
Subadults:	15 (46.9)	6 (18.8)	11 (34.3)	32 (100.0)

As can be seen in the table, most of the adult burials are of the central-chamber type and only three are shaft-and-chamber burials. The percentages of pit variety according to sex are similar, except that all of the shaft-and-chamber burials are of females. Central-chambers are also the most frequent subadult burial pit type. There are, however, more shaft-and-chamber and simple pits among the subadults than the adults.

Cane Matting

In thirteen burials, cane matting was preserved by the copper salts from brass artifact. (Chapter IV). These burials are of adults and subadults, and all three burial pit types are represented. The above suggests that the use of cane mats was an additional level of mortuary treatment for all the Sara Burials.

Body Position

Body position refers to the "relationship of the segments of the body to each other" (Sprague 1968: 481, after Anderson 1962: 159). In describing flexure, it is assumed that the knees are together. Any variation from the definitions given below should be noted. They are:

1. Extended - no flexure of the legs.
2. Semiflexed - the legs are at an angle of 90 degrees or greater to the trunk.
3. Flexed - the legs are at an angle of 90 degrees or less to the trunk.
4. Tightly flexed - the legs are at an angle to the trunk which approaches zero.

The categories of arm position are:

1. Placed along the sides of the body.
2. Crossed on the pelvis.
3. Folded on the chest.
4. The hands are raised toward the head.

In classifying the above positions, organic stain that outlined the body (e.g. Plate X, Burial 44) and beadwork patterns were helpful where bone preservation was poor.

Flexure could be noted in 37 adults and 14 subadults, and the position of both arms could be described in 23 adults and 5 subadults. The position of one arm also was noted in 6 adults and 2 subadults.

Flexure of the trunk and legs of adults and subadults is presented in Table 9 and arm positions of adults and subadults is presented in Table 10. In only one case does a position given in one of the tables (Table 9) require further description. Burial 1, a female, aged 17 to 21 years, was placed on her back with knees apart (180 degrees) and legs semiflexed. This burial is included in Table 9 as a semiflexed burial.

TABLE 9

FLEXURE OF ADULTS AND SUBADULTS

Position:	Extended		Semi-Flexed		Flexed		Tightly Flexed		Total	
Adults:	No.	%	No.	%	No.	%	No.	%	No.	%
Male	0		4		4		0		8	
Female	0		5		5		1		11	
Ind.	0		7		10		1		18	
Total	0	(0.0)	16	(43.2)	19	(51.4)	2	(5.4)	37	(100.0)
Subadults:	2	(14.3)	5	(35.7)	5	(35.7)	2	(14.3)	14	(100.0)

As can be seen in Table 9, there were no extended adults observed and only two adults were tightly flexed. As previously discussed, however, Burial 27 may have been

extended, as the pit measured 6.75 feet in length. The largest number of adults were either flexed or semiflexed and there is no difference between the males and females.

The subadult sample is small but like the adults, more subadults were flexed or semiflexed. There are, however, two extended subadult burials. Both are infant burials.

The positions of the arms of adults and subadults are presented in Table 10. For adults, the most frequent arm position is raised toward the head, and the least frequent is along the sides of the body. Also among subadults, the arms are most often raised toward the head. The sample size for subadults, however, is much smaller.

TABLE 10

ARM POSITION OF ADULTS AND SUBADULTS

Arm Position	1.		2.		3.		4.		Total	
Adults:	R	L	R	L	R	L	R	L	R	L
Male	1	1	2	3	2	0	3	3	8	7
Female	1	0	1	1	1	6	7	3	10	10
Ind.	0	1	3	0	3	2	2	4	8	7
Total	2	2	6	4	6	8	12	10	26	24
Subadults:	1	1	1	0	2	3	1	5	5	9

1. Along the sides. 2. Crossed on pelvis.
3. Folded on chest. 4. Raised toward head.

Body Deposition

Body deposition refers to the manner in which the body has been placed in the grave. Sprague lists "back", "face," "side" (left or right), and "sitting" or "seated." These "self-explanatory" terms "include all primary inhumations" (Sprague 1968: 482).

In the present study, however, it was found that the difference between back and side deposition required more explanation. The upper portion of a number of skeletons lay flat on the chamber floor while the lower skeleton was in a flexed position. To distinguish between back and side deposition, a burial was considered placed upon the back when the scapulae and ischia were parallel to each other and flat against the chamber floor.

As with body position, organic stain was helpful in determining body depositon of a number of the burials. The body deposition of 37 adults and 15 subadults that could be determined is presented in Table 11. The position of the legs of those individuals placed upon the back can be found in the burial descriptions in Chapter IV.

More than half of the adults were placed upon their left sides. Of those adults placed upon their right sides, all but one are females. The sample of sexed adults is small, however, and three males placed upon their backs have legs flexed on their right sides.

The deposition of the subadults differs from that of the adults in that more than half were placed on their backs.

Most of these subadults were aged as infants or small children. Again, with the small sample of subadults having deposition determined, further study with a larger sample may shed some light on this difference.

TABLE 11

BODY DEPOSITON OF ADULTS AND SUBADULTS

Deposition:	Back		Lt. Side		Rt. Side		Total	
Adults:	No.	%	No.	%	No.	%	No.	%
Male	3		4		1		8	
Female	3		2		6		11	
Ind.	1		15		2		18	
Total	7	(18.3)	21	(56.8)	9	(24.3)	37	(100.0)
Subadults:	8	(53.3)	4	(26.7)	3	(20.0)	15	(100.0)

Orientation

Sprague (1968: 482) notes that "probably no aspect of burial terminology is more confused and yet is more easily explained than orientation." Orientation, in the literature has referred to the direction of the feet, the entire skull, or the face. Different types of orientation also have been given for grave and burial "containers" (Sprague 1968: 482).

Sprague (1968) and Ubelaker (1978) prefer Heizer's (1958) definition of orientation, and this definition, will be used in the present study. Orientation, according to Heizer, "refers to the direction in which the head lies in relation to a line between the skull and the center of the

pelvis" (Heizer 1958: 65 in Sprague 1968: 482).

Orientation, as described above, could be determined for the majority of the adults (39) and the majority of subadults (24) in the Sara Sample. As with body deposition and body position, organic stain and the beadwork patterns aided in a number of determinations.

In extensively disturbed burials, body orientation could not be determined. In 14 disturbed burials, however, the orientations of the major axis of the chamber floor could be determined. The major axis of six was east-west, three were southeast-northwest, and four were northeast-southwest.

Body orientation for 39 adults and 24 subadults is presented in Figure 8 and Table 12. The orientation of the major axis for each burial is presented in the descriptions of disturbed burials in Chapter IV.

In Figure 8, north is 0 degrees and south is 180 degrees. The burials, then can be oriented in eight possible directions, each of which is 45 degrees apart. For those burials where a direction of the body axis could be determined, the direction given in Figure 8 is the closest in degrees to the cardinal direction.

As can be seen in Figure 8 and Table 12, there were no burials oriented toward the north, west, or northwest, and only one subadult each was oriented to the south and southwest. The orientation of these two subadults is puzzling because 97 percent of the sample is oriented within a 90 degree range (northeast [45 degrees] to the southeast

[135 degrees]). And, if only east is considered, the majority of adults and subadults, a total of 68 percent are oriented in that direction.

Because a majority of the individuals are oriented to the east, and 97 percent of the total fall within 90 degrees, northeast to the southeast, it can be suggested that the Sara were burying their dead in the direction of sunrise.

TABLE 12

ORIENTATION OF ADULTS AND SUBADULTS

Orientation:	NE		E		SE		S		SW		Total	
Adults	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Male	2		4		2		0		0		8	
Female	2		7		2		0		0		11	
Ind.	0		14		6		0		0		20	
Total	4	(10.3)	25	(64.1)	10	(25.6)	0	(0.0)	0	(0.0)	39	(100.0)
Sub-Adults	2	(8.3)	18	(75.0)	2	(8.3)	1	(4.2)	1	(4.2)	24	(100.0)

Considering the latitude of Sk^{V}1a (39 deg. 17 min.), sunrise in March and September is at about 90 degrees from north, on June 21 it is about 60 degrees from north, and on December 21 it is about 121 degrees from north. These changing positions of sunrise also are presented in Figure 8.

As can be seen in the figure, the burial orientations are close to the range of the direction of the sun, at

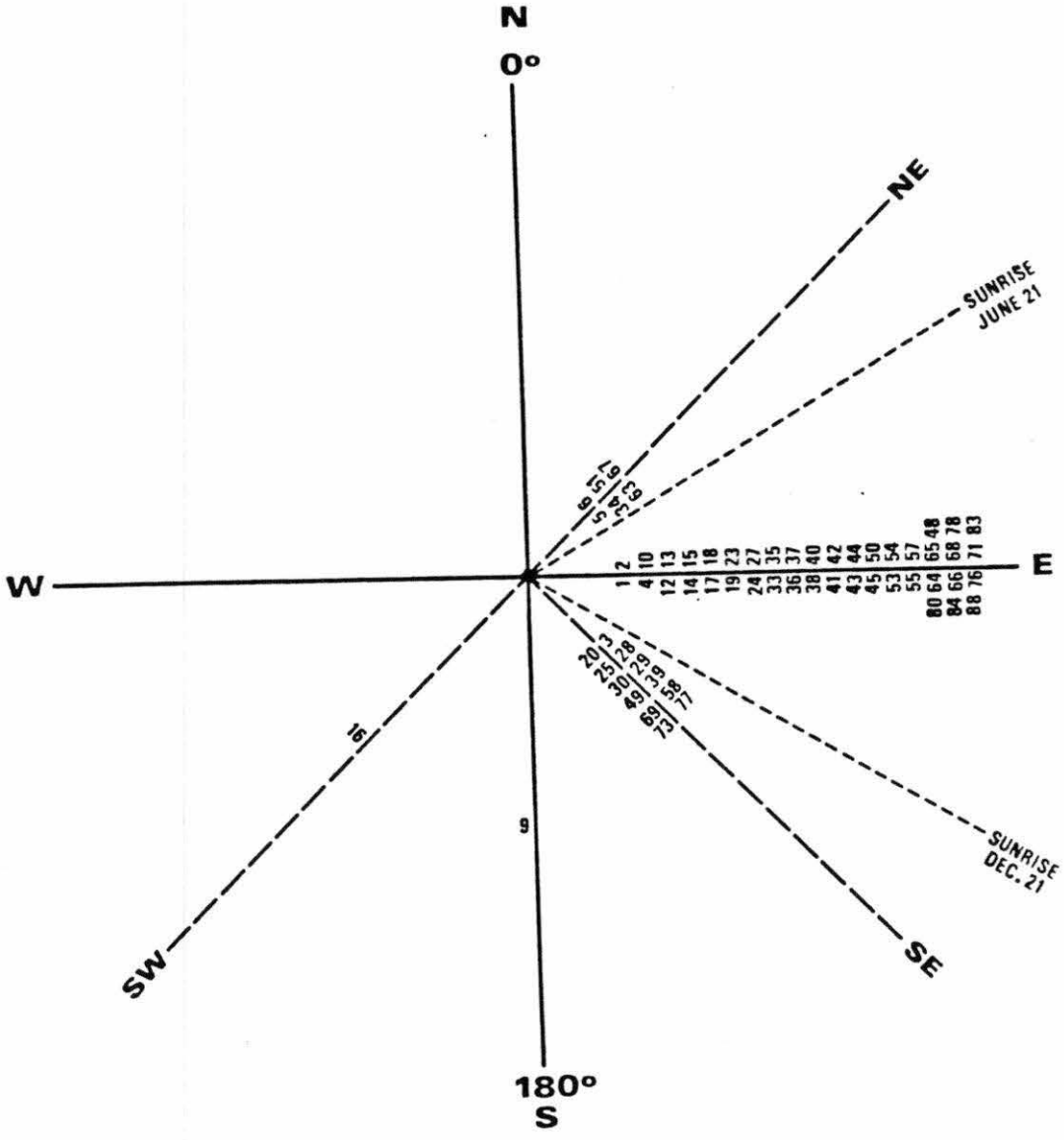


Figure 8. Orientation of the Sara burials.

sunrise, in a yearly cycle. Gruber (1971) in a similar study, found a relationship of burial orientation to sunrise, and he infers seasonality of death.

Because Gruber infers seasonality from burial orientation there is the implication (not explicitly stated) that those individuals burying the dead were aligning the grave and body in an accurate position toward sunrise. The Sara burials may provide a good test for this research problem. Presently, however, it is suggested that the Sara were burying their dead (adults and subadults) in a position toward sunrise but seasonality of the deaths is left to further exploration of the problem.

Burial Accompaniments

In Chapters I and II, the techniques that have evolved over the years to recover information about the types, frequency, and placement of artifacts included in Sara burials were briefly discussed. As stated, the burials have been very carefully excavated. And, because many of the burials contained artifacts such as brass ornaments or strands of beads that were used to adorn the bodies or parts of clothing, portions of some of those burials were pedestaled and removed in the field to enable careful cleaning in the laboratory. In the laboratory, the stages of cleaning and disassembly have been documented by photographs and scaled drawings.

Information from both the field and the laboratory are used in the present study. But with the potential wealth of

data regarding the types of artifacts and patterns of their placement (especially ornamentation), only a general treatment of Sara burial goods is possible.

General descriptions of the frequency and types of burial accompaniments for each burial were presented in Chapter IV. A broad classification scheme is used in this chapter to delineate any patterns in mortuary treatment.

Presence or Absence of Burial Goods

Of the 47 adult burials in the sample, 36 were undisturbed, and one burial (Burial 1) was partly vandalized. In this largely undisturbed sample, seven burials (19 percent) lacked burial accompaniments. A percentage of about 15 percent, however, is thought to be more accurate, because seven of the disturbed adult burials contained large quantities of trade beads in disturbed fill. Also, in one burial the bones were copper stained and brass artifacts were recovered from the fill.

A smaller number of burials (37) were determined to be subadult. Of these burials, 30 were not vandalized, and four of these (13 percent) lacked burial goods. As in the adult sample, there were disturbed burials (three) with large quantities of trade beads, or with copper-stained bone and brass artifacts in the fill (1 burial).

No significant patterns are noted when a comparison of these burials lacking burial accompaniments is made to other aspects of mortuary treatment. Those burials without burial goods are of varied ages, both males and females are

represented, (of those sexed, two are males and three are females), and no correlations with specific pit types, body positions, body depositions, or body orientations were found.

Classes of Artifacts

The Sara burial accompaniments are divided into the broad classes of European ornamental, European utilitarian, aboriginal ornamental and aboriginal utilitarian in Table 13. The numbers and percentages of adult and subadult undisturbed burials in which these classes occur also are presented.

It should be noted, however, that not included in the table are: red ochre, pieces of leather, faunal remains, wooden objects, and basket impressions. These burial accompaniments are not included because compared to the other classes of burial goods, their presence is thought to be influenced by preservation or careful recognition in the field, rather than frequency of use. Tabulation of these burial accompaniments are presented in a following section.

Table 13 shows that, in the total sample, European glass beads and brass ornaments occur most often. Aboriginal shell ornaments are the next most common class of burial goods. If ceramics and lithics are combined, however, aboriginal utilitarian artifacts follow European ornaments in frequency.

There are a few differences between the adult and subadult burials regarding the classes of artifacts. A slightly greater percentage of European ornamental artifacts are found with subadults, whereas the classes of European utilitarian, aboriginal utilitarian, and aboriginal

ornamental occur slightly more often in adult burials.

To delineate any further patterns in burial accompaniments, the combinations in which the artifact classes occur with adults and subadults are presented in Table 14.

TABLE 13

CLASSES OF ARTIFACTS IN ADULT AND SUBADULT BURIALS

European Ornamental	Adults (30)		Subadults (26)		Total (56)	
Glass beads	22	(73.3)	22	(84.6)	44	(78.6)
Brass Ornaments	14	(46.7)	16	(61.5)	30	(53.6)
European Utilitarian						
Iron	4	(13.3)	1	(3.8)	5	(8.9)
Spoons	1	(3.3)	1	(3.8)	2	(3.6)
Unidentified metal	2	(6.7)	1	(3.8)	3	(5.4)
Aboriginal Ornamental						
Shell ornaments	7	(23.3)	4	(15.4)	11	(19.6)
Aboriginal Utilitarian						
Ceramics	7	(23.3)	3	(11.5)	10	(17.9)
Lithics	4	(13.3)	1	(3.8)	5	(8.9)

From an examination of Table 14, it can be seen that with nearly half of the adults and the majority of subadults, only European ornamental artifacts are found. A comparison of these burials with other dimensions of mortuary treatment

TABLE 14

COMBINATIONS OF ARTIFACT CLASSES IN

ADULT AND SUBADULT BURIALS

Classes of Artifacts	Adults (30)	Sub-adults (26)	Total (56)
AO + EO + AU + EU	1	0	1
AO + EO + AU	2	1	3
AO + EO + EU	1	0	1
EO + AU + EU	1	0	1
AO + EO	2	2	4
EO + AU	3	2	5
EO + EU	2	3	5
AO	1	1	2
EO	13	17	30
AU	4	0	4
EU	0	0	0
	30	26	56

reveals no specific pattern. In four of five undisturbed subadult shaft-and-chambered burials, only European ornaments are present. For adults, however, one has European ornamental and European utilitarian artifacts, one has all classes of burial goods except aboriginal utilitarian artifacts, and the other is lacking any kind of burial goods.

Where only aboriginal utilitarian or aboriginal ornamental artifacts occur, there are two burials that differ in additional dimensions of mortuary treatment. Chipped-stone projectile points and a clay pipe were found with Burial 45. This burial is similar in all other dimensions of mortuary treatment to many other burials in the sample, with one exception. Burial 45 is the only multiple burial in the sample.

Only a shell ear pin was found with Burial 16, a subadult burial. This burial differs from many other burials in the sample in that it is a shaft-and-chambered burial, the body is tightly flexed, and the body is oriented to the southwest.

Combinations of artifact classes occur in 20 burials. Only one of these burials differs in a number of dimensions. Burial 1 is of a young female, aged 17 to 21 years. The pit type is a shaft-and-chamber. The body position is unusual, as the legs are semiflexed with the knees apart. And, as will be seen in a following section, this burial contains the largest quantity of burial accompaniments in the sample.

Types of Artifacts

A few general patterns, and a few differences, in the occurence of artifact classes have been noted. The artifact classes are further divided into types in Table 15. The purpose is to see if certain types of burial accompaniments vary according to age or sex.

It can be seen in the table, that glass trade beads and brass ornaments have been found in the majority of Sara burials. The occurence of large glass beads and seed beads does not appear to differ, but there may be a difference between adults and subadults in the types of brass ornaments present. Bells, pendants, and gorgets occur more frequently in subadult burials, whereas brass tubular beads are most often present in adult burials. (Plate VI, Burial 55, shows a brass gorget and brass bells; Plates IV and VI, Burials 64

and 71, show brass pendants).

In only one subadult burial (Burial 55) is there an iron object--a jew's harp. Shell artifacts, lithics, and ceramics also are found infrequently in subadult burials. The types of these artifacts associated with subadults further differ in that only pipes are found in adult burials, no small columella beads are found in subadult burials, and the only lithics found in a subadult burial were two hammerstones. (Plate XII, Burial 1, shows strands of small columella beads or "wampum" located near the left temporal).

With the exception of brass tubular beads and wire, the brass artifacts listed in Table 15 for adults were found in three female burials. In addition, of the four adult burials with iron utilitarian objects, two could be determined as to sex, and both are female. It cannot be determined whether certain brass or iron artifacts were buried predominately with females. That there are females in the sample with these types of artifacts (axe, hoe, knife), however, is thought to be significant. In a study of burial customs, Binford (1971: 22) found artifacts that symbolized male and female division of labor "cross-cut" other "dimensions of the social persona."

Large and small columella beads occur with both males and females. (Plate XIII shows the large columella beads found around the neck of Burial 73, a male aged 40+). Only one of the four burials with lithics could be determined as to sex, one being a male and one a female. In both of

these burials the ceramic artifacts are elbow pipes.

Frequency of Artifacts

To obtain an indication of the relative frequencies of artifacts associated with the Sara burials, and of possible differences according to age or sex, the groupings presented in Table 16 were utilized. In the table, the burial numbers of adults and subadults are presented so that reference can be made to the burial descriptions in Chapter IV.

The first grouping in Table 16 primarily includes burials with large quantities of strands of large or small glass trade beads in the areas of the neck, shoulders, and the chest. Additional bead concentrations at the calves or wrists also occur in a number of burials in this group (Plate XIV, Burial 17).

In the second group, for each burial a large quantity of beads in strands is found, but the quantity is less than in the first grouping. Generally, the bead ornamentation is limited to around the head or neck-and-shoulders. Other burial goods may occur, but in small quantities.

In the majority of burials in the third grouping, smaller quantities of beads (glass or columella) are found. The beads in five of the burials in this group occur in a single strand around the neck, and they border a skirt or cloak in three other burials. One burial appears to have a beaded belt or sash. In another, there are what appear to be beaded wristbands, and in one other, beads occur in the area of the calves. The remaining burials in this group have

small quantities of utilitarian or ornamental artifacts.

A few burials have an assortment of utilitarian and ornamental artifacts included as burial accompaniments. Generally, these artifacts are limited in number.

TABLE 15

TYPES OF ARTIFACTS FOUND IN

ADULT AND SUBADULT BURIALS

European:

Brass	A's	SA's	Iron	A's	SA's	Other Metals	A's	SA's
O - Bells	2	8	u - Axe	1	O	U - Spoons	1	1
O - Beads	11	4	u - Hoe	1	O	? - Unid. Metal	2	2
O - Button	1	O	u - Harp	O	1			
O - Cones	1	1	u - Knife	1	O	Glass Beads	A's	SA's
O - Gorgets	2	4	u - Nail	1	O			
O - Pendants	1	6	u - Scissors	1	O	O - Lrg. Beads	11	12
O - Rings	2	O				O - Seed Beads	18	18
O - Wire	1	O						

Aboriginal:

Shell	A's	SA's	Ceramics	A's	SA's
O - L. Columella Beads	6	3	u - Bowls	2	2
O - S. Columella Beads	3	O	u - Dipper	O	1
O - Columella Ear Pins	1	1	u - Pipes	8	O
Lithics			**Pigment**		
u - Celt	1	O	O - Red Ochre	3	O
u - C.S.P.P.	3	O			
u - Drill	1	O	**Other**		
u - Hammerstone	2	1	Basket Impression	1	O
			Wood Object	1	O

Faunal:

	A's	SA's
O - Porcupine Quills	O	1
O - Turtle Shell	O	1
O - Deer Astralagi	1	O

Plate XII. Burial 1, aged 17 to 21 years. The pedestaled portion is of the skull area. Small columnella beads (lower right) may have been attached to the left ear. Also present are portions of a beaded "cap" (top) and part of a beaded garment in the neck area (bottom).

Plate XIII. Burial 73, aged 40+ years. The pedestaled portion is of the skull and thoracic areas. Large columella beads were found around the neck. Seed beads extended around the neck and onto the chest.

The final group includes those burials in which no artifacts were found.

As can be seen in Table 16, the percentages of subadults with evidence of beaded garments (the first two groups) are slightly higher than for adults. These percentages, however, may in actuality be less divergent if disturbed burials are considered. Although large quantities of trade beads were found in seven disturbed adult burials, this was true of only three disturbed subadult burials.

In eight of the adult burials and in nine of the subadult burials with evidence of beaded garments, utilitarian or additional ornamental artifacts also were found. The quantities of these additional artifacts are generally similar in the two age groups. There is, however, one exception, Burial 1. This burial was previously discussed as being unusual in other mortuary dimensions. It is also the burial with the largest quantity and variety of burial accompaniments in the sample. The burial goods associated with this burial include: iron scissors, a spoon, unidentified iron objects, deer astralagi, a brass gorget, and relatively large quantities of brass heads, brass pendants, brass conical beads, brass tubular beads, seed beads, large glass beads, large columella beads and "wampum" Chapter IV.

In the remaining groupings with smaller quantities of artifacts, the percentages of subadult burials are slightly less. Overall, however, when the quantity of artifacts are

Plate XIV. Burial 17, a female aged 40+. Seed beads were found around the head, down the chest and in the abdominal area. Brass rings extended from the left ear and three were found on the fingers of the left hand. An iron hoe and possibly an iron nail were located to the south of the skull.

considered (Table 6) the adults and subadults in the sample to not differ significantly. This hypothesis was tested using the chi-square technique with one degree of freedom at the .2 level of significance. Each group in Table 16 was included in the test, except the fourth group (Different Types in Low Frequency), due to the small number of observations.

Three males and two females were buried in extensively beaded garments. Again, however, the burial (Burial 1) with the largest quantity of burial accompaniments is of a female, aged 17 to 21 years.

TABLE 16

GROUPINGS OF ADULT AND SUBADULT

BURIALS BY QUANTITIES OF ARTIFACTS

Extensively Beaded Garments	N	%
Adults: 1,3,6,13,17,38,41,42,50,73	10	27.0
Subadults: 23,53,46,47,53,54,55,57,64,69,71	11	36.7
Less Extensively Beaded Garments	**N**	**%**
Adults: 10,19,36,39,58,65	6	16.2
Subadults: 9,35,48,63,76,84	6	20.0
Single Strands of Beads, Wristbands and/or Other Types of Burial Accompaniments in Low Frequency	**N**	**%**
Adults: 2,20,24,27,28,29,37,45,66,77,87	11	29.7
Subadults: 16,33,40,61,78,80,83	7	23.3
Different Types of Burial Accompaniments In Low Frequency	**N**	**%**
Adults: 44,49,51	3	8.1
Subadults: 5,15	2	6.7
No Burial Accompaniments	**N**	**%**
Adults: 4,12,14,18,25,67,79	7	18.9
Subadults: 26,32,88	4	13.3
Total	**N**	**%**
Adults:	37	100.0
Subadults:	30	100.0

CHAPTER VI

SUMMARY AND INTERPRETATIONS OF BURIAL PATTERNS

Summary of Burial Patterns

The 87 burials in $Sk^{V}1a$ sample were found within a single segment of the Sara village. In this area, they are located within, on the periphery of, intruded by, and intrusive into house patterns. There is, with the only exception of neonates, no obvious segregation by age group or sex. From a study of the mortality data, it was determined that neonates were not represented in expected numbers. But the remaining age groups and adults of both sexes were represented in expected proportions. The neonates may have been buried elsewhere or disposed of in different manner. No additional patterns emerge when the locations of the burials are compared to other dimensions of mortuary treatment.

Three types of grave pits were found in both the adult and subadult samples. Although the graves differ in construction, in all three varieties there is evidence of log-covered chambers. The most frequent type is a central-chamber, with the pits for 78 percent of the adults and 47 percent of the subadults constructed in this manner. Shaft-and-chambers are the least frequent type of grave. The subadult sample, however, shows a slightly higher percentage

of this burial pit type, as well as the simple pit. There are males and females buried in central-chambers and simple pits. But all three of the adult shaft-and-chambers (Burials 1, 17, and 79) are of females.

Most of the adults and most of the subadults were found in flexed or semiflexed positions. Only two adults (Burials 10 and 79) were tightly flexed, and the only extended burials (Burials 23 and 64) were infants. One adult (Burial 27) however, may have been extended, as the burial pit was very large relative to the rest of the sample. No pattern according to sex was noted. A single tightly flexed adult (Burial 79), however, could be identified as a female. And, another female (Burial 1) also shows an unusual position. This individual was placed upon the back with the legs semiflexed but the knees apart.

The most common position of the arms among adults and subadults was raised toward the head and the least frequent position was along the sides of the body. Males and females differed as to the frequency of different arm positions. With the small sample having information on both sex and arm position, however, no statement about such differences was possible.

Body deposition varied more than body position. Whereas, most adults appear to have been placed on their left sides, subadult deposition is most often upon the back. In only about half of the latter sample, however, could body deposition be observed. Males and females differ in body

deposition only in that six females as opposed to one male, were placed upon their right sides. The legs, however, of the males placed upon their backs were semiflexed and on their right sides.

The Sara burials differ in the dimensions of pit type, body position, arm position and body deposition. But only two subadult burials (Burials 9 and 16), or three percent of the total sample, showed body orientations outside a 90 degree range from the northeast (45 degrees) to the southeast (135 degrees). Also, if only east is considered the majority or (68 percent) of all the burials are oriented in this direction. It can be proposed that the Sara were aligning the bodies of their dead in the direction of sunrise. There is also the possibility that the seasons in which some of the individuals were buried are represented in specific alignments. This interpretation assumes that those disposing of the dead were accurately aligning the bodies toward sunrise.

In about 15 percent of the adult burials, there was no evidence for burial accompaniments. And, the percentage of subadult burials lacking burial goods is thought to be slightly lower than 13 percent. All age groups are represented in this sample (from infants to older adults), and of those burials that could be sexed, two are males (Burials 4 and 67) and three are females (Burials 14, 18, and 79).

The broad classes of artifacts that are found associated most frequently in the total sample of burials are European

glass beads and brass ornaments. Aboriginal utilitarian objects are next in frequency, followed by aboriginal ornaments and European utilitarian objects. There are differences in the occurence of the classes of artifacts between adults and subadults. The subadults show a slightly greater percentage of European ornamental artifacts, whereas among the adults there are more aboriginal utilitarian, aboriginal ornamental, and European utilitarian artifacts. When combinations of the above classes in the sample are examined, most often only European ornamental trade items (glass beads and brass ornaments) are present. This is ture for nearly half of the adults and for the majority of subadults.

The classes of artifacts were further subdivided into types in an effort to see if there were any differences between the adults and subadults, and between males and females. From this comparison, subadults appear to differ from adults in the types of brass ornaments found. They also differ in the frequency of iron utilitarian objects, lithics, and shell artifacts. There is also a difference in the occurence of ceramics. Bowls were found in both adult and subadult burials, but pipes are found only in eight adult burials.

Brass tubular beads were found in both male and female burials and brass wire occured in one male burial (Burial 3). All other types of brass ornaments listed in Table 15, however, occured in just three female burials (Burials 1, 17,

and 51).

Iron utilitarian artifacts also occured in four burials of which two were determined to be female (Burials 1 and 17). Of the burials with pipes, two could be sexed, one male (Burial 73) and one female (Burial 87). One burial with lithics could be determined as male (Burial 2). And, shell beads were found with three females (Burials 1, 51 and 77) and two males (Burials 2 and 73).

To obtain an indication of the frequency of artifacts, the burials were grouped according to the extent of ornamentation. In the groupings of these individuals with evidence of beaded garments, the subadults show slightly higher percentages. However, when a chi-square test was used, the differences between the numbers of adults and subadults in three of the groups were not significant. Also, one burial, Burial 1, stands out in the frequency of glass beads and additional artifacts. Relative to the rest of the sample, a tremendous quantity of artifacts were found in this burial.

There does not appear to be a difference in the quantity of burial accompaniments between the sexes. Again, however, the burial with the largest quantity of burial accompaniments is of a female.

Interpretations of Burial Patterns

In recent years, variability in mortuary practices has been interpreted by a number of archeologists to reflect the organizational properties of particular sociocultural groups (e.g., Binford 1971; Brown 1971; Buikstra 1976; Larson 1971;

Rothschild 1979; Saxe 1971).

Binford's (1971) propositions that are related to "mortuary ritual structure" are tested in the present study. First, Binford (1971: 18) proposes that "there should be a high degree of isomorphism between (a) the complexity of the status structure in a socio-cultural system and (b) the complexity of mortuary ceremonialism as regards differential treatment of persons occupying different status positions." Second, he predicts that:

> Age and sex should serve more commonly as bases for mortuary distinction among hunters and gatherers; while among agriculturalists, social position as varying independently of age and sex as well as sub-group affiliation, should more commonly serve as the bases of differential mortuary treatment (Binford 1971: 20).

In the Sara analysis, there were a few differences between the mortuary treatment of adults and subadults. The frequencies of burial pit types and manner of body deposition differed. Also, some types of artifacts were found more often with one or the other age group (e.g., pipes were found only with adults).

With the small samples of sexed adults it was difficult to note any patterns. Three female burials (Burials 1, 17, and 79), however, stood out as different from the remainder of the sample. The three were the only shaft-and-chamber burials in the adult sample. Burials 1 and 17 further differed in the quantity and types of artifacts associated with them. And, the body positions of Burial 1 and Burial 79 differed from the remainder of the sample.

The differences in mortuary treatment of Burials 1 and 17 may have reflected the social positions of these two individuals. (No artifacts were found with Burial 79). It is difficult, however, to explain the patterns observed in the sample as reflective of either an equalitarian (hunting and gathering) or hierarchial (agricultural) sociocultural system.

With the exception of neonates no spatial segregation was found in the cemetery area according to age or sex. Body orientation for 97 percent of the sample fell within a range from the northeast to the southeast. Most of the individuals (78 percent of the adults and 47 percent of the subadults) were buried in central-chambered pits. Body position was semiflexed or flexed for 94 percent of the adults and 72 percent of the subadults. European ornamental artifacts were found in the majority of burials. There were similar numbers of adults and subadults in groups defined by the quantity of artifacts. And, almost half of the adults and half of the subadults were buried in beaded garments.

The large number of Sara adults and subadults accorded similar mortuary treatment does not correspond with Binford's model of simple versus complex sociocultural systems. Following Binford's first proposition, the similarities in mortuary treatment of adults and subadults would reflect a structural simplicity. This would not, however, correspond with Binford's second propositon. If age and sex define mortuary treatment, as in simple sociocultural systems,

subadults (of low rank) would not be accorded the same mortuary treatment as adults.

Further, when a comparison is made between the Sara archeological data and the ethnohistoric record, support of Binford's model is not forthcoming. In History of North Carolina, an account of John Lawson's travels among a number of Siouan speaking tribes of the Carolinas in 1701, there are numerous references to "Kings," "Queens," "War-Captains" and "Doctors."

In a chapter entitled "An Account of the Indians of North Carolina" Lawson states that:

> The King is the ruler of the Nation, and he has others under him, to assist him, as his War-Captains, and Counsellors, who are picked out and chosen from among the ancientist Men of the Nation he is King of (Lawson 1937: 206).

Although Kings appear to have had considerable power and prestige, the status also appears to be achieved with age and with becoming a warrior.

> How stout a man he approved himself, how many Enemies and Captives he had killed and taken; how strong, tall and nimble he was; that he was a great hunger; a lover of his country, and possessed of a great many beautiful Wives and Children, esteemed the greatest of Blessings among these Savages... (Lawson 1937: 190-191).

A person of this stature was sure to go to a "Heaven" of comfort and good things, whereas a poor hunter was destined to an afterlife of discomfort and troubles (Lawson 1937: 191).

Although "Queens" are mentioned, in summarizing the status of women from Lawson's account, Lewis (1951) states

that "women are subservient to their husbands and fathers, never scolding, suffering themselves to be loaned or leased for sexual purposes" (Lewis 1951: 82). And in describing funeral ceremonies, Lawson states that:

> ...the women are never accompanied with these ceremonies after Death, and to what World they allot that Sex, I never understood, unless to wait on their dead Husbands...(Lawson 1937: 193).

From ethnographic and ethnohistorical data, Lewis (1951) concludes that the Siouan speaking tribes were "cooperative cultures" with status for the most part, achieved rather than ascribed. Lawson states that:

> Several of the Indians are possessed of a great many Slaves, Wampums, Ammunition, and what other things are esteemed Riches amongst them; yet such as Indian is no more Esteemed amongst them, than any other ordinary Fellow...(Lawson 1937: 209).

The ethnohistoric data do not appear to correspond well with Binford's simple dichotomy of complex hierarchical versus simple egalitarian sociocultural systems.

The mortuary treatment of a few individuals in the Sara sample (especially Burial 1) may have reflected social positions that were independent of "age," "sex," or "sub-group affiliation." There is ethnohistoric data to support this interpretation. Lawson makes numerous references to "Kings" and "Queens." The large number of individuals (adults and subadults) accorded similar mortuary treatment, however, is puzzling in a society where status was achieved. It may be that the cultural determinant that accounted for the orientation of 97 percent of the sample to the east was stronger than status distinctions.

Further use of a larger sample, of comparative data from precontact Siouan sites and other Siouan sits that date to the same period as $Sk^{V}1a$, and of comparative data from sites in the Southern Appalachians that show some similar burial traits is suggested for further research. It is hoped that this introduction to the mortuary practices of the Sara Indian will provide a beginning for this future comparative research.

APPENDIX A

SEXING BY DISCRIMINANT FUNCTIONS OF THE MANDIBLE*

Measurement	Coefficients		
	Set 1(w)	Set 2(N)	Set 3(W+N)
1. Symphysis height	1.390	1.065	1.000
2. Ramus height	2.304	2.105	2.075
3. Bigonial Diameter	1.000	1.000	1.003
Male 0.05 level	306.93	279.03	276.53
Male mean	302.25	278.36	274.48
Sectioning point	287.43	265.74	261.83
Female mean	272.60	253.13	249.19
Female 0.05 level	256.99	240.19	236.60

*Giles (1964: 132).

Sara

Male mean	303.55	287.44	275.81
Female mean	266.83	245.53	242.16

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