THE HARRINGTON SITE (1Mt 231): A WINDOW INTO

THE PAST IN CENTRAL ALABAMA

By

Sharon Kestle Cobb

A thesis submitted to the faculty of

Auburn University at Montgomery

in partial fulfillment of the requirements

for the degree of

Master of Liberal Arts

Montgomery, Alabama

22 May 1998

APPROVED

Craig Sheldon
Thesis Director

Michael P. Fitzsimmons
Michael Fitzsimmons
Second Reader

Keith Jacobi
Keith Jacobi,
Outside Reader

Roger Ritvo
Roger Ritvo
Director of Graduate Studies

ACKNOWLEDGMENTS

In the completion of this work, I owe thanks and gratitude to Craig Sheldon, Associate Professor of Anthropology, Auburn University at Montgomery, as Thesis Director; to Keith Jacobi, Human Osteology Collections Manager, University Museum, University of Alabama, for his helpful comments, suggestions, and candor, and for greatly improving the manuscript; to Mary Lucas Powell, Curator of the William S. Webb Museum, University of Kentucky, Lexington, for her support, guidance, and access to her many references; to James Lauridson, M. D., Chief Medical Examiner, Alabama Department of Forensic Sciences, for his patience and generosity; to Jay Bell, East Columbia Medical Center, for producing and donating quality radiographs; to John Lucedo, friend and scholar, for photographs; to Susan Willis, Director of MLA Graduate Studies, for her never ending confidence and for proof-reading the manuscript; to Jason Mann for his advice and friendship; and lastly to the late Robert L. Blakely, my mentor, who always had faith in me and helped me realize what a great love I have for the discipline of anthropology. In his memory, I dedicate this thesis. Any misinterpretation or mistakes are solely my own. Finally, I would like to thank my family, Garrett and Wesley, who have been with me through the whole process, and a special thanks to my husband Bryan, whose patience has endured over the last three years.

TABLE OF CONTENTS

LIST OF PLATES

LIST OF TABLES

LIST OF FIGURES

CHAPTER I – INTRODUCTION

> Man is passionately interested in his past, in the motive and driving force behind historical changes. It may be that he is interested in the drama of the story to a certain extent, but above all, a knowledge of his past helps him to understand his present and forecast his future (Acsádi and Nemeskéri 1970:7).

Why study human skeletal remains? With artifacts, such remains can yield valuable information about a group of past peoples. The cultural remains reveal how a population lived on a daily basis. The skeletal remains can offer a different approach to the biology of a population, such as demography (sex and age), subsistence and health, stature and robusticity, and community status.

Biometry, or the measurement of skeletal remains, can describe general physical features such as height and robusticity. Over the last century, many investigators such as Alés Hrdlička (the "Father of Physical Anthropology") used anthropometry as the basis for defining racial types and differences between populations. Variation in physical features provides information about nutrition, heritage, and sexual dimorphism. Morphological diversification is a key element for understanding adaptations to the environment (Webb and DeJarnette 1942:408, 419, 461).

Questions concerning daily activities of the human body can be addressed by investigating joint pathologies and long bone diaphyseal morphology. For example, the research of Patricia Bridges' (1991), analyzes the differences in diaphyseal morphology confirms the importance of comparative studies between hunter/gatherer and agricultural populations.

Biological stress can be inferred from examining the dentition and macroscopic bone lesions for disease recognition (Hillson 1996:294; Kelley and Larsen 1990:1, 241, 279; Mann and Murphy 1990:7-9; Roberts and Manchester 1995:9-14). From all that can be inferred from skeletal remains, "[their] scientific analysis . . . can help document the structure of the group, reflect subsistence activities, illustrate cultural change processes through demography and pathology, and record the interaction of cultural and biological factors of human development" (Rathbun 1986:1).

In recent decades, the biological approach to human skeletal remains has been paralleled by an increase in sophistication of analytical tools along with a more acute awareness of the integrated systems of culture, biology, and ecology. This biocultural approach helps contribute to a better understanding of prehistoric human behavior. Through this biocultural approach we can extrapolate information about subsistence and settlement patterns, community health, disease recognition, and biomechanical activity patterns. Our goal as physical anthropologists is to exceed mere identification of conditions. It is imperative that we strive to diagnose pathological processes, measure nutritional stress, and determine their clinical and epidemiological significance (Blakely 1977:2, 45).

The focal archaeological site of this analysis, the Harrington site (1Mt231), is located in south Montgomery County, Alabama (Figure 1). Archaeological salvage investigations in 1977 uncovered 38 features including nine human burials. The

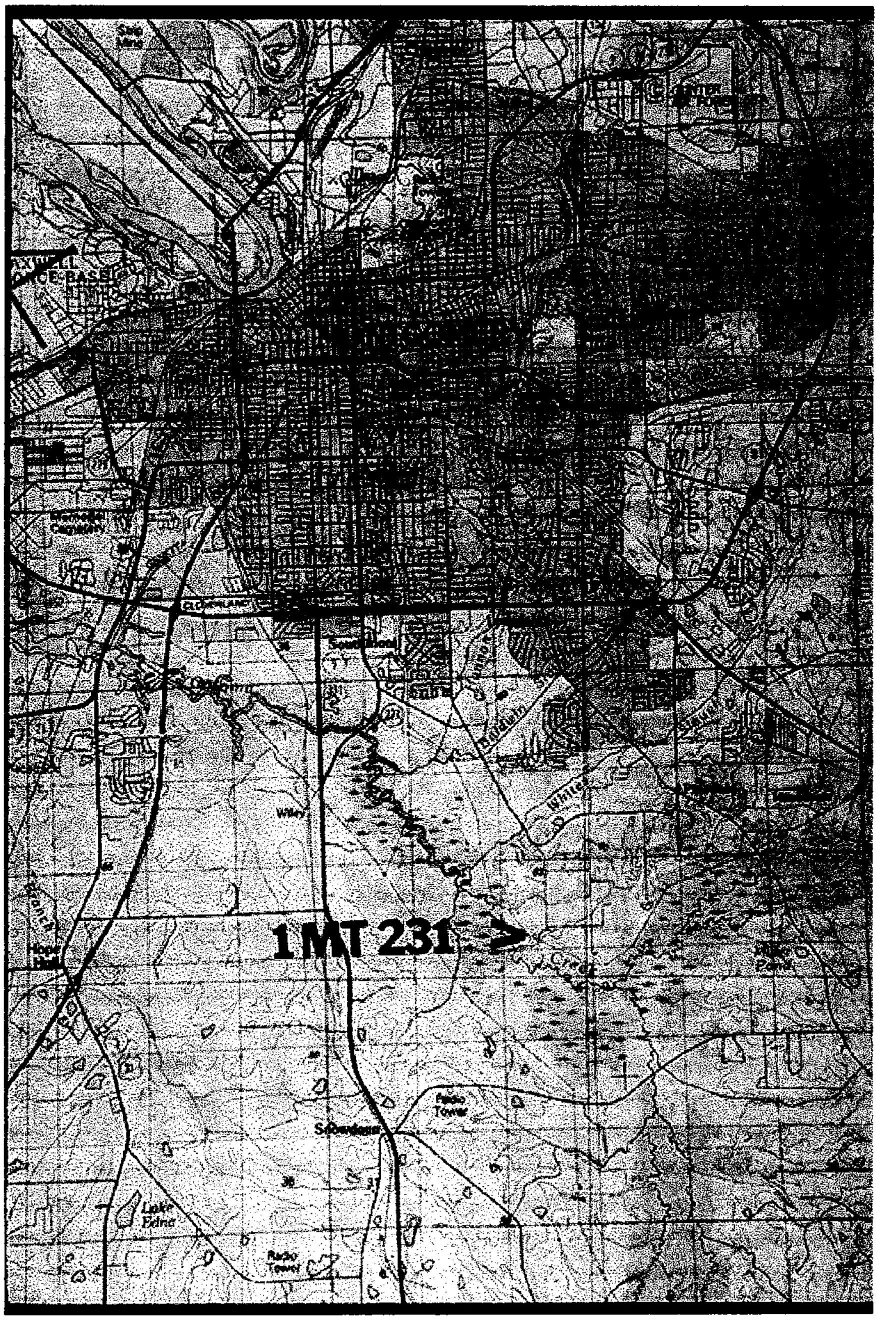


Figure 1.   Harrington Site Location Map

Harrington site was occupied during the Early to Middle Woodland period of 200-600 A. D. (Table 1). The beginning of the Woodland stage was " . . . marked by major changes in adaptive strategy, social organization, and ceremonial life" (Walthall 1980:104). The Middle Woodland subphase of central Alabama was characterized by stable village sites or communities near water, mortuary areas, sometimes in the form of mounds, and seasonal cycles of movement related to plant and animal resource procurement. Woodland subsistence represents a continuation of the Archaic hunting and foraging techniques with the exception of utilitarian pottery vessels (Walthall 1980:108). Agriculture was nonexistent except for perhaps minor horticulture in some areas. Village life consisted of autonomous groups (segmentary tribes) and community self-sufficiency (Walthall 1980:109). Buikstra (1977: 75, 79) suggests stable local gene pools for the Middle Woodland period and frequent recovery from episodic stress.

Middle Woodland populations consumed a wide variety of foodstuffs providing a mostly nutritious diet during much of the year (Buikstra 1977:69; Whatley and Asch 1974). With low population densities and a nomadic existence, these populations probably did not suffer much disease or stress. According to Buikstra and Cook (1981:118), there is a low expectation of epidemic diseases given the "current interpretation of Middle Woodland subsistence strategy, population density, and supra local interaction." However, parasitic organisms and bacterial infection were always a factor, as was the scarcity of resources in the late winter and early spring (Kerley and Bass 1978). Cockburn (1967) points out that hunting and gathering societies, because of their low population densities and mobile nature, escaped the serious bouts with infectious diseases that were so common to settled agricultural villages (Lallo 1973:170). Nutritional aspects of prehistoric societies are always a consideration when dealing with biocultural accounts of human adaptation. Viability is of prime consideration for the interpretation of how an organism survives and what this survival means in relation to demographic patterns of a population. According to Gilbert and Mielke (1985:158), nutritional considerations are key to understanding biocultural aspects of subsistence procurement:

> In order for a human organism to remain viable, in order for it to grow, fend off disease, heal itself, and survive, a minimum level of proper nutrition is necessary. If the minimum required intake of each essential nutrient is not met, the individual will suffer [from] malnutrition and consequently a decrease in fitness (increased morbidity, decreased fertility, etc.) . . . . The assumption that hunter/gatherers will satisfy their basic nutritional requirements is supported by empirical evidence that shows that hunter/gatherers subsisting on a traditional diet rarely suffer from any form of malnutrition or from nutritionally related diseases.

The purpose of this study is to analyze the human skeletal material from the Harrington site in order to determine the extent to which the material differs from or resembles that already analyzed from other Woodland sites in the southeast United States. To date, very little physical information is available from the Woodland period in central Alabama. Buikstra and Cook (1981:118) propose that Woodland populations should have a primarily low incidence of infectious diseases, given their low aggregates of population. They describe middle Woodland culture as "a spaced series of hunting, gathering and cultivating communities, which had base camps within the major river valleys, but whose seasonal rounds doubtless included adjacent uplands and other valley regions." In hunting and gathering societies, one might also expect to find a lack of evidence for malnutrition due to a variable diet, with an increase of mechanical bone strength seen in a moderate to high robusticity index. Due to more demands on the axial skeleton, an increased incidence of degenerative pathologies might also be present. Given these general parameters for Woodland populations, it is the thesis of this work that the nine individuals from the Harrington site should not differ appreciably from other Woodland populations of the Southeast.

The research methodology involves basic skeletal inventory procedures that are used by physical anthropologists. The integration of data into a standardized format follows the *Standards for Data Collection from Human Skeletal Remains* (Buikstra and Ubelaker 1994). This is the most recent comprehensive manual for human osteological study. The procedures include, but are not limited to, inventory, sexing and aging, anthropometry, dental analysis, nonmetric traits, and paleopathology. The manual includes twenty-nine useful data recording forms. This publication brought together the major tools for comparative research with guidelines for minimal inter- and intra-observer error. The impetus for such a publication grew out of the Native American Graves Repatriation Act of 1990 which regulates Native American human skeletal remains, which might be ancestral to living American Indians. "The provisions of the law that garner the most attention involve the repatriation of types of objects to American Indian tribes. These include human remains, associated and unassociated funerary objects, sacred objects and objects of cultural patrimony" (McCoy 1996:83). It is hoped, with the use of these standardized procedures, that a maximum amount of information can be obtained from all the Harrington skeletons if and when repatriation occurs.

Chapter II summarizes the archaeological context of the Harrington site. Lithic evidence at Harrington indicates a Late Archaic component preceding the Early Woodland time span in question. The archaeological evidence confirms a near-village size middle Woodland settlement with occupancy from about A. D. 175 to 550 (Chase 1977:8):

> Detection for this component was based upon the recovery of many largely plain [pottery] sherds reflecting a manufacturing technique utilizing generous amounts of mica in addition to either sand or crushed quartzite granules as a tempering medium. Ceramics of this type have been previously indicated in the local (Central Alabama) sequence as belonging to the *Calloway Phase.*

Disease and mortality profiles were compared to other sites from central Alabama of a somewhat later time period (Late Woodland and Early Mississippian). These comparisons might provide significant insight into temporal and spatial differences between populations. Comparative research between populations can serve to distinguish subsistence technology and ecological adaptations. These interpretations will be pertinent when other Woodland skeletal assemblages are analyzed or found.

Chapter III defines the material and methods used for research. These include skeletal inventory, age and sex, and anthropometric measurements. It provides details of skeletal and dental data and morphological observations. Specific topics are discussed as they relate to the skeletal collection. These include dental enamel hypoplasias and alveolar changes in the dentition relative to health and disease in human skeletal populations; epigenetic traits for comparison among individuals in the populations; and paleopathology, which is useful for the assessment of general health in a population. Pathologies that would indicate the general health of the Harrington population include osteoarthritis and degenerative joint disease, inflammatory bone lesions, osteroporosis, and Schmorl's nodes of the vertebrae.

The data provides evidence that this hunting and gathering population is similar, at least in subsistence strategy, to many of the populations found in the Southeastern and Midwestern United States. From the collected data, inferences about infectious disease rates, nutritional stress, degenerative pathology, and trauma can be extrapolated. These data can explain how this population was adapting to their environment and how these results compare to contemporaneous populations living in the same region.

To date, large skeletal series from central Alabama are sparse, especially those from Woodland times. Many of the smaller skeletal samples have yet to be sufficiently analyzed. According to Chase (1977:26), the Calloway hunters were a populous group in central Alabama, evidenced by small campsites found in the region. The changes in adaptations to the natural and social environment are evident during Middle Woodland times in southeastern prehistory. There seemed to be a shift from large riverine environments to tributary micro-habitats. Realizing regional and developmental diversity and the complexity of cultural and social development in prehistory, the Harrington population should be relatively similar, in physical characteristics, to other Woodland populations practicing parallel subsistence technology and settlement patterns. With the integration of research goals, along with active collaboration between

CHAPTER II - ARCHAEOLOGICAL BACKGROUND

CULTURAL STAGES

The nearly 10,000 years of prehistoric occupation in the Southeast are divided into five cultural stages: Paleo-Indian, Archaic, Woodland, Mississippian, and Historic (Table 2). These stages are characterized by distinctive artifact types, features, and interpretations of past life ways (Walthall 1980).

TABLE 1 *STAGES IN SOUTHEASTERN ARCHAEOLOGY

Paleoindian	10,000 B.C. - 8,000 B.C.
Archaic	8,000 B.C. - 2,500 B.C.
Gulf Formational	2,500 B.C. - 1,000 B.C.
Woodland	1,000 B.C. - 1,000 A.D.
Mississippian	1,000 A.D. - 1,550 A.D.
Historic	1,550 A.D. - 1,836 A.D.

*From Walthall 1980

The Paleo-Indian period of circa 10,000 to 8,000 B.C. encompasses the terminal Pleistocene geological period. Archaeological evidence from this period is restricted to fluted and nonfluted projectile points (*Cumberland, Beaver Lake,* and *Quad* types), unifacial tools, and lithic tool debris (Walthall 1980:23, 26). There are indications of small nomadic bands of hunters and gatherers exploiting natural plant and animal resources at multiple activity locations (Walthall 1980; Whatley and Asch 1975;

Willey and Phillips 1958).

In the Archaic stage (8,000 to 2,500 B. C.), the modern regime of climate and plant and animal species appeared. There were an increased number of sites with artifacts showing a continuation of the hunting and gathering economy. There were larger populations, an increase in sedentism, expanded tool inventories, and regional trade networks of certain lithic and other raw materials (Walthall 1980; Willey and Phillips 1958). The long cultural tradition of the Archaic, has traditionally been divided into three sequential periods:

> The first of these temporal segments, the early Archaic period, is characterized by notched and stemmed projectile points, uniface flake tools, and, in northern Alabama, by a more intensive utilization of rock shelters as habitation sites. This initial Archaic period dates from approximately 8000 to 6000 B. C. The following period, the middle Archaic dating from 6,000 to 4,000 B. C., is characterized by the appearance of ground and polished stone implements; a wide variety of bone tools; flexed burials, often accompanied by mortuary goods; and the first major occupation of riverine shell middens. In late Archaic times, there were many innovations, including the development of limited spectrum economies based upon a few high-yield natural foods, and the earliest cultivation of native annuals. This final period in the Archaic sequences dates from 4,000 B. C. to the diffusion of Gulf Formational pottery into the Alabama region. Ceramics of this sort were introduced around 1,000 B. C., thus establishing a terminal date for the Archaic stage in this area (Walthall 1980:39-40).

During the following Gulf Formational or Early Woodland period, there was little significant change in subsistence technology and settlement pattern, but pottery, first tempered with fiber and later with sand, appeared in increasing amounts (Chase 1979; Jenkins n.d.). According to Walthall (1980):

> The genesis of the Gulf Formational culture apparently is not the result of major population movement or replacement. Rather, they appear to have diffused into Alabama through trade and culture contact with ethnic groups in surrounding regions. The succeeding Woodland stage was primarily northern in origin. Major characteristics include cord- or fabric-impressed pottery, burial mounds and cultivation of certain native plants. . . . (Walthall 1980:1).

The Woodland stage was "marked by major changes in adaptive strategy, technology, social organization and ceremonial life" (Walthall 1980:104). It is defined by the development of pottery, burial mounds, and agriculture. The bow and arrow is introduced into the Southeast at this time (Walthall 1980). According to Willey (1966:267) the Eastern Woodlands tradition is the most unique since there is a definite disruption of the previous Archaic lifestyle and a transformation of pottery styles not unlike those from Mesoamerica.

By the middle Woodland period, populations continued to grow and disperse. Trading was evident and grave goods include such materials as copper, galena, mica, hematite, tar, red ochre, and asphalt. Pottery was extensively produced with many regional variations (Walthall 1980:104). Walthall (1980:109-110) states:

> The most common form of sociopolitical systems during [the Woodland stage] was the tribe, although in rare instances certain groups, such as Ohio Hopewell, may have attained more complex levels of organization. Probably the most widespread type of tribal society in the forested East during Woodland times was the segmentary tribe. . . . The segmentary tribe was divided into small, local communities that rarely included more than a hundred members and most commonly claimed no more than a few square miles of territory. These communities were generally organized through a single descent group or lineage or, at times, by an association of several lineages. Each communal group was politically equal.

The temporal focus of this thesis is the Middle Woodland subperiod at the Harrington archaeological site (1Mt231) near Montgomery, Alabama. Chase (1977) assigned the major occupation at this site to the *Calloway Phase* culture of approximately 200-600 A. D. The "Calloway" Phase is named after a nearby creek in Elmore County, Alabama. Archaeological units, such as the *Calloway Phase*, are defined by the presence of specific types of pottery, lithic tools, and other archaeological data (Willey and Phillips 1958:22). Calloway pottery is largely distinguished by mica-tempering with plain surfaces and notched rims. (See Table 3 for summation of pottery types and lithic remains from the burial fill for Harrington). Chase (1977:6-7) contends that:

> While defining the Woodland of Central Alabama, a taxonomic picture emerged implying development parallels between that seen in Georgia and to some degree, the Northwest Gulf Coast. The transitional shift from Late Archaic into a ceramic technology was evidenced initially in what was to be called the *Ivy Knoll Phase* with identifying artifacts being fiber-tempered plain vessels, steatite bowls and later, some fabric impressed ware all with a continuum of Late Archaic lithic types in association. This appeared to be followed by a Deptford-like ceramic complex with stamped elongated vessels with podal supports together with a shift in lithic material to smaller projectile types of the *Greenville* variety, cut sheet mica and drilled diskform sherds, all characterizing the *Cobb's Swamp Phase*. This was followed by the emergence of a tricultural lineage beginning with the *Calloway Phase* whose complex of plain, generally mica-tempered Vessels and small stemmed projectile points were found in direct association with minority counts of Weeden Island I ceramics in several Central Alabama Sites.

The inhabitants of the Harrington site may have migrated south by way of the Coosa River as indicated by other sites along the Coosa with common mica-tempered pottery (Chase 1977; Jenkins 1998, personal communication). "Mica-tempering has been documented in Middle Woodland pottery pastes from Western North Carolina, East

Table 2: 1MT231, Cultural Materials in Grave Pits

Artifacts	Burial 1	Burial 2	Burial 3	Burial 4	Burial 5	Burial 6	Burial 7	Burial 8	Burial 9	Total
Ceramic										
Fiber Plain					1	1		1		3
Mica Plain	11	34	99	27	171	3	7	20	13	385
Mica Plain, notched lip			1							1
Sand Plain	55	24	77	14	74		5	7	11	267
Daub	2		8	1	12	4	4	11	1	40
Lithics									2	
Swan Lake proj. point		2		1						3
Camp Creek proj. point										
Greenville proj. point		1								1
Cobble Hammerstone										
Unmodified Cobbles					1				1	2
Fractured Cobbles	3	11	15	9	23				6	73
White Quartzite Debris	3	27	56	16	177	4	8	3	3	297
Knox Chert Debris	1		7		13					21
Ocalla Chert Debris	1	3	1	4	26					35
Other debris	1	3	4	4	34					46
Faunal Remains										
Deer		5	2		7				8	22
Turtle		14	9		3					26
Beaver		2								2
Striped skunk		1								1
Bone antler baton				1						1
Unidentifed Animals	5	124	98	29	43	7	1	9	99	415
Univalve molusks	16	89	16	1	39					181
Bivalve molusks	17	13			9	8				47

Tennessee, North Alabama, and Central Alabama. The use of mica in Middle Woodland pottery pastes may also reflect aspects of ceremonial activities" (Little et al. 1996:150). Archaeological evidence indicates Calloway cultures evolved into the *Dead River Phase* and later into the *Hope Hull Phase* (Chase 1977; Jenkins 1998, personal communication). According to Little et al. (1996:146):

> Evidence from the archaeological record indicates that the complexity of sociopolitical organizations varied among Woodland populations. While the archaeological record indicates that most Early and Middle Woodland societies were characterized by egalitarian organizations, Struever (1965) presented evidence in support of the postulate that the Hopewellian populations of Ohio attained a higher level of sociopolitical complexity. . . . There appears to have been a shift from broader regional alliances to more localized social networks.

It is probable that the Harrington inhabitants were not involved or participating in the well-known Hopewellian interaction sphere typical of populations farther north. The Hopewellian tradition was in decline by 400 A. D. (Walthall 1980; Jenkins 1998, personal communication). There is an " . . . association of the Copena Mounds with an indigenous Tennessee Valley Woodland culture stimulated by trade contacts with Hopewellian cultures in the Midwest. Radiocarbon dates submitted indicate a temporal range extending from 100 to 500 A. D. for Copena" (Walthall 1980:10-11). The Copena Culture Focus was described by Webb and DeJarnette in 1942 as including the presence of copper and galena burial offerings of Middle Woodland times in the Tennessee Valley and other parts of Alabama. It is much more likely that some Calloway cultures, including Harrington, were participating in the "Weeden Island" sphere influenced by the migration north of Weeden Island populations into the Conecuh Valley as far up as the

Fall Line (Jenkins 1982). See Table 3 for the Woodland chronology of the Alabama Region.

TABLE 3: ***WOODLAND CHRONOLOGY: ALABAMA REGION**

	Tennessee Valley	Coosa	Tombigbee	Mobile Bay	Alabama River	Chattahoochee
A.D. 1000						
Late Woodland	Mckelvey Flint River	Coker Ford	Miller III	Tates Hammock McLeod	Autauga Hope Hull Henderson Dead River	Weeden Island Late Swift Creek
A.D. 500						
Late Middle Woodland	Copena	Yanceys Bend	Miller II	Porter	**Calloway**	Early Swift Creek
A.D. 100						
Early Middle Woodland	Colbert	Cedar Bluff	Miller I		Cobbs Swamp	Deptford
300 B.C.						

*Walthall 1980

THE HARRINGTON SITE: PHYSICAL DESCRIPTION

The Harrington Site (1Mt231) was discovered by David Chase during an archaeological survey of a sewage pipeline in March, 1977. It was a small site (about 4 acres) located on a second terrace on the north bank of Catoma Creek in Montgomery County, Alabama (Figure A). The site was located in the upper area of the Gulf Coastal Plain in an agriculturally rich area known as the Black Belt Prairie, a gently rolling area of central Alabama with no topographic features that might appreciably influence weather or climate (Chase 1977). It was located in an "open sandy field bordered on the east and west by tree-filled sloughs which may be older silted-in spring branches (Figure 2). Along the southern edge was a swampy ox-bow lake remnant of the old Catoma Creek channel. The present day Catoma Creek flows in a westerly direction about 200 meters of this ox-bow" (Chase 1977:2).

Archaeological salvage excavations of 113.8 square meters in a sewer line right of way yielded a total of 38 features, including pits, postholes, and nine human interments. A fairly uniform vertical stratigraphy of three distinct layers was found. An historic plow zone of 20 centimeters laid over 70 centimeters of Norfolk Fine Sandy Loam. Below this was a brownish-gray hard pan of Yazoo clay. Cultural artifacts extended to 50 centimeters below the surface, with the greatest concentration between 23 and 30 centimeters (Chase 1977:3). Initial tests uncovered evidence of two components. The earlier component appeared to be a Late Archaic occupancy of the *Millbrook Phase* (circa 1350 B.C.) as indicated by the recovery of a number of large stemmed projectile points (*Savannah River*), steatite bowl sherds, and fiber-tempered pottery (Chase 1977).

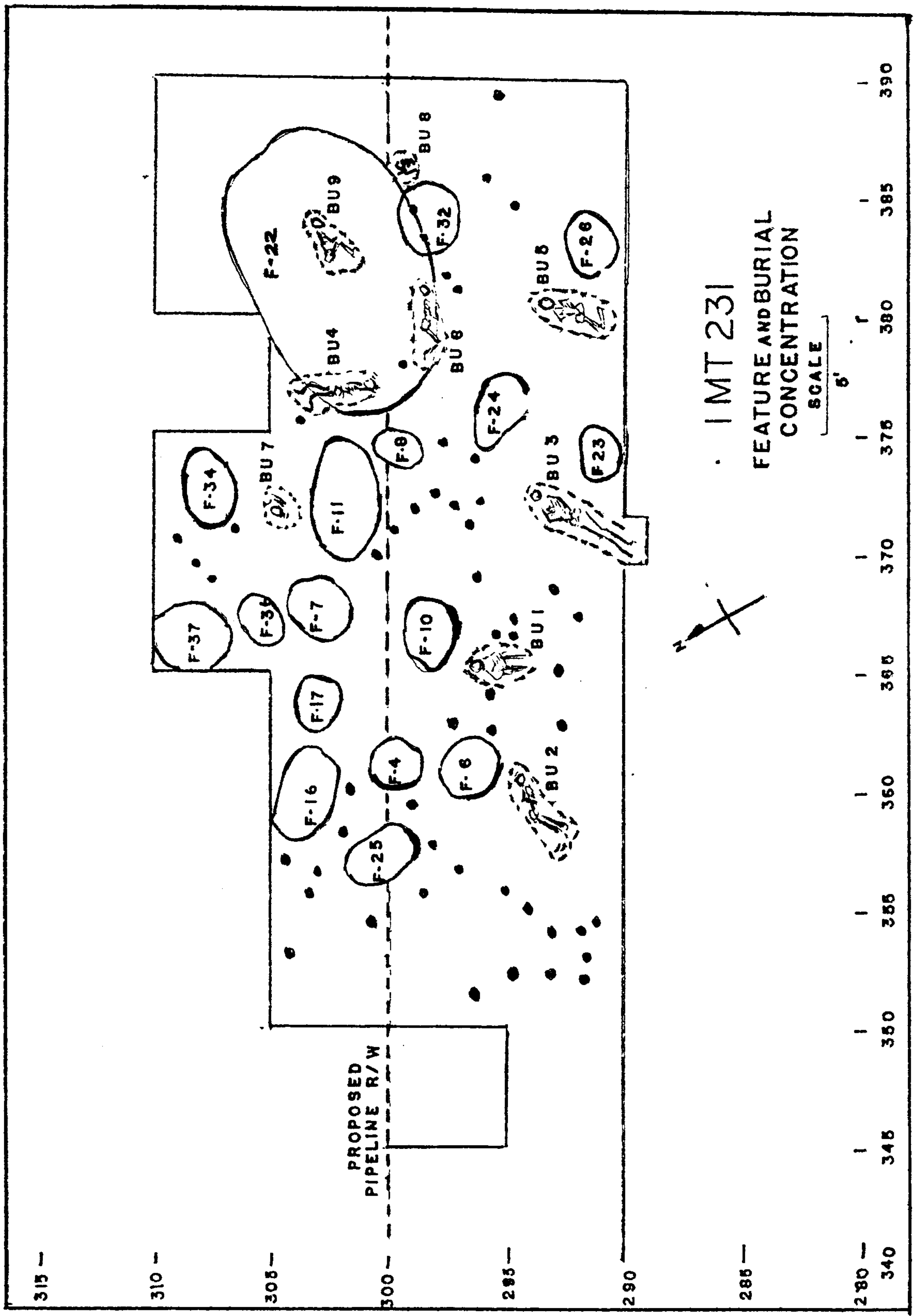


Figure 2: Feature and burial concentration map, 1Mt231

A second and later component at the Harrington site indicated a larger Middle Woodland settlement. Identification of this component was based upon the recovery of many large, plain sand, mica-tempered, or crushed quartzite-tempered pottery sherds. Ceramics of this type have been previously reported in Central Alabama as belonging to the *Calloway Phase* (Chase 1977:8). "Calloway ceramics show influence from the Santa Rosa-Swift Creek tradition and display the first evidence of contact with Weeden Island settlements" (Walthall 1980:175). Typical projectile points included *Bradley Spike*, *Swan Lake*, *Mud Creek*, *Coosa Notched*, and *Greenville* types. "All [of these] relate, at least in the northern half of Alabama, to Woodland proveniences" (Chase 1977:12). The burials and the majority of other features appeared to belong to the *Calloway Phase*, since no artifacts were found on the site of any later period. The artifact and feature analysis from the Harrington site has not been completed.

At Harrington, adult burials were placed in individual grave pits, outside possible structures, in flexed, semi-flexed, and extended positions. The juvenile burials were bundled and placed as secondary interments.

Archaeological evidence at Harrington suggested a subsistence pattern consistent with hunter-gatherers. Burned animal bones found in ash pits represented deer, possum, rabbit, turkey, bobcat, beaver, striped skunk, freshwater turtle, univalve and bivalve mollusks. Vegetable remains included charred hickory and walnut fragments "Presumably many species of berries, roots and other forests foods completed what might have been, at certain times of the year, a precarious diet" (Chase 1977:27). Elisabeth Sheldon examined ash contents from the site but found no botanical remains (Craig

Sheldon 1997, personal communication). The archaeological evidence suggested a moderate-sized population of gatherers, fishers, and hunters who successfully exploited the local environment.

OTHER WOODLAND PHASES

Knowledge of middle Woodland cultural developments of central Alabama is very uneven. Some phases are based upon excavations at only one or two sites; others are provisionally defined due to inadequate analysis or lack of radiometric dates. Consequently comparisons of the Harrington material with contemporaneous cultural data is difficult. Osteological analysis is hampered by small population samples and incomplete preservation. There is no comprehensive regional cultural chronology for central Alabama (Sheldon 1998, personal communication).

In 1982, Jenkins completed a synthesis for, the archaeology of the Gainesville Lake area of the Tennessee-Tombigbee Waterway, in cooperation with the U. S. Army Corps of Engineers. These sites provide comparative osteological data set developed during the salvage excavation of the Tenneessee Tombigbee Waterway. The components used for comparison with Harrington are: A) Cofferdam Subphase (1Pi61 - 1000 to 1100 A. D.), B) Catfish Bend Subphase (1Pi61 - 900 to 1000 A. D.), C) Gainesville Subphase (1Pi61 - 1000 to 1100 A. D.), and D) Summerville I Phase (1Pi33), an early Mississippian component from 1000 to 1200 A. D. Mortality profiles of 78 burials for these Gainesville Lake subphases were provided by Cole, Hill, and Ensor (1982:187-250) with Harrington percentages estimated for comparison. A more detailed discussion of these comparisons can be found in Chapter IV.

Closer to Montgomery, along the upper Alabama River was the Henderson Phase of the late Woodland period. First defined by Chase (1968) and Dickens (1971), the phase was most intensively investigated by Cottier at sites 1Au143, 1Au144, 1Au145, 1Au146, 1Au147, and 1Au139 (1982). These sites were excavated over several field seasons and reported in 1982. These sites were located on Ivy Creek, which "originates within the Fall Line Hills physiographic province of central Alabama and flows south joining the Alabama River at Jones Bluff" (Cottier 1982:4). Ivy Creek site is 49 kilometers (30 miles) west of the Harrington site. The occupancy of these sites was from Middle to Late Woodland times. This multiple site location represented "not a single contemporaneous settlement [and] it is suspected that the systemic activities which produced the archaeological record recurred over time and not always with the same population aggregate" (Cottier and Waselkov 1982:152). Some of these were single component sites deposited over a brief period of time. Site 1Au146, however, appeared to be a large base camp with multiple occupations. The interpretations of these sites illuminate Middle Woodland subsistence patterns and social organization and might shed light on group structure at Harrington. There is, at present, no reliable and complete cultural chronology for Central Alabama therefore the nature of culture change in this location remains inconclusive. "The *Henderson Phase* has never been formally defined as an archaeological culture, and is still poorly understood in the prehistory of central Alabama" (Cottier 1982:3). Ceramics at the Henderson site proved useful in reconstructing temporal seriation of the Ivy Creek occupation. However, lithic assemblages were not as time sensitive. According to Cottier and Waselkov (1982):

> The holistic definition of cultural manifestations in central Alabama and the analysis of culture process in the area has been minimal. Numerous Woodland Tradition phases have been mentioned for the area, and this has underscored the importance of the region for an understanding of Alabama prehistory. Unfortunately, as in many other cases, the ceramic remains have been more completely investigated than any other cultural aspect. Henderson ceramics, and other related types, are a blending of the Gulf Coast Tradition with some elements of extra-areal extent, such as distinctive pottery which appears to embrace primarily traits from Weeden Island, and secondarily, from a somewhat generalized Woodland style, from perhaps the Montgomery, Alabama area.

Jeter (1973, 1977) suggested that large *Henderson Phase* sites on the banks of the Alabama River were base camps or semi-permanent villages, occupied from spring to fall by numerous individuals, and that upland and tributary stream sites (such as those at Ivy Creek and Harrington) were occupied by small groups from late fall to early spring. The larger sites were most likely multi-component sites with spatially overlapping temporary occupations by small bands of people.

In area C-1 (approximately 650 square feet) at 1Au146, there was a small *Henderson Phase* cemetery with burial pits of natural sand. Unfortunately all of the six human burials are in very poor condition and the cemetery did not demonstrate extensive occupation. Mound A (1Au146) was a circular mound, 25 by 30 feet in diameter with a height of 2.3 feet. There was an underlying previous Archaic component with evidence of Archaic artifacts that were used for subsistence and procurement activities. The mound contained 18 features and 37 burials from a *Henderson Phase* (Woodland) component. Stratigraphic preservation was poor with no definition of burial pits.

Osteological remains were limited to teeth and crumbling bones. There was one individual from 1Au139 that was summarized by Turner (1982). The tiny calcined remains were determined to be from one individual between the ages of 20 to 60 years. Turner (1982:453) suggested this individual represented a cremation in which the individual was burned in tact with no evidence of cut marks from mechanical defleshing. All of the burials were covered with porous sand. They consisted of secondary interments with simple associations of indigenous iron oxide-sands and -chunks with a few grave goods in some instances. Burial placement appeared to be intentional and was arranged in an arc across the northern and eastern axis of the mound (Cottier 1982:188):

> These observations were indicative of the accretional growth of the mound, and that this growth was culturally organized or defined. Despite the development of the burial mound in an accretional manner, it was postulated that the burials within mound A are not totally representative of the population and might represent higher status individuals within the society (Cottier and Waselkov 1982:377).

These burials were interpreted by Cottier and Waselkov as secondary interments. According to Binford (1971), Hatch (1976), and Peebles (1971), ethnographically derived mortuary data and archaeological data suggest the purpose of mounds, such as Mound A, was for the interment of important individuals. However, there was no conclusive demographic data due to poor preservation and, accordingly, not much skeletal material to analyze. According to Cottier and Waselkov (1982:186):

> *Henderson Phase* populations at Ivy Creek selected the peninsula point for use as a burial location. The factors influencing their decision are unknown; however, possible criteria may have included: the elevation of the land forms, the lack of major habitation directly on the point, the nearness of the location to more than one community, the sandy surface soil of the point, and perhaps numerous unsurmised aspects of Henderson religious or belief systems.

The Ivy Creek sites comprise a mere portion of the total populations that would have lived in this and surrounding regions of Central and South Alabama. Syntheses are tenuous at best until more sites can be found and more material culture, skeletal remains, and floral and faunal evidence are obtained. However, more specific questions can be addressed in light of current interpretations. The recoverable data reflects technological and ecological behavior, which are necessary for investigations of subsistence patterning and cultural change. Details of mortuary data such as type, position, and grave associations can be used for comparative purposes and behavioral implications. Furthermore:

> Henderson sites represent human communities, which interacted on a regular basis, manufactured, and utilized similar artifact forms, had complementary subsistence strategies, and which participated in similar levels of political organization, social structure, and belief system. Such an interpretation presupposes participation in some form of common organization which distinguished the Henderson culture from other Woodland cultures within Central Alabama. Therefore, the similarity of the material culture remains of Henderson communities reflects the participation of populations within a common culture (Cottier and Waselkov 1982:376).

Located within the area of the junction of the Coosa, Tallapoosa, and Alabama rivers in Central Alabama, there are numerous sites which are known to have affiliation with the *Calloway Phase.* Limited investigations (Chase 1977: 9-12) have occurred at the Kalumi Site (1Mt3), Miller's Creek Site (1Mt52), North of Maxwell Air Force Base (1Mt92), the William McLemore Site (1Mt120), and the Calabee Creek Site (1Mc25). Unfortunately, little is known of these sites due to lack of excavations or analysis of recovered material. The sites do serve to indicate the extent of the *Calloway Phase.*

Twenty-six burials were recovered at the Hickory Bend site (1Mt56), located on the south bank of the Tallapoosa River just twenty miles east of Montgomery, Alabama (Chase 1968:18-23). Nine of the burials relate to the *Hope Hull Phase* (late Woodland) of circa 700-900 A. D. The rest are apparently of a later Mississippian provenience (Chase 1968:23). The Hope Hull burial positions were extended on the back or slightly flexed. Only two of the interments had accompanying artifacts. One was of a child with eight dippers of marine conch shell. The second contained beads of marine shell and marginella shell and traces of copper. Large greenstone celts are another frequent burial item at other Hope Hull sites, (Chase 1968:18). Unfortunately none of the skeletal remains for 1Mt56 or the other known Hope Hull sites have been analyzed.

The Woodland period was a time of transition and change in the Southeast. There was more efficient use of natural plant and animal resources, larger and more sedentary settlements, trade of copper, galena, mica and hematite increased through social networks, and pottery production grew with many styles and variations. In some regions, there were more elaborate burial practices with an increase in mortuary grave accoutrements and ceremonialism. In surrounding areas, the Copena Focus exhibited unique traits, one in which some middle Woodland populations participated, placing exotic grave goods of copper and galena with the deceased. At this time, some middle Woodland cultures, such as Harrington, were influenced by the Swift Creek - Weeden Island culture that migrated north from the Gulf Coastal Plain (Walthall 1980; Willey 1966). According to Cottier and Waselkov (1982:430):

Certain aspects of southeastern prehistory indicated that general

> organizational changes occurred from the Middle Woodland to the Mississippian. The degree of organization and complexity decline from Middle and Late Woodland, and then ascend with the Mississippian.

It is evident that during Woodland times, subsistence strategies were very similar for all populations in Alabama. There were shifts from large riverine environments of the shell midden Archaic peoples of the Tennessee River to the exploitation of smaller ecosystems of those Woodland populations scattered along the Alabama River and its tributaries (Walthall 1980:40, 110). Sites not over two acres in size were more common on tributaries during the middle Woodland (Chase 1979:3). Seasonality probably played a role in these shifts. The Woodland peoples possessed a generalized pattern of subsistence. The prerequisite for this type of pattern are: (1) low population density; (2) scarce and widely dispersed food resources requiring mobility; and (3) Band level social organization (Beals et al. 1977:223-224). Differing social and environmental stressors were apparent with some bands exploiting better locations than other bands. These small populations might have been somewhat isolated. Perhaps those at Harrington were in such a location, with little social contact with other populations. A more complete inventory may prove to include trade goods.

Jenkins (n.d.) described Calloway communities as located on smaller tributaries of larger rivers, perhaps for concealment purposes. The exploitation of mollusks, was indicated by shell middens at several sites. This food source would have been easy to obtain with little effort to supplement the diet. Elongated biface blades and small stemmed and notched projectile points were common. Besides the nine burials from

Harrington, only a single Calloway skeleton is known. These remains were a flexed adult inhumation found in a shell mound with no grave associations (Walthall 1980). This young adult female had a wound behind her right mastoid process, which is located behind the ear. At the present, a site number for this individual has not been found.

Calloway artifacts and pottery demonstrate contact with Weeden Island populations situated further south. Other sites with Swift-Creek affinities include those situated in the Middle Chattahoochee Valley of Alabama and Georgia. They are the Averett site (9Me15B), which "contained evidence of an unquestionable transition of Early Swift Creek to Middle Swift Creek. . . and the possibility of very early contacts between the inland Woodland peoples and the Gulf Coastal peoples" (Chase 1978:61); the Quartermaster site (9Ce42), located in Fort Benning, just south of Columbus, Georgia, where recoverable pottery was of the Late Swift Creek and Weeden Island provenience and represents a "probable extension inland of the Weeden Island cultural periphery" (Chase 1967:61); the Uchee Creek site (Ru58), located in Russell County, Alabama, which yielded evidence of Late Swift Creek and Weeden occupation; and the Miller's Creek site (1Mt52), located two miles south of the Tallapoosa River and a half mile north of Atlanta Highway, east of Montgomery, Alabama, where the Calloway Complex was the earlier component and more evidence of Late Swift Creek-Weeden Island type pottery. "Random surface finds made on other western Georgia and eastern Alabama sites in the Middle Chattahoochee Valley attested to the Weeden Island cultural associations in that area" (Chase 1967:61). However, there is no mention of any skeletal material from any of these sites.

The complexities of social adaptations in prehistory are compounded by regional and developmental diversity. The Woodland cultures of Alabama represent this diversity as a result of migration and contact with other cultures during this time. Ecological considerations are paramount in understanding adaptations to macro and micro habitation zones and the resulting technological innovations and behavioral modifications. The Harrington site is but one example of the middle Woodland cultural systems. The Calloway culture complex has been noted at a variety of sites in Alabama, represented archaeologically by campsites with lithic and pottery remains. Skeletal material, however, is lacking. This absence might be due to the mobility of the groups involved and/or poor preservation. The Harrington site is the first skeletal series, albeit a small one that has been systematically analyzed from this middle Woodland time span in Alabama prehistory. Like many other sites from a Woodland provenience in Alabama, Harrington demonstrates contact with Gulf Coastal populations as evidenced by pottery styles, a mobile or seasonal hunting and gathering existence, and exploitation of micro habitats on smaller tributaries of larger river systems.

CHAPTER III – MATERIALS AND METHODS

The Harrington site (1Mt231) skeletal collection of 9 burials is housed in the archaeology laboratory at Auburn University, Montgomery, Alabama. Some of the skeletal remains have been partially reconstructed, primarily the cranial elements, by previous students from Florida State University. In 1982, with the assistance of Dan Morse, M. D. and Dr. Robert C. Dailey, Greg A. Mikell completed a brief, descriptive osteopathology report. Mikell states: "Foregoing specific diagnosis in the favor of simple description in certain instances of this report is intentional to avoid any 'speculativity' in this initial investigation of *Calloway Phase* osteopathology" (Mikell 1982:1).

A complete skeletal inventory of all nine burials is provided in the appendices of this thesis (C-K). In this thesis, the skeletal analysis went beyond a purely descriptive data set. A complete inventory was prepared for each skeleton using the data collecting protocols in *Standards for Data Collection from Human Skeletal Remains* (Buikstra and Ubelaker 1994). The format renders more meaningful interpretations for comparison with data from other populations. The format also enables a maximum recording of information per unit of time and minimizes intra- and inter-observer error. The preservation of the skeletal remains from the Harrington site ranged from poor to excellent. All skeletal elements were reconstructed as completely as possible.

Each individual was assessed for age at death using numerous age indicators. These include suture closure of the cranium using recommended techniques from Buikstra and Ubelaker (1994), pubic symphyses morphology following Suchey (1984) and Todd (1920), and auricular age as recommended by Meindl and Lovejoy (1989).

Suture closure is not a very reliable age indicator because there is considerable variability in closure rates (Masset 1989). However, according to Acsadi and Nemeskeri (1970) and Meindl and Lovejoy (1985), suture closure is "useful when other criteria are not available or when used in conjunction with other attributes" (Buikstra and Ubelaker 1994:32). Bass (1995) states:

> The bones of the skull come together or unite along special serrated and interlocking joints known as sutures. The sutures are irregular linear gaps before the age of 17 but often unite in old age and eventually become obliterated. It should be noted that ossification of the sutures occurs inside the skull (endocranially) first and proceeds toward the outside (ectocranially) (Bass 1995:37).

The degree of suture closure was recorded for 10 ectocranial, 4 palatal, and 3 endocranial locations. Composite scores were correlated with three age ranges (Buikstra and Ubelaker 1994:36)

Young Adult (20-34 years)
Middle Adult (35-49 years)
Old Adult (50+ years)

Adolescents were given an age range based upon the sequence, formation and eruption of the deciduous dentition and the completeness of the permanent dentition (Ubelaker 1978, 1989). The sex and age of the Harrington individuals can be found in the appendices C-K and Table 6.

The innominate or pelvis is considered the most important bone for age estimation. The age of an individual can be assessed from the pubic symphysis, an area of the pelvis where the two hipbones meet in front. The pubic bone undergoes regular morphological changes at the time of puberty well into adulthood (Bass 1995; Ubelaker 1978). Phases (age spans) of these changes have been defined by Brooks and Suchey (1990), Gilbert and McKern (1973), Katz and Suchey (1986), McKern and Stewart (1957), Phenice (1969), and Todd (1920).

Auricular aging techniques were more complex and difficult to interpret. The auricular surfaces, located on the posterior inferior ilium of the pelvis, are the surfaces which articulate with the alae of the sacrum (see Meindl and Lovejoy 1989). The auricular surface "provides a useful way to document age-related changes in cases where the pubic symphysis is not preserved" (Buikstra and Ubelaker 1994:24).

The sex of each individual was assessed by numerous criteria. These were the measurement of the femoral head; the shape of the sciatic notch; the shape and appearance of the pubis; the presence or absence of the preauricular sulcus; the size of the supraorbital ridge, nuchal area, and mastoid process of the skull; and the gracility or robusticity of the mandible (Bass 1995). Ubelaker (1978:41) states:

> Estimates of sex, stature, and age from prehistoric skeletal remains employ information obtained from studies of living or recently deceased individuals whose age, sex, and relevant medical history are known. These studies indicate that considerable variation exists between males and females; between individuals of the same sex, age, and race affiliation; and between individuals exposed to different environments – to mention only the primary causes.

ANTHROPOMETRY – METRIC DATA

Anthropometric data was collected with a sliding Mitutoyo Digimatic digital caliper calibrated in millimeters on each individual comprising a set of 24 cranial, 10 mandibular, and 44 post-cranial measurements for standardized documentation (Buikstra and Ubelaker 1994). Many of the cranial measurements were not possible due to the fragmented and incomplete nature of the cranial and facial elements. Anthropometric data and tables can be found in the appendices A and C-K. Stature estimates were based on mathematical regression equations taken from Trotter and Gleser (1952) and found in Bass (1995).

All measurements were based on methods and procedures used by Bass (1995:162, 169, 176, 233, 250, 258). Robustness of each individual was assessed using the indices provided by Bass (1995:152, 173, 225). These figures express the relative robusticity of the long bone shaft. The platymeric index, which describes the broadness of the proximal part of the femur shaft, was also determined. There are considerable differences in general shape among various populations and races (Bass 1995:225). An osteometric board was used to measure long bones (see Buikstra and Ubelaker 1994). All measurements were taken in millimeters.

DENTAL ANTHROPOLOGICAL ANALYSIS

The dental data was inventoried as to the presence and condition of all teeth. These data were recorded as numerical codes in accordance with the recommendations of Buikstra and Ubelaker (1994). The standardization manual provides inventory, recording forms which are included in the appendices C-K. Categories for analysis include: dental inventory, occlusal surface wear (attrition) for reconstructing prehistoric diets, caries and abscess incidence patterns for dental disease, and lastly, enamel defects such as those caused by metabolic and nutritional deficiencies referred to as hypoplasias. Roberts and Manchester (1995:52-53) state:

> Attrition is not a dental disease per se but can predispose to other dental pathological conditions, e.g. caries and abscesses. As teeth wear, secondary dentine is produced under the worn enamel to protect the pulp cavity. . . . However, attrition may be somewhat beneficial to teeth in that it removes the fissures and pits on the biting surfaces of the molars which may trap food particles.

Dental remains from archaeological sites are important for a variety of reasons to physical anthropologists. Specialists in dental anthropology can make inferences about diet, age at death, health, disease, genetic affiliation, and cultural phenomenon. Teeth are the last part of the skeleton to decay, because they consist of a dense matrix of enamel (Buikstra and Ubelaker 1994: Kelley and Larsen 1991). Kelley and Larsen (1991:1) contend that:

> In contrast to skeletal tissues, teeth do not remodel once they have formed. Except under specific conditions involving partial or complete loss of the tooth crown – due either to pathology or to attrition or both during the lifetime of the individual – teeth represent a permanent record of ontogeny and evolution.

Dental measurements and morphological observations are significant factors in any osteological analysis. These data provide important information about heritage and evolutionary trends in dental morphology (Buikstra and Ubelaker 1994). Again, a Mitutoyo Digimatic digital sliding caliper calibrated in millimeters was used for all dental measurements (Figures 3, 4, and 5).

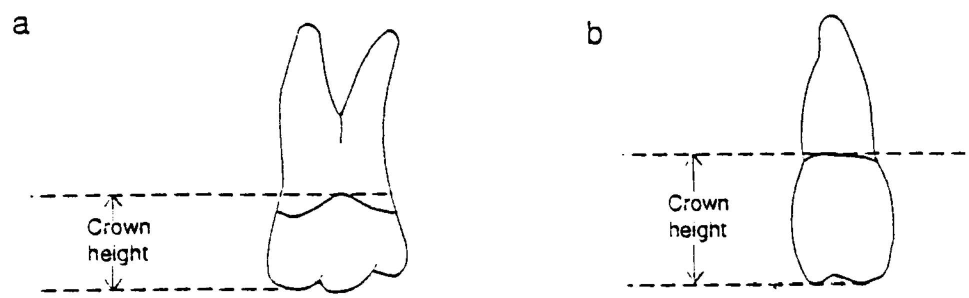
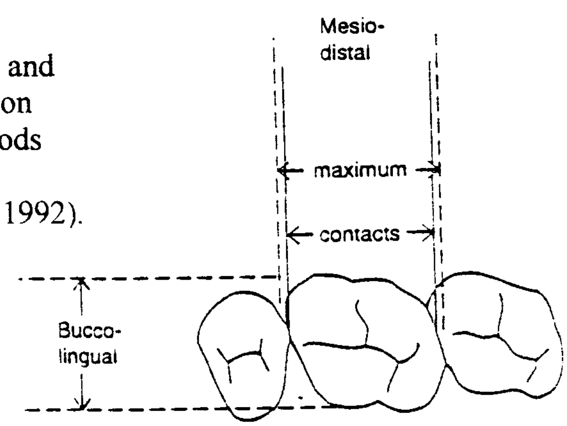


Figure 3: Measurement of crown height a) Posterior teeth; b) Anterior teeth (Buikstra and Ubelaker 1994, figure 33, p. 63. After Rogers 1984).

Figure 4: Measurement of mesiodistal and buccolingual (faciolingual) diameters on posterior teeth. Two mesiodistal methods are illustrated (Buikstra and Ubelaker 1994, Figure 31, p. 62. After Mayhall 1992).



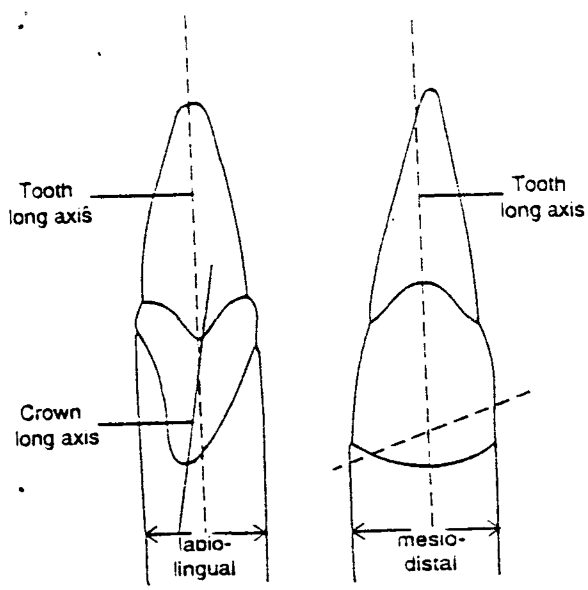


Figure 5: Measurement of mesiodistal and labiolingual (faciolingual) diameters on anterior teeth. Note that the long axis of the crown is not the same as the long axis of the tooth (Buikstra and Ubelaker 1994, Figure 32, p. 62. After Mayhall 1992).

The Murphy system for dentition, modified by Smith (1984), was used to evaluate dental wear for the premolars, canines, and incisors (Figure 6). The standards developed by Scott (1979) were used for molars (Figure 7). The Murphy and Scott systems are numerical codes used to establish differences in attrition rates. According to Buikstra and Ubelaker (1994:52):

> wear is recorded along an eight point scale, based on the amount of exposed dentin . . . In accordance with the Scott system, each molar occlusal surface is divided into quadrants and the amount of observable enamel is scored on a scale between 1 and 10 . . . . The final score recorded for each tooth is the sum of the scores for the four quadrants, thus yielding a possible range from 4-4.

Linear enamel hypoplasias are horizontal lines produced during the developmental process. "All enamel developmental defects result from disruption of the process of amelogenesis of enamel formation" (Goodman and Rose 1991:281). There may be times when the matrix formation is interrupted and the end result may be lines or pits on the labial (lips) or buccal (cheek) areas and lingual side of the dentition. Enamel defects may reflect nonspecific physiological perturbations (stress) in an individual during tooth development. Studies using secondary (adult) dentition in archaeological populations have shown the highest frequency of hypoplastic defects occurs between the ages of four and five (Goodman and Rose 1991). Other researchers (Buikstra and Mielke 1985) found peak ages of hypoplastic involvement at two to four years. Some feel that these lines correlate with the weaning process and the differences in age reflect cultural aspects of breast-feeding (Buikstra and Cook 1985). Hillson (1996:291) states:

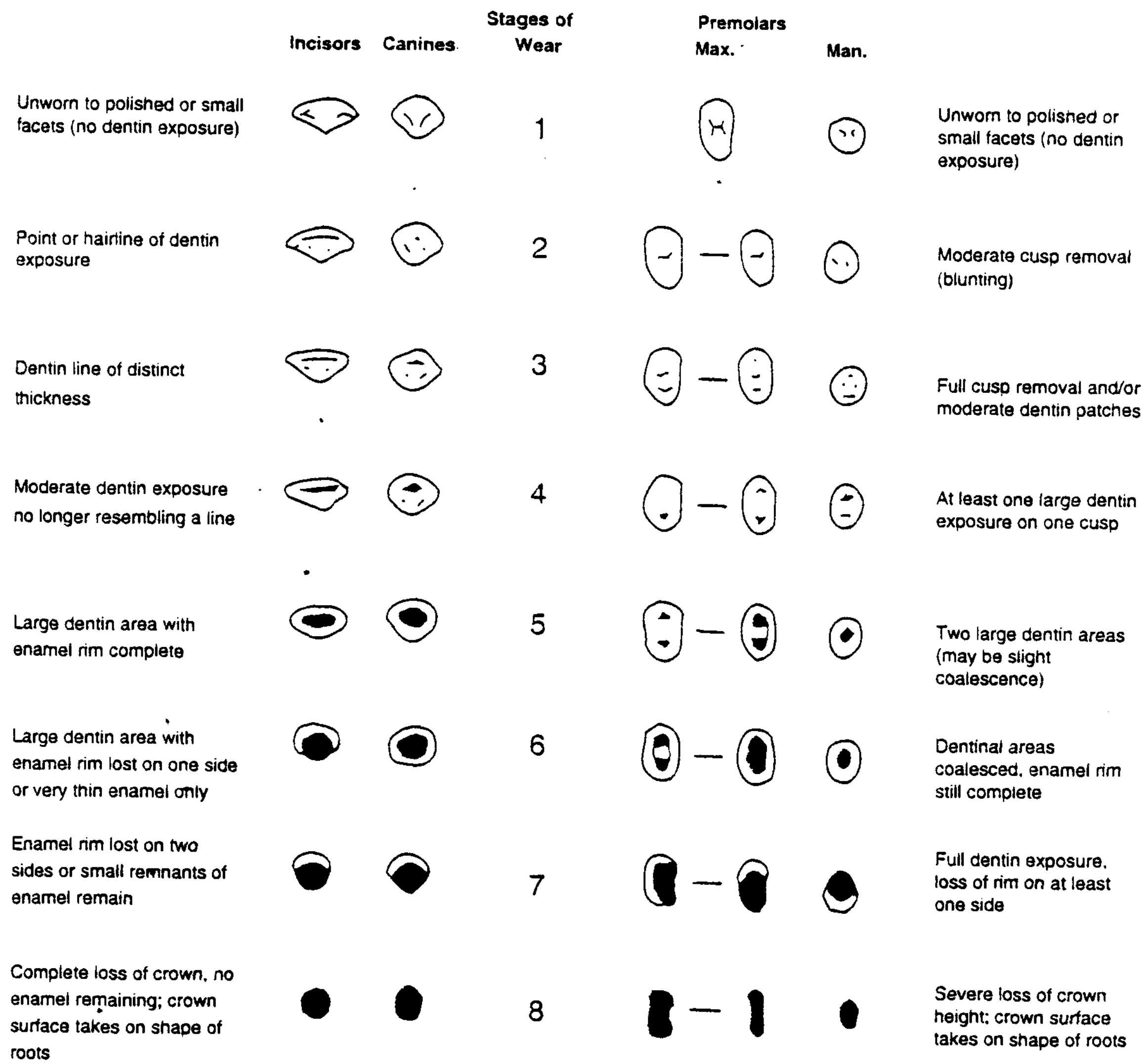
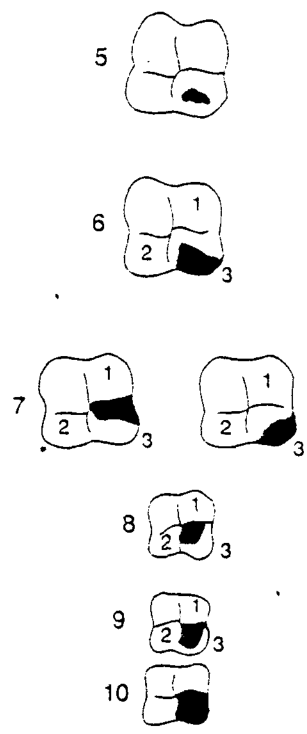


Figure 6: Surface wear scoring system for incisors, canines, and premolars (Buikstra and Ubelaker 1994, Figure 25, p. 52. After Smith 1984)



Score	Description
0	No information available (tooth not occluding, unerupted, antemortem or postmortem loss, etc.)
1	Wear facets invisible or very small
2	Wear facets large, but large cusps still present and surface features (crenulations, noncarious pits) very evident. It is possible to have pinprick size dentine exposures or dots which should be ignored. This is a quadrant with much enamel.
3	Any cusp in the quadrant area is rounded rather than being clearly defined as in 2. The cusp is becoming obliterated but is not yet worn flat.
4	Quadrant area is worn flat (horizontal) but there is no dentine exposure other than a possible pinprick sized dot.
5	Quadrant is flat, with dentine exposure one-fourth of quadrant or less. (Be careful not to confuse noncarious pits with dentine exposure.)
6	Dentine exposure greater: more than one-fourth of quadrant area is involved, but there is still much enamel present. If the quadrant is visualized as having three sides (as in the diagram) the dentine patch is still surrounded on all three sides by a ring of enamel.
7	Enamel is found on only two sides of the quadrant.
8	Enamel on only one side (usually outer rim) but the enamel is thick to medium on this edge.
9	Enamel on only one side as in 8, but the enamel is very thin—just a strip. Part of the edge may be worn through at one or more places.
10	No enamel on any part of quadrant—dentine exposure complete. Wear is extended below the cervicoenamel junction into the root.

Figure 7: Scott system for scoring surface wear in molars (Buikstra and Ubelaker 1994, Figure 26, p. 53. After Scott 1979)

> Developmental defects of enamel are recognized as an important indicator of general health in both living and ancient populations, and methods for rapid recording of these defects at a macroscopic level are well established. The challenge for studies of hypoplasia is made by a consideration of the defects at the microscopic level, where they are seen as part of a much more complex pattern of growth disruption, and it is no longer clear just what can be inferred from the size and position of defects, as seen with the naked eye. Much future work is likely to be based upon detailed microscopy, both of the crown surface and of sections through the crown. The relationship between surface defects and the internal layering of the brown strae of Retzius needs to be investigated, together with the mechanisms by which disruptions to the ameloblasts generate the different forms of defect, and the relationship between the form of the defect and the timing of the growth disrupting event.

A variety of systemic stressors such as malnutrition and infectious disease can produce abnormal enamel growth patterns (Rose et al.1985). These stress indicators are measured from the cementoenamel junction, which is the line of contact between the enamel and cementum of a tooth to the midpoint of the linear enamel hypoplasia. Using regression analysis, the age at the time of disturbance can be calculated. Often there are sequential lines indicative of periodic or seasonal stress, perhaps due to hard times during winter (Buikstra and Ubelaker 1994; Kerley and Bass 1978). The enamel hypoplastic growth disruption is a measure of general stress from birth to age seven (Huss-Ashmore 1981). Linear enamel hypoplasias have been associated with malnutrition and disease or to the synergistic interaction between them. "Poor nutritional status decreases immune function and predisposes one to infection, while infectious diseases can further diminish scarce nutritional resources" (Goodman and Rose 1991:283). Most often, defects are due to systemic metabolic insults which affect more than one tooth. Nonspecific disruptions include fever, infectious agents, malnutrition, over nutrition, and hormonal changes (Goodman and Rose 1991). Linear enamel hypoplasias are considered general non-specific stress indicators with their expression controlled by a variety of morphological, developmental, and genetic factors (Goodman and Armelagos 1985). Hypoplastic features were recorded by type and location, and the distance was measured from the midpoint of the labial/buccal cemento-enamel junction to the midpoint of the hypoplasia. Age of occurrence of hypoplastic defects was not estimated for Harrington.

ALVEOLAR CHANGES IN THE DENTITION

In the past, archaeological studies on the dentition have overestimated periodontitis. Many of the alveolar changes that were seen, especially in populations with high attrition rates, were indirectly caused by severe tooth wear. "The tissues that support the teeth are known collectively as the periodontium, which consists of the gingiva, periodontal ligament, cementum, and alveolar bone" (Hildebolt and Molnar 1991:226). And according to Clarke and Hirsch (1991): "Cultural practices, the composition of the diet, and personal habits are several important factors that determine the rate of tooth wear . . . The attrition produces a pulpal pathosis that subsequently induces suppurative changes within the attachment of the apparatus of the teeth" (Clarke and Hirsch 1991:247, 251). As a result of severe tooth wear, the tooth structure may crack and allow bacteria into the pulp cavity, which can produce infectious lesions (Roberts and Manchester 1995).

Infection of the dental pulp induces inflammatory changes and abscess cavity formation, which is the second major pathological factor in the teeth of prehistoric dental populations (Kelley and Larsen 1995). According to Hartnady and Rose (1991:273):

mandibular abscessing occurs more frequently in males and maxillary abscessing more in females. These authors have developed a model to explain attrition, tooth loss and periodontal disease that includes such variables as the types of food gathered, environmental niches exploited, cultural practices (tooth tool use), and food processing techniques. "Abscess formation can also occur if an individual develops periodontal disease and a periodontal pocket. This is initiated by the accumulation of plaque between the soft tissue of the gum and teeth" (Roberts and Manchester 1995:50). Harrington individuals were assessed for abscessing by macroscopic observation for integrity of the alveolar bone.

CALCULUS

Calculus is mineralized plaque which can become "a dense accumulation of microorganisms on the tooth surface" (Hillson 1996:254). It is present in the dentition of many archaeological populations. Calculus samples were taken from the Harrington individuals for preservation. These samples may be useful for future research in that "Calculus frequently traps food remains and plant phytoliths and can therefore be useful in dietary reconstruction" (Buikstra and Ubelaker 1994:56). The scoring method for dental or supra-gingival calculus is shown in figure 9. Calculus deposits naturally increase with age and the extent of the deposits may actually provide clues as to one's immune response, thereby implying general health of the individual.

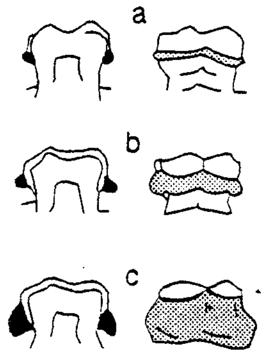


Figure 8: Scoring system for supra-gingival calculus (copied from Brothwell 1981).

NONMETRIC TRAITS

Determining heritability in populations can prove useful in anthropological studies of family relations (Buiksra and Ubelaker 1994). There are many skeletal traits with known family relationships (Hauser and De Stefano 1989). Sample size is critical in the analysis of epigenetic traits; therefore, the summary of the Harrington population was mostly descriptive. Hauser and De Stefano (1989) present an exhaustive review of the types and locations of epigenetic traits, but only the 24 traits provided by Buikstra and Ubelaker (1994) were recorded (Table 5). Recorded were positive occurrences, absences, and instances in which observations could not be made. Bilateral traits were recorded for both sides, and some traits were considered against a graded scale (Buikstra and Ubelaker 1994:86):

> The term epigenetic was applied to minor skeletal variants by Berry and Searle (1963). Crosses between inbred strains of mice showed that each variant is determined by a number of genes acting additively, and that a developmental threshold or thresholds in the genotype

> distribution leads to the manifestation of phenotypic alterations or variants, rather than a continuously distributed character. Thus the term epigenetic with its connotation of possible modification during ontogeny, was thought to emphasize the contrast to features that are strictly Mendelian in nature. In the latter there is direct gene-character relationship, the frequency of the character only alters with the frequency of the gene, i. e. as a result of processes such as mutation, and is independent of environmental change during ontogeny (Hauser and De Stefano 1989:1).

Nonmetric skeletal traits have been recorded in skeletal populations since 1776 (Buikstra and Ubelaker 1994). These markers are useful for the determination of familial heredity and are used in biodistance studies, which compare populations (Hauser and De Stefano 1989). Traditionally, physical anthropologists have focused on craniometric studies (see Robertson 1996; Howells 1989; Hrdlička 1952; Jantz et al, 1978; and Montagu 1960). Today there are more studies of nonmetric traits (for examples see: Berry and Berry 1967; Corruccini 1972; Finnegan 1974; Hauser and De Stefano 1989; Mouri 1976; and Sjøvold 1984). In the past, the word "epigenetic" was "applied mainly in an evolutionary context to denote phylogenetic change. [However], none of the characters studied shows Mendelian transmission" (Hauser and De Stefano 1989:1). These traits are manifested as complex genetic and environmental interaction and exhibit variable expression.

Nonmetric traits have a "value for assessing population variation in time and space as the outcome of genetic similarity or divergence" (Hauser and De Stefano 1989:1). They are divided into two categories: (1) hypostotic and (2) hyperostotic. Hypostotic traits involve incomplete osseous development, which is retained into adulthood. Hyperostotic traits are where excess bone growth arises from the ossification of tissues (Hauser and De Stefano 1989:5-6):

> Direct evidence in man is slight; since the characters are primarily skeletal, there is little family and twin material with precise indication of the familial relationship between the individuals. In the few studies that there are, the data have been subjected to different statistical treatments; the analyses have been based on relatively simple scoring methods, namely the dichotomous classification of presence or absence of a trait; they generally lack consideration of different degrees of manifestation, or laterality, and only a few take into account variations between age and sex.

Nonmetric or "epigenetic" traits for the Harrington individuals were assessed and scored in accordance with Buikstra and Ubelaker's (1994) standardization methods. The format is outlined by Buikstra and Ubelaker in *Standards for Data Collection from Human Skeletal Remains* (1994:85-94). All of the adult and juvenile skeletons from Harrington were assessed for nonmetric traits by visual observation. Recording forms for nonmetric material can be found in appendices C-K.

PALEOPATHOLOGY

Paleopathology is the study of ancient human diseases in humans. The bony remains left behind at mortuary sites provide the only tools by which physical anthropologists can directly reconstruct ancient disease profiles, etiology of diseases, and disease processes.

The Harrington skeletons were visually analyzed for: (1) abnormalities of shape; (2) abnormalities of size; (3) bone loss; (4) abnormal bone formation; (5) fractures and dislocations; (6) porotic hypersotosis/cribra orbitalia; (7) vertebral pathology; (8) arthritis; and (9) miscellaneous conditions (Buikstra and Ubelaker 1994:112).

The Harrington site skeletons were analyzed macroscopically and microscopically to assess lesion patterning and distribution for differential diagnosis. Lesions on bones can be caused by numerous insults in which the osteoblastic response of the organism is interrupted. Patterning and distribution of lesions may distinguish various etiologies of an otherwise similar bony response. "The boundaries between disease (even between health and disease) are frequently blurred and may overlap; pathological processes are dynamic, advancing, relapsing, and the final nature of the disease may not be known" (Waldron 1994:35-36).

The probability of disease in a given population may be determined from case-referent studies, case control studies, and/or previously studied prehistoric populations. From these data, the assessment of the exposure to a disease might be calculated. However, Waldron (1994) contends that caution must be taken when comparing pathological rates with modern rates because of differing environmental factors and consideration of disease evolution. Buikstra and Ubelaker (1994:108) state:

> Ortner and Putschar (1985:36) list three essential elements for recording skeletal pathology: (1) an unambiguous terminology; (2) precise identification of the locations and distribution of abnormal bone; and (3) a descriptive summary of the morphology of the abnormal bone. Clear, consistently applied terminology is considered an essential, fundamental requirement.

Buikstra and Ubelaker (1994) emphasize that one must know the differences between normal and abnormal bone morphology, age-related changes, and post-depositional erosion. Some of the anomalies like Pacchionian or Arachnoid depressions of the skull are perfectly normal and not pathological in nature. It is recommended that each pathological lesion be photographed and coded according to the methodology described by Buikstra and Ubelaker (1994:105-158). The Harrington skeletal lesions were photographed, videotaped, and radiographed, some of which were used in this thesis.

The radiographs for the Harrington site are located at Auburn University at Montgomery archaeology laboratory.

OSTEOARTHRITIS AND DEGENERATIVE JOINT DISEASE

According to Mann and Murphy (1990), Ortner and Putschar (1981), and Rogers and Waldron (1995), osteoarthritis is the most common joint disease in both modern and ancient populations. Osteoarthritis is characterized by a focal loss of articular cartilage and subsequent bony reaction of the subchondral or marginal bone. This condition affects only synovial joints in which the prevalence is age progressive:

> The changes seen in cartilage are not necessarily progressive but represent real or attempted repair, rather than degeneration. Osteoarthritis is probably the product of a normal remodeling or repair process and is the natural reaction of a synovial joint to joint failure (Rogers and Waldron 1995:33).

Degenerative alterations include: abnormal force, weakened cartilage or subchondral bone, an increase in articular metabolism, alterations of synovial fluids, changes in periarticular supporting structures, and the development of characteristic cartilaginous and osseous abnormalities related to enzymatic destruction (Resnick and Niwayama 1988:1365-1367). Jurmain (1977:353) states:

> Clinical investigations propose both systemic-predisposing and mechanical-functional factors. Included in the former are age, sex, metabolism, nutrition, hormones, and heredity, while the latter includes chronic or acute trauma or obesity [and locomotory behavior].

With all of these factors taken into consideration "the most convincing etiological argument relates directly to the kind and amount of environmental stress typical of the populations sampled" (Ruff 1992:364).

Degenerative joint disease is a term used to denote the degeneration of some articular surface. There are three types of joint or articular surfaces in the human body: fibrous, cartilaginous, and synovial articulations (Resnick and Niwayama 1988:1365-1367). According to Resnick and Niwayama 1988:1365-1367), cartilaginous alterations predominate in early phases of degeneration. This is called "chondroarthritis" or "chondroarthrosis." "Osteoarthritis" and "osteoarthrosis" are more appropriate for degenerative processes of the synovial joints. Examples of the synovial joints are the hip, knee, and the apophyseal joints of the spine. This condition relates to a projection from a bone or an outgrowth without an independent center of ossification. Synovial fluid lubricates the cavity and also provides nutrients to the articular cartilage. "The type of disease present in a joint depends upon which of these tissues is mainly affected and which disease process is involved - - such as inflammation or infection. These factors will determine which particular signs may be present on the bone elements of the joints" (Rogers and Waldron 1995:2). Interestingly, related changes are more pronounced in the hip than in the knee (Jurmain 1977:357).

It is well known that bone responds to stress, disease, or other disturbances. However, the bony response has only a limited capacity of expression to pathological change. "One of the fundamental problems for any classificatory system is that bone reaction to disease is limited" (Mann and Murphy 1990:9). Bone either rejuvenates through a reparative process to form new bone (proliferative or osteoblastic), or it loses substance in which there is no reparative process, only degeneration (osteolytic, erosive arthropathy, osteoporosis, or osteopenia). "Metabolic disturbances generally result in reduction of bone mass by: (1) inadequate osteoid production, (2) inadequate osteoid mineralization, or (3) excessive deossification of normal bone tissues" (Steinbock 1976:55). Sometimes proliferation and degeneration occur at the same time. There is little evidence that climatic or environmental factors play a significant role in degenerative joint disease. However, "the age of onset in females suggests some genetically influenced hormonal control possibly associated with menopause" (Jurmain 1977:360). The age-related predisposition increases exponentially after age fifty or sixty years and may be related to a diminished capacity of aging cartilage to resist mechanical stress due to changing physical and biomechanical cartilaginous properties (Resnick and Niwayama 1988). "The typical osteological changes of degenerative joint disease seen in skeletal material presumably correspond with real pathological conditions during life, e.g., symptoms of pain, stiffness, [and] limitation of movement" (Jurmain 1977:356).

A true sign of osteoarthritis is evidence of eburnation (polished bone surface). This occurs when there is complete destruction of the cartilage and the bony joint remains, rubbing bone against bone, forming a shiny surface, pathognomic or indicative of osteoarthritis. These highly polished areas occur at the place of maximum mechanical loading. Any new bone formation represents an attempt to stabilize the joint. Torsional or mechanical forces on bone derive from the action of gravity and muscles on the bone. Factors include body size and proportions, posturing, and activity type and level. Bone tissue adapts and remodels in association with these factors (Ruff 1992). The new bony growths are referred to as osteophytes, which arise at the joint margins where the synovial membrane is continuous with the articular cartilage. In the spine they originate from the point of attachment of the fibers of the annulus fibrosa (Plate 1). Osteophytes vary in size and shape, increase in prevalence with the aging process, and are extremely common in any skeletal population. However, osteoarthritis must never be diagnosed if marginal osteophytosis is the only abnormality (Rogers and Waldron 1995). Other bony growths that are not osteophytes, seen in unusual locations or near muscle attachments of the bone are referred to as exostoses. Ligamentous exostoses or myositis ossificans traumatica (traumatic ossification of muscles) occurs from occupational stress (enthesopathy) or injury.

In the spine, osteophytes are a good indicator of degenerative disc disease or intervertebral chondrosis. During life, an individual gradually experiences loss of marginal disc space between the vertebrae. The cervical and lumbar vertebrae are the most often affected areas with the thoracic area often spared (Schmorl and Junghanns 1971). Osteophytes, which appear as horizontal outgrowths extending from the edge of adjacent vertebral bodies, may also arise following a traumatic injury, like a compression fracture in one of the vertebrae, usually in the lumbar area. According to Schmorl and Junghanns (1971:158), "all osteophyte formation along the edges of the vertebral bodies results from damage to disc tissue." Accompanying aging, marginal osteophytes are probably not pathological in the absence of other abnormalities (Rogers and Waldron 1995). Etiological differences in frequencies of degenerative joint disease between the sexes are not clear. Resnick and Niwayama (1988:1371) state:

Plate 1: Osteophytosis of lumbar vertebra, burial 1.

> It is suggested that subtle changes in joint geometry that occur throughout life are associated with greater congruity of opposing articular margins . . . . Degenerative joint disease may be secondary to inflammatory joint disease such as rheumatoid arthritis and septic arthritis. Progressive cartilaginous abnormalities will eventually expose the subchondral bone to increased stress, initiating osseous,degenerative alterations . . . . It is apparent that either excess or diminished pressure is deleterious to cartilage. Changes are common in the non-stressed segments of the joints as well as the stressed articular surface.

PATHOLOGICAL BONE ABNORMALITIES

When analyzing ancient human skeletal remains, the paleopathologist has only bones for investigation. The cartilage has deteriorated, along with the synovial fluids and tissues. It can be very difficult to determine the exact process, which led to degeneration. "The analysis of paleopathology cannot give a complete picture of morbidity and mortality in ancient societies" (Lallo 1971:44). Researchers have invented guidelines for differential diagnosis and distribution of bony lesions (see Buikstra 1976:179-184). Pathological bone abnormalities include: abnormalities of size and shape; bone loss and abnormal bone formation; fractures and dislocations; porotic hyperostosis and cribra orbitalia (a bony response of the upper eye orbits or skull vault that may represent an anemic response caused by nutritional deficiencies, infectious disease, and/or parasitism; vertebral pathology and arthritis; and also miscellaneous conditions (Buikstra and Ubelaker 1994:112-123).

INFLAMMATORY BONE LESIONS

Inflammatory bone lesions of osteomyelitis and periostitis were assessed for the Harrington Site individuals. These lesions are the result of trauma or some type of infectious agent that has entered the body. Osteomyelitis is a chronic or acute bone infection of the medullary (inside) cavity and manifests in disruption of the cortical bone with subsequent involucrum (a sheath or coating, such as that encasing a sequestrum of necrotic bone) and cloaca (an opening, for drainage, into the sheath of tissue around necrotic bone (Mosby 1994: 348, 842, 1127-1128). Periostitis is distinguishable in that only the outer layer or periosteum of the bone is affected or inflamed. "Periostitis is a non-specific osseous response which may be provoked by infection or by trauma and is not, in itself, diagnostic of any particular disease" (Powell 1986:139; see Hoeprich 1977; Ortner and Putschar 1981; and Steinbock 1976).

Inflammatory bone lesions are a manifestation of bacterial infection. However, it is difficult to determine which bacteria are responsible. The more common bacterial agents are staphylococci, streptococci, pneumococci, and the typhoid bacillus. According to Powell (1988:41): "The experience of human populations with infectious diseases results from the dynamic interaction of three sets of variables: (1) host susceptibility and resistance, (2) infectious pathogens, and (3) the environment in which they interact." Differential diagnosis and lesion patterning are clues to the etiology of chronic conditions. Roberts and Manchester (1995:126) contend that:

> Sometimes the terms periostitis, osteitis, and osteomyelitis are applied respectively to infection of these separate layers. Since bone is a single biological unit, such an arbitrary division of terms is perhaps artificial and it is preferable to use the single term osteomyelitis for all infectious lesions of the bone. However, a semantic discussion is inappropriate since both systems of description have their uses.

Osteoporosis is the most common metabolic disease in prehistoric and present-day populations. Osteoporosis results in a reduction of total bone volume caused by thinning of the cortical walls of long bone and loss of trabeculae of cancellous bone. Aging is the most common cause of osteoporosis, but the etiology is certainly multifactoral (Resnick and Niwayama 1988). Dietary intake of calcium also plays a significant role. "Disturbances in calcium intake alter the rate of mineralization of new bone matrix formed" (Roberts and Manchester 1995:178). The individuals from Harrington were also assessed for osteoporosis, which is a disorder characterized by abnormal rarefaction of the bone (Mosby 1994). The extent of involvement was measured in terms of the visible, observable structure (Buikstra and Ubelaker 1994:117). To distinguish osteoporosis in the skeleton, signs of diminished bone mass with irregular trabecular patterning of endosteal resorption would be observed. This reduction in the number and diameter of the trabeculae would be accompanied by a thinning of cortical bone thereby greatly reducing the weight of the specimen (Ortner and Putschar 1981:291). There are differences in the rate of osteoporosis between males and females and even between populations:

> [Erickson] concludes that environmental factors, rather than genetics, is the major factor in the differences, and she speculates that nutrition and physical activity may be important (Ortner and Putschar 1981:292).

SCHMORL'S NODES

Schmorl's nodes are a direct result of degenerative disc disease and occur from a herniation of the intervertebral disc. These depressions are common in all populations (Waldron 1994). "Stewart (1953) concluded that these defects are age progressive, with trauma and postural stress as factors, and characteristic of populations with physically arduous lifestyles" (Kelley 1982:277).

Schmorl's nodes are a result of disc tissue that may be displaced from between the bony elements of the vertebrae by gradual progressive pathologic changes and occasionally from a single, sudden trauma. Thus, it can happen in the younger individuals as well as older. "Schmorl's depressions in subadults result from trauma from such activities as a fall from height, heavy lifting, trauma during physical exercises, and similar activities" (Mann and Murphy 1990:52). The disc prolapses into the intervertebral bodies as a result of gaps and weakening in the cartilaginous plates. The protrusion of the disc tissue results in Schmorl's nodes, which is considered an anatomical basis for vertebral insufficiency (Schmorl and Junghanns 1971). The node was described by Mann and Murphy (1990:52) as "a circular, linear or a combination of the two, depressed lesion, usually with a sclerotic floor of either of the centra end plates." Furthermore, Schmorl and Junghanns (1971:158) state:

> The partially liquid central portion of the intervertebral disc (nucleus pulposa) expands to cause the variable indentation of the vertebral bodies. In all cases, the loss of disc tissue signifies a decrease of efficiency of the disc which reacts upon the parts of the involved motor segment.

Kelley's studies revealed that with age, interosseous chondrosis evolves into spondylosis deformans (a condition of the vertebral elements in which mobility is limited, by fusion between the vertebral elements).

ARTICULAR SURFACE DEFECTS OF THE FOOT

Mechanical loading, which is imposed on the skeleton during physical activity, can provide clues to the responses of particular bones and their subsequent form (Ruff 1992:40). Arthritis and enthesopathies, i.e., work-related stress can be an indicator as to the physical activity of individuals and may be directly related to lifestyle. A lot of running, for example, will tend to stress the lower legs and affect the bony areas of muscle attachment at the heel and posterior femur. This would be consistent with the physically active lifestyle of hunter-gatherers.

Numerous incidences of metatarsal pitting involving the joints of the third metatarsal and lateral cuneiform bones of the foot have been noted consistently in prehistoric populations (Regan and Case 1997). The individuals at Harrington were assessed for this anomaly. Regan and Case (1997) suggested a probable etiology for these articular surface defects: According to Regan and Case (1997:24,195):

> Etiologies involving trauma, osteoarthritis, or an infectious process were examined, but were considered unlikely because of the regularity in location and appearance of the defects and the fact that the defects are often bilaterally symmetrical and without associated pathology in other bones and joints

Regan and Case (1997) felt it necessary to consider biomechanical influences and tarsal coalition for differential diagnosis. The defect seemed not to be age or sex specific Future research may provide further evidence that these anomalies occur more frequently in highly active robust individuals with a possible genetic component.

CHAPTER IV - RESULTS

All of the inventory, age, sex and anthropometric data of each individual from the Harrington site skeletal collection can be found in the appendices of this thesis. Any interpretation from these formatted data is tentative at the present time. In the following section, there is a brief description of mortuary information. The second section discusses the dental analysis, followed by epigenetic trait data. The last section deals with results of the paleopathological analysis. The burials are treated separately in each section. Mortuary specifics of Harrington site burials can be found in Table 4.

BURIALS

Burial 1 was a male, between 18-25 years at time of death. The skeletal condition was good. This male individual exhibited slightly bilobate posterior cranial deformation centered at lambda i.e., the intersection of the sagittal and lambdoidal sutures of the skull in the midline (Bass 1995; Buikstra and Ubelaker 1994). Cranial deformation is a cultural phenomenon and common among Native American Indian groups. Examples of major forms of cranial deformation are found in Figure 9. Pubic symphyseal morphological age was 22-24, Phase I (Brooks and Suchey 1990; Katz and Suchey 1986), Phase I, II, and III (Todd 1921), and auricular age was 20-24, Phase I (Meindl and Lovejoy 1989).

Burial 1 was a primary interment found in a tightly flexed position with his head oriented to the north. He was on his back with the knees tight to the chest and the left arm straight along the side. His right arm was bent with the right hand over the pelvic

Burial	Age	Sex	Burial position	Head orientation	Depth	Grave goods
1	18-25	Male	Tightly flexed/ supine	North	24cm	Freshwater shell
2	42-49	Male	Semi-flexed Knees left	East	21cm	Quartz projectile point/ turtle carapice
3	35-45	Male	Fully extended/ supine	Northeast	22cm	Large potsherd
4	39-60	Female	Semi-flexed/ Supine knees right	South	____	Antler baton/ Small-stemmed quartz point/ Small chert scraper
5	30-35	Male	Semi-flexed/ Supine Knees left	Northeast	____	2 potsherds
6	25-35	Male	Semi-flexed Left side	East	____	____
7	3-4	?	Bundle burial	Northwest	31cm	____
8	2-3	?	Bundle burial	East	30cm	____
9	50-59	Female	Semi-flexed Left side	East	____	Pottery fragments/ small dog remains

Table 4. Summary description of the Harrington site burials.

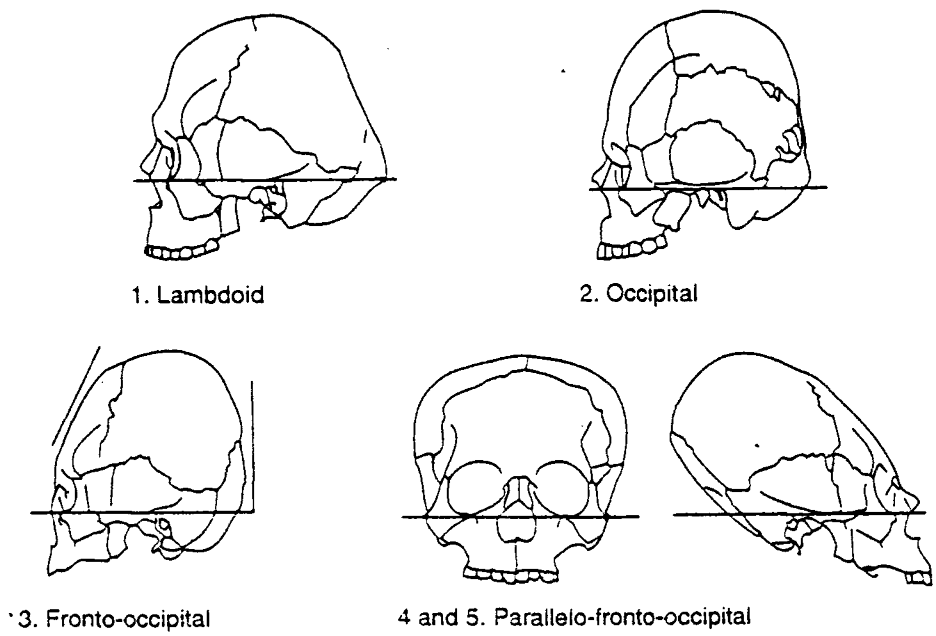


Figure 9: Major forms of North American cranial deformation (Buikstra and Ubelaker 1994, Figure 117, p. 162. After Neumann 1942).

region. A concentration of freshwater shells, both univalve and bivalve, were found near the abdominal area. The artifacts found in the burial fill were: 11 Mica Plain pottery sherds, 55 Sand Plain sherds, 2 pieces of daub, 3 fractured quartzite cobbles, 3 small white quartzite fragments, 1 large piece of Knox Chert, 1 Ocalla Chert, 5 unidentified animal bones, 16 freshwater univalve mollusk shells, and 17 freshwater bivalve mollusk shells (Chase 1977). For grave pit materials for all burials see Table 3.

Burial 2 was a male, between 34-49 at the time of death. The skeletal condition was good to excellent and almost complete. Pubic symphyseal morphological age was 45-49, Phase 5 (Brooks and Suchey 1990), Phase 7 and 8 (Todd 1920), and auricular age estimate was 42-44, Phase 5 (Meindl and Lovejoy 1989). Posterior cranial deformation centered at lambda (Buikstra and Ubelaker 1994).

Burial 2 was a primary burial in semi-flexed position with his head oriented to the north. The lower legs were tightly flexed with the heels to the pelvis. Both arms were folded across the abdominal region. A small projectile point of quartz was found on the right femur. An unmodified turtle carapace was placed inside the left elbow between the left arm and ribcage. The artifacts found from the burial fill were: 34 Mica Plain pottery sherds, 24 Sand Plain pottery sherds, 2 *Swan Lake* projectile points, 1 *Greenville* projectile point, 11 fractured quartzite cobbles, 27 fragments of white quartzite, 3 pieces of Ocalla Chert, 5 deer bones, 14 turtle bones (one individual), 2 Beaver teeth, 1 bone fragment from a striped skunk, 125 unidentified animal bone pieces, 89 freshwater univalve mollusk shells, and 13 freshwater bivalve mollusk shells (Chase 1977).

Burial 3 was a male, between 35-45 years at time of death. Skeletal condition was good. Auricular age was 40-44, Phase 5 (Buikstra and Ubelaker 1994; Lovejoy et al. 1985). This male exhibited posterior cranial deformation centered at lambda (Buikstra and Ubelaker 1994).

Burial 3 was a fully extended primary interment lying supine with both arms slightly folded. His head was oriented to the northeast. His right hand was located over the left elbow with the right arm resting on the rib cage. The left hand was positioned over the sternum. One large pottery sherd was between the tibiae. The artifacts from the burial fill were: 99 Mica Plain pottery sherds, 1 Mica Plain pottery sherd with a notched lip (crenulated), 77 Sand Plain pottery sherds, 8 pieces of daub, 15 fractured cobbles, 56 pieces of white quartzite, 7 pieces of Knox Chert, 1 piece of Ocalla Chert, 2 deer bones, 9 turtle bones, 98 unidentified animal bones, and 16 freshwater univalve mollusk shells (Chase 1977).

Burial 4 was a female, between 39-60 years at time of death. Skeletal condition was poor to good. In this instance there were only the teeth and sternal end of the rib to assess age. The teeth were extremely worn and the sternal rib age was 43.3-58.1 years, Phase 6 (Bass 1995:146; Iscan and Loth 1985). This female had posterior bilobate, posterior cranial deformation.

Burial 4 was a primary interment with her head oriented to the south. This female had her legs bent under her body with knees and legs to the right. She was lying supine with the right arm extended under the right pelvis and the left arm bent over the head and the left hand beneath the skull. A deer antler "baton" was found lateral to the left shoulder, which showed signs of considerable battering and may have been utilized as a pounding or flint working tool. This tool is not commonly found in graves of females and could have been placed there by a male relative. Just above the left pelvis was a *Swan Lake* small stemmed quartzite projectile point. A small pebble scraper was placed above the left foot by the lower left leg and a large pottery sherd was found near the right hand. The artifacts found in the burial fill included: 27 Mica Plain pottery sherds, 14 Sand Plain pottery sherds, 1 piece of daub, 1 *Swan Lake* projectile point, 9 fractured cobbles, 16 fragments of white quartzite, 4 pieces of Ocalla Chert, one deer antler tool, 29 unidentified animal bones, and 1 freshwater univalve mollusk shell (Chase 1977).

Burial 5 was a male, between 30-35 years at the time of death. Skeletal condition was good. Pubic symphyseal age was 30-35, Phase 3 (Brooks and Suchey 1990), Phase 6 (Todd 1921). Auricular age was 30-34, Phase 3 (Buikstra and Ubelaker 1994; Lovejoy et al. 1985). He exhibited labdoidal cranial deformation (Buikstra and Ubelaker 1994).

Burial 5 was a primary interment found in a semi-flexed position. The man's knees were bent with his head oriented to the northeast. His left arm was extended along the body with the right arm crossing the left and the right hand just above the pelvis. Many pottery sherds and freshwater mollusk shells were concentrated near the pelvis and ribs.

The artifacts found in the burial fill included: 1 Fiber Plain pottery sherd, 171 Mica Plain pottery sherds, 74 Sand Plain pottery sherds, 12 pieces of daub, 1 unmodified cobble, 23 fractured cobbles, 177 white quartzite fragments, 13 Knox Chert pieces, 26 Ocalla Chert pieces, 7 deer bones, 3 turtle bones, 43 unidentified animal bones, 39 freshwater univalve and 9 freshwater bivalve mollusk shells (Chase 1977).

Burial 6 was a male individual who was 25-35 years at time of death. The skeletal condition was poor with moderate to advanced post-depositional weathering. Early on, this individual was thought to be a female based upon the nature of the mandible and maxilla. However, after discovering that burial 1 and 6 had some misplaced elements due to past laboratory analysis, a switch of elements was in order for appropriate inventory. Upon realizing that the newly placed mandible was male, the post cranial-bones fit more appropriately. This male had posterior cranial deformation centered at lambda.

Burial 6 was a primary, semi-flexed interment on back with the knees tightly flexed to the left. His head orientation was to the east. His left arm was extended along the body with the right arm bent with both forearms extended toward the right knee. Both of the bent legs were tight to the body.

The artifacts found in the burial fill were: 1 Fiber Plain pottery sherd, 3 Mica Plain pottery sherds, 4 pieces of daub, 4 Knox Chert debris, 7 unidentified animal bone, and 8 freshwater bivalve mollusk shells.

Burial 7 was a 3- to 5-year old child at the time of death based on dental eruption (Ubelaker 1978). Sex was indeterminate. This individual had a completely restored cranium and face with the rest of the skeleton in good condition. There were indications of possible rodent gnaw marks on the femur, humerus, and skull. This may indicate signs of pre-burial exposure to the elements and wildlife as a process of defleshing the bones for secondary interment as a bundle burial. Burial 7 had posterior, bilobate cranial deformation.

Burial 7 was a child burial bundled in a small pit with an inverted skull with the long bones nearby. The head was oriented to the east.

The fill artifacts included: 7 Mica Plain pottery sherds, 5 Sand Plain pottery sherds, 4 pieces of daub, 8 pieces of white quartzite, and 1 unidentified animal bone (Chase 1977).

Burial 8 was a bundle burial of a 2 -3 year old child. There were only skull and long bone fragments. The maxilla and mandible were preserved enough for aging but still fragmentary. The skull was too incomplete for the determination of cranial deformation.

The head of burial 8 was oriented to the northeast. The burial fill artifacts included: 1 Fiber Plain pottery sherd, 20 Mica Plain pottery sherds, 7 Sand Plain pottery sherds, 11 pieces of daub, 3 white quartzite debris, and 9 unidentified animal bones (Chase 1977). No signs of rodent gnaw marks were evident in the remains present.

Burial 9 was a female with an auricular age of 50-59, Phase 7 (Buikstra and Ubelaker 1994:24-32; Meindl and Lovejoy 1989). Her long bones were extremely gracile.

Burial 9 was a primary interment of a flexed woman resting on her left side with her knees bent back wards with legs under the body. Her head was orientated to the east. Her arms were bent back to the chest with both hands over the face. Burial 9 was located at the bottom of a large pit feature, which contained a small dog burial nearby, which may not have been in direct association. Burial 9 appeared to be older than burial 4, 6, and 8 and was buried as deep as the water table. This burial may possibly have been part of an earlier Archaic component at this site (Chase 1977:25).

DENTAL ANTHROPOLOGICAL ANALYSIS

The following is an assessment of the dentition of each individual from the Harrington site. These results include information on dental development, wear, pathology, linear enamel hypoplasias, and calculus deposits. All of these individuals have shovel-shaped incisors which is typical of North American Indian populations. This trait varies in its expression, and ranges of these expressions are data that were not collected. For an inventory of the tooth presence and condition of all teeth, see appendices C-K.

Linear enamel hypoplasias at the Harrington could have been caused by nutritional problems related to periodic food shortages. However, extrinsic factors, i. e., environmental and parasitic, cannot be ruled out completely. Enamel hypoplasias are divided into two groups: (1) nutritional deficiencies and (2) childhood illnesses (Roberts and Manchester 1995). The etiology of hypoplastic conditions are likely due to a combination of factors. Kelley and Larsen (1991:3) state:

> On the basis of experimental research and epidemiological studies by various reseachers, there is evidence for an association between hypoplasia and malnutrition and disease. Because of the nonspecifity of hypoplasia, however, it is not possible to pinpoint a specific causal relationship between these enamel defects and a particular episode or episodes of nutritional deprivation or disease. Despite this nonspecificity, the study of these enamel defects provides an important source of information on the human condition.

Not all of the individuals from Harrington exhibited these nonspecific stress indicators.

The dentition of burial 1 exhibited a large amount of occlusal surface attrition (wear). There was a small amount of calculus on the buccal and lingual areas of the teeth. There were no carious teeth or abscesses. Linear enamel hypoplasias were also absent.

There was a slight porosity (pin-sized holes) of the temporomandibular joint which might be attributed to heavy attrition rates (Roberts and Manchester 1995).

Burial 2 was also an adult with a large amount of attrition. There were small amounts of calculus on the buccal and lingual surfaces of the molar teeth. There were no caries or abscesses. Three successive linear hypoplasias were noted on the maxillary left first central incisor. Two were noted on the left mandibular canine. The canine is the longest forming tooth and is preferred by researchers for examining linear enamel hypoplasias.

This individual exhibited uneven wear of the upper central incisors. The angle of wear measured 67 degrees from the labial to the lingual side. Unfortunately none of the four lower incisors were recoverable; however, they were in place before death as indicated by the roots broken off in the socket post-mortem. There was no overbite, but there was a distinct wear pattern where the upper first molars occlude on top of the lower first and second molars, creating a scooped-out appearance.

Burial 3 had the most complete dentition of the Harrington individuals. The teeth had a moderate amount of dental wear. The teeth had a moderate amount of calculus on the interproximal, mesiodistal, and buccolingual surfaces. Burial 3 showed no signs of caries or abscess. There was a hypoplastic nonlinear array of pits noted on the maxillary left canine. The upper central incisors exhibited bilateral winging at greater than 20 degrees. Winging is defined as rotation mesiolingually of the upper central incisors giving a v-shaped appearance when viewed from the occlusal surface (Buikstra and Ubelaker 1994). Winging is a dental trait that can be used to show familial relationships or genetic relationships (Turner et al.1991). Burial 7 also exhibits bilateral winging, possibly an indication of a relationship between these two individuals. These two burials were not next too near each other in a mortuary context.

Burial 4 had extreme attrition most likely due to advanced age. Interstitial wear existed between the mandibular second premolars and first molars. Dental calculus build-up was small and adhered to the mesial and buccal surfaces. It is possible that all of the dentition evaluated was washed and cleaned by previous researchers, thereby losing some of the calculus. Burial 4 had an apical abscess of the mandibular first molar, a sign of infection (Plate 2). The trauma of heavy attrition would have exposed the dentin, making the tooth vulnerable. This individual had hypercementosis of the roots, indicative of heavy attrition and advanced age. Although other factors have been cited for the cause of hypercementosis, such as chronic malnutrition, the progression of periodontal disease, and generalized trauma (Corruccini et al. 1987), it seems that occlusal stress and advanced age are likely the most contributing factor in this case. There were hypoplastic pits on the left maxillary canine and a linear horizontal hypoplasia defect on the left maxillary second premolar.

Burial 5 had no caries but displayed a large amount of dental attrition but a small amount of calculus build-up. There was, however, an abscess of the right mandibular first molar below the root, with sclerotic alveolar resorption 10.87 mm from the cementoenamel junction and 10.43 mm wide; there was fenestration (perforation) evident on the buccal aspect. The heavy attrition was coupled with extreme interproximal wear. In disease, there may be a loss of attachment between the alveolar bone and cementum, a

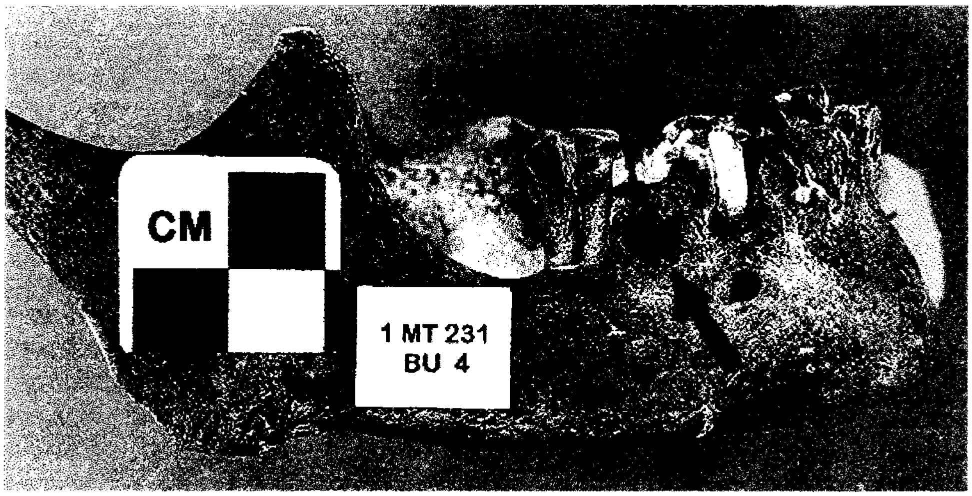


Plate 2: Mandibular abscess, burial 4.

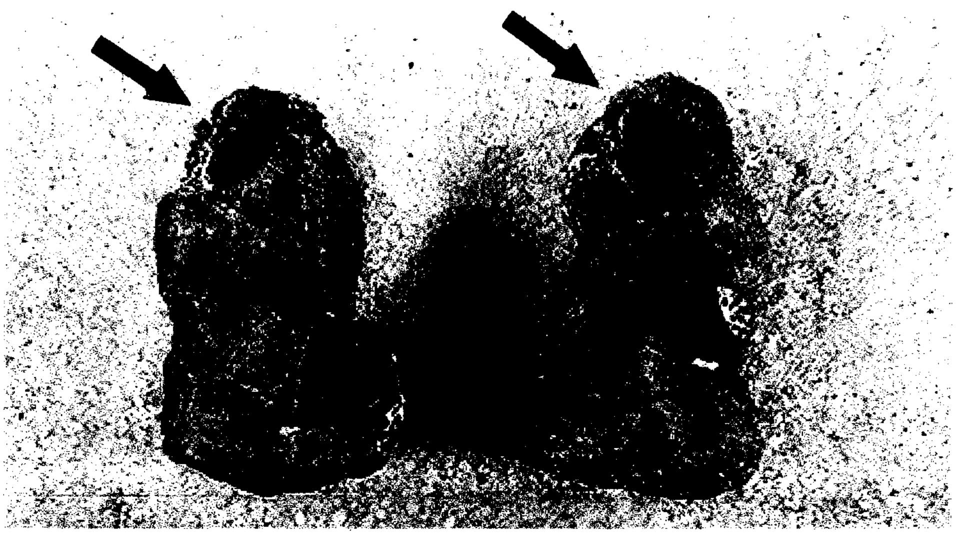


Plate 3: Nonosseous tarsal coalition, burial 4.

substance which "covers the root of the tooth and is the site where the periodontal ligament inserts to the tooth . . . Cementum is continuously deposited and resorbed throughout life with a general tendency for the overall thickness of cementum to increase [with age]" (Hildebolt and Molnar 1991:226). Teeth continuously erupt in response to attrition and add cementum to the roots (hypercementosis), thus maintaining the cementoenamel junction (where the tooth enamel meets with the root). Interestingly, burial 5 displayed antemortem loss of the first premolars. The upper first premolars exhibited unusual buccal wear on the occlusal surface. The maxillary first premolars would have occluded with the missing mandibular first premolars, perhaps evidence that this individual was using the mandibular canines and the upper first premolars for some specific task. The loss of these two mandibular canines may be due to abscesses. The unusual buccal wear on the upper first premolars could also be from the individual compensating for pain from abscesses by trying to chew in a certain way. Both of the mandibular first premolars were lost before death, and the remaining alveoli (bony sockets) exhibit alveolar changes and a resorptive process. Burial 5 showed alveolar changes on the buccal surface of the right mandibular first and second molar with concomitant fenestration. These changes not only affected the root apex but also the integrity of the alveolar bone. According to Hildebolt and Molnar (1991:227):

> The supporting bone consists of an outer thin layer of cortical bone and an underlying zone of cancellous (spongy) bone . . . In disease the cortex is resorbed, and the surface becomes roughened; the nutrient canals, which are normally small, become enlarged and can easily be seen. As the resorption of the cortex continues, the underlying trabecular pattern of cancellous bone is exposed.

Burial 5 may have had a case of retrograde periodontitis where the lesions join with the alveolar crest but originate in a more apical (root tip) location as a result of pulpal pathosis.

Burial 6 had moderate to heavy amounts of wear. No carious lesions or abscesses were noted. A small amount of calculus adhered to the buccal-lingual and mesio-distal areas of the molars. The left maxillary second premolar lingual side was rotated mesially in the socket, a genetic or developmental anomaly. Linear enamel hypoplasias were seen on the maxillary right canine and first incisor, maxillary left first premolar and also on the mandibular right canine. No nonmetric traits of interest were observed.

Burial 7 was a child of 4 years +/- 12 months who had no caries, abscesses, or calculus. There was slight wear evident on the occlusal surfaces of molar cusps, canines, and lateral and central incisors. This was an indication that this child was off soft foods. Burial 7 exhibited bilateral winging of the upper central incisors at less than 20 degrees, just like burial 3.

Burial 8 was a child 3 years of age +/- 12 months. The child had no caries, abscesses, calculus, hypoplasia, or dental attrition. There was double shoveling of the upper first central incisors.

Burial 9 had an extreme amount of wear on her maxillary dentition. The tooth sockets of this individual's mandible were completely resorbed (there were no teeth, and all of the tooth sockets had disappeared). Apparently she lost the mandibular teeth some time before death perhaps due to disease. A small amount of calculus adhered to the molars, buccolingually and mesiodistally. Burial 9 had an apical abscess of the maxillary left canine. Two linear enamel hypoplasias were noted on the cervical third of the maxillary left canine.

EPIGENETIC TRAITS

There are 24 primary nonmetric cranial traits included in *Standards for Data Collection from Human Skeletal Remains* by Buikstra and Ubelaker (1994). Not all traits manifest themselves in a population. According to Hauser and De Stefano (1989:16):

> The present evidence suggests that epigenetic traits show little or no sexual dimorphism [differences between males and females], little or no dependence upon age during adulthood, significant side to side associations in their expressions, no consistent tendency to occur on one side more often than the other, and are largely independent in their expression from one another.

Burial 9 of the series did not yield any nonmetric cranial traits due to its fragmentary and incomplete nature.

The Harrington site population exhibited a variety of epigenetic traits. Burials 1 and 7 have lambdoidal ossicles in which the size, shape, and location are similar. Burials 1 and 2 share many nonmetric traits, and they were buried next to one another. The significance of these observations cannot be fully appreciated until other skeletal populations are found that represent similar biological markers. By and large, these traits may be viewed as normal with nothing extraordinary about them. They are a basis to compare with future data. A summary of the data on epigenetic traits can be found in Table 5.

PALEOPATHOLOGY

After considerable research and investigation of infectious disease processes and differential lesion patterning, no evidence of epidemic diseases was found at the

Table 5: Epigenetic variants of the skull

	Bu 1	Bu 2	Bu 3	Bu 4	Bu 5	Bu 6	Bu 7
1) metopic suture	A	partial	A	A	9	A	A
2) supraorbital structures							
notch	P	P	P	A	9	P	P
foramen	P	P	A	P	9	A	P
3) infraorbital structure	9	P	9	A	9	9	A
4) multible infraorbital foramen	9	P	9	9	9	9	P
5) zygomatico-facial foramen	9	P	9	P	9	P	P
6) parietal foramen	P	P	A	A	9	A	A
7) sutural bones							
coronal ossicle	9	9	P	P	9	P	A
apical bone	A	A	A	9	P	A	A
lambdoid ossicle	P	A	A	9	P	P	P
asterionic bone	P	P	A	A	P	P	P
parietal notch	A	A	P	P	9	A	A
8) inca bone	A	A	A	A	P	A	A
9) condylar canal	9	9	9	9	9	9	P
10) divided hypoglossal canal	A	A	9	A	P	A	A
11) flexure of superior sagittal suture	A	A	P	P	P	P	A
12) foramen ovule incomplete	9	9	9	9	9	9	A
13) foramen spinosum incomplete	9	9	9	P	9	9	A
14) pterygo-spinous bridge	9	9	9	A	9	9	9
15) pterygo-alar bridge	9	9	9	9	9	9	9
16) tympanic dihiscence	A	A	A	P	A	A	P
17) auditory exostosis	P	A	P	A	A	A	A
18) mastoid foramen							
location	Temporal	A	Temporal	A	A	A	A
number	2	A	2	A	A	A	A
19) mental foramen	P	P	P	P	P	P	P
20) mandibular torus	Moderate	A	Moderate	A	A	A	Moderate
21) mylohyoid bridge							
location	A	A	A	A	A	9	Center
degree	A	A	A	A	A	9	Complete
22) atlas bridging							
lateral	Complete	Complete	Complete	9	Complete	A	9
posterior	A	Complete	A	9	A	A	9
23) accessory transverse foramina	9	9	9	9	A	9	9
24) septal aperture	A	P	A	P	A	A	9

A = absent P = present 9 = unobservable

Harrington site. This would certainly corroborate evidence from other studies of pre-agricultural populations in the Southeastern United States (Kerley and Bass 1978; Buikstra and Mielke 1985). That does not mean, however, that epidemic diseases did not exist, because many of the ailments could have caused death before affecting the skeleton.

The paleopathology of the Harrington site included osteoarthritis and degenerative joint disease, osteoporosis, trauma, Schmorl's nodes and/or depressions, hematogenous periostitis, and a possible neoplasm. Table 6 outlines individual pathologies, sex, and age at death.

Burial 1 suffered a traumatic compression fracture of the second lumbar vertebra resulting in a 12-15 degree scoliosis of the spine (Plate 4) (Mikell 1984:2). There was a degenerative reaction to the trauma with possible secondary infection affecting the remaining lumbar vertebrae. The distinctive crescent-shaped lesions on the anterior portion of the lumbar vertebral bodies (Plates 5 and 6) implied a compensatory biomechanical force involving the cartilaginous intervertebral discs (Kelley 1979).

The lumbar vertebrae exhibited moderate osteophytosis (Plate 1). The dorsal aspect of the left patella appeared arthritic with a small multifocal surface porosity in the center. Mikell (1982) noted torsion of both femurs with 25 degrees of torsion in the right and 26 in the left. He suggested that the uniformity of the torsion might indicate a congenital complication. Mikell notes this in other burials at Harrington, but numerous burials with the same congenital disorder would be unlikely. Therefore, the torsion could

Table 6: Sex, age at death, and pathologies of individuals

Burial no.	Sex	Age	Pathologies
1	Male	18-25	Vertebral arthritis Lumbar compression fracture (healed) Osteochondrosis (crescentic lesions, vertebrae) Osteoarthritis Osteophytosis
2	Male	42-49	Osteoarthritis Nonosseous tarsal coalition Osteophytes Hypoplasias
3	Male	35-45	Osteophytes Schmorl's nodes Hypoplasias Neoplasm ?
4	Female	39-60	Osteoporosis Osteopenia Degenerative joint disease Osteoarthritis Nonosseous tarsal coalition Fractured fourth metatarsal (healed) Systemic disorder ? Hypoplasias
5	Male	30-35	Traumatic myositis ossificans Fractured fibula (healed) Localized periostitis Colles' fracture (healed) Depressed cranial fracture (healed) Hypoplasias
6	Male	25-35	Hypoplasias
9	Female	50-59	Osteoporosis Osteophytes Cribra orbitalia (healed) Degenerative joint disease Porotic hyperostosis (healed)

Plate 4: Compression fracture of the lumbar - 2 vertebra, burial 1.

Plate 5: Crescentic lesion, superior/anterior aspect of lumbar - 3, burial 1.

Plate 6: Crescentic lesion, inferior/anterior aspect of lumbar - 3 vertebra, burial 1.

be attributed to the robustness of these individuals who were actively involved in hunting and gathering activities.

The femora of burial 2 exhibited prominent lineae aspera (posterior crest of the thigh-bone to which muscles are attached), which was consistent with a stocky build and an active lifestyle.

The border of the sacro-iliac joint and sacral promontory of burial 2 was slightly arthritic with bony lipping. Osteoarthritis was evident on the surface of the acetabulum with polishing (eburnation) in the center. Exostoses were situated superior to the auricular surface of the pelvis, almost certainly a result of ligamentous changes, perhaps attributed to the biomechanical torsion of the femurs at 23 degrees (Mann and Murphy 1990).

Burial 2 had nonosseous tarsal coalition of the left and right second cuneiform and lesions on the surface of the adjacent metatarsals of the feet (see example Plate 3). This individual shows osteoarthritis in the semi-lunar notch of the ulna, the vertebrae, and the acetabulum of the pelvis.

Burial 3 had evidence of sudden acute trauma to the vertebral column. Schmorl's nodes/depressions are found in much of the thoracic vertebrae 7-11 (Plate 7). There was mild osteophytosis of lumbar-5. According to Buikstra and Ubelaker (1994:121).

> Schmorl's nodes occur as a result of intervertebral disc pressure on the superior or inferior surfaces of the vertebral bodies. [They] are commonly associated with other forms of degenerative change, such as the formation of bony spurs or *osteophytes* extending from the vertebral bodies.

Everyday physical stress or acute trauma plays a role in this disorder called intervertebral osteochondrosis (Schmorl and Junghanns 1971). Kelley's study (1982:278) revealed that

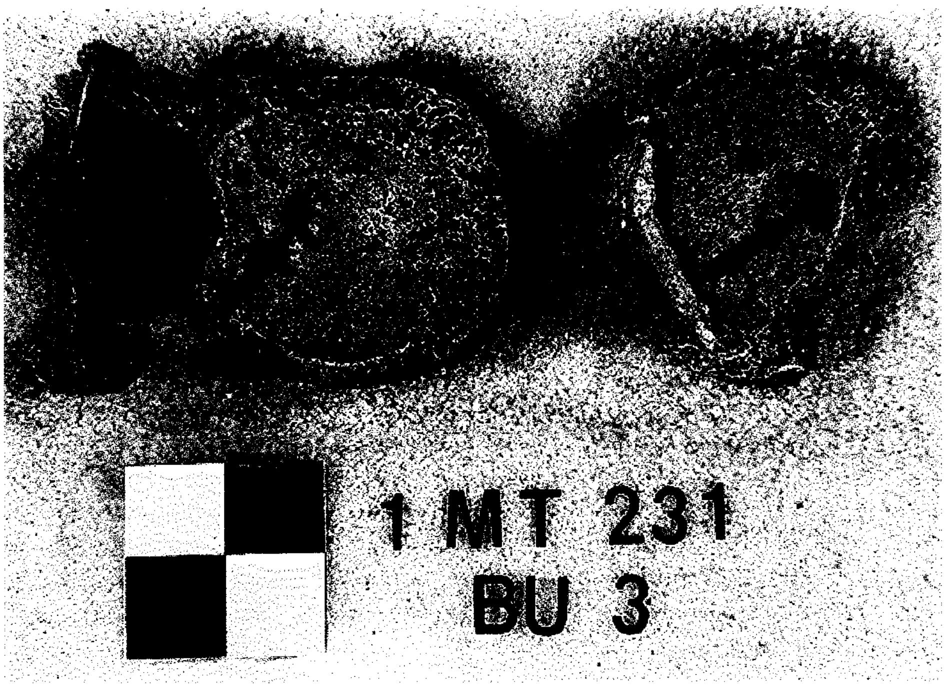


Plate 7: Schmorl's depressions as seen in the vertebral body, burial 3.

with age, intervertebral osteochondrosis evolves into spondylosis deformans (a degenerative joint disease process) and was statistically higher in males.

Burial 3 had a lesion posterior the clinoid process around the area of the spheno-occipital synchodrosis. This area involves both the sphenoid and occipital portion of the clivus (Plate 8). The clivus forms a part of the floor of the posterior cranial fossa. The clivus is a steep, bony incline passed from the back of the Sella turcica to the border of the foramen magnum. The anterior clivus is sphenoid and the posterior clivus is occipital (Sobotta 1906). This may be a result of a neoplastic disorder. A neoplasm is an abnormal mass of tissue, which can be benign or malignant (Mosby 1994:1056): "Their only manifestation in bone is by virtue of their secondary spread, or more rarely their local bone invasion" (Roberts and Manchester 1995:192).

Burial 4 was one of two females at Harrington. These females were the oldest individuals from the sample. Auricular and pubic symphyseal aging techniques could not be used due to the extensive remodeling and skeletal lysis of bone in those areas from arthritis (Plate 9). Child bearing may have been another factor, which affected the bones of the pubic symphyses from the stress of ligament contraction during parturition. Along with hypertrophy of the ligaments, osteopenia is suspect, which is linked to osteoporosis. Osteopenia is a condition of subnormally mineralized bone, usually the result of a failure of the rate of bone matrix synthesis to compensate for the rate of bone lysis (Mosby 1994:1129). The condition is perhaps due to a decrease in bone mass related principally to low-turnover osteoporosis (Resnick and Niwayama 1988). Kelley (1979) noted that the frequency of pits and grooves in nulliparious females remains low throughout life.

Plate 8: Possible neoplasm affecting a portion of the sphenoid and occipital bones, burial 3.

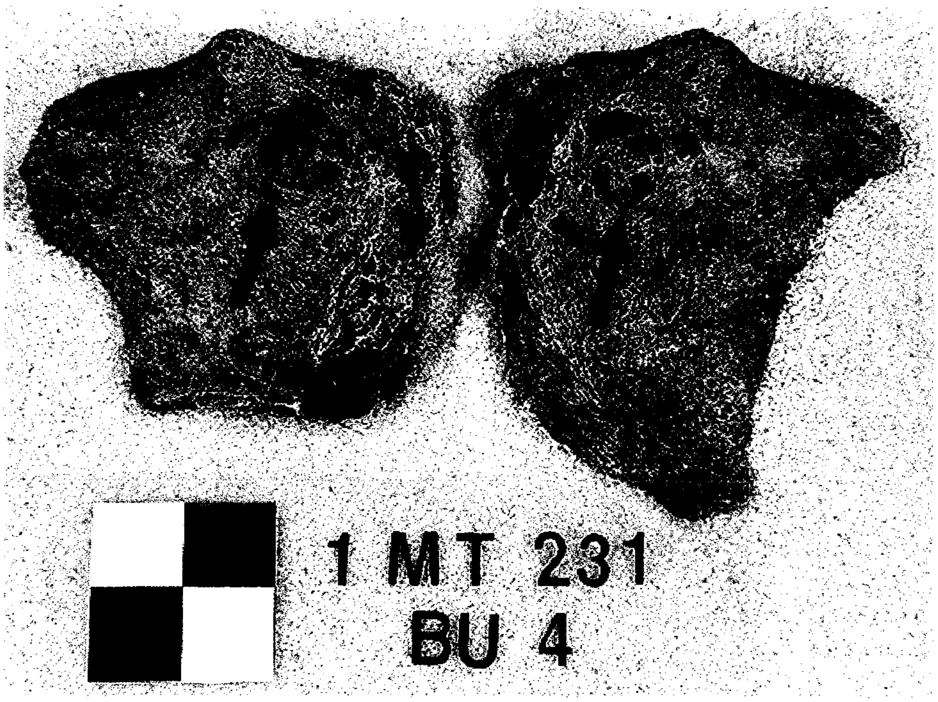


Plate 9: Pubic symphyses, burial 4.

Since the peak age of childbearing females rises sharply from the third decade of life, Kelley suggests that the visible bony changes were obliterated with age. Furthermore, a fairly large proportion of females in his sample showed no evidence of dorsal pubic pitting regardless of parity status. In his sample of n = 91, only 9.2% of parious females exhibited moderate to severe dorsal pitting. Obesity can be a factor and "the upright gait puts the pelvis in a keystone position for weight-bearing static and dynamic stress, leading to age-related degenerative changes in both sexes" (Putschar 1976:594). The diagnosis was a difficult one, but perhaps the condition was due to the synergistic effect of age, parturition, nutrition, or some unknown regional systemic disorder. Putschar states: "The human symphysis pubis undergoes a variety of changes under the influence of age and function and, in the female, under the special hormonal influence of pregnancy and the mechanical trauma of parturition" (Putschar 1976:589). According to Holt (1978), remodeling due to parturition occurs on the dorsal aspect of the pubic bones, creating what is termed a "retropubic eminence." Burial 4 exhibited these lesions on the ventral surfaces. Mikell (1982:8) describes the bilateral irregular pits on the anterior surface of the pubic bone as "smooth-walled lesions with little new bone development." Mikell noted that there was cortical thinning of the long bones that may indicate a systemic disorder related to disease or nutritional stress.

Burial 4 exhibited the most osteoarthritis of any individual at Harrington. Affected joints included: the temporomandibular, glenoid cavitiy of the shoulders, the semi-lunar notch of the ulnae, the carpal bones of the wrist, metacarpals of the hands and metatarsal of the feet, and the sacro-iliac joints of the pelvis with large areas of eburnation. This individual also suffered from a fractured fourth metatarsal of the left foot resulting in an infectious abscess with concomitant pseudoarthritis between the third and fourth metatarsal (Plate 10). Additionally, this female exhibited non-osseous tarsal coalition of the third and fourth metatarsal and cuneiform of both feet (Plate 3).

Burial 5 possessed greatly elevated femoral lineae asperae bilaterally along with enthesopathies on the posterior left and right calcanea. The distal right tibia exhibited traumatic myositis ossificans (inflammation of muscle tissue initiated trauma in which the muscle is replaced by bone) due to a pulled Flexor longus digitorum ligament which moved a spicule of bone anteriorly toward the medial malleolus.

This male's tibiae had pitting and irregularity of the surfaces with associated striations, signs of periostitis (inflammation of the periosteum of the bone) possibly indicative of a systemic infection. The fibulae were affected as well and the left tibia had a well-remodeled (healed) fracture of the distal third. There was evidence of lower leg bone trauma: a fractured left fibula was healed 100 mm from the distal end. The isolated pathologies of the lower leg bones surely would have caused this individual pain and fever of the affected area, perhaps intermittently.

A colles' fracture was detected in the distal radius and ulna resulting in a callous formation and lateral angulation of these bones. The area for the attachment of the right deltoid muscle of the humerus was large, and the area of insertion on the right clavicle for the deltoid muscle indicated a quite robust individual.

Burials 7 and 8 were those of children with no visible pathological abnormalities. Whatever caused these individuals to die left no manifestation in the bony remains.

Plate 10: Healed fracture of metatarsals with accompanying arthritis, burial 4.

Burial 9 had slight arthritis of the temporomandibular joints and severe, advanced degenerative joint disease in lumbar vertebrae 1 and 2 with osteophytosis (Plate 11) and in cervical vertebrae 3-6 (plate 12). The destruction of these lumbar vertebrae took place over a long period of time with major bone loss. Cortical thinning was evident in the shafts of the long bones, perhaps due to old age.

ARTICULAR SURFACE DEFECTS OF THE FOOT

Two individuals from the Harrington site possessed bilateral nonosseous tarsal coalition of the third metatarsal and cunieform (Plate 3).

Recently, Regan and Case (1997) excluded biomechanics as a factor by investigating torsion of the foot, specifically of the tarsometatarsal joint. The compression force for the third joint was one of the most restricted; therefore, if biomechanical forces were involved, then it was likely to affect similar joints as well. Regan and Case (1997) suggested a synchondrosis, which is a cartilaginous union in tarsal coalition that would be evident in archaeologically recovered skeletons: "We have found, what we feel to be presumptive evidence that the pit defect in the third metatarsal and third cuneiform is part of a range of expressions of tarsometatarsal coalition" (Regan and Case 1997:195). This "nonosseous" tarsal coalition (tarsal blocks) is believed to be a developmental anomaly affecting cartilaginous skeletal elements during joint space cavitation in the embryonic period (Regan and Case 1997). Aufderheide and Rodriquez-Martin (1998:75) state:

> Tarsal blocks may be congenital (the etiology is unknown) or secondary to extrinsic factors (infection, trauma, etc.), and may be isolated or form part of other syndromes (Apert's syndrome, arthrogryposis, symphalangism, etc.). These blocks may occur between any of the tarsal bones, but most common of the tarsal blocks are talocalcaneal coalition: bilateral in 25% of cases and occurs between the talus and the sustentaculum tali.

Plate 11: Degenerative lumbar disease, burial 9.

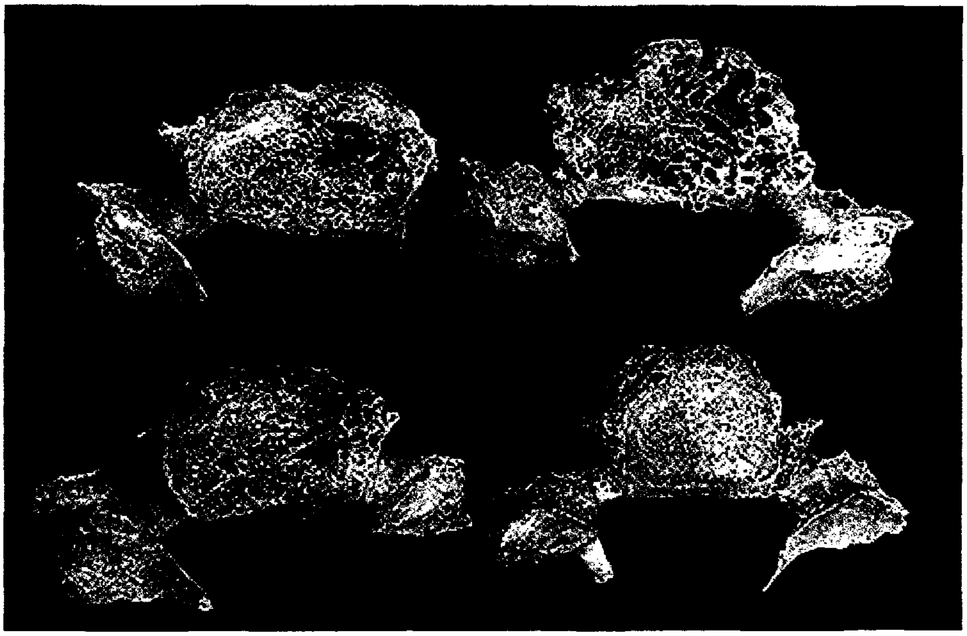


Plate 12: Degenerative cervical disease, burial 9.

> Calcaneonavicular coaltion: may be bilateral and shows hypoplasia of the head of the talus, talonavicular coalition: this is much more uncommon than the blocks listed above.

The nine individuals from the Harrington site suffered from a variety of conditions considered pathological. The most prevalent conditions were osteoarthritis and degenerative joint disease. Considering the robusticity of the males in this population, and their subsistence strategy of hunting and gathering, these pathologies would not be unusual. Osteoporosis was detected in both the females who were quite advanced in age. Mikell (1984:8) notes cortical thinning of the long bones in burial 4 due to perhaps some nutritional stress. More detailed research on cortical bone loss of these skeletons in the future might be illuminating.

The other pathological conditions noted in this sample include: trauma, likely from accidents, hematogenous periostitis, possibly secondary to trauma, Schmorl's nodes or depressions, and a potential neoplastic disorder, which are the most unusual conditions from the sample. The two children from Harrington show no overt cause of death, perhaps because whatever led to their demise was swift.

A full understanding of pathological dynamics cannot be complete since the population representing the Calloway Culture is very small. Furthermore, there are no comparative populations to ascertain any trends in mortality and morbidity in the central Alabama region. Chase states (1977:27-28):

> The site furnished us with only a few clues as to the origins of these early hunters. Their probable contact with Early Swift Creek peoples, perhaps in the Gulf Coastal area, seems likely in view of strong ceremic similarities, especially in the earlier sub-phase (Catoma). Their contact with the later Weeden Island peoples - also a Gulf Coastal culture, has been demonstrated on several terminal Calloway

sites of the later sub-phase (Maxwell). Finally, the exploration of at least ten major sites in this region illustrates the Calloway as being ancestral to the *Hope Hull Phase*, which, by the 9th century A. D. may have become a major prehistoric power in this region.

CHAPTER V - CONCLUSION

Nine Middle Woodland human skeletons from central Alabama were analyzed. No discernible demographic conclusions were possible due to the small population sample. However, according to Reichs (1986), even small skeletal samples have a purpose of "filling in the gaps." They might represent portions of a larger series, which are underrepresented in the population. Analyses of the lithics and pottery from the Harrington site (1Mt231) are incomplete. Future studies of these artifacts might reveal nuances of culture contact and trade or other cultural phenomenon.

Autonomous village life 1500 years ago was vastly different than today in southeastern North America. The Woodland stage (circa 100 B. C. - 1000 A. D.) in Alabama prehistory was a time of expansion and cultural change. The Woodland stage marks the production of pottery and diffusion of pottery styles. In central Alabama,

> two major waves of foreign influence, both emanating from culture to the southeast, can be recognized in the regional Woodland sequence. The earliest of these diffusions occurred during the middle Woodland period and is marked by the appearance of Deptford ceramics at sites along the Alabama River. Later, after A. D. 500, Weeden Island pottery diffused from coastal communities into the interior. The appearance of these ceramic forms in Woodland components in central Alabama denotes the beginning of the late Woodland period (Walthall 1980:175).

Calloway Phase ceramics from Harrington show evidence of contact with Weeden Island populations and the Santa Rosa-Swift Creek tradition from the Gulf Coastal Plain.

The Harrington site was a small settlement on a tributary of the Alabama River with a hunter and gatherer subsistence regime, indicated by the abundance of animal remains and by the lack of any identifiable cultigens. The archaeological evidence of contemporaneous phases such as those at Ivy Creek (Cottier 1982) and Gainesville Lake (Jenkins 1982) suggests nomadic activity with possible seasonal occupations at the Harrington site. There was similarity of mortuary goods found between Harrington and those excavated by Jenkins (1982) in the Gainesville Lake area of the central Tombigbee Valley. These include: lithic tools, bone, stone, and shell, ceramics, and turtle shell remains. "In an egalitarian society (earned status) most of the mortuary artifacts will be technomic and will reflect personal achievement of the deceased individual. The statuses were likely to represent a sexual division of labor" (Jenkins 1982:222). It was difficult to interpret social stratification at Harrington due to the small population. It is, however, plausible that the sociopolitical organization was like other contemporaneous groups in the region. At present, it appears that the artifacts do not cross cut local boundaries. More in depth investigations are needed.

A pathology summary devised by Cole et al. (1982) for the Gainesvillle Lake area cemeteries was compared with Harrington's pathological conditions (see Appendix A for pathology summary and mortality profiles for these populations). The statistical evidence indicates that trauma and degenerative pathologies are higher at Harrington while infection and nutritional stress are lower in comparison. It appears that there may be significant differences in environmental and social stressors between the middle Woodland population at Harrington and those of the late Woodland at Gainesville

Lake. "Environmental stresses corresponding to social, nutritional, and disease stressors may be inferred from osteological pathologies" (Cole et al. 1982:236). When other typological attributes fail to distinguish between populations, skeletal biology will prove useful for these interpretations.

The lives of the Harrington individuals were not hampered by sedentism. These groups were mobile and archaeological evidence indicates seasonal shifts with many sites revisited yearly. Like the Archaic peoples before them, ecological conditions played an important role in survival. Technological advancement is evident with the invention of pottery marking the beginning of the Woodland Tradition. Several Calloway sites have been found along the Alabama River shoreline and up tributary streams (Walthall 1980). The exploitation of different environmental niches i.e., smaller tributary streams, might have evolved from increasing population pressures through Woodland times.

The Early (Gulf Formational) to Middle Woodland time span in central Alabama is known almost entirely from lithic and pottery types. Only one other *Calloway Phase* burial is known, other than the nine from Harrington. This single burial was a flexed young adult female with a possible wound behind the right ear (Jenkins n.d.). This individual was found in a shell midden deposit, with no grave associations (Walthall 1980). The Harrington skeletal assemblage and synthesis is therefore a departure for investigations into Woodland cultural dynamics in central Alabama and surrounding areas.

Nine individuals, five men, two women, and two children were analyzed from the Harrington site. They ranged in age from 2 to over 50 years old. Average height was

169 mm (5'6") for the men and 163 mm (5'3") for the women. Sexual dimorphism was evident between the sexes. The women were smaller and more gracile, and the men were more robust with larger muscle attachments. Heavy attrition was age progressive and was noted on all the adult dentition. Carious lesion rate was zero percent, which is consistent with other Archaic, Early and Middle Woodland populations from the east, summarized by Milner (1984) in Larsen (1991). Milner calculated 0.4 to 7.8 percent in these three populations, whereas late Woodland, Mississippian, and contact populations averaged 4.5 to 43.4 percent carious lesions. Based on the dental data, it is likely that the Harrington site inhabitants relied heavily on foods that were low in sucrose content, i.e., more protein and plant material (no caries), and high in abrasion (heavy wear) to include processing techniques.

Epigenetic traits of the Harrington individuals were recorded and listed in Table 6. As with most statistical analyses, sample size is critical, therefore meaningful comparisons were lacking (Hauser and De Stefano 1989:16). Burials 1 and 2 appear to share the most genetic similarity of these traits. Their close mortuary proximity could also indicate familial ties. Burials 3 and 7 share two traits that might have a genetic relationship. Both have winging of the upper central incisors and the presence of a moderate mandibular torus. These similarities might possibly mean these two individuals were related as well.

Evidence of osteoarthritis and/or degenerative joint disease was the most common of conditions affecting the Harrington adult individuals at 90 percent. The weight-bearing joints affected were primary with a few secondary locations caused by trauma. For males, the robusticity indices were elevated indicating high levels of mechanical loading on the axial skeleton, perhaps from demands of a foraging subsistence economy (see appendix B for postcranial indices and stature estimates). Both females were advanced in age, so degenerative and arthritic changes were most likely age-related. Other pathological abnormalities included trauma with and without infection, porotic hyperostosis and cribra orbitalia, a possible neoplasm in the central portion of the occipital bone, and linear enamel hypoplasias of the dentition.

From the biological data extrapolated from this analysis, some tentative conclusions were obtained. Specific biological characteristics are analyzed interactively and holistically. Future research on the interaction of biological features may change perspectives of interpretation. From the dental data, it is presumed that the Harrington population was a hunting and gathering society. Heavy attrition and low carious rates were significant indicators for this assumption. Robust body size and bone strength, in addition to a high frequency of degenerative joint disease, is a predisposition of this lifestyle. Future statistical analysis of craniofacial, tooth, and postcranial measurements might prove to be insightful. A lower incidence of nonspecific bone infection and infectious bone lesions caused by epidemic or endemic disease led to minimal stressors experienced by this population:

> The hard tissues, skeletal and dental, are remarkably sensitive to the environment. A variety of factors, including disease and diet, population mobility, and physical exercise and work, leave a collective signature on the skeleton that directly and indirectly reflects environmental circumstances throughout the lifetime of the individual and the population . . . and an amorphous group of physical, physiological, and psychological variables reflect the individual's interaction with his environment (Larsen 1987:24, 36).

The inhabitants of the Harrington site made their living by hunting and gathering in an ecosystem where scarcity of nutrients was evident, at least on a seasonal basis. Dental hypoplastic analysis confirms seasonal nutritional stress. Mortality and morbidity patterns are inconclusive given the small sample. However, certain conclusions can be made on the extant data.

The high incidences of degenerative joint disease and osteoarthritis along with local trauma, confirm an active lifestyle. The stress on the axial skeleton, especially seen in the males of this population, verify this activity and suggest a sexual division of labor. The lack of evidence for disease from the skeletal remains further indicates small population aggregates and a semi-nomadic existence.

Health and disease in prehistoric populations are directly related to ecology. The Harrington site inhabitants were situated in a tributary stream ecosystem that may not have been the most optimal setting for adaptation to the environment. It seems plausible, however, that they made a decent enough living for many of the individuals to survive to advanced age. Increasing social pressure may have played another important role during this time of cultural change and population expansion.

Appendix A

Metrics

Permanent Dentition Measurement and Wear
Postcranial Indices and Stature Estimates
Linear Enamel Hypoplasias
Postcranial Measurements
Cranial Measurements

Appendix A: 1Mt231 Permanent Dentition Measurements and Wear

Observations*		Burial 1	Burial 2	Burial 3	Burial 4	Burial 5	Burial 6	Burial 9
Maxilla								
I1	MD	6.26	7.01	9.11	--	--	8.12	--
	BL	6.35	7.18	7.44	--	--	6.37	--
	CH	5.77	6.20	5.36	--	--	8.24	--
I2	MD	6.13	--	8.64	--	5.54	6.11	6.02
	BL	6.00	--	7.34	--	6.34	5.56	6.34
	CH	5.02	--	8.17	--	3.12	6.72	--
C	MD	7.32	7.37	8.53	6.79	7.52	7.41	7.81
	BL	7.96	9.17	9.14	8.49	8.39	8.10	8.85
	CH	4.88	6.20	8.22	4.30	6.71	7.34	5.39
PM1	MD	--	--	7.19	--	6.73	6.97	6.65
	BL	--	--	10.08	--	9.48	9.81	10.05
	CH	--	--	6.26	--	4.60	5.58	4.85
PM2	MD	5.70	6.19	6.53	5.63	6.20	7.05	5.78
	BL	8.51	10.36	9.73	9.98	9.58	7.10	8.92
	CH	3.57	5.64	6.13	5.14	4.74	5.69	3.50
M1	MD	8.93	9.05	10.98	--	9.67	10.41	--
	BL	11.58	12.23	12.97	--	11.27	12.00	--
	CH	4.70	5.43	6.54	--	5.53	5.09	--
M2	MD	8.43	--	11.26	--	8.67	9.35	--
	BL	10.48	--	12.64	--	10.48	11.42	--
	CH	2.81	--	7.26	--	6.16	5.36	--
M3	MD	8.17	--	--	--	10.11	--	8.23
	BL	10.31	--	--	--	10.89	--	10.43
	CH	3.85	--	--	--	5.22	--	4.45
Mandible								
M3	MD	10.04	11.34	10.89	10.29	9.95	9.92	--
	BL	10.41	11.61	11.92	10.57	10.75	10.04	--
	CH	5.91	4.34	5.19	4.14	6.10	3.13	--
M2	MD	9.17	9.73	11.84	9.58	10.38	10.59	--
	BL	10.15	11.03	11.76	9.97	10.56	10.64	--
	CH	3.94	2.76	4.93	3.91	4.79	4.24	--
M1	MD	11.08	9.32	12.00	8.82	9.63	11.50	--
	BL	11.11	12.10	11.74	10.14	10.84	10.80	--
	CH	4.29	2.47	5.79	2.32	4.52	4.35	--
PM2	MD	6.19	7.27	6.65	--	6.07	6.52	--
	BL	8.20	9.69	8.69	--	8.36	8.08	--
	CH	3.63	6.03	5.25	--	5.13	6.21	--
PM1	MD	5.89	6.77	7.41	--	--	6.82	--
	BL	8.03	9.00	8.86	--	--	8.19	--
	CH	4.19	6.33	6.71	--	--	5.98	--
C	MD	6.48	7.35	--	--	6.71	6.67	--
	BL	7.59	7.42	--	--	8.18	6.88	--
	CH	4.99	5.91	--	--	3.31	7.92	--
I2	MD	3.76	--	6.49	--	4.55	--	--
	BL	5.58	--	6.47	--	6.28	--	--
	CH	--	--	5.03	--	3.96	--	--
I1	MD	3.77	--	5.33	--	4.03	--	--
	BL	5.36	--	6.28	--	5.55	--	--
	CH	2.83	--	6.48	--	2.05	--	--

* Measurements taken following procedures outlined by Buikstra and Ubelaker 1995; measurements in mm
MD=Mesiodistal, BL=Buccolingual, CH=Crown height
Adapted from Larsen and Kelley (1995)

Appendix A: 1Mt231 Postcranial Indices and Stature Estimates

Burial	Max. Length	Robusticity	Index value	Stature estimate	
1	38.4cm(tibia)		Platycnemic=59.9	2.39(38.4)+81.45=173+/-3.27	5'6"
	45.0cm(femur)	12.2	Platymeric=84.5	2.15(45.0)+72.57=169+/-3.80	5'5"
	33.0cm(humerus)	16.9	Radiohumeral=75.8	2.68(33.0)+83.19=172+/-4.16	5'6"
	25.0cm(radius)			3.54(25.0)+82.00=171+/-4.60	5'6"
2	38.0cm(tibia)		Mesocnemic=68.1	2.39(38.0)+81.45=172+/-3.27	5'6"
	44.5cm(femur)	12.1	Platymeric=84.9	2.15(44.5)+72.57=168+/-3.80	5'5"
	33.0cm(humerus)	17.6	Radiohumeral=77.3	2.68(33.0)+83.19=172+/-4.16	5'6"
	25.5cm(radius)			3.54(25.5)+82.00=170+/-4.60	5'6"
	28.0cm(ulna)		Caliber=13.7	3.48(28.0)+77.45=174+/-4.66	5'7"
3	32.0cm(humerus)	16.8	Radiohumeral=78	2.68(32.0)+83.19=169+/-4.16	5'5"
	25.0cm(radius)			3.54(25.0)+82.00=171+/-4.60	5'6"
	26.0cm(ulna)		Caliber=14.7	3.48(26.0)+77.45=168+/-4.66	5'5"
4	30.5cm(humerus)	16.2	Radiohumeral=75.4	2.68(30.5)+83.19=165+/-4.16	5'4"
	23.0cm(radius)			3.54(23.0)+82.00=163+/-4.60	5'3"
5	23.7cm(radius)			3.45(23.7)+82.00=163+/-4.60	5'3"
	27.5cm(ulna)			3.48(27.5)+77.45=173+/-4.66	5'6"
6	44.0cm(femur)	11.7	Eurymeric=85.2	2.15(44.0)+72.57=167+/-3.80	5'4"
	27.0cm(ulna)			3.48(27.0)+77.45=171+/-4.66	5'6"
9	21.0cm(radius)			3.54(21.0)+82.00=156+/-4.60	5'1"
	23.0cm(ulna)			3.48(23.0)+77.45=157+/-4.66	5'1"

Appendix A: Linear Enamel Hypoplasias of the canine at Harrington

	Tooth	Location
Bu 1 right	mandibular	1 mesial
Bu 2 left	mandibular	1 mesial 1 cervical
Bu 3 right	maxillary	2 cervical
Bu 5 right	mandibular	2 mesial 1 cervical
Bu 6 left	mandibular	1 cervical

Appendix A: 1Mt231 Postcranial Measurements

Measurement**	Burial 1	Burial 2	Burial 3	Burial 4	Burial 5	Burial 6	Burial 9
Left Femur							
Head diameter	44.5	43.0	--	41.0*	46.0	43.3(R)*	--
Maximum length	450.0	--	--	--	--	440.0(R)*	--
Bicondylar length	450.0	--	--	--	--	435.0(R)*	--
A-P diam., midshaft	31.1	29.0	--	25.5	30.0	27.8(R)	21.8*
M-L diam., midshaft	24.1	25.0	--	23.2	24.0	28.2(R)	22.6*
Circum. midshaft	90.0	84.0	--	83.0	85.0	82.0(R)	70.0*
A-P diam., subtro.	23.4	23.0	--	22.1	25.0	26.7(R)	28.2
M-L diam., subtro.	30.7	30.0	--	27.2	31.0	31.2(R)	18.0
Epicondylar Breadth	76.3	--	--	--	--	80.0(R)	--
Left Tibia							
Maximum length	390.0	382.0	--	--	--	--	--
Max. Prox. Epiph. Br.	72.8	--	--	--	--	--	--
Max. Dis. Epiph. Br.	36.3*	47.0	--	40.0	53.0	--	--
M-L diam., midshaft	22.6	25.0	--	20.5	--	25.4(R)	--
Max. diam. nutrient foramen	37.6	35.0	--	30.6	--	39.1(R)	--
Circum. nutrient foramen	93.0	96.0	--	82.0	--	100.0(R)	--
Left Fibula							
Max. length	380.0*	--	--	--	--	--	--
Max. diam. midshaft	16.0	14.0	--	16.4	16.0	16.7*(R)	--
Left Clavicle							
Max. length	15.2	15.8	150.0	--	145.0	140.0(R)	--
A-P diam. midshaft	11.2	15.0	13.4	11.3	11.3	11.8	10.2
S-I diam. midshaft	10.2	9.0	10.1	8.3*	9.5	8.6	8.7
Left Humerus							
Max. length	330.0	330.0(R)	--	300.7	--	--	--
Max. diam. midshaft	19.0	21.7(R)	20.3	17.1	22.0	24.4*(R)	16.2
Min. diam. midshaft	15.0	15.6(R)	15.0	14.1	21.0	15.2*(R)	12.7
Vert. diam. head	45.0	42.0(R)	46.0	39.0	45.8	--	--
Epicondylar breadth	60.0	58.0	61.6	51.5(R)	57.0(R)	57.1(R)	50.0
Left Radius							
Max. length	250.0	254.0(R)	250.0	230.2(R)	247.0*	--	210.0
A-P diam. midshaft	10.2	10.0(R)	10.1	9.5(R)	10.5	12.5*(R)	9.5
M-L diam. midshaft	10.6	14.0(R)	14.5	13.0(R)	11.9	16.4*(R)	8.0
Left Ulna							
Max. length	270.0	280.0(R)	260.0	240.3	275.0*	270.0	230.0
Physiological length	240.0	252.0(R)	240.0	210.8	248.0	235.0(R)	200.0
A-P diameter	13.6	12.0(R)	13.0	10.7	12.3	15.7(R)	10.3
M-L diameter	11.7	14.0(R)	11.0	10.6	13.0	15.3(R)	10.4
Min. Circumference	33.0	37.0(R)	35.0	30.0	34.0	35.0(R)	27.0
Sacrum							
Anterior length	114.4	100.0	--	--	--	--	--
A-S breadth	112.0	--	--	--	--	--	--
Max. Trans. Diam. Base	50.0	47.0	--	--	--	--	--
Ox Coxae							
Height	--	207.0*	--	--	--	--	--
Iliac breadth	143.5	147.0	--	--	--	--	--
Pubis length	77.6	75.0*	--	--	--	--	--
Ischium length	--	78.0*	--	--	--	--	--
Calcaneous							
Max. Length	74.0	77.0	--	70.3	85.0	--	--
Middle breadth	42.0	40.0	--	39.5	38.0*(R)	--	--

* Measurement estimates
**Measurement taken following procedures outlines by Moore-Jansen et al., 1994; measurements in mm
(R)Measurement of antimere
Adapted from Larsen and Kelley (1995)

Appendix A: 1Mt231 Cranial Measurements

Measurement**	Burial 1	Burial 2	Burial 3	Burial 4	Burial 5	Burial 6	Burial 9
Max. cranial length	--	180.0	165.0	150.5	--	165.0	--
Max. cranial breadth	165.0	165.0	160.0	150.7	144.0(R)	132.0	--
Bizygomatic diameter	150.0*	165.0*	--	140.5*	--	135.0*	--
Basio-Bregma height	--	--	--	--	--	--	--
Cranial base length	--	--	--	--	--	--	--
Basion-Prosthion length	135.0*	--	--	--	--	--	--
Maxillo-Alveolar breadth	59.9	--	67.6	--	--	--	--
Maxillo-Alveolar length	55.7	--	60.2	--	--	--	--
Biauricular breadth	121.2	145.0	130.0	130.5	--	120.0	--
Upper facial height	--	--	--	--	--	--	--
Minimum Frontal breadth	--	106.0	--	96.0	--	85.0	--
Upper facial breadth	--	114.0	--	100.3*	--	95.0	--
Nasal height	--	--	--	--	--	--	--
Nasal Breadth	--	--	--	--	--	--	--
Orbital breadth	--	--	--	--	--	--	--
Orbital height	--	--	--	--	--	--	--
Biorbital breadth	--	--	--	--	--	--	--
Interorbital breadth	--	--	--	--	--	--	--
Frontal chord	--	114.0	100.0	99.9*	--	100.0	--
Parietal chord	98.7	113.0	100.0	94.5*	--	95.0	--
Occipital chord	91.4	--	--	--	--	--	--
Foramen Magnum length	--	--	--	--	--	--	--
Foramen Magnum breadth	--	--	--	--	--	--	--
Mastoid length	17.8	26.0	29.2	15.1	27.2	22.6	16.9
Chin height	36.2	31.0	33.5	30.1	28.9	24.3	18.7
Mandibular body height	31.4	33.0(R)	33.7	24.3	31.8	30.6	18.0
Mandibular body breadth	10.9	13.0	13.7	9.9	12.7	11.5	14.3
Bigonial width	9.5	8.6	--	7.7	8.4(R)	8.6	7.1
Bicondylar breadth	--	132.0	--	122.9	117.0(R)	--	--
Minimum Ramus breadth	34.0	37.0	36.7	33.5	35.2	--	32.0
Maximum Ramus breadth	41.2(R)	47.0(R)*	43.5*	46.0	50.0	--	--
Maximum Ramus height	56.2(R)	52.0	--	47.7	64.0	--	64.0
Mandibular length	88.5	99.0	98.1	90.5	88.0	86.7*	--

Appendix A: Pathology Summary (Percent of Population Affected).

	CFBC n=18		CFBW n=16		CFBS n=11		GN n=19		GS n=14		CBC n=45		GC n=33		SI n=19		HS n=9	
Pathology	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Trauma	(5)	**28**	(6)	**38**	(4)	**37**	(7)	**37**	(5)	**36**	(15)	**33**	(12)	**36**	(3)	**16**	(4)	**44**
Nutritional Stress	(7)	**39**	(5)	**31**	(5)	**45**	(11)	**58**	(5)	**36**	(17)	**38**	(16)	**48**	(8)	**42**	(3)	**33**
Infection	(7)	**39**	(5)	**31**	(4)	**36**	(11)	**58**	(11)	**79**	(16)	**36**	(22)	**67**	(5)	**26**	(2)	**22**
Degenerative Pathologies	(3)	**17**	(5)	**31**	(4)	**36**	(5)	**26**	(5)	**36**	(12)	**27**	(10)	**30**	(4)	**21**	(6)	**55**

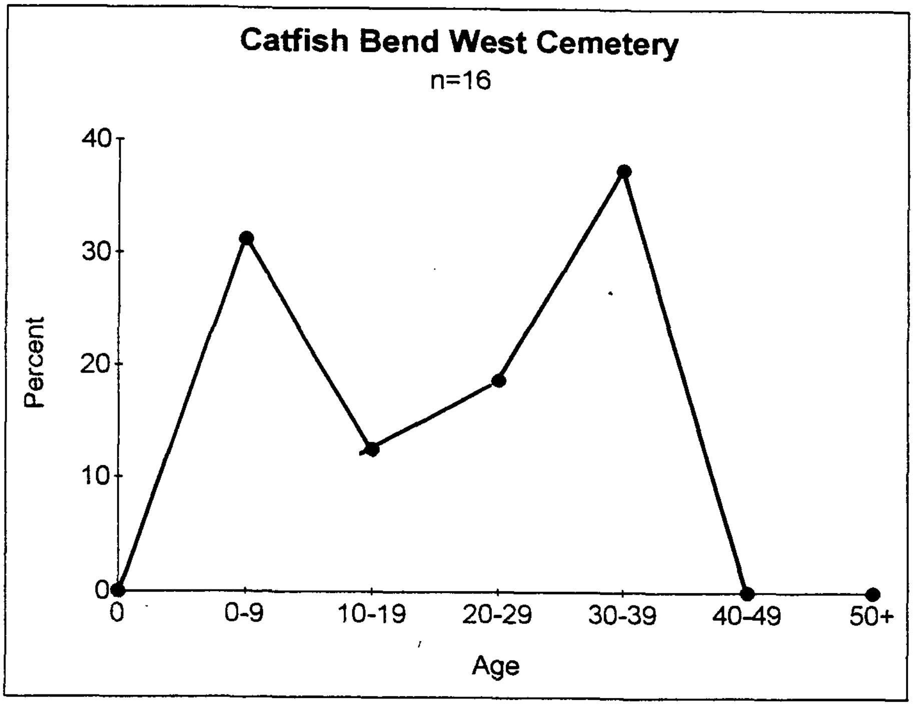
CFBC = Catfish Bend Central
CFBW = Catfish Bend West
CFBS = Catfish Bend South
GN = Gainesville North
GS = Gainesville South

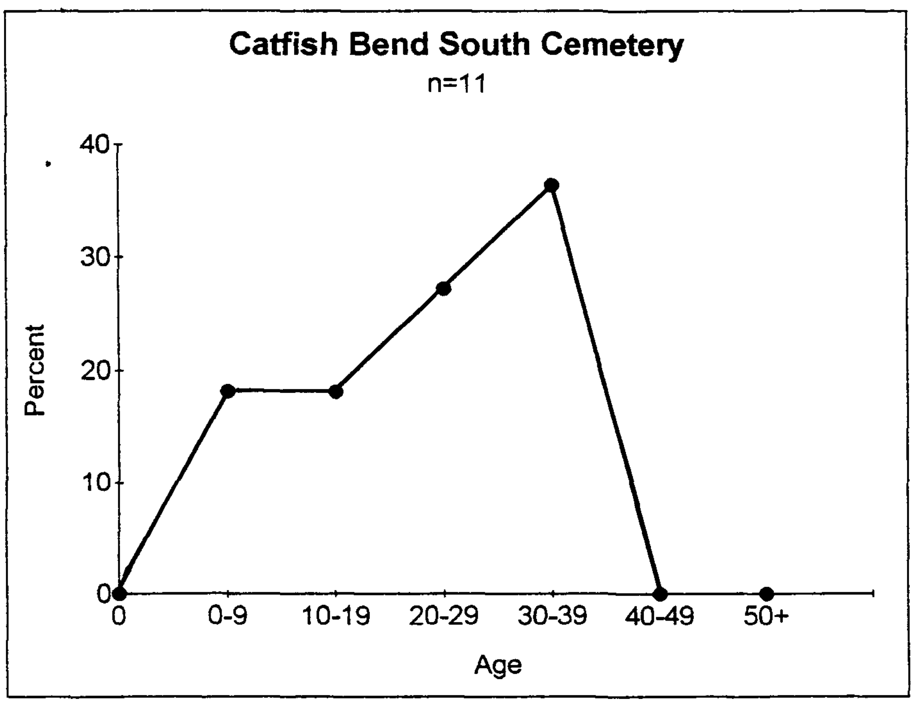
CBC = Catfish Bend Combined
GC = Gainesville Combined
SI = Summerville I
HS = Harrington Site
Statistics taken from Cole, Hill, and Ensor 1982

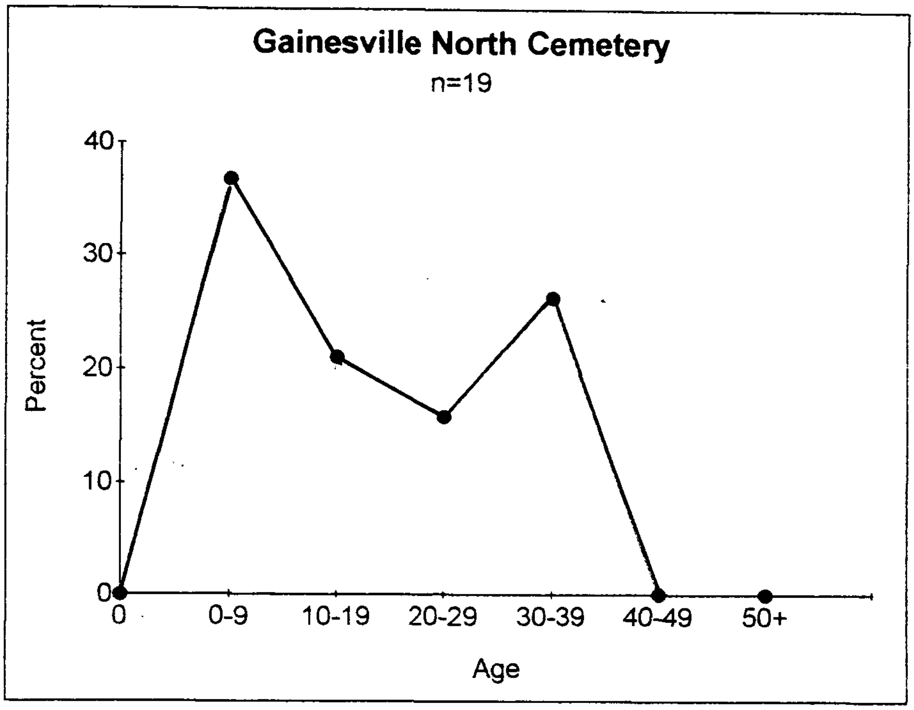
Appendix B

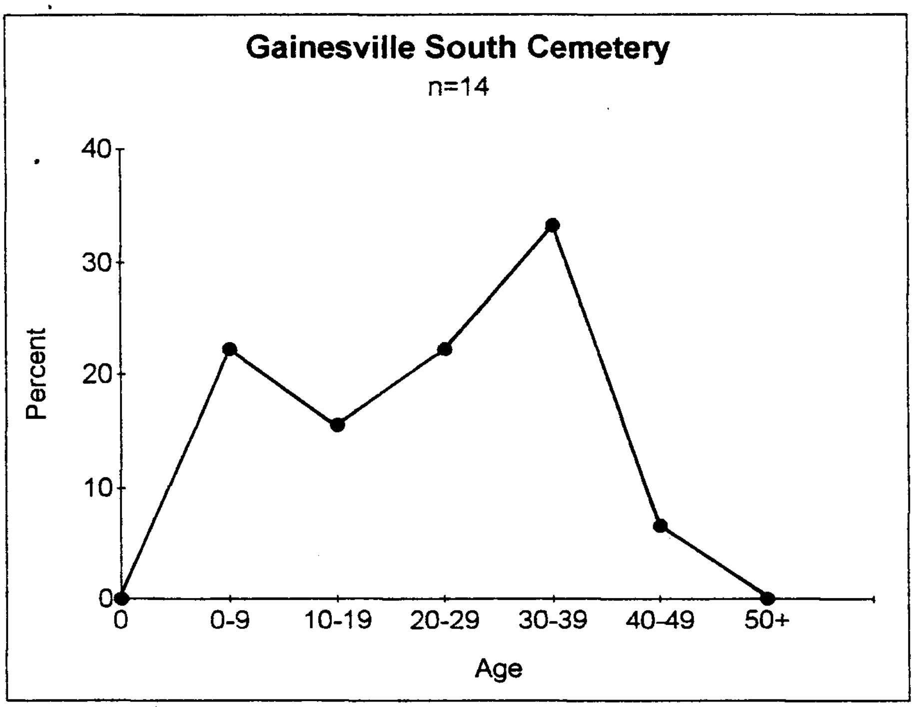
Demographic Data

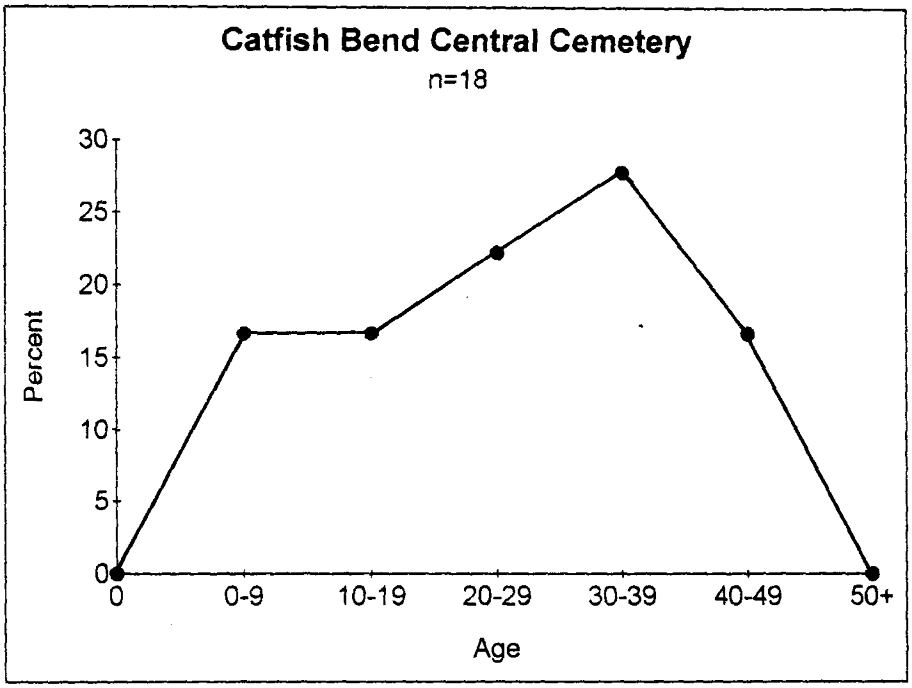
Catfish Bend Central Cemetery
Catfish Bend South Cemetery
Catfish Bend West Cemetery
Gainesville North Cemetery
Gainesville South Cemetery
Harrington Site

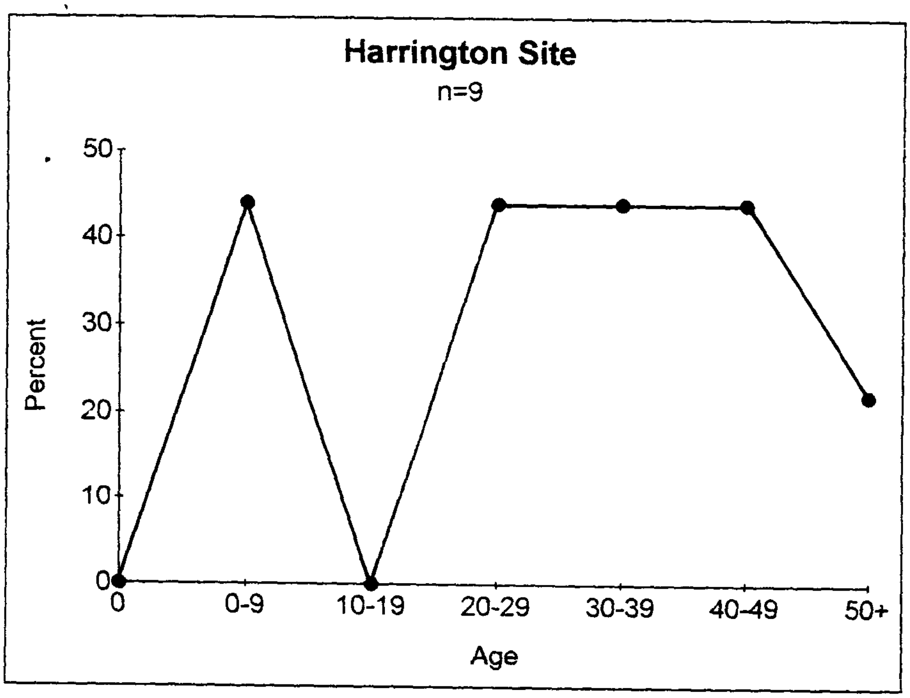

Catfish Bend West Cemetery
n=16
Percent
40
30
20
10
0
0
0-9
10-19
20-29
30-39
40-49
50+
Age


Catfish Bend South Cemetery
n=11
Percent
40
30
20
10
0
0
0-9
10-19
20-29
30-39
40-49
50+
Age


Gainesville North Cemetery
n=19
Percent
40
30
20
10
0
0
0-9
10-19
20-29
30-39
40-49
50+
Age


Gainesville South Cemetery
n=14
Percent
40
30
20
10
0
0
0-9
10-19
20-29
30-39
40-49
50+
Age


Catfish Bend Central Cemetery
n=18
Percent
30
25
20
15
10
5
0
0
0-9
10-19
20-29
30-39
40-49
50+
Age


Harrington Site
n=9
Percent
50
40
30
20
10
0
0
0-9
10-19
20-29
30-39
40-49
50+
Age

Appendix C

Burial 1

INVENTORY RECORDING FORM
FOR COMPLETE SKELETONS

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 1 Date 9/8/97

Present Location of Collection Auburn University at Montgomery

CRANIAL BONES AND JOINT SURFACES

	L(left)	R(right)		L	R
Frontal	3	2	Sphenoid	1	1
Parietal	1	1	Zygomatic	2	3
Occipital	1	1	Maxilla	1	1
Temporal	1	1	Palatine	1	1
TMJ	1	1	Mandible	1	1

POSTCRANIAL BONES AND JOINT SURFACES

	L	R		L	R
Clavicle	1	1	Os Coxae		
Scapula			Ilium	1	1
Body	2	2	Ischium	2	2
Glenoid f.	1	1	Pubis	3	1
Patella	1	1	Acetabulum	1	1
Sacrum	1	1	Auric. Surface	1	1

VERTEBRAE(individual)

	Centrum	Neural Arch
C1	1	1
C2	1	1
C7		
T10		
T11	1	1
T12	1	2
L1	1	1
L2	1	1
L3	1	1
L4	1	1
L5		

VERTEBRAE(grouped)

#Present/# Complete

	Centra	Neural Arches
C3-6	3 / 3	3 / 3
T1-T9	9 / 2	7 / 1

Sternum: Manubrium ____ Body ____

RIBS(individual)

	L	R
1st	2	1
2nd	1	1
11th	1	1
12th	1	1

RIBS(grouped)

#Present/# Complete

	L	R	Unsided
3-10	/	/	8 /

Burial/Skeleton 1MT231 Burial1
Observer/Date SK Cobb 9/10/97

LONG BONES

	Proximal Epiphysis	Diaphysis: Proximal Third	Diaphysis: Middle Third	Diaphysis: Distal Third	Distal Epiphysis
Left Humerus	1	1	1	1	1
Right Humerus	1	1	1	1	2
Left Radius	1	1	1	1	1
Right Radius	1	1	1	1	1
Left Ulna	1	1	1	1	1
Right Ulna	2	2	1	1	1
Left Femur	1	1	1	1	1
Right Femur	1	1	1	1	1
Left Tibia	2	1	1	1	1
Right Tibia		3	1	2	1
Left Fibula	2	1	1	1	1
Right Fibula	1	1	1	1	1

Left Talus 1
Right Talus 1
Left Calcaneous 1
Right Calcaneous 1 .

HAND(# Present/# Complete)

	L	R	Unsided
# Carpals	7 / 7	3 / 3	/
#Metacarpal	5 / 5	5 / 5	/
#Phalanges	2 / 2	10 / 10	/

FOOT(# Present/# Complete)

	L	R	Unsided
#Tarsals	7 / 7	/ 6	/
# Metatarsals	5 / 5	5 / 5	/
#Phalanges	14 / 14	6 / 6	/

Comments:

Rib Fragments < 2" = 140g
Rib Fragments >2" = 189.6g
Misc. Fragments = 36.3g
Unidentified Fragments = 16.8g
Vertebral Fragments = 92.5g
Long Bone Fragments = 50.3g
Facial Fragments = 39g

ADULT AGE/SEX RECORDING FORM

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 1 Date 9/8/97

Present Location of Collection Auburn University at Montgomery

SEX

Pelvis	L	R
Ventral Arc (1-3)		
Subpubic Concavity (1-3)		
Ischiopubic Ramus Ridge (1-3)		3
Greater Sciatic Notch (1-5)		4
Preauricular Sulcus (0-4)	0	0

Skull	L	M	R
Nuchal Crest (1-5)	3	3	3
Mastoid Process (1-5)	4		4
Supraorbital Margin (1-5)	5		5
Glabella (1-5)	4		4
Mental Eminence (1-5)		4	

Estimated Sex, Pelvis (0-5) 4

Estimated Sex, Skull (0-5) 4

AGE

Pubic Symphysis	L	R
Todd (1-10)	3	3
Suchey-Brooks (1-6)	1	1

	L	R
Auricular Surface(1-8)	1	1

Suture Closure (blank = unobservable; 0 = open; 1 = minimal; 2 = significant; 3 = complete)

External Cranial Vault	1. Midlambdoidal	0
	2. Lambda	1
	3. Obelion	1
	4. Anterior Sagittal	1
	5. Bregma	1
	6. Midcoronal	
	7. Pterion	
	8. Sphenofrontal	
	9. Inferior Sphenotemporal	0
	10. Superior Sphenotemporal	
Palate	11. Incisive	3
	12. Anterior Medial Palatine	3
	13. Posterior Medial Palatine	3
	14. Transverse Palatine	1
Internal Cranial Vault	15. Sagittal	2
	16. Left Lambda	2
	17. Left Coronal	2

Estimated Age:		
	Young Adult (20-35 years)	x
	Middle Adult (35-50 years)	
	Old Adult (50+ years)	

Comments:

DENTAL INVENTORY RECORDING FORM
DEVELOPMENT, WEAR, AND PATHOLOGY: PERMANENT TEETH

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 1 Date 2/24/97

Present Location of Collection Auburn University at Montgomery

Tooth presence and development: code 1-8. For teeth entered as "1" (Present, but not in occlusion), record stage of crown/root formation under "Development." **Occlusal surface wear:** use left teeth, following Smith (1984) for anterior teeth (code 1-8) and Scott (1979) for molars (code 0-10). If marked asymmetry is present, record both sides. Record each molar quadrant separate in the spaces provided (+) and the Total for all four quadrants under "Total." **Caries:** code each carious lesion separately (1-7); **Abscesses:** code location (1-2). **Calculus:** code 0-3, 9. Note surface affected (buccal/labial or lingual).

	Tooth	Presence	Dev.	Wear/Total	Caries	Abscess	Calculus/Affected	
Maxillary Right	1 M3	2		6|7 5|7 25			1	Circular
	2 M2	2		8|7 8|8 32			1	Circular
	3 M1	2		9|9 9|9 36			1	Circular
	4 P2	2		6				
	5 P1	5						
	6 C	5						
	7 I2	2		7				
	8 I1	2		7				
Maxillary Left	9 I1	2		6				
	10 I2	5						
	11 C	2		6				
	12 P1	5						
	13 P2	5						
	14 M1	2		10|10 10|10 40				Worn to CEJ
	15 M2	2		9|9 9|9 36			1	Circular
	16 M3	4						

Burial/Skeleton 1MT231 Burial 1
Observer/Date SK Cobb 2/24/97

	Tooth	Presence	Dev.	Wear/Total	Caries	Abscess	Calculus/Affected
Mandibular Left	17 M3	1		5|4 15 3|3			s 1 Circular
	18 M2	2		8|5 22 5|4			s 1 Circular
	19 M1	2		9|9 32 9|5			s 1 Circular
	20 P2	2		5			s 1 Circular
	21 P1	2					s 1 Circular
	22 C	5					
	23 I2	7					
	24 I1	2		6			
Mandibular Right	25 I1	2		7			
	26 I2	2		7			
	27 C	2		6			1 Circular
	28 P1	2		7			1 Circular
	29 P2	2		7			1 Circular
	30 M1	2		9|9 32 5|9			1 Circular
	31 M2	2		5|8 26 5|8			1 Circular
	32 M3	2		4|8 27 7|8			1 Circular

Comments: *s = calculus sample taken
Some Calculus already picked or cleaned off.
Sizable amount of calculus remained and retained.
Identical bilateral wear on mandibular M-1's - enamel left on lingual distal occlusal surface.

DENTAL MEASUREMENTS AND MORPHOLOGY RECORDING FORM

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 1 Date 2/24/97

Present Location of Collection Auburn University at Montgomery

Dental Measurements

Record left side of arcade only; substitute antimere when left not observable.

Maxilla

Tooth	I1	I2	C	PM1	PM2	M1	M2	M3
Mesiodistal diameter	6.26	6.13	7.32		5.70	8.93	8.43	8.17
Buccolingual diameter	6.35	6.00	7.96		8.51	11.58	10.48	10.31
Crown height	5.77	5.02	4.88		3.57	4.70	2.81	3.85

Mandible

Tooth	M3	M2	M1	PM2	PM1	C	I2	I1
Mesiodistal diameter	10.04	9.17	11.08	6.19	5.89	6.48	3.76	3.77
Buccolingual diameter	10.41	10.15	11.11	8.20	8.03	7.59	5.58	5.36
Crown height	5.91	3.94	4.29	3.63	4.19	4.99	*	2.83

*I2 not measured-worn to CEJ
Lower right I1 and I2 worn buccally and unevenly
Lower P1's and P2's furrowed in the center mesiodistally

Skeleton 1MT231 Burial 1
Observer/Date SK Cobb 9/8/97

Dental Morphology

Maxilla

	Right						Left					
Tooth	M3	M2	M1	PM1	I2	I1	I1	I2	PM1	M1	M2	M3
Winging (0-4)												
Shoveling (0-7)						5	5					
Double-shoveling (0-6)												
Peg-shaped Incisor												
Premolar Root Number (1-3)				1					1			
Hypocone				Too worn								
Metaconule				Too worn								
Carabelli's				Too worn								
Extensions												

Mandible

	Left				Right			
Tooth	M3	M2	M1	PM1	PM1	M1	M2	M3
Premolar Root Number (0-5)					3			
Groove pattern								
Cusp Number (4-6)								
Protostylid (0-7)								
Cusp 5 (0-5)								
Cusp 6 (0-5)								
Cusp 7 (0-4)								
Molar Root Number	2	2	3			3	2	2

CRANIAL AND POSTCRANIAL MEASUREMENT RECORDING FORM: ADULT REMAINS

Site Name/Number__Harrington 1Mt231____________Observer_Sharon Kestle Cobb____

Feature/ Burial Number__Burial 1________________Date__9/8/97______________

Present Location of Collection:_Auburn University at Montgomery____________________

Record all measurements to the nearest millimeter; in the case of bilateral measurements, take measurement on the left side. If right side is substituted, Place and (R) nest to the measurement. If bones are fragmented, measurement should not be taken, but dimensions should be estimated for minor erosion or reconstruction; identify these with an asterick "*"

Cranial measurements

1. Maximum cranial length:____
2. Maximum Cranial Breadth: 16.5
3. Bizygomatic Diameter: 15_
4. Basion-Bregma Height: ____
5. Cranial Base Length:____
6. Basion-Prosthion Length: 13.5_
7. Maxillo-Alveolar Breadth: 59.9
8. Maxillo-Alveolar Length: 55.7
9. Biauricular Breadth: 121
10. Upper Facial Height:____
11. Minimum Frontal Breadth:____
12. Upper Facial Breadth:____
13. Nasal Height:____
14. Nasal Breadth:____
15. Orbital Breadth:____
16. Orbital Height:____
17. Biorbital Breadth:____
18. Interorbital Breadth:____
19. Frontal Chord:____
20. Parietal Chord: 98.7
21. Occipital Chord: 91.4
22. Foramen Magnum Length:____
23. Foramen Magnum Breadth:____
24. Mastoid Length: 17.7__
25. Chin Height: 36.2__
26. Height of Mandibular Body: 31.4
27. Breadth of Mandibular Body: 10.9__
28. Bigonial Width:_95.7_
29. Bicondylar Breadth:____
30. Minimum Ramus Breadth:_34__
31. Maximum Ramus Breadth: 41.2 (R)
32. Maximum Ramus Height: 56.5 (R)
33. Mandibular Length:_88.5_
34. Mandibular Angle:____

Burial/Skeleton 1MT231 Burial 1
Observer/Date SK Cobb 9/8/97

Record all measurements to the nearest millimeter; in the case of bilateral measurements, take measurement on the left side. If right side is substituted, place and (R) next to the measurement. If bones are fragmented, measurements should not be taken, but dimensions should be estimated for minor erosion or reconstruction; identify these with an asterick "*"

Postcranial Measurements

35. Clavicle: Maximum Length: 15.2
36. Clavicle: Ant.-Post. Diameter at Midshaft: 11.2
37. Clavicle: Sup.-Inf. Diameter at Midshaft: 10.2
38. Scapula: Height:____
39. Scapula: Breadth:____
40. Humerus: Maximum Length: 330
41. Humerus: Epicondylar Breadth: 60
42. Humerus: Vertical Head Diameter: 45
43. Humerus: Max. Diametr at Midshaft: 19
44. Humerus: Min. Diameter at Midshaft: 15
45. Radius: Maximum Length: 250
46. Radius: Ant.-Post. Diameter/Midshaft: 10.2
47. Radius: Med.-Lat. Diameter/Midshaft: 10.6
48. Ulna: Maximum Length: 270
49. Ulna: Ant.-Post. Diameter: 13.6
50. Ulna: Med.-Lat. Diameter: 11.7
51. Ulna: Physiological Length: 240
52. Ulna: Minimum Circumference: 3.3
53. Sacrum: Anterior Length: 114.4 *
54. Sacrum: Anterior Superior Breadth: 112
55. Sacrum: Max. Transverse D. Of Base: 50
56. Os Coxae: Height:____
57. Os Coxae: Iliac Breadth: 143.5
58. Os Coxae: Pubis Length: 77.6 (R)
59. Os Coxae: Ischium Length:____
60. Femur: Maximum Length: 450+
61. Femur: Bicondylar Length: 450-
62. Femur: Epicondylar Breadth: 76.3
63. Femur: Max. Head Diameter: 44.5
64. Femur: Ant.-Post. SD: 23.4
65. Femur: Medial-Lateral SD: 30.7
66. Femur: Ant.-Post. Midshaft D: 31.1
67. Femur: Med.-Lat. Midshaft D: 24.1
68. Femur: Midshaft Circum: 9
69. Tibia: Length: 390
70. Tibia: Max. Prox. Epiphyseal B: 72.8
71. Tibia: Max. Distal Eph. Breadth: 36.3*
72. Tibia: Max D/Nutrient Foramen: 37.6
73. Tibia: Med.-Lat. D/Nutrient F: 22.6
74. Tibia: Circum/Nutrient Foramen: 9.3
75. Fibula: Maximum Length: 38*
76. Fibula: Max. Diameter/Midshaft: 16
77. Calcaneous: Maximum Length: 74
78. Calcaneous: Middle Breadth: 42

PRIMARY NONMETRIC TRAITS RECORDING FORM

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb
Burial Number Burial 1 Date 9/8/97

	L	M	R
1. Metopic Suture		0	
0 = absent; 1 = partial; 2 = complete; 9 = unobservable			
2. Supraorbital Structures			
a. Supraorbital notch	2		9
0 = absent; 1 = present, < ½ occluded by spicules; 2 = present, > ½ occluded by spicules; 3 = present, degree of occlusion unknown; 4 = multiple notches; 9 = unobservable			
b. Supraorbital foramen	1		9
0 = absent; 1 = present; 2 = multiple foramina; 9 = unobservable			
3. Infraorbital Suture	9		9
0 = absent; 1 = partial; 2 = complete; 9 = unobservable			
4. Multiple Infraorbital For.	9		9
0 = absent; 1 = internal dıvsion only; 2 = two distinct foramina; 3 = more than two distinct foramina; 9 = unobservable			
5. Zygomatico-facial For.	9		9
0 = absent; 1 = 1 large; 2 = 1 large plus smaller f.; 3 = 2 large; 4 = 2 large plus smaller foramina; 5 = 1 small; 6 = multiple small; 9 = unobservable			
6. Parietal Foramen	0		1
0 = absent; 1 = present, on parietal; 2 = present, sutural; 9 = unobservable			
7. Sutural Bones			
0 = absent; 1 = present; 9 = unobservable			
a. epipteric bone:	9		9
b. coronal ossicle:	9		9
c. bregmatic bone:		9	
d. sagittal ossicle:		0	
e. apical bone		0	
f. lambdoid ossicle	1		1
g. asterionic bone:	1		9
h. ossicle in occipito-mastoid suture:	0		0
i. parietal notch bone:	0		0
8. Inca Bone		0	
0 = absent; 1 = complete, single bone; 2 = bipartite; 3 = tripartite; 4 = partial; 9 = unobservable			
9. Condylar Canal	9		9
0 = not patent; 1 = patent; 9 = unobservable			
10. Div. Hypoglossal Can.	9		0
0 = absent; 1 = partial, internal surface; 2 = partial, within canal; 3 = complete, internal surface; 4 = complete, within canal; 9 = unobservable			
11. Flexure of Sup. Sag. Sulcus		3	
1 = Right; 2 = Left; 3 = Bifurcate; 9 = unobservable			
12. For. Ovale Incomplete	9		9
0 = absent; 1 = partial formation; 2 = no definition of foramen; 9 = unobservable			

L M R

13. Foramen Spinosum Incom. 9 9
0 = absent
1 = partial formation
2 = no definition
9 = unobservable

14. Pterygo-spinous Bridge: 9 9
0 = absent
1 = trace (spicule only)
2 = partial bridge
3 = complete bridge
9 = unobservable

15. Pterygo-alar Bridge: 9 9
0 = absent
1 = trace (spicule only)
2 = partial bridge
3 = complete bridge
9 = unobservable

16. Tympani Dihiscence: 0 0
0 = absent
1 = foramen only
2 = full defect present
9 = unobservable

17. Auditory Exostosis: 0 0
0 = absent
1 = <1/3 canal occluded
2 = 1/3-2/3 canal occluded
3 = >2/3 canal occluded
9 = unobservable

18. Mastoid Foramen
a. Location: 1 1
0 = absent
1 = temporal
2 = sutural
3 = occipital
4 = both sutural and temporal
5 = both occipital and temporal
9 = unobservable
b. Number: 2 2
0 = absent
1 = 1
2 = 2
3 = more than 2
9 = unobservable

19. Mental Foramen: 1 1
0 = absent
1 = 1
2 = 2
3 = >2

L M R

20. Mandibular Torus: 2 2
0 = absent
1 = trace (can palpate but not see)
2 = moderate: elevation between 2-5 mm.
3 = markedL elevation greater than 5 mm.
9 = unobservable

21. Mylohyoid Bridge
a.Location: 0 0
0 = absent
1 = near mandibular foramen
2 = center of groove
3 = both bridges described, with hiatus
4 = both bridges described, no hiatus
9 = unobservable
b. Degree: 0 0
0 = absent
1 = partial
2 = complete
9 = unobservable

22. Atlas Bridging
a. Lateral Bridging: 9 2
0 = absent
1 = partial
2 = complete
9 = unobservable
b. Posterior Bridging: 0 0
0 = absent
1 = partial
2 = complete
9 = unobservable

23. Accessory Transverse Foramina-in 7th Cervical Vertebra 9 9
0 = absent
1 = partial
2 = complete
3 = unobservable

24. Septal Aperture: 0 9
0 = absent
1 = small foramen (pinhole) only
2 = true perforation
9 = unobservable

PALEOPATHOLOGY RECORDING FORM I & II

SHAPE, SIZE, BONE LOSS, FORMATION, FRACTURES, AND POROTIC HYPEROSTOSIS
VERTEBRAL PATHOLOGY, ARTHRITIS, AND MISCELLANEOUS

Site Name/Number Harrington 1 MT 231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 1 Date 9/8/97

Present Location of Collection Auburn University at Montgomery

5.0 FRACTURES

Bone	3.3.2
Aspect	3
Obs 1	5.1.6
Obs 2	5.4.7

7.0 VERTEBRAL PATHOLOGY

Bone	3.3.1	3.3.2	3.3.3	3.3.4
Obs 1	7.2.3	7.2.3	7.2.3	7.2.3
Obs 2	8.8.0	8.8.0	8.8.0	8.8.0

8.0 ARTHRITIS

Bone	3.3.1	3.3.2	3.3.3	3.3.4	4.1.3	4. 3.2
Aspect	3	1	2/8	1/8	7	1
Obs 1	8.1.3	8.1.3	8.1.3	8.1.3	8.3.2	8.3.0
Obs 2	8.2.2	8.2.2	8.2.2	8.2.2	8.4.1	8.3.1
Obs 3	8.5.1		8.8.2	8.7.2	8.1.2	
Obs4	8.6.1		8.9.2	8.9.2	8.7.2	
Obs 5	8.7.2					

COMMENTS: Compression fracture laterally of Lumbar 2 resulting in sciliosis to the right at Side 12 to 15 degrees. Reactive bone with osteophytosis and crescent-shaped lesions.

CRANIAL DEFORMATION RECORDING FORM

Site Name/Number__Harrington 1MT231____ Observer__Sharon Kestle Cobb__

Feature/Burial Number__Burial 1____ Date__9/8/97__

Present Location of Collection__Auburn University at Montgomery__

General Category:__3__
1. Tabular
2. Circumferential
3. Other (describe)

Anterior Aspect
Cranial deformation present:__2__
1. Yes
2. No

Posterior Aspect

Cranial deformation present:__1__
1. Yes
2. No

Pressure was centered at:__1__
1. Lambda
2. Squamous portion of occipital
3. Below inion

Plane of pressure in relationship to transverse plane:__2__
1. Perpendicular (90 degrees)
2. Obtuse (>90 degrees)

Are any of the following present?_1,2,3_
1. Sagittal elevation
2. Lambdic elevation
3. Lambdic depression

Pad Impressions:__0__
0. No pad impressions
1. One pad
2. Two pads
3. More than two pads

Impression of bindings visible__2__
1. Yes
2. No

Appendix D

Burial 2

INVENTORY RECORDING FORM FOR COMPLETE SKELETONS

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 2 Date 9/10/97

Present Location of Collection Auburn University at Montgomery

CRANIAL BONES AND JOINT SURFACES

	L(left)	R(right)		L	R
Frontal	1	1	Sphenoid		
Parietal	1	1	Zygomatic	2	3
Occipital	1	1	Maxilla	2	2
Temporal	1	1	Palatine	2	2
TMJ	1	1	Mandible	1	1

POSTCRANIAL BONES AND JOINT SURFACE

	L	R		L	R
Clavicle	1	1	Os Coxae		
Scapula			Ilium	1	1
Body	3	3	Ischium	1	1
Glenoid f.	1	1	Pubis	1	1
Patella	2	1	Acetabulum	1	1
Sacrum	1	2	Auric. Surface	1	1

VERTEBRAE(individual)

	Centrum	Neural Arch
C1	1	1
C2	1	3
C7	1	1
T10	1	1
T11	1	1
T12	1	1
L1	1	1
L2	1	1
L3	1	1
L4	1	1
L5	1	1

VERTEBRAE(grouped)

#Present/# Complete

	Centra	Neural Arches
C3-6	3 / 3	3 /
1-T9	9 / 9	7 / 7

Sternum: Manubrium 2 Body 1

RIBS(individual)

	L	R
1st	2	1
2nd	1	1
11th	1	1
12th	1	1

RIBS(grouped)

#Present/# Complete

	L	R	Unsided
3-10	8 / 8	8 / 8	/

Burial/Skeleton 1MT231 Burial 2
Observer/Date SK Cobb 9/10/97

LONG BONES

	Proximal Epiphysis	Diaphysis Proximal Third	Diaphysis Middle Third	Diaphysis Distal Third	Distal Epiphysis
Left Humerus	1	1	1	1	1
Right Humerus	1	1	1	1	1
Left Radius	1	1	1	1	1
Right Radius	1	1	1	1	1
Left Ulna	1	1	1	1	1
Right Ulna	1	1	1	1	1
Left Femur	1	1	1	1	2
Right Femur	1	1	1	2	
Left Tibia	2	1	1	1	1
Right Tibia	3	1	1	1	1
Left Fibula		1	1	1	
Right Fibula		1	1	1	1

Left Talus 1
Right Talus 1
Left Calcaneous 1
Right Calcaneous 1

HAND(# Present/# Complete)

	L	R	Unsided
# Carpals	7 / 7	8 / 8	/
#Metacarpals	5 / 5	5 / 5	/
#Phalanges	10 / 10	8 / 8	/

FOOT(# Present/# Complete)

	L	R	Unsided
#Tarsals	5 / 5	5 / 5	/
# Metatarsals	5 / 5	5 / 5	/
#Phalanges	8 / 8	4 / 4	/

Comments: Rib Fragments = 43g
Long Bone Fragments = 9.9g
Misc. Fragments = 13g
Cranial Fragments = 27.2
Vertebral Fragments = 14g
Sacral hiatus = 26.54mm long x 14.48mm at widest part
Arthritic distal first metatarsal L and R

ADULT AGE/SEX RECORDING FORM

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 2 Date 9/10/97

Present Location of Collection Auburn University at Montgomery

SEX

Pelvis	L	R
Ventral Arc (1-3)	3	3
Subpubic Concavity (1-3)	3	3
Ischiopubic Ramus Ridge (1-3)	3	3
Greater Sciatic Notch (1-5)	5	4
Preauricular Sulcus (0-4)	0	4

Skull	L	M	R
Nuchal Crest (1-5)	4	4	4
Mastoid Process (1-5)	4		4
Supraorbital Margin (1-5)	4		4
Glabella (1-5)	4	3	4
Mental Eminence (1-5)		5	

Estimated Sex, Pelvis (0-5) 4

Estimated Sex, Skull (0-5) 4

AGE

Pubic Symphysis	L	R
Todd (1-10)	7	7
Suchey-Brooks (1-6)	5	5

	L	R
Auricular Surface(1-8)	5	5

Suture Closure (blank = unobservable; 0 = open; 1 = minimal; 2 = significant; 3 = complete)

External Cranial Vault	1. Midlambdoidal	2
	2. Lambda	2
	3. Obelion	2
	4. Anterior Sagittal	2
	5. Bregma	2
	6. Midcoronal	2
	7. Pterion	
	8. Sphenofrontal	
	9. Inferior Sphenotemporal	
	10. Superior Sphenotemporal	
Palate	11. Incisive	3
	12. Anterior Medial Palatine	2
	13. Posterior Medial Palatine	
	14. Transverse Palatine	
Internal Cranial Vault	15. Sagittal	2
	16. Left Lambda	
	17. Left Coronal	2

Estimated Age:	
Young Adult (20-35 years)	
Middle Adult (35-50 years)	X
Old Adult (50+ years)	

Comments:

Age = 30-35

Endocranial sutures may actually have been obliterated but the skull was broken apart at the suture junctures. After reconstruction, these sutures appear not to be 100% fused.

DENTAL INVENTORY RECORDING FORM
DEVELOPMENT, WEAR, AND PATHOLOGY: PERMANENT TEETH

Site Name/Number: Harrington 1MT231　Observer: Sharon Kestle Cobb

Feature/Burial Number: Burial 2　Date: 2/11/97

Present Location of Collection: Auburn University at Montgomery

Tooth presence and development: code 1-8. For teeth entered as "1" (Present, but not in occlusion), record stage of crown/root formation under "Development." **Occlusal surface wear:** use left teeth, following Smith (1984) for anterior teeth (code 1-8) and Scott (1979) for molars (code 0-10). If marked asymmetry is present, record both sides. Record each molar quadrant separate in the spaces provided (+) and the Total for all four quadrants under "Total." **Caries:** code each carious lesion separately (1-7); **Abscesses:** code location (1-2). **Calculus:** code 0-3, 9. Note surface affected (buccal/labial or lingual).

	Tooth	Presence	Dev.	Wear/Total	Caries	Abscess	Calculus	Affected
Maxillary Right	1 M3	3		1				
	2 M2	3		1				
	3 M1	2		9|9 36 9|9			1	Circular
	4 P2	5						
	5 P1	4						
	6 C	2		6			1	Circular
	7 I2	2		6				
	8 I1	2		7				
Maxillary Left	9 I1	2		7				
	10 I2	5						
	11 C	2		6				
	12 P1	4						
	13 P2	2		6			1	Circular
	14 M1	2		9| 9 36 9| 9			1	Circular
	15 M2	3		1			1	Circular
	16 M3	3						

Burial/Skeleton 1MT231 Burial 2
Observer/Date SK Cobb 2/11/97

	Tooth	Presence	Dev.	Wear/Total	Caries	Abscess	Calculus	Affected
Mandibular Left	17 M3	2		9|9 36 9|9			1	Circular
	18 M2	2		9|9 36 9|9			1	Circular
	19 M1	2		9|9 36 9|9			1	Lingual
	20 P2	2		5			1	Circular
	21 P1	5						
	22 C	2		6				
	23 I2	5						
	24 I	5						
Mandibular Right	25 I	5						
	26 I2	5						
	27 C	2		6			1	Circular
	28 P	1		4			1	Circular
	29 P2	2		5			1	Circular
	30 M1	2		9|9 36 9|9			1	Circular
	31 M2	2		9|9 36 9|9			1	Circular
	32 M3	2		9|9 36 9|9			1	Circular

Comments: *s = calculus sample taken

Less wear on mandibular P1 right-not in occlusion with maxillary tooth, missing post-mortem.

Calculus still clings to some teeth lingually but it appears to have been previously scraped or cleaned buccally.

ENAMEL DEFECTS (HYPOPLASIAS AND OPACITIES)
RECORDING FORM: PERMANENT TEETH

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 2 Date 2/11/97

Present Locatio of Collection Auburn University at Montgomery

Type: code 0-7 or 9; Location: measure distance from the CEJ to most occlusal portion of the defect;
Color: code 1-4 for hypocalcifications (type 6 or 7) only.

Maxilla, Right

Tooth	M3			M2			M1			PM2			PM1			C			I2			I1		
Defect	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Type																								
Location																								
Color																								

Maxilla, Left

Tooth	I1			I2			C			PM1			PM2			M1			M2			M3		
Defect	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Type	1	1	1				1	1																
Location																								
Color	4	4	4				2	2																

I1 =2.15, 1.08, .88; C = 2.88, .92

Mandible, Left

Tooth	M3			M2			M1			PM2			PM1			C			I2			I1		
Defect	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Type																	3							
Location																								
Color																								

C = 2.72

Mandible, Right

Tooth	I1			I2			C			PM1			PM2			M1			M2			M3		
Defect	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Type																								
Location																								
Color																								

DENTAL MEASUREMENTS AND MORPHOLOGY RECORDING FORM

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 2 Date 2/11/97

Present Location of Collection Auburn University at Montgomery

Dental Measurements

Record left side of arcade only; substitute antimere when left not observable.

Maxilla

Tooth	I1	I2	C	PM1	PM2	M1	M2	M3
Mesiodistal diameter	7.01		7.37		6.19	9.05		
Buccolingual diameter	7.18		9.17		10.36	12.23		
Crown height	6.20		6.20		5.64	4.43		

Mandible

Tooth	M3	M2	M1	PM2	PM1	C	I2	I1
Mesiodistal diameter	11.34	9.73	9.32	7.27	6.77	7.35		
Buccolingual diameter	11.61	11.03	12.10	9.69	9.00	7.42		
Crown height	4.34	2.47	2.47	6.03	6.33	5.91		

Mandibular canine worn buccally (uneven)
Lower M1 measurements may be unreliable due to unusual tooth wear and worn enamel. Same for upper M1's
malocclusion

PRIMARY NONMETRIC TRAITS RECORDING FORM

Site Name/Number Harrington 1MT23 Observer Sharon Kestle Cobb
Burial Number Burial 2 Date 9/10/97

	L	M	R
1. Metopic Suture			
0 = absent			
1 = partial		1	
2 = complete			
9 = unobservable			
2. Supraorbital Structures			
a. Supraorbital notch	1		1
0 = absent			
1 = present, < ½ occluded by spicules			
2 = present, > ½ occluded by spicules			
3 = present, degree of occlusion unknown			
4 = multiple notches			
9 = unobservable			
0			
b. Supraorbital foramen	2		1
0 = absent			
1 = present			
2 = multiple foramina			
9 = unobservable			
3. Infraorbital Suture	2		2
0 = absent			
1 = partial			
2 = complete			
9 = unobservable			
4. Multiple Infraorbital For.	1		1
0 = absent			
1 = internal divsion only			
2 = two distinct foramina			
3 = more than two distinct foramina			
9 = unobservable			
5. Zygomatico-facial For.	2		6
0 = absent			
1 = 1 large			
2 = 1 large plus smaller f.			
3 = 2 large			
4 = 2 large plus smaller foramina			
5 = 1 small			
6 = multiple small			
9 = unobservable			
6. Parietal Foramen	1		0
0 = absent			
1 = present, on parietal			
2 = present, sutural			
9 = unobservable			

	L	M	R
7. Sutural Bones			
0 = absent			
1 = present			
9 = unobservable			
a. epipteric bone:	9		9
b. coronal ossicle:	9		9
c. bregmatic bone:			0
d. sagittal ossicle:		0	
e. apical bone:		0	
f. lambdoid ossicle:	0		0
g. asterionic bone:	1		1
h. ossicle in occipito-mastoid suture:	0		0
i. parietal notch bone:		0	
8. Inca Bone		0	
0 = absent			
1 = complete, single bone			
2 = bipartite			
3 = tripartite			
4 = partial			
9 = unobservable			
9. Condylar Canal	9		9
0 = not patent			
1 = patent			
9 = unobservable			
10. Divided Hypoglos. Can.	9		0
0 = absent			
1 = partial, internal surface			
2 = partial, within canal			
3 = complete, internal surface			
4 = complete, within canal			
9 = unobservable			
11. Flexure of Sup. Sag. Sulcus		3	
1 = Right			
2 = Left			
3 = Bifurcate			
9 = unobservable			
12. For. Ovale Incomplete	9		9
0 = absent			
1 = partial formation			
2 = no definition of forame			
9=unobservable			

	L	M	R
13. Foramen Spinosum Incom.	9		9
0 = absent			
1 = paartial formation			
2 = no definition			
9 = unobservable			
14. Pterygo-spinous Bridge:	9		9
0 = absent			
1 = trace (spicule only)			
2 = partial bridge			
3 = complete bridge			
9 = unobservable			
15. Pterygo-alar Bridge:	9		9
0 = absent			
1 = trace (spicule only)			
2 = partial bridge			
3 = complete bridge			
9 = unobservable			
16. Tympani Dihiscence:	0		0
0 = absent			
1 = foramen only			
2 = full defect present			
9 = unobservable			
17. Auditory Exostosis:	0		0
0 = absent			
1 = <1/3 canal occluded			
2 = 1/3-2/3 canal occluded			
3 = >2/3 canal occluded			
9 = unobservable			
18. Mastoid Foramen			
a. Location:	0		0
0 = absent			
1 = temporal			
2 = sutural			
3 = occipital			
4 = both sutural and temporal			
5 = both occipital and temporal			
9 = unobservable			
b. Number:	0		0
0 = absent			
1 = 1			
2 = 2			
3 = more than 2			
9 = unobservable			
19. Mental Foramen:	1		1
0 = absent			
1 = 1			
2 = 2			
3 = >2			

	L	M	R
20. Mandibular Torus:	0		0
0 = absent			
1 = trace (can palpate but not see)			
2 = moderate: elevation between 2-5 mm.			
3 = marked: elevation greater than 5 mm.			
9 = unobservable			
21. Mylohyoid Bridge			
a.Location:	0		0
0 = absent			
1 = near mandibular foramen			
2 = center of groove			
3 = both bridges described, with hiatus			
4 = both bridges described, no hiatus			
9 = unobservable			
b. Degree:	0		0
0 = absent			
1 = partial			
2 = complete			
9 = unobservable			
22. Atlas Bridging			
a. Lateral Bridging:	2		2
0 = absent			
1 = partial			
2 = complete			
9 = unobservable			
b. Posterior Bridging:	2		2
0 = absent			
1 = partial			
2 = complete			
9 = unobservable			
23. Accessory Transverse Foramina-in 7th Cervical Vertebra	9		9
0 = absent			
1 = partial			
2 = complete			
3 = unobservable			
24. Septal Aperture:	2		0
0 = absent			
1 = small foramen (pinhole) only			
2 = true perforation			
9 = unobservable			

PALEOPATHOLOGY RECORDING FORM I & II

SHAPE, SIZE, BONE LOSS, FORMATION, FRACTURES, AND POROTIC HYPEROSTOSIS
VERTEBRAL PATHOLOGY, ARTHRITIS, AND MISCELLANEOUS

Site Name/Number__Harrington 1MT231 Observer__Sharon Kestle Cobb

Feature/Burial Number__Burial 2 Date__9/16/97

Present Location of Collection__Auburn University at Montgomery

4.0 FORMATION

Bone	4.3.5
Side	3
Aspect	7
Obs1	4.7.0
Obs2	4.7.2

7.0 VERTEBRAL PATHOLOGY

Bone	3.3.2	3.3.3	3.3.4
Aspect	3	3	3
Obs 1	7.2.0	7.2.0	7.2.0
Obs 2	7.2.2	7.2.2	7.2.2

8.0 ARTHRITIS

Bone	4.2.4
Side	3
Aspect	1
Obs1	8.3.0
Obs2	8.3.1

COMMENTS:

CRANIAL DEFORMATION RECORDING FORM

Site Name/Number__Harrington 1MT231____Observer__Sharon Kestle Cobb___

Feature/Burial Number__Burial 2____Date__9/10/97____

Present Location of Collection__Auburn University at Montgomery____

General Category:__3__
1. Tabular
2. Circumferential
3. Other (describe)

Anterior Aspect

Cranial deformation present:__2__
1. Yes
2. No

Posterior Aspect

Cranial deformation present:__1__
1. Yes
2. No

Pressure was centered at:__1__
1. Lambda
2. Squamous portion of occipital
3. Below inion

Plane of pressure in relationship to transverse plane:__2__
1. Perpendicular (90 degrees)
2. Obtuse (>90 degrees)

Are any of the following present?_1,2,3_
1. Sagittal elevation
2. Lambdic elevation
3. Lambdic depression

Pad Impressions:__0__
0. No pad impressions
1. One pad
2. Two pads
3. More than two pads

Impression of bindings visible__2__
1. Yes
2. No

Appendix E

Burial 3

INVENTORY RECORDING FORM FOR COMPLETE SKELETONS

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 3 Date 8/27/97

Present Location of Collection Auburn University at Montgomery

CRANIAL BONES AND JOINT SURFACES

	L(left)	R(right)		L	R
Frontal	2	1	Sphenoid	3	3
Parietal	1	1	Zygomatic	2	2
Occipital	2	1	Maxilla	2	2
Temporal	1	2	Palatine	1	1
TMJ	1	3	Mandible	1	1

POSTCRANIAL BONES AND JOINT SURFACES

	L	R		L	R
Clavicle	1	2	Os Coxae		
Scapula			Ilium	3	1
Body	3	3	Ischium	3	2
Glenoid f.	1	1	Pubis	3	
Patella		3	Acetabulum		1
Sacrum	3	3	Auric. Surface	3	1

VERTEBRAE(individual)

	Centrum	Neural Arch
C1	1	1
C2	1	1
C7		
T10		
T11	3	
T12	2	
L1		
L2		
L3		
L4	1	1
L5	1	2

VERTEBRAE(grouped)

#Present/# Complete

	Centra	Neural Arches
C3-6	4 / 4	4 / 4
T1-T9	9 / 9	8/ 6

Sternum: Manubrium 3 Body ____

RIBS(individual)

	L	R
1st	1	1
2nd	1	1
11th	1	1
12th	1	1

RIBS(grouped)

#Present/# Complete

	L	R	Unsided
3-10	12 /	12 /	/

Burial/Skeleton 1MT231 Burial 3
Observer/Date SK Cobb 8/27/97

LONG BONES

		Diaphysis			
	Proximal Epiphysis	Proximal Third	Middle Third	Distal Third	Distal Epiphysis
Left Humerus	1	1	1	1	1
Right Humerus		2	1	1	1
Left Radius	1	1	1	1	1
Right Radius	1	1	1	1	1
Left Ulna	1	1	1	1	1
Right Ulna	2	1	1	1	1
Left Femur	1	2	1	2	2
Right Femur		2	1	2	2
Left Tibia	3	2	2	2	3
Right Tibia			3	3	3
Left Fibula		2	1	2	
Right Fibula			2		

Left Talus 1
Right Talus 1
Left Calcaneous 2
Right Calcaneous 2

HAND(# Present/# Complete)

	L	R	Unsided
# Carpals	10 / 7	7 / 7	/
#Metacarpal	5 / 2	4 / 4	/
#Phalanges	12 / 12	10 / 10	/

FOOT(# Present/# Complete)

	L	R	Unsided
#Tarsals	2 / 2	5 / 5	/
# Metatarsals	3 / 2	5 / 2	/
#Phalanges	7 / 7	1 /	/

Comments:

Rib Fragments < 2" = 151g
Vertebral Fragments = 127.5g
Pelvis Fragments = 66.9g
Long Bone Fragments = 220g
Skull and Facial Fragments = 58g
Sternal and Scapulae Fragments = 37.6g

ADULT AGE/SEX RECORDING FORM

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 3 Date 8/27/97

Present Location of Collection Auburn University at Montgomery

SEX

Pelvis	L	R
Ventral Arc (1-3)		
Subpubic Concavity (1-3)		
Ischiopubic Ramus Ridge (1-3)		
Greater Sciatic Notch (1-5)		5
Preauricular Sulcus (0-4)		0

Estimated Sex, Pelvis (0-5) 5

Skull	L	M	R
Nuchal Crest (1-5)	4	5	4
Mastoid Process (1-5)	5		5
Supraorbital Margin (1-5)			5
Glabella (1-5)	5		5
Mental Eminence (1-5)	5		5

Estimated Sex, Skull (0-5) 5

AGE

Pubic Symphysis	L	R
Todd (1-10)		
Suchey-Brooks (1-6)		

	L	R
Auricular Surface(1-8)		4

Suture Closure (blank = unobservable; 0 = open; 1 = minimal; 2 = significant; 3 = complete)

External Cranial Vault	1. Midlambdoidal	2
	2. Lambda	2
	3. Obelion	3
	4. Anterior Sagittal	3
	5. Bregma	3
	6. Midcoronal	3
	7. Pterion	
	8. Sphenofrontal	
	9. Inferior Sphenotemporal	2
	10. Superior Sphenotemporal	
Palate	11. Incisive	3
	12. Anterior Medial Palatine	3
	13. Posterior Medial Palatine	3
	14. Transverse Palatine	2
Internal Cranial Vault	15. Sagittal	3
	16. Left Lambda	2
	17. Left Coronal	3

Estimated Age: Young Adult (20-35 years) ___
Middle Adult (35-50 years) X
Old Adult (50+ years) ___

Comments:

DENTAL INVENTORY RECORDING FORM
DEVELOPMENT, WEAR, AND PATHOLOGY: PERMANENT TEETH

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 3 Date 2/6/97

Present Location of Collection Auburn University at Montgomery

Tooth presence and development: code 1-8. For teeth entered as "1" (Present, but not in occlusion), record stage of crown/root formation under "Development." **Occlusal surface wear:** use left teeth, following Smith (1984) for anterior teeth (code 1-8) and Scott (1979) for molars (code 0-10). If marked asymmetry is present, record both sides. Record each molar quadrant separate in the spaces provided (+) and the Total for all four quadrants under "Total." **Caries:** code each carious lesion separately (1-7); **Abscesses:** code location (1-2). **Calculus:** code 0-3, 9. Note surface affected (buccal/labial or lingual).

	Tooth	Presence	Dev.	Wear/Total	Caries	Abscess	Calculus/Affected	
Maxillary Right	1 M3	5						
	2 M2	2		5|6 4|4 19			s 2	MD|LB
	3 M1	2		6|9 5|9 29			2	M|LB
	4 P2	2		5			s 2	MD|B
	5 P1	5						
	6 C	2		5			1	MD
	7 I2	2		6			1	MD|LB
	8 I1	2		6			1	MD
Maxillary Left	9 I1	2		6			1	MD
	10 I2	2		6			1	MD
	11 C	2		5			1	DB
	12 P1	2		5			s 2	B
	13 P2	2		5			s 2	B
	14 M1	2		9|6 9|9 33			2	LM
	15 M2	2		9|4 8|5 26			2	B
	16 M3	5						

Burial/Skeleton 1Mt231 Burial 3
Observer/Date SK Cobb 2/6/97

		Tooth Presence	Dev.	Wear/Total	Caries	Abscess	Calculus/Affected	
Mandibular Left	17 M3	2		3|3 12 3|3			s 2	MD|LB
	18 M2	2		8|3 25 9|5			s 2	MD|LB
	19 M1	2		8|3 24 9|4			s 2	MD|LB
	20 P2	2		2			s 2	MD|LB
	21 P1	2		2			2	MD|LB
	22 C	5						
	23 I2	5						
	24 I1	1					2	MD|LB
Mandibular Right	25 I1	1		6			2	MD|LB
	26 I2	1		6			2	MD|LB
	27 C							
	28 P1	2		2			s 2	MD|LB
	29 P2	2		2			s 2	MD|LB
	30 M1	2		5|8 26 5|8			2	B
	** 31 M2	2		5|6 29 9|9			2	ML
	32 M3	2		2|2 8 2|2			s 2	B

Comments: *s = calculus sample taken
**retrieved tooth from F.S. 234
Both maxillary M3's missing post-mortem
Both mandibular canines missing post-mortem
Left I2 missing post-mortem
Retrieved mandibular right M2 from separate bag (F.S. 234) perfect match and in occlusion plus calculus consistent with rest of dentition-the roots are at such an angle as to be conclusive.
Concerning hypoplasias-the mandibular dentition has moderate calculus deposits. It was decided not to scrape for observation of hypoplasias since the maxillary dentition exhibits observable ones.

ENAMEL DEFECTS (HYPOPLASIAS AND OPACITIES)
RECORDING FORM: PERMANENT TEETH

Site Name/Number Harrington 1 MT 231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 3 Date 2/10/97

Present Location of Collection Auburn University at Montgomery

Type: code 0-7 or 9; Location: measure distance from the CEJ to most occlusal portion of the defect; Color: code 1-4 for hypocalcifications (type 6 or 7) only.

Maxilla, Right

Tooth	M3			M2			M1			PM2			PM1			C			I2			I1		
Defect	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Type																								
Location																								
Color																								

Maxilla, Left

Tooth	I1			I2			C			PM1			PM2			M1			M2			M3		
Defect	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Type							4																	
Location																								
Color							1																	

Mandible, Left

Tooth	M3			M2			M1			PM2			PM1			C			I2			I1		
Defect	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Type																								
Location																								
Color																								

Mandible, Right

Tooth	I1			I2			C			PM1			PM2			M1			M2			M3		
Defect	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Type																								
Location																								
Color																								

DENTAL MEASUREMENTS AND MORPHOLOGY RECORDING FORM

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 3 Date 2/6/97

Present Location of Collection Auburn University at Montgomery

Dental Measurements

Record left side of arcade only; substitute antimere when left not observable.

Maxilla

Tooth	I1	I2	C	PM1	PM2	M1	M2	M3
Mesiodistal diameter	9.11	8.64	8.53	7.19	6.53	10.98	11.26	
Buccolingual diameter	7.44	7.34	9.14	10.08	9.73	12.97	12.64	
Crown height	5.36	8.17	8.22	6.26	6.13	6.54	7.26	

Mandible

Tooth	M3	M2	M1	PM2	PM1	C	I2	I1
Mesiodistal diameter	10.89	11.84	12.00	6.65	7.41		6.49	5.33
Buccolingual diameter	11.92	11.76	11.74	8.69	8.86		6.47	6.28
Crown height	5.19	4.93	5.79	5.25	6.71		5.03	6.48

PRIMARY NONMETRIC TRAITS RECORDING FORM

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb
Burial Number Burial 3 Date 9/8/97

	L	M	R
1. Metopic Suture			
0 = absent			
1 = partial		0	
2 = complete			
9 = unobservable			
2. Supraorbital Structures			
a. Supraorbital notch	9		1
0 = absent			
1 = present, < ½ occluded by spicules			
2 = present, > ½ occluded by spicules			
3 = present, degree of occlusion unknown			
4 = multiple notches			
9 = unobservable			
b. Supraorbital foramen	9		0
0 = absent			
1 = present			
2 = multiple foramina			
9 = unobservable			
3. Infraorbital Suture	9		9
0 = absent			
1 = partial			
2 = complete			
9 = unobservable			
4. Multiple Infraorbital For.	9		9
0 = absent			
1 = internal divsion only			
2 = two distinct foramina			
3 = more than two distinct foramina			
9 = unobservable			
5. Zygomatico-facial For.	9		9
0 = absent			
1 = 1 large			
2 = 1 large plus smaller f.			
3 = 2 large			
4 = 2 large plus smaller foramina			
5 = 1 small			
6 = multiple small			
9 = unobservable			
6. Parietal Foramen	0		0
0 = absent			
1 = present, on parietal			
2 = present, sutural			
9 = unobservable			

	L	M	R
7. Sutural Bones			
0 = absent			
1 = present			
9 = unobservable			
a. epipteric bone:	0		0
b. coronal ossicle:	0		0
c. bregmatic bone:		0	
d. sagittal ossicle:		0	
e. apical bone		0	
f. lambdoid ossicle	0		0
g. asterionic bone:	0		0
h. ossicle in occipito-mastoid suture:	0		0
i. parietal notch bone:	0		1
8. Inca Bone		0	
0 = absent			
1 = complete, single bone			
2 = bipartite			
3 = tripartite			
4 = partial			
9 = unobservable			
9. Condylar Canal	9		9
0 = not patent			
1 = patent			
9 = unobservable			
10. Divided Hypoglossal Can.	9		9
0 = absent			
1 = partial, internal surface			
2 = partial, within canal			
3 = complete, internal surface			
4 = complete, within canal			
9 = unobservable			
11. Flexure of Sup. Sag. Sulcus		3	
1 = Right			
2 = Left			
3 = Bifurcate			
9 = unobservable			
12. For. Ovale Incomplete	9		9
0 = absent			
1 = partial formation			
2 = no definition of foramen			
9 = unobservable			

	L	M	R
13. Foramen Spinosum Incom.	9		9

0 = absent
1 = paartial formation
2 = no definit on
9 = unobservable

	L	M	R
14. Pterygo-spinous Bridge:	9		9

0 = absent
1 = trace (spicule only)
2 = partial bridge
3 = complete bridge
9 = unobservable

	L	M	R
15. Pterygo-alar Bridge:	9		9

0 = absent
1 = trace (spicule only)
2 = partial bridge
3 = complete bridge
9 = unobservable

	L	M	R
16. Tympani Dihiscence:	0		0

0 = absent
1 = foramen only
2 = full defect present
9 = unobservable

	L	M	R
17. Auditory Exostosis:	0		0

0 = absent
1 = <1/3 canal occluded
2 = 1/3-2/3 canal occluded
3 = >2/3 canal occluded
9 = unobservable

18. Mastoid Foramen

	L	M	R
a. Location:	0		0

0 = absent
1 = temporal
2 = sutural
3 = occipital
4 = both sutural and temporal
5 = both occipital and temporal
9 = unobservable

	L	M	R
b. Number:	0		0

0 = absent
1 = 1
2 = 2
3 = more than 2
9 = unobservable

	L	M	R
19. Mental Foramen:	1		2

0 = absent
1 = 1
2 = 2
3 = >2

	L	M	R
20. Mandibular Torus:	0		0

0 = absent
1 = trace (can palpate but not see)
2 = moderate: elevation between 2-5 mm.
3 = markedL elevation greater than 5 mm.
9 = unobservable

21. Mylohyoid Bridge

	L	M	R
a.Location:	0		1

0 = absent
1 = near mandibular foramen
2 = center of groove
3 = both bridges described, with hiatus
4 = both bridges described, no hiatus
9 = unobservable

	L	M	R
b. Degree:	0		2

0 = absent
1 = partial
2 = complete
9 = unobservable

22. Atlas Bridging

	L	M	R
a. Lateral Bridging:	2		2

0 = absent
1 = partial
2 = complete
9 = unobservable

	L	M	R
b. Posterior Bridging:	0		0

0 = absent
1 = partial
2 = complete
9 = unobservable

	L	M	R
23. Accessory Transverse Foramina-in 7th Cervical Vertebra	9		9

0 = absent
1 = partial
2 = complete
3 = unobservable

	L	M	R
24. Septal Aperture:	0		0

0 = absent
1 = small foramen (pinhole) only
2 = true perforation
9 = unobservable

PALEOPATHOLOGY RECORDING FORM I & II

SHAPE, SIZE, BONE LOSS, FORMATION, FRACTURES, AND POROTIC HYPEROSTOSIS
VERTEBRAL PATHOLOGY, ARTHRITIS, AND MISCELLANEOUS

Site Name/Number Harrington 1 MT 231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 3 Date 9/8/97

Present Location of Collection Auburn University at Montgomery

7.0 VERTEBRAL PATHOLOGY

Bone	3.3.4	3.2.3	3.2.4	3.2.2	3.2.1
Obs 1	7.2.3	7.1.2	7.1.3	7.1.2	7.1.1
Obs 2					7.1.2
Aspect	3	1	3	1	1

COMMENTS:

CRANIAL DEFORMATION RECORDING FORM

Site Name/Number__Harrington 1 MT 231__Observer__Sharon Kestle Cobb__

Feature/Burial Number__Burial 3__Date__8/27/97__

Present Location of Collection__Auburn University at Montgomery__

General Category:__3__
1. Tabular
2. Circumferential
3. Other (describe)

Anterior Aspect
Cranial deformation present:__2__
1. Yes
2. No

Posterior Aspect

Cranial deformation present:__1__
1. Yes
2. No

Bilobate cranium

Pressure was centered at:__1__
1. Lambda
2. Squamous portion of occipital
3. Below inion

Plane of pressure in relationship to transverse plane:__2__
1. Perpendicular (90 degrees)
2. Obtuse (>90 degrees)

Are any of the following present?__1,2,3__
1. Sagittal elevation
2. Lambdic elevation
3. Lambdic depression

Pad Impressions:__0__
0. No pad impressions
1. One pad
2. Two pads
3. More than two pads

Impression of bindings visible__2__
1. Yes
2. No

Appendix F

Burial 4

INVENTORY RECORDING FORM FOR COMPLETE SKELETONS

Site Name/Number 1MT 231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 4 Date 9/1/97

Present Location of Collection Auburn University at Montgomery

CRANIAL BONES AND JOINT SURFACES

	L(left)	R(right)
Frontal	1	1
Parietal	1	1
Occipital	1	1
Temporal	1	1
TMJ	1	1

	L	R
Sphenoid	1	1
Zygomatic	1	1
Maxilla	2	2
Palatine	3	3
Mandible	1	1

POSTCRANIAL BONES AND JOINT SURFACES

	L	R
Clavicle	1	___
Scapula		
Body	3	3
Glenoid f.	1	1
Patella	1	1
Sacrum	2	3

	L	R
Os Coxae		
Ilium	2	2
Ischium	2	2
Pubis	1	1
Acetabulum	3	2
Auric. Surface	1	1

VERTEBRAE(individual)

	Centrum	Neural Arch
C1	1	1
C2	1	3
C7	___	___
T10	___	___
T11	___	___
T12	___	___
L1	___	___
L2	___	___
L3	___	___
L4	___	___
L5	2	___

VERTEBRAE(grouped)

#Present/# Complete

	Centra	Neural Arches
C3-6	2 / 2	2 / 2
T1-T9	/	/

Sternum: Manubrium ____ Body ____

RIBS(individual)

	L	R
1st	1	1
2nd	2	2
11th	2	2
12th	2	2

RIBS(grouped)

#Present/# Complete

	L	R	Unsided
3-10	12 /	12 /	8 /

Burial/Skeleton 1MT231 Burial 4
Observer/Date SK Cobb 9/1/97

LONG BONES

	Proximal Epiphysis	Diaphysis: Proximal Third	Diaphysis: Middle Third	Diaphysis: Distal Third	Distal Epiphysis
Left Humerus	1	1	1	1	1
Right Humerus	1	1	1	1	1
Left Radius					
Right Radius	1	1	1	1	1
Left Ulna	1	1	1	1	1
Right Ulna	1	1	1	1	1
Left Femur	1	1	1	2	
Right Femur	3	1	1	3	
Left Tibia		3	2	1	1
Right Tibia		3	1	2	
Left Fibula		1	1	1	1
Right Fibula		1	1	1	

Left Talus 1
Right Talus 2
Left Calcaneous 3
Right Calcaneous 1

HAND(# Present/# Complete)

	L	R	Unsided
# Carpals	7 / 7	7 / 7	/
#Metacarpal	5 / 4	5 / 4	/
#Phalanges	9 / 9	9 / 7	/

FOOT(# Present/# Complete)

	L	R	Unsided
#Tarsals	5 / 5	5 / 5	/
# Metatarsals	5 / 4	5 / 5	/
#Phalanges	4 / 2	8 / 8	/

Comments:
Rib Fragments = 166.2g
Scapulae Fragments = 10.4g
Pelvic Fragments = 57g
Unidentified Fragments = 9g
Craniofacial Fragments = 26.2g
Sacral Fragments = 25.9g
Long Bone Fragments = 77g
Left third and fourth metatarsal exhibits healed fracture/fused. Additional bony spur on left Second metatarsal. Bilateral non-osseous coalition of metatarsal 3 and cuneiform 3.

ADULT AGE/SEX RECORDING FORM

Site Name/Number 1 M T231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 4 Date 9/1/97

Present Location of Collection Auburn University at Montgomery

SEX

Pelvis	L	R
Ventral Arc (1-3)	2	2
Subpubic Concavity (1-3)	2	
Ischiopubic Ramus Ridge (1-3)		
Greater Sciatic Notch (1-5)	1	1
Preauricular Sulcus (0-4)	1	1

Skull	L	M	R
Nuchal Crest (1-5)	2	2	2
Mastoid Process (1-5)	1		2
Supraorbital Margin (1-5)	3		3
Glabella (1-5)	2	1	2
Mental Eminence (1-5)		2	

Estimated Sex, Pelvis (0-5) 1

Estimated Sex, Skull (0-5) 2

AGE

Pubic Symphysis	L	R
Todd (1-10)		
Suchey-Brooks (1-6)		

	L	R
Auricular Surface(1-8)		4

Suture Closure (blank = unobservable; 0 = open; 1 = minimal; 2 = significant; 3 = complete)

External Cranial Vault	1. Midlambdoidal	1
	2. Lambda	
	3. Obelion	
	4. Anterior Sagittal	
	5. Bregma	
	6. Midcoronal	1
	7. Pterion	1
	8. Sphenofrontal	1
	9. Inferior Sphenotemporal	
	10. Superior Sphenotemporal	1
Palate	11. Incisive	
	12. Anterior Medial Palatine	
	13. Posterior Medial Palatine	
	14. Transverse Palatine	
Internal Cranial Vault	15. Sagittal	2
	16. Left Lambda	2
	17. Left Coronal	2

Estimated Age: Young Adult (20-35 years) ___
Middle Adult (35-50 years) ___
Old Adult (50+ years) X

Comments:

Cannot assess pubic symphyses although both are present due to disease process. Auricular surface is very smooth with lytic destruction from arthritis. Auricular surface does not correspond to any age category conclusively.

DENTAL INVENTORY RECORDING FORM
DEVELOPMENT, WEAR, AND PATHOLOGY: PERMANENT TEETH

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 4 Date 2/3/97

Present Location of Collection Auburn University at Montgomery

Tooth presence and development: code 1-8. For teeth entered as "1" (Present, but not in occlusion), record stage of crown/root formation under "Deve opment." **Occlusal surface wear:** use left teeth, following Smith (1984) for anterior teeth (code 1-8) and Scott (1979) for molars (code 0-10). If marked asymmetry is present, record both sides. Record each molar quadrant separate in the spaces provided (+) and the Total for all four quadrants under "Total." **Caries:** code each carious lesion separately (1-7); **Abscesses:** code location (1-2). **Calculus:** code 0-3, 9. Note surface affected (buccal/labial or lingual).

	Tooth	Presence	Dev.	Wear/Total	Caries	Abscess	Calculus	Affected
Maxillary Right	1 M3	3						
	2 M2	2		9|9 37 9|10			1	Circular
	3 M1	2		10|10 40 10|10			1	Circular
	4 P2	2		6			1	Circular
	5 P1	2		7			1	Circular
	6 C	2		6			1	Circular
	7 I2	5						
	8 I1	2		8			1	Circular
Maxillary Left	9 I1	2		8			1	Circular
	10 I2	5						
	11 C	2		7			1	Circular
	12 P1	5						
	13 P2	2		7			1	Circular
	14 M1	4						
	15 M2	2		9|9 37 9|10			1	Circular
	16 M3	3						

Burial/Skeleton 1MT231 Burial 4
Observer/Date SK Cobb 2/3/97

	Tooth Presence	Dev.	Wear/Total	Caries	Abscess	Calculus/Affected
Mandibular Left	17 M3 2	__	9|8 34 9|8	__ __ __	__	s 1 Circular
	18 M2 2	__	9|9 35 9|8	__ __ __	__	1 Circular
	19 M1 2	__	9|9 36 9|9	__ __ __	__	1 Circular
	20 P2 7	__	__ __	__ __ __	__	__ __
	21 P1 2	__	__ 8	__ __ __	__	1 Circular
	22 C 7	__	__ __	__ __ __	__	1 Circular
	23 I2 7	__	__ __	__ __ __	__	1 Circular
	24 I1 7	__	__ __	__ __ __	__	1 Circular
Mandibular Right	2 I1 7	__	__ __	__ __ __	__	1 Circular
	26 I2 7	__	__ __	__ __ __	__	1 Circular
	27 C 2	__	__ 8	__ __ __	__	1 Circular
	28 P1 5	__	__ __	__ __ __	__	__ __
	29 P2 7	__	__ 7	__ __ __	__	1 Circular
	30 M1 7	__	__ __	__ __ __	1	1 Circular
	31 M2 2	__	9|9 35 8|9	__ __ __	__	1 Circular
	32 M3 4	__	__ __	__ __ __	__	__ __

Comments: *s = calculus sample taken
Right mandibular M3 lost antemortem-still signs of resorption in socket but almost healed.
Left mandibular M3 is crooked and extends lingually 5.70mm beyond M2.
Mandible is small and teeth heavily worn.

DENTAL MEASUREMENTS AND MORPHOLOGY RECORDING FORM

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 4 Date 2/3/97

Present Location of Collection Auburn University at Montgomery

Dental Measurements

Record left side of arcade only; substitute antimere when left not observable.

Maxilla

Tooth	I1	I2	C	PM1	PM2	M1	M2	M3
Mesiodistal diameter	**		6.79		5.63			
Buccolingual diameter	**		8.49		9.98			
Crown height			4.30		5.14			

** exists but not measurable due to extreme attrition

Mandible

Tooth	M3	M2	* M1	PM2	PM1	C	I2	I1
Mesiodistal diameter	10.29	9.58	12.00		**			
Buccolingual diameter	10.57	9.97	11.74		**			
Crown height	4.14	3.91	5.79					

* present but measured minus enamel

Skeleton 1MT231 Burial 4
Observer/Date SK Cobb 2/4/97

Dental Morphology

Maxilla

	Right						Left					
Tooth	M3	M2	M1	PM1	I2	I1	I1	I2	PM1	M1	M2	M3
Winging (0-4)												
Shoveling (0-7)												
Double-shoveling (0-6)												
Peg-shaped Incisor (0-2)												
Premolar Root Number (1-3)												
Hypocone												
Metaconule												
Carabelli's												
Extensions												

Mandible

	Left				Right			
Tooth	M3	M2	M1	PM1	PM1	M1	M2	M3
Premolar Root Number (0-5)								
Groove pattern								
Cusp Number (4-6)								
Protostylid (0-7)								
Cusp 5 (0-5)								
Cusp 6 (0-5)								
Cusp 7 (0-4)								
Molar Root Number								

Extensive dental attrition-no morphology noted.

CRANIAL AND POSTCRANIAL MEASUREMENT RECORDING FORM: ADULT REMAINS

Site Name/Number__Harrington 1MT231__________Observer_Sharon Kestle Cobb_____

Feature/ Burial Number__Burial 4__________Date__9/1/ 97__________

Present Location of Collection:__Auburn University at Montgomery__________

Record all measurements to the nearest millimeter; in the case of bilateral measurements, take measurement on the left side. If right side is substituted, Place and (R) nest to the measurement. If bones are fragmented, measurement should not be taken, but dimensions should be estimated for minor erosion or reconstruction; identify these with an asterick "*"

Cranial measurements

1. Maximum cranial length: 150.5
2. Maximum Cranial Breadth: 150.7
3. Bizygomatic Diameter:____
4. Basion-Bregma Height: ____
5. Cranial Base Length:____
6. Basion-Prosthion Length: ___
7. Maxillo-Alveolar Breadth:___
8. Maxillo-Alveolar Length:___
9. Biauricular Breadth: 130.5
10. Upper Facial Height:____
11. Minimum Frontal Breadth: 96
12. Upper Facial Breadth: 100*
13. Nasal Height:____
14. Nasal Breadth:____
15. Orbital Breadth:____
16. Orbital Height:____
17. Biorbital Breadth:____
18. Interorbital Breadth:____
19. Frontal Chord: 100
20. Parietal Chord: 95
21. Occipital Chord:____
22. Foramen Magnum Length:____
23. Foramen Magnum Breadth:____
24. Mastoid Length: 15.1
25. Chin Height: 30.1
26. Height of Mandibular Body: 24.3
27. Breadth of Mandibular Body: 10
28. Bigonial Width: 76.7
29. Bicondylar Breadth: 122.9 (wide but correct)
30. Minimum Ramus Breadth: 33.5
31. Maximum Ramus Breadth: 46
32. Maximum Ramus Height: 48
33. Mandibular Length: 90.5
34. Mandibular Angle:____

Burial/Skeleton 1MT231 Burial 4
Observer/Date SK Cobb 9/1/97

Record all measurements to the nearest millimeter; in the case of bilateral measurements, take measurement on the left side. If right side is substituted, place and (R) next to the measurement. If bones are fragmented, measurements should not be taken, but dimensions should be estimated for minor erosion or reconstruction; identify these with an asterick "*"

Postcranial Measurements

35. Clavicle: Maximum Length:___
36. Clavicle: Ant.-Post. Diameter at Midshaft: 11.3*
37. Clavicle: Sup.-Inf. Diameter at Midshaft: 8.3*
38. Scapula: Height:_____
39. Scapula: Breadth:_____
40. Humerus: Maximum Length: 300.7
41. Humerus: Epicondylar Breadth: 51.5(R)
42. Humerus: Vertical Head Diameter: 39
43. Humerus: Max. Diametr at Midshaft: 17
44. Humerus: Min. Diameter at Midshaft: 14
45. Radius: Maximum Length: 230(R)
46. Radius: Ant.-Post. Diameter/Midshaft: 9.5(R)
47. Radius: Med.-Lat. Diameter/Midshaft: 13(R)
48. Ulna: Maximum Length: 240
49. Ulna: Ant.-Post. Diameter: 10.7
50. Ulna: Med.-Lat. Diameter: 10.6
51. Ulna: Physiological Length: 210.8
52. Ulna: Minimum Circumference: 3
53. Sacrum: Anterior Length:___
54. Sacrum: Anterior Superior Breadth:___
55. Sacrum: Max. Transverse D. Of Base:___
56. Os Coxae: Height:___
57. Os Coxae: Iliac Breadth:___
58. Os Coxae: Pubis Length:___
59. Os Coxae: Ischium Length:___
60. Femur: Maximum Length:___
61. Femur: Bicondylar Length:___
62. Femur: Epicondylar Breadth:____
63. Femur: Max. Head Diameter: 41*
64. Femur: Ant.-Post. SD: 23
65. Femur: Medial-Lateral SD: 27
66. Femur: Ant.-Post. Midshaft D: 25.5
67. Femur: Med.-Lat. Midshaft D: 23
68. Femur: Midshaft Circum: 8.3
69. Tibia: Length:___
70. Tibia: Max. Prox. Epiphyseal B:___
71. Tibia: Max. Distal Eph. Breadth: 40
72. Tibia: Max D/Nutrient Foramen: 30.6
73. Tibia: Med.-Lat. D/Nutrient F: 20.5
74. Tibia: Circum/Nutrient Foramen: 8.2
75. Fibula: Maximum Length:___
76. Fibula: Max. Diameter/Midshaft: 16.4
77. Calcaneous: Maximum Length: 70.3
78. Calcaneous: Middle Breadth: 39.6

PRIMARY NONMETRIC TRAITS RECORDING FORM

Site Name/Number Harrington 1 MT 231 Observer Sharon Kestle Cobb
Burial Number Burial 4 Date 9/8/97

	L	M	R
1. Metopic Suture		0	
0 = absent; 1 = partial; 2 = complete; 9 = unobservable			
2. Supraorbital Structures			
a. Supraorbital notch	0		0
0 = absent; 1 = present, < ½ occluded by spicules; 2 = present, > ½ occluded by spicules; 3 = present, degree of occlusion unknown; 4 = multiple notches; 9 = unobservable			
b. Supraorbital foramen	1		2
0 = absent; 1 = present; 2 = multiple foramina; 9 = unobservable			
3. Infraorbital Suture	0		0
0 = absent; 1 = partial; 2 = complete; 9 = unobservable			
4. Multiple Infraorbital For.	9		9
0 = absent; 1 = internal divsion only; 2 = two distinct foramina; 3 = more than two distinct foramina; 9 = unobservable			
5. Zygomatico-facial For.	6		6
0 = absent; 1 = 1 large; 2 = 1 large plus smaller f.; 3 = 2 large; 4 = 2 large plus smaller foramina; 5 = 1 small; 6 = multiple small; 9 = unobservable			
6. Parietal Foramen	9		0
0 = absent; 1 = present, on parietal; 2 = present, sutural; 9 = unobservable			

	L	M	R
7. Sutural Bones			
0 = absent; 1 = present; 9 = unobservable			
a. epipteric bone:	0		0
b. coronal ossicle:	9		1
c. bregmatic bone:		9	
d. sagittal ossicle:		9	
e. apical bone		9	
f. lambdoid ossicle	9		9
g. asterionic bone:	0		0
h. ossicle in occipito-mastoid suture:	0		0
i. parietal notch bone:	1		0
8. Inca Bone		0	
0 = absent; 1 = complete, single bone; 2 = bipartite; 3 = tripartite; 4 = partial; 9 = unobservable			
9. Condylar Canal	9		9
0 = not patent; 1 = patent; 9 = unobservable			
10. Divided Hypoglossal Can.	3		3
0 = absent; 1 = partial, internal surface; 2 = partial, within canal; 3 = complete, internal surface; 4 = complete, within canal; 9 = unobservable			
11. Flexure of Sup. Sag. Sul.		3	
1 = Right; 2 = Left; 3 = Bifurcate; 9 = unobservable			
12. For. Ovale Incomplete	9		9
0 = absent; 1 = partial formation; 2 = no definition of foramen; 9 = unobservable			

	L	M	R
13. Foramen Spinosum Incom.	9		2
0 = absent			
1 = paartial formation			
2 = no definition			
9 = unobservable			
14. Pterygo-spinous Bridge:	0		0
0 = absent			
1 = trace (spicule only)			
2 = partial bridge			
3 = complete bridge			
9 = unobservable			
15. Pterygo-alar Bridge:	0		0
0 = absent			
1 = trace (spicule only)			
2 = partial bridge			
3 = complete bridge			
9 = unobservable			
16. Tympani Dihiscence:	2		9
0 = absent			
1 = foramen only			
2 = full defect present			
9 = unobservable			
17. Auditory Exostosis:	0		0
0 = absent			
1 = <1/3 canal occluded			
2 = 1/3-2/3 canal occluded			
3 = >2/3 canal occluded			
9 = unobservable			
18. Mastoid Foramen			
a. Location:	0		0
0 = absent			
1 = temporal			
2 = sutural			
3 = occipital			
4 = both sutural and temporal			
5 = both occipital and temporal			
9 = unobservable			
b. Number:	0		0
0 = absent			
1 = 1			
2 = 2			
3 = more than 2			
9 = unobservable			
19. Mental Foramen:	1		1
0 = absent			
1 = 1			
2 = 2			
3 = >2			

	L	M	R
20. Mandibular Torus:	0		0
0 = absent			
1 = trace (can palpate but not see)			
2 = moderate: elevation between 2-5 mm.			
3 = markedL elevation greater than 5 mm.			
9 = unobservable			
21. Mylohyoid Bridge			
a.Location:	0		0
0 = absent			
1 = near mandibular foramen			
2 = center of groove			
3 = both bridges described, with hiatus			
4 = both bridges described, no hiatus			
9 = unobservable			
b. Degree:	0		0
0 = absent			
1 = partial			
2 = complete			
9 = unobservable			
22. Atlas Bridging			
a. Lateral Bridging:	9		9
0 = absent			
1 = partial			
2 = complete			
9 = unobservable			
b. Posterior Bridging:	9		9
0 = absent			
1 = partial			
2 = complete			
9 = unobservable			
23. Accessory Transverse Foramina-in 7th Cervical Vertebra	9		9
0 = absent			
1 = partial			
2 = complete			
3 = unobservable			
24. Septal Aperture:	2		2
0 = absent			
1 = small foramen (pinhole) only			
2 = true perforation			
9 = unobservable			

PALEOPATHOLOGY RECORDING FORM I & II

SHAPE, SIZE, BONE LOSS, FORMATION, FRACTURES, AND POROTIC HYPEROSTOSIS
VERTEBRAL PATHOLOGY, ARTHRITIS, AND MISCELLANEOUS

Site Name/Number Harrington 1 MT 231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 4 Date 9/8/97

Present Location of Collection Auburn University at Montgomery

3.0 BONE LOSS

Bone	4.2.3
Aspect	8
Side	3
Obs 1	3.5.1

4.0 FORMATION

Bone	4.2.3	Bone	4.2.3
Aspect	4	Aspect	8
Side	3	Side	3
Obs1	4.1.3	Obs1	4.1.3

5.0 FRACTURES

Bone	4.3.6
Side	2
Section	7
Obs1	5.1.4
Obs2	5.2.2
Obs3	5.4.2
Obs4	5.4.7

8.0 ARTHRITIS

Bone	3.4.0	3.4.0	4.2.1	4.1.3	4.1.1
Aspect	1	5	4	1	5
Side	3	3	3	2	3
Obs 1	8.1.2	8.1.1	8.1.2	8.1.2	8.3.3
Obs 2	8.2.2	8.2.2	8.2.2	8.2.2	8.4.1
Obs 3	8.4.3	8.3.3	8.3.3	8.3.3	8.5.1
Obs4	8.5.2	8.4.2	8.4.2	8.4.1	8.6.1
Obs5	8.6.1	8.5.2	8.5.2	8.5.2	8.7.2
Obs6	8.7.2	8.6.1	8.6.1	8.7.2	8.8.2
Obs7	8.8.2	8.7.2	8.7.1	8.8.2	8.9.2
Obs8	8.9.2	8.8.2	8.8.2	8.9.1	
Obs9		8.9.2	8.9.2		

COMMENTS: Arthritis involving sacro-iliac joint, pubic symphyses, and promontory of sacrum.

CRANIAL DEFORMATION RECORDING FORM

Site Name/Number__Harrington 1 MT 231__________Observer__Sharon Kestle Cobb__

Feature/Burial Number__Burial 4__________Date__9/8/97__________

Present Location of Collection__Auburn University at Montgomery__________

General Category:__3__
1. Tabular
2. Circumferential
3. Other (describe)

Posterior Aspect

Cranial deformation present:__1__
1. Yes
2. No

Pressure was centered at:__1__
1. Lambda
2. Squamous portion of occipital
3. Below inion

Plane of pressure in relationship to transverse plane:__2__
1. Perpendicular (90 degrees)
2. Obtuse (>90 degrees)

Are any of the following present?_1,2,3_
1. Sagittal elevation
2. Lambdic elevation
3. Lambdic depression

Pad Impressions:__0__
0. No pad impressions
1. One pad
2. Two pads
3. More than two pads

Impression of bindings visible__2__
1. Yes
2. No

Anterior Aspect

Cranial deformation present:__2__
1. Yes
2. No

Bilobate Cranium

Appendix G

Burial 5

INVENTORY RECORDING FORM
FOR COMPLETE SKELETONS

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 5 Date 918/97

Present Location of Collection Auburn University at Montgomery

CRANIAL BONES AND JOINT SURFACES

	L(left)	R(right)		L	R
Frontal			Sphenoid		2
Parietal	1	2	Zygomatic		
Occipital	1	1	Maxilla	1	3
Temporal	1	2	Palatine	2	
TMJ	1	1	Mandible	1	1

POSTCRANIAL BONES AND JOINT SURFACES

	L	R		L	R
Clavicle	2	1	Os Coxae		
Scapula			Ilium	1	3
Body	3	3	Ischium	1	1
Glenoid f.	1	1	Pubis	1	
Patella			Acetabulum	1	
Sacrum	2	2	Auric. Surface	2	

VERTEBRAE(individual)

	Centrum	Neural Arch
C1	1	1
C2	1	1
C7	1	3
T10	1	3
T11	1	
T12	2	2
L1	1	1
L2	1	1
L3	1	1
L4	2	2
L5	1	3

VERTEBRAE(grouped)

#Present/# Complete

	Centra	Neural Arches
C3-6	4 / 4	3 / 0
T1-T9	7 / 6	2 / 0

Sternum: Manubrium 2 Body 3

RIBS(individual)

	L	R
1st	2	2
2nd	2	2
11th	2	2
12th	2	2

RIBS(grouped)

#Present/# Complete

	L	R	Unsided
3-10	12 / 0	12 / 0	/

Burial/Skeleton 1MT231 Burial 5
Observer/Date SK Cobb 9/18/97

LONG BONES

	Proximal Epiphysis	Diaphysis: Proximal Third	Diaphysis: Middle Third	Diaphysis: Distal Third	Distal Epiphysis
Left Humerus	1	1		2	1
Right Humerus	2		1	1	1
Left Radius	1	2	1	1	1
Right Radius	2	2	1	2	3
Left Ulna	1	1	1	1	1
Right Ulna	1	1	2	1	
Left Femur	1	1	2		
Right Femur	3	2	1	3	
Left Tibia		3	1	1	1
Right Tibia			2	1	1
Left Fibula			2	1	1
Right Fibula		1	3	1	1

Left Talus 1
Right Talus 1
Left Calcaneous 1
Right Calcaneous 1

HAND(# Present/# Complete)

	L	R	Unsided
# Carpals	8 / 8	8 / 8	/
#Metacarpal	5 / 3	5 / 4	/
#Phalanges	9 / 5	11 / 11	/

FOOT(# Present/# Complete)

	L	R	Unsided
#Tarsals	7 / 7	7 /	/
# Metatarsals	5 / 5	5 / 5	/
#Phalanges	11 / 10	6 / 6	/

Comments:

Left Rib Fragments = 113g
Right Rib Fragments = 106g
Vertebral Fragments = 68.5g
Long Bone Fragments = 115g
Scapulae Fragments = 35.2g
Sternal Fragments = 26.1g
Pelvic Fragments = 180g
Skull Fragments = 88g

Ribs are all fragmentary. There is something unusual about the right TMJ-photographed both sides for comparison-perhaps an injury to the right temporal bone-depression 9.73mm superior to mastoid process and 10.19mm posterior to auditory canal.

ADULT AGE/SEX RECORDING FORM

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 5 Date 9/18/97

Present Location of Collection Auburn University at Montgomery

SEX

Pelvis	L	R
Ventral Arc (1-3)	3	
Subpubic Concavity (1-3)	3	
Ischiopubic Ramus Ridge (1-3)	3	
Greater Sciatic Notch (1-5)	4	
Preauricular Sulcus (0-4)	0	

Skull	L	M	R
Nuchal Crest (1-5)	5	3	5
Mastoid Process (1-5)	5		5
Supraorbital Margin (1-5)			
Glabella (1-5)			
Mental Eminence (1-5)	5	5	5

Estimated Sex, Pelvis (0-5) 3

Estimated Sex, Skull (0-5) 5

AGE

Pubic Symphysis	L	R
Todd (1-10)	6	
Suchey-Brooks (1-6)	3	

	L	R
Auricular Surface(1-8)	3	

Suture Closure (blank = unobservable; 0 = open; 1 = minimal; 2 = significant; 3 = complete)

External Cranial Vault	1. Midlambdoidal	1
	2. Lambda	1
	3. Obelion	
	4. Anterior Sagittal	
	5. Bregma	
	6. Midcoronal	
	7. Pterion	
	8. Sphenofrontal	
	9. Inferior Sphenotemporal	
	10. Superior Sphenotemporal	
Palate	11. Incisive	3
	12. Anterior Medial Palatine	
	13. Posterior Medial Palatine	
	14. Transverse Palatine	
Internal Cranial Vault	15. Sagittal	
	16. Left Lambda	2
	17. Left Coronal	

Estimated Age: Young Adult (20-35 years) X Attrition corroborates
Middle Adult (35-50 years) ___
Old Adult (50+ years) ___

Comments: Sternal age phase = 4 (24.4 - 31.0)

DENTAL INVENTORY RECORDING FORM
DEVELOPMENT, WEAR, AND PATHOLOGY: PERMANENT TEETH

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 5 Date 1/27/97

Present Location of Collection Auburn University at Montgomery

Tooth presence and development: code 1-8. For teeth entered as "1" (Present, but not in occlusion), record stage of crown/root formation under "Development." **Occlusal surface wear:** use left teeth, following Smith (1984) for anterior teeth (code 1-8) and Scott (1979) for molars (code 0-10). If marked asymmetry is present, record both sides. Record each molar quadrant separate in the spaces provided (+) and the Total for all four quadrants under "Total." **Caries:** code each carious lesion separately (1-7); **Abscesses:** code location (1-2). **Calculus:** code 0-3, 9. Note surface affected (buccal/labial or lingual).

		Tooth Presence	Dev.	Wear/Total	Caries	Abscess	Calculus/Affected	
Maxillary Right	1 M3	2		6|6 21 6|3				
	2 M2	2		5|5 20 5|5			s 1	
	3 M1	2		6|6 24 6|6				
	4 P2	2		5			1	
	5 P1	2		5			1	
	6 C	3					1	Circular
	7 I2	3						
	8 I1	3						
Maxillary Left	9 I1	3						
	10 I2	2		8				
	11 C	2		7				
	12 P1	2		7				
	13 P2	2		5				
	14 M1	2		9|7 34 9|9				
	15 M2	2		4|4 4|4				
	16 M3	2		4|6 18 4|4				

Burial/Skeleton 1MT231 Burial 5
Observer/Date SK Cobb 1/27/97

<table>
<tr><th></th><th>Tooth</th><th>Presence</th><th>Dev.</th><th>Wear/Total</th><th>Caries</th><th>Abscess</th><th>Calculus/Affected</th></tr>
<tr><td>Mandibular Left</td><td>17 M3</td><td>2</td><td></td><td>4|5 21
6|6</td><td></td><td></td><td></td></tr>
<tr><td></td><td>18 M2</td><td>2</td><td></td><td>6|5 21
5|5</td><td></td><td></td><td></td></tr>
<tr><td></td><td>19 M1</td><td>2</td><td></td><td>9|6 30
9|6</td><td></td><td></td><td></td></tr>
<tr><td></td><td>20 P2</td><td>2</td><td></td><td>4</td><td></td><td></td><td></td></tr>
<tr><td></td><td>21 P1</td><td>3</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>22 C</td><td>2</td><td></td><td>5</td><td></td><td></td><td></td></tr>
<tr><td></td><td>23 I2</td><td>2</td><td></td><td>6</td><td></td><td></td><td></td></tr>
<tr><td></td><td>24 I1</td><td>2</td><td></td><td>6</td><td></td><td></td><td></td></tr>
<tr><td>Mandibular Right</td><td>25 I1</td><td>2</td><td></td><td>6</td><td></td><td></td><td></td></tr>
<tr><td></td><td>26 I2</td><td>2</td><td></td><td>6</td><td></td><td></td><td></td></tr>
<tr><td></td><td>27 C</td><td>2</td><td></td><td>5</td><td></td><td></td><td></td></tr>
<tr><td></td><td>28 P1</td><td>3</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>29 P2</td><td>2</td><td></td><td>5</td><td></td><td></td><td></td></tr>
<tr><td></td><td>30 M1</td><td>2</td><td></td><td>10|9 35
8|8</td><td></td><td>1</td><td>s 1 Circular</td></tr>
<tr><td></td><td>31 M2</td><td>2</td><td></td><td>5|5 19
5|4</td><td></td><td>1</td><td></td></tr>
<tr><td></td><td>32 M3</td><td>2</td><td></td><td>7|4 27
9|9</td><td></td><td></td><td>s 1 Circular</td></tr>
</table>

Comments: *s = calculus sample taken-very small sample
M1 abscess = 9.74mm deep/9.97mm wide M2 abscess = 10.87mm deep/10.43mm wide
Mandibular right M2 type 7-opacity looks like dentin exposure? This tooth is abscessed with sclerotic alveolar resorption 10.87mm from CEJ into alveolar bone and 10.43mm wide.
Dentition appears to have been previously cleaned.
Maxillary left PM1 exhibits unusual wear on occlusal surface-worn more buccally-this PM1 would have been on occlusion with the missing mandibular PM1-perhaps evidence that this individual was using his teeth for some task!
Maxillary right M1 hard to discern hypoplasias but looks like multilocular pits throughout cervical area-may be dentin exposure.
Missing P1 abscess?-12.51mm deep x 8.02mm wide right mandible
Missing P1 abscess?-12.16mm deep x 7.70mm wide left mandible large smooth-walled circular crevice at apical aspect.

DENTAL MEASUREMENTS AND MORPHOLOGY RECORDING FORM

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 5 Date 1/27/97

Present Location of Collection Auburn University at Montgomery

Dental Measurements

Record left side of arcade only; substitute antimere when left not observable.

Maxilla

Tooth	I1	I2	C	PM1	PM2	M1	M2	M3
Mesiodistal diameter		5.54	7.52	6.73	6.20	9.67	8.67	10.11
Buccolingual diameter		6.34	8.39	9.48	9.58	11.27	10.48	10.89
Crown height		3.12	6.71	4.60	4.74	5.53	6.16	5.22

Mandible

Tooth	M3	M2	M1	PM2	PM1	C	I2	I1
Mesiodistal diameter	9.95	10.38	9.63	6.07		6.71	4.55	4.03
Buccolingual diameter	10.75	10.56	10.84	8.36		8.18	6.28	5.55
Crown height	6.10	4.79	4.52	5.13		3.31	3.96	2.05

ENAMEL DEFECTS (HYPOPLASIAS AND OPACITIES)
RECORDING FORM: PERMANENT TEETH

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 5 Date 1/27/97

Present Location of Collection Auburn University at Montgomery

Type: code 0-7 or 9; Location: measure distance from the CEJ to most occlusal portion of the defect; Color: code 1-4 for hypocalcifications (type 6 or 7) only.

Maxilla, Right

Tooth	M3			M2			M1			PM2			PM1			C			I2			I1		
Defect	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Type	1	1		3	1		7			4			1	1										
Location																								
Color																								

M3=large opacities and short lines M3(1) = 1.80, M3(2) = 2.34; M2(1) = 1.95, M2(2) = 3.26; PM2(1) = 1.66; PM(1) = 3.92, PM1(2) = 4.68; M1 shows dentin exposure

Maxilla, Left

Tooth	I1			I2			C			PM1			PM2			M1			M2			M3		
Defect	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Type				1	3		1	3					1			3	3		3	3	3	4	1	
Location																								
Color																								

I2(1) = .52, I2(2) = 1.06; C(1) = 1.98, C(2) = 2.49; PM2(1) = 1.48; M1(1) = .87, M1(2) = 1.71; M2(1) = 1.37, M2(2) = 1.91, M2(3) = 3.69; M3(1) = 2.14, M3(2) = 3.01; PM1 worn buccally

Mandible, Left

Tooth	M3			M2			M1			PM2			PM1			C			I2			I1		
Defect	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Type	1	1		6	1		1			1	1					4	4	4						
Location																								
Color																								

M3(1) = .88, M3(2) = 2.58; M2(1) = 2.44, M2(2) = 3.95; M1(1) = 1.37; PM2(1) = 1.75, PM2(2) = 3.07; C(1) = 3.45, C(2) = 5.00 C(3) = 5.77

Mandible, Right

Tooth	I1			I2			C			PM1			PM2			M1			M2			M3		
Defect	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Type							4	4	4				1			7			1	1		1	7	
Location																								
Color																								

C(1) = 2.65, C(2) = 3.82, C(3) = 3.97; PM2(1) =1.33; M2(1) = 2.10, M2(2) = 3.24; M3(1) = 2.53

CRANIAL AND POSTCRANIAL MEASUREMENT RECORDING FORM: ADULT REMAINS

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/ Burial Number Burial 5 Date 9/18/ 97

Present Location of Collection: Auburn University at Montgomery

Record all measurements to the nearest millimeter; in the case of bilateral measurements, take measurement on the left side. If right side is substituted, Place and (R) nest to the measurement. If bones are fragmented, measurement should not be taken, but dimensions should be estimated for minor erosion or reconstruction; identify these with an asterick "*"

Cranial measurements

1. Maximum cranial length:___
2. Maximum Cranial Breadth: 144(R)
3. Bizygomatic Diameter:___
4. Basion-Bregma Height: ___
5. Cranial Base Length:___
6. Basion-Prosthion Length: ___
7. Maxillo-Alveolar Breadth:.___
8. Maxillo-Alveolar Length:___
9. Biauricular Breadth:___
10. Upper Facial Height:___
11. Minimum Frontal Breadth:___
12. Upper Facial Breadth:___
13. Nasal Height:___
14. Nasal Breadth:___
15. Orbital Breadth:___
16. Orbital Height:___
17. Biorbital Breadth:___
18. Interorbital Breadth:___
19. Frontal Chord:___
20. Parietal Chord:___
21. Occipital Chord:___
22. Foramen Magnum Length:___
23. Foramen Magnum Breadth:___
24. Mastoid Length: 27.2
25. Chin Height: 28.9
26. Height of Mandibular Body: 32
27. Breadth of Mandibular Body: 12.7
28. Bigonial Width: 84(R)
29. Bicondylar Breadth: 117(R)
30. Minimum Ramus Breadth: 35.2
31. Maximum Ramus Breadth: 50
32. Maximum Ramus Height: 64
33. Mandibular Length: (L)88(R)95
34. Mandibular Angle:____

Burial/Skeleton 1MT231 Burial 5
Observer/Date SK Cobb 9/18/97

Record all measurements to the nearest millimeter; in the case of bilateral measurements, take measurement on the left side. If right side is substituted, place and (R) next to the measurement. If bones are fragmented, measurements should not be taken, but dimensions should be estimated for minor erosion or reconstruction; identify these with an asterick "*"

Postcranial Measurements

35. Clavicle: Maximum Length: 145
36. Clavicle: Ant.-Post. Diameter at Midshaft: 11.3
37. Clavicle: Sup.-Inf. Diameter at Midshaft: 9.5
38. Scapula: Height: ___
39. Scapula: Breadth: ___
40. Humerus: Maximum Length: ___
41. Humerus: Epicondylar Breadth: 57(R)
42. Humerus: Vertical Head Diameter: 45.8
43. Humerus: Max. Diametr at Midshaft: 22
44. Humerus: Min. Diameter at Midshaft: 21
45. Radius: Maximum Length: 247*
46. Radius: Ant.-Post. Diameter/Midshaft: 10.5
47. Radius: Med.-Lat. Diameter/Midshaft: 11.9
48. Ulna: Maximum Length: 275*
49. Ulna: Ant.-Post. Diameter: 12.3
50. Ulna: Med.-Lat. Diameter: 13
51. Ulna: Physiological Length: 248
52. Ulna: Minimum Circumference: 3.4
53. Sacrum: Anterior Length: ___
54. Sacrum: Anterior Superior Breadth: ___
55. Sacrum: Max. Transverse D. Of Base: ___
56. Os Coxae: Height: ___
57. Os Coxae: Iliac Breadth: ___
58. Os Coxae: Pubis Length: ___
59. Os Coxae: Ischium Length: ___
60. Femur: Maximum Length: ___
61. Femur: Bicondylar Length: ___
62. Femur: Epicondylar Breadth: ___
63. Femur: Max. Head Diameter: 45.7
64. Femur: Ant.-Post. SD: 25
65. Femur: Medial-Lateral SD: 31
66. Femur: Ant.-Post. Midshaft D: 30
67. Femur: Med.-Lat. Midshaft D: 24
68. Femur: Midshaft Circum: 8.5
69. Tibia: Length: ___
70. Tibia: Max. Prox. Epiphyseal B: ___
71. Tibia: Max. Distal Eph. Breadth: 53
72. Tibia: Max D/Nutrient Foramen: ___
73. Tibia: Med.-Lat. D/Nutrient F: ___
74. Tibia: Circum/Nutrient Foramen: ___
75. Fibula: Maximum Length: ___
76. Fibula: Max. Diameter/Midshaft: 16
77. Calcaneous: Maximum Length: 85
78. Calcaneous: Middle Breadth: 38(R)*

PRIMARY NONMETRIC TRAITS RECORDING FORM

Site Name/Number Harrington 1 MT 231 Observer Sharon Kestle Cobb
Burial Number Burial 5 Date 9/18/97

	L	M	R
1. Metopic Suture		9	
2. Supraorbital Structures			
a. Supraorbital notch	9		9
b. Supraorbital foramen	9		9
3. Infraorbital Suture	9		9
4. Multiple Infraorbital For.	9		9
5. Zygomatico-facial For.	9		9
6. Parietal Foramen	9		9

1. Metopic Suture
0 = absent
1 = partial
2 = complete
9 = unobservable

2. Supraorbital Structures

a. Supraorbital notch
0 = absent
1 = present, < ½ occluded by spicules
2 = present, > ½ occluded by spicules
3 = present, degree of occlusion unknown
4 = multiple notches
9 = unobservable

b. Supraorbital foramen
0 = absent
1 = present
2 = multiple foramina
9 = unobservable

3. Infraorbital Suture
0 = absent
1 = partial
2 = complete
9 = unobservable

4. Multiple Infraorbital For.
0 = absent
1 = internal divsion only
2 = two distinct foramina
3 = more than two distinct foramina
9 = unobservable

5. Zygomatico-facial For.
0 = absent
1 = 1 large
2 = 1 large plus smaller f.
3 = 2 large
4 = 2 large plus smaller foramina
5 = 1 small
6 = multiple small
9 = unobservable

6. Parietal Foramen
0 = absent
1 = present, on parietal
2 = present, sutural
9 = unobservable

	L	M	R
7. Sutural Bones			
a. epipteric bone:	9		9
b. coronal ossicle:	9		9
c. bregmatic bone:		9	
d. sagittal ossicle:		9	
e. apical bone		1	
f. lambdoid ossicle	1		1
g. asterionic bone:	9		9
h. ossicle in occipito-mastoid suture:	9		9
i. parietal notch bone:	9		9
8. Inca Bone		4	
9. Condylar Canal	9		9
10. Divided Hypoglossal Can.	9		1
11. Flexure of Sup. Sag. Sul.		3	
12. For. Ovale Incomplete	9		9

7. Sutural Bones
0 = absent
1 = present
9 = unobservable

8. Inca Bone
0 = absent
1 = complete, single bone
2 = bipartite
3 = tripartite
4 = partial
9 = unobservable

multiple irregular-shaped ossicles 7+

9. Condylar Canal
0 = not patent
1 = patent
9 = unobservable

10. Divided Hypoglossal Can.
0 = absent
1 = partial, internal surface
2 = partial, within canal
3 = complete, internal surface
4 = complete, within canal
9 = unobservable

11. Flexure of Sup. Sag. Sul.
1 = Right
2 = Left
3 = Bifurcate
9 = unobservable

12. For. Ovale Incomplete
0 = absent
1 = partial formation
2 = no definition of foramen
9 = unobservable

	L	M	R
13. Foramen Spinosum Incom.	9		9
0 = absent			
1 = partial formation			
2 = no definition			
9 = unobservable			
14. Pterygo-spinous Bridge:	9		9
0 = absent			
1 = trace (spicule only)			
2 = partial bridge			
3 = complete bridge			
9 = unobservable			
15. Pterygo-alar Bridge	9		9
0 = absent			
1 = trace (spicule only)			
2 = partial bridge			
3 = complete bridge			
9 = unobservable			
16. Tympani Dihiscence:	0		0
0 = absent			
1 = foramen only			
2 = full defect present			
9 = unobservable			
17. Auditory Exostosis:	0		0
0 = absent			
1 = <1/3 canal occluded			
2 = 1/3-2/3 canal occluded			
3 = >2/3 canal occluded			
9 = unobservable			
18. Mastoid Foramen			
a. Location:	0		0
0 = absent			
1 = temporal			
2 = sutural			
3 = occipital			
4 = both sutural and temporal			
5 = both occipital and temporal			
9 = unobservable			
b. Number:	0		0
0 = absent			
1 = 1			
2 = 2			
3 = more than 2			
9 = unobservable			
19. Mental Foramen:	1		1
0 = absent			
1 = 1			
2 = 2			
3 = >2			

	L	M	R
20. Mandibular Torus:	0		0
0 = absent			
1 = trace (can palpate but not see)			
2 = moderate: elevation between 2-5 mm.			
3 = markedL elevation greater than 5 mm.			
9 = unobservable			
21. Mylohyoid Bridge			
a.Location:	0		0
0 = absent			
1 = near mandibular foramen			
2 = center of groove			
3 = both bridges described, with hiatus			
4 = both bridges described, no hiatus			
9 = unobservable			
b. Degree:	0		0
0 = absent			
1 = partial			
2 = complete			
9 = unobservable			
22. Atlas Bridging			
a. Lateral Bridging:	2		2
0 = absent			
1 = partial			
2 = complete			
9 = unobservable			
b. Posterior Bridging:	0		0
0 = absent			
1 = partial			
2 = complete			
9 = unobservable			
23. Accessory Transverse Foramina-in 7th Cervical Vertebra	0		0
0 = absent			
1 = partial			
2 = complete			
3 = unobservable			
24. Septal Aperture:	0		0
0 = absent			
1 = small foramen (pinhole) only			
2 = true perforation			
9 = unobservable			

PALEOPATHOLOGY RECORDING FORM I & II

SHAPE, SIZE, BONE LOSS, FORMATION, FRACTURES, AND POROTIC HYPEROSTOSIS
VERTEBRAL PATHOLOGY, ARTHRITIS, AND MISCELLANEOUS

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 5 Date 9/22/97

Present Location of Collection Auburn University at Montgomery

4.0 FORMATION

Bone	4.3.3	Bone	4.3.3	Bone	4.3.3	Bone	4.3.4	Bone	4.3.4	Bone	4.3.5
Aspect	4	Aspect	9	Aspect	4	Aspect	9	Aspect	9	Aspect	7
Side	1	Side	1	Side	2	Side	1	Side	2	Side	1 & 2
Section	4	Section	7	Section	3	Section	7	Section	7		
Obs1	4.7.0		4.0.0		9.0.0		4.1.0		4.1.0		4.7.0
Obs2	4.7.1		4.1.0		4.1.0		4.1.2		4.1.2		4.7.2
Obs3	4.7.2		4.1.2		4.1.2						

5.0 FRACTURES

Bone	4.3.3	Bone	4.1.2	Bone	4.1.3
Side	1	Side	2	Side	2
Section	4	Section	4	Section	4
Obs1	5.4.9		5.0.0		5.0.0
Obs2			5.1.3		5.1.3
Obs3					5.4.2

COMMENTS: Greatly elevated femoral linea aspera bilaterally.
Distal right tibia = traumatic myositis ossificans.
Left ulna and radius at 1/3 distal end = healed colles fracture. Resulted in callus formation on ulna and angulation of radius.
Enthesopathy on left and right calcaneous.
Right humeral deltoid muscle attachment large in correlation with right clavicular deltoid attachment which is noticeably pulled.

CRANIAL DEFORMATION RECORDING FORM

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 5 Date 922/97

Present Location of Collection Auburn University at Montgomery

General Category: 3
1. Tabular
2. Circumferential
3. Other (describe)

Anterior Aspect
Cranial deformation present: 2
1. Yes
2. No

Posterior Aspect

Cranial deformation present: 1
1. Yes
2. No

Pressure was centered at: 1
1. Lambda
2. Squamous portion of occipital
3. Below inion

Plane of pressure in relationship to transverse plane: 2
1. Perpendicular (90 degrees)
2. Obtuse (>90 degrees)

Are any of the following present? 1,2,3
1. Sagittal elevation
2. Lambdic elevation
3. Lambdic depression

Pad Impressions: 0
0. No pad impressions
1. One pad
2. Two pads
3. More than two pads

Impression of bindings visible 2
1. Yes
2. No

Appendix H

Burial 6

INVENTORY RECORDING FORM
FOR COMPLETE SKELETONS

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 6 Date 8/6/97

Present Location of Collection Auburn University at Montgomery

CRANIAL BONES AND JOINT SURFACES

	L(left)	R(right)		L	R
Frontal	1	1	Sphenoid		
Parietal	1	1	Zygomatic	3	2
Occipital	1	1	Maxilla	3	2
Temporal	1	1	Palatine	3	2
TMJ	1	1	Mandible	1	2

POSTCRANIAL BONES AND JOINT SURFACES

	L	R		L	R
Clavicle	2	1	Os Coxae		
Scapula			Ilium		
Body			Ischium		
Glenoid f.			Pubis		
Patella		1	Acetabulum		
Sacrum			Auric. Surface		

VERTEBRAE(individual)

	Centrum	Neural Arch
C1	1	1
C2	1	3
C7		
T10		
T11		
T12		
L1	2	
L2	1	2
L3		
L4		
L5		

VERTEBRAE(grouped)

#Present/# Complete

	Centra	Neural Arches
C3-6	6 / 6	/
T1-T9	9 / 6	7 / 5

Sternum: Manubrium ____ Body ____

RIBS(individual)

	L	R
1st		
2nd		
11th		
12th		

RIBS(grouped)

#Present/# Complete

	L	R	Unsided
3-10	6 /	3 /	4 /

Burial/Skeleton 1MT231 Burial 6
Observer/Date SK Cobb 9/8/97

LONG BONES

	Proximal Epiphysis	Diaphysis Proximal Third	Diaphysis Middle Third	Diaphysis Distal Third	Distal Epiphysis
Left Humerus		3	1	2	
Right Humerus		2	1	1	1
Left Radius	2	2	2	2	
Right Radius	2	1	1	2	
Left Ulna	2	2		2	2
Right Ulna	1	1	1	1	1
Left Femur		2	1	2	
Right Femur	2	2	1	1	2
Left Tibia	3	3			
Right Tibia	3	2	1	2	
Left Fibula					
Right Fibula		2	1	2	

Left Talus___
Right Talus___
Left Calcaneous___
Right Calcaneous___

HAND(# Present/# Complete)

	L	R	Unsided
# Carpals	/	1 / 1	/
#Metacarpal	/	5 / 1	/
#Phalanges	/	4 / 3	/

FOOT(# Present/# Complete)

	L	R	Unsided
#Tarsals	/	2 / 2	/
# Metatarsals	/	/	/
#Phalanges	/	/	/

Comments:

Rib Fragments = 20.1g
Cranial Fragments = 11.7g
Scapulae Fragments = 11.8
Long Bone Fragments = 23.1g
Facial Fragments = 27.3g
Vertebral Fragments = 74g

Left maxilla = rotated P2

Burial/Skeleton 1MT231 Burial 6
Observer/Date SK Cobb 9/8/97

LONG BONES

	Proximal Epiphysis	Diaphysis: Proximal Third	Diaphysis: Middle Third	Diaphysis: Distal Third	Distal Epiphysis
Left Humerus		3	1	2	
Right Humerus		2	1	1	1
Left Radius	2	2	2	2	
Right Radius	2	1	1	2	
Left Ulna	2	2		2	2
Right Ulna	1	1	1	1	1
Left Femur		2	1	2	
Right Femur	2	2	1	1	2
Left Tibia	3	3			
Right Tibia	3	2	1	2	
Left Fibula					
Right Fibula		2	1	2	

Left Talus___
Right Talus___
Left Calcaneous___
Right Calcaneous___

HAND(# Present/# Complete)

	L	R	Unsided
# Carpals	/	1 / 1	/
#Metacarpal	/	5 / 1	/
#Phalanges	/	4 / 3	/

FOOT(# Present/# Complete)

	L	R	Unsided
#Tarsals	/	2 / 2	/
# Metatarsals	/	/	/
#Phalanges	/	/	/

Comments:
Rib Fragments = 20.1g
Cranial Fragments = 11.7g
Scapulae Fragments = 11.8
Long Bone Fragments = 23.1g
Facial Fragments = 27.3g
Vertebral Fragments = 74g

Left maxilla = rotated P2

INVENTORY RECORDING FORM
FOR COMPLETE SKELETONS

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 6 Date 8/6/97

Present Location of Collection Auburn University at Montgomery

CRANIAL BONES AND JOINT SURFACES

	L(left)	R(right)		L	R
Frontal	1	1	Sphenoid		
Parietal	1	1	Zygomatic	3	2
Occipital	1	1	Maxilla	3	2
Temporal	1	1	Palatine	3	2
TMJ	1	1	Mandible	1	2

POSTCRANIAL BONES AND JOINT SURFACES

	L	R		L	R
Clavicle	2	1	Os Coxae		
Scapula			Ilium		
Body			Ischium		
Glenoid f.			Pubis		
Patella		1	Acetabulum		
Sacrum			Auric. Surface		

VERTEBRAE(individual)

	Centrum	Neural Arch
C1	1	1
C2	1	3
C7		
T10		
T11		
T12		
L1	2	
L2	1	2
L3		
L4		
L5		

VERTEBRAE(grouped)

#Present/# Complete

	Centra	Neural Arches
C3-6	6 / 6	/
T1-T9	9 / 6	7 / 5

Sternum: Manubrium ____ Body ____

RIBS(individual)

	L	R
1st		
2nd		
11th		
12th		

RIBS(grouped)

#Present/# Complete

	L	R	Unsided
3-10	6 /	3 /	4 /

ADULT AGE/SEX RECORDING FORM

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 6 Date 8/8/97

Present Location of Collection Auburn University at Montgomery

SEX

Pelvis	L	R
Ventral Arc (1-3)	___	___
Subpubic Concavity (1-3)	___	___
Ischiopubic Ramus Ridge (1-3)	___	___
Greater Sciatic Notch (1-5)	___	___
Preauricular Sulcus (0-4)	___	___

Skull	L	M	R
Nuchal Crest (1-5)	___	3	___
Mastoid Process (1-5)	4	___	4
Supraorbital Margin (1-5)	4	___	4
Glabella (1-5)	___	4	___
Mental Eminence (1-5)	___	4	___

Estimated Sex, Pelvis (0-5) ___

Estimated Sex, Skull (0-5) 4

AGE

Pubic Symphysis	L	R
Todd (1-10)	___	___
Suchey-Brooks (1-6)	___	___

	L	R
Auricular Surface(1-8)	___	___

Suture Closure (blank = unobservable; 0 = open; 1 = minimal; 2 = significant; 3 = complete)

External Cranial Vault	1. Midlambdoidal	0
	2. Lambda	0
	3. Obelion	0
	4. Anterior Sagittal	0
	5. Bregma	0
	6. Midcoronal	0
	7. Pterion	1
	8. Sphenofrontal	1
	9. Inferior Sphenotemporal	1
	10. Superior Sphenotemporal	0
Palate	11. Incisive	___
	12. Anterior Medial Palatine	___
	13. Posterior Medial Palatine	___
	14. Transverse Palatine	___
Internal Cranial Vault	15. Sagittal	2
	16. Left Lambda	2
	17. Left Coronal	2

Estimated Age: Young Adult (20-35 years) 25-35
Middle Adult (35-50 years) ___
Old Adult (50+ years) ___

Comments: Burial 6 has a small cranuim but the skull exhibits male characteristics.

DENTAL INVENTORY RECORDING FORM
DEVELOPMENT, WEAR, AND PATHOLOGY: PERMANENT TEETH

Site Name/Number_Harrington 1MT231_____________Observer_Sharon Kestle Cobb_____

Feature/Burial Number_Burial 6_____________________Date_8/6/97_______________

Present Location of Collection_Auburn University at Montgomery_________________

Tooth presence and development: code 1-8. For teeth entered as "1" (Present, but not in occlusion), record stage of crown/root formation under "Development." **Occlusal surface wear:** use left teeth, following Smith (1984) for anterior teeth (code 1-8) and Scott (1979) for molars (code 0-10). If marked asymmetry is present, record both sides. Record each molar quadrant separate in the spaces provided (+) and the Total for all four quadrants under "Total." **Caries:** code each carious lesion separately (1-7); **Abscesses:** code location (1-2). **Calculus:** code 0-3, 9. Note surface affected (buccal/labial or lingual).

	Tooth	Presence	Dev.	Wear/Total	Caries	Abscess	Calculus/Affected	
Maxillary Right	1 M3	___	___	┼ __	___ ___ ___	___	___	______
	2 M2	2	___	5|8 27 6|8	___ ___ ___	___	1	BL|MD
	3 M1	2	___	8|9 34 8|9	___ ___ ___	___	1	BL|MD
	4 P2	2	___	__ 5	___ ___ ___	___	1	BL|MD
	5 P1	2	___	__ 5	___ ___ ___	___	1	BL|MD
	6 C	2	___	__ 6	___ ___ ___	___	1	BL|MD
	7 I2	2	___	__ 5	___ ___ ___	___	1	BL|MD
	8 I1	2	___	__ 5	___ ___ ___	___	1	BL|MD
Maxillary Left	9 I1	___	___	__ __	___ ___ ___	___	___	______
	10 I2	__ __	___	__ __	___ ___ ___	___	___	______
	11 C	___	___	__ __	___ ___ ___	___	___	______
	12 P1	2	___	__ 4	___ ___ ___	___	1	BL|MD
	13 P2	2	___	__ 3	___ ___ ___	___	1	BL|MD
	14 M1	2	___	9|5 30 9|7	___ ___ ___	___	1	BL|MD
	15 M2	2	___	9|5 29 9|6	___ ___ ___	___	1	BL|MD
	16 M3	___	___	__ __	___ ___ ___	___	___	______

Burial/Skeleton 1MT231 Burial 6
Observer/Date SK Cobb 8/6/97

	Tooth	Presence	Dev.	Wear/Total	Caries	Abscess	Calculus/Affected
Mandibular Left	17 M3	2	__	9|8 25 4|4	__ __ __	__	1 BL|MD
	18 M2	2	__	9|8 34 9|8	__ __ __	__	1 BL|MD
	19 M1	2	__	8|7 30 8|7	__ __ __	__	1 BL|MD
	20 P2	2	__	__ 2	__ __ __	__	1 BL|MD
	21 P1	2	__	__ 4	__ __ __	__	1 BL|MD
	22 C	2	__	__ 5	__ __ __	__	1 BL|MD
	23 I2	5	__	__ __	__ __ __	__	__ ____
	24 I1	5	__	__ __	__ __ __	__	__ ____
Mandibular Right	25 I1	5	__	__ __	__ __ __	__	__ ____
	26 I2	5	__	__ __	__ __ __	__	__ ____
	27 C	5	__	__ __	__ __ __	__	__ ____
	28 P1	2	__	__ 5	__ __ __	__	1 BL|MD
	29 P2	2	__	__ 5	__ __ __	__	1 BL|MD
	30 M1	2	__	8|9 34 8|9	__ __ __	__	1 BL|MD
	31 M2	2	__	8|9 34 8|9	__ __ __	__	1 BL|MD
	32 M3	2	__	8|7 27 3|5	__ __ __	__	1 BL|MD

Comments: *s = calculus sample taken

DENTAL MEASUREMENTS AND MORPHOLOGY RECORDING FORM

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 6 Date 6/6/97

Present Location of Collection Auburn University at Montgomery

Dental Measurements

Record left side of arcade only; substitute antimere when left not observable.

Maxilla

Tooth	* I1	* I2	* C	PM1	** PM2	M1	M2	M3
Mesiodistal diameter	8.12	6.11	7.41	6.97	7.05	10.41	9.35	
Buccolingual diameter	6.37	5.56	8.10	9.81	7.10	12.00	11.42	
Crown height	8.24	6.72	7.34	5.58	5.69	5.09	5.36	

* = antemere
** = rotated in socket buccal-mesially

Mandible

Tooth	M3	M2	M1	PM2	PM1	C	I2	I1
Mesiodistal diameter	9.92	10.59	11.50	6.52	6.82	6.67		
Buccolingual diameter	10.04	10.64	10.80	8.08	8.19	6.88		
Crown height	3.13	4.24	4.35	6.21	5.98	7.92		

Skeleton 1MT231 Burial 6
Observer/Date SK Cobb 6/9/97

Dental Morphology

Maxilla

	Right						Left					
Tooth	M3	M2	M1	PM1	I2	I1	I1	I2	PM1	M1	M2	M3
Winging (0-4)												
Shoveling (0-7)					1	0						
Double-shoveling (0-6)												
Peg-shaped Incisor (0-2)												
Premolar Root Number (1-3)				1					1			
Hypocone												
Metaconule												
Carabelli's												
Extensions	0	0	0							0	0	0

Mandible

	Left				Right			
Tooth	M3	M2	M1	PM1	PM1	M1	M2	M3
Premolar Root Number (0-5)					0			
Groove pattern								
Cusp Number (4-6)								
Protostylid (0-7)								
Cusp 5 (0-5)								
Cusp 6 (0-5)								
Cusp 7 (0-4)								
Molar Root Number								

CRANIAL AND POSTCRANIAL MEASUREMENT RECORDING FORM:. ADULT REMAINS

Site Name/Number_ Harrington 1MT231 Observer_Sharon Kestle Cobb

Feature/ Burial Number_ Burial 6 Date 6/9/ 97

Present Location of Collection: Auburn University at Montgomery

Recora all measurements to the nearest millimeter; in the case of bilateral measurements, take measurement on the left side. If right side is substituted, Place and (R) nest to the measurement. If bones are fragmented, measurement should not be taken, but dimensions should be estimated for minor erosion or reconstruction; identify these with an asterick "*"

Cranial measurements

1. Maximum cranial length: 16.5
2. Maximum Cranial Breadth: 13.2
3. Bizygomatic Diameter: 135*
4. Basion-Bregma Height: ____
5. Cranial Base Length: ____
6. Basion-Prosthion Length: ____
7. Maxillo-Alveolar Breadth: ____
8. Maxillo-Alveolar Length: ____
9. Biauricular Breadth: 120
10. Upper Facial Height: ____
11. Minimum Frontal Breadth: 8.5
12. Upper Facial Breadth: 9.5
13. Nasal Height: ____
14. Nasal Breadth: ____
15. Orbital Breadth: ____
16. Orbital Height: ____
17. Biorbital Breadth: ____
18. Interorbital Breadth: ____
19. Frontal Chord: 10
20. Parietal Chord: 9.5
21. Occipital Chord: ____
22. Foramen Magnum Length: ____
23. Foramen Magnum Breadth: ____
24. Mastoid Length: 22.6
25. Chin Height: 24.3
26. Height of Mandibular Body: 30.6
27. Breadth of Mandibular Body: 11.5
28. Bigonial Width: 85.7
29. Bicondylar Breadth: ____
30. Minimum Ramus Breadth: ____
31. Maximum Ramus Breadth: ____
32. Maximum Ramus Height: ____
33. Mandibular Length: 86.7*
34. Mandibular Angle: ____

Burial/Skeleton 1MT231 Burial 6
Observer/Date SK Cobb 8/9/97

Record all measurements to the nearest millimeter; in the case of bilateral measurements, take measurement on the left side. If right side is substituted, place and (R) next to the measurement. If bones are fragmented, measurements should not be taken, but dimensions should be estimated for minor erosion or reconstruction; identify these with an asterick "*"

Postcranial Measurements

35. Clavicle: Maximum Length: 140(R)
36. Clavicle: Ant.-Post. Diameter at Midshaft: 11.8
37. Clavicle: Sup.-Inf. Diameter at Midshaft: 8.6
38. Scapula: Height: ___
39. Scapula: Breadth: ___
40. Humerus: Maximum Length: ___
41. Humerus: Epicondylar Breadth: 57(R)
42. Humerus: Vertical Head Diameter: ___
43. Humerus: Max. Diametr at Midshaft: 24.4(R)
44. Humerus: Min. Diameter at Midshaft: 15.2(R)
45. Radius: Maximum Length: ___
46. Radius: Ant.-Post. Diameter/Midshaft: 12.5(R)
47. Radius: Med.-Lat Diameter/Midshaft: 16.4(R)
48. Ulna: Maximum Length: 270
49. Ulna: Ant.-Post. Diameter: 15.7(R)
50. Ulna: Med.-Lat. Diameter: 15.3(R)
51. Ulna: Physiological Length: 235(R)
52. Ulna: Minimum Circumference: 3.5(R)
53. Sacrum: Anterior Length: ___
54. Sacrum: Anterior Superior Breadth: ___
55. Sacrum: Max. Transverse D. Of Base: ___
56. Os Coxae: Height: ___
57. Os Coxae: Iliac Breadth: ___
58. Os Coxae: Pubis Length: ___
59. Os Coxae: Ischium Length: ___
60. Femur: Maximum Length: 440(R)*
61. Femur: Bicondylar Length: 435(R)*
62. Femur: Epicondylar Breadth: 80(R)*
63. Femur: Max. Head Diameter: 43(R)*
64. Femur: Ant.-Post. SD: 27(R)
65. Femur: Medial-Lateral SD: 31(R)
66. Femur: Ant.-Post. Midshaft D: 28(R)
67. Femur: Med.-Lat. Midshaft D: 23(R)
68. Femur: Midshaft Circum: 8.2(R)
69. Tibia: Length: ___
70. Tibia: Max. Prox. Epiphyseal B: ___
71. Tibia: Max. Distal Eph. Breadth: ___
72. Tibia: Max D/Nutrient F: 39(R)
73. Tibia: Med.-Lat. D/Nutrient F: 25(R)
74. Tibia: Circum/Nutrient F: 10(R)
75. Fibula: Maximum Length: ___
76. Fibula: Max. D/Midshaft: 17(R)
77. Calcaneous: Maximum Length: ___
78. Calcaneous: Middle Breadth: ___

PRIMARY NONMETRIC TRAITS RECORDING FORM

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb
Burial Number Burial 6 Date 8/9/97

	L	M	R
1. Metopic Suture		0	
0 = absent			
1 = partial			
2 = complete			
9 = unobservable			
2. Supraorbital Structures			
a. Supraorbital notch	9		2
0 = absent			
1 = present, < ½ occluded by spicules			
2 = present, > ½ occluded by spicules			
3 = present, degree of occlusion unknown			
4 = multiple notches			
9 = unobservable			
b. Supraorbital foramen	0		0
0 = absent			
1 = present			
2 = multiple foramina			
9 = unobservable			
3. Infraorbital Suture	9		9
0 = absent			
1 = partial			
2 = complete			
9 = unobservable			
4. Multiple Infraorbital For.	9		9
0 = absent			
1 = internal divsion only			
2 = two distinct foramina			
3 = more than two distinct foramina			
9 = unobservable			
5. Zygomatico-facial For.	9		2
0 = absent			
1 = 1 large			
2 = 1 large plus smaller f.			
3 = 2 large			
4 = 2 large plus smaller foramina			
5 = 1 small			
6 = multiple small			
9 = unobservable			
6. Parietal Foramen	0		0
0 = absent			
1 = present, on parietal			
2 = present, sutural			
9 = unobservable			

	L	M	R
7. Sutural Bones			
0 = absent			
1 = present			
9 = unobservable			
a. epipteric bone:	0		0
b. coronal ossicle:	1		1
c. bregmatic bone:		0	
d. sagittal ossicle:		0	
e. apical bone		0	
f. lambdoid ossicle	1		1
g. asterionic bone:	0		0
h. ossicle in occipito-mastoid suture:	0		0
i. parietal notch bone:	0		0
8. Inca Bone		0	
0 = absent			
1 = complete, single bone			
2 = bipartite			
3 = tripartite			
4 = partial			
9 = unobservable			
9. Condylar Canal	9		9
0 = not patent			
1 = patent			
9 = unobservable			
10. Divided Hypoglossal Can.	0		0
0 = absent			
1 = partial, internal surface			
2 = partial, within canal			
3 = complete, internal surface			
4 = complete, within canal			
9 = unobservable			
11. Flexure of Sup. Sag. Sul.		3	
1 = Right			
2 = Left			
3 = Bifurcate			
9 = unobservable			
12. For. Ovale Incomplete	9		9
0 = absent			
1 = partial formation			
2 = no definition of foramen			
9 = unobservable			

L M R

13. Foramen Spinosum Incom. 9 9

0 = absent
1 = partial formation
2 = no definition
9 = unobservable

14. Pterygo-spinous Bridge: 9 9

0 = absent
1 = trace (spicule only)
2 = partial bridge
3 = complete bridge
9 = unobservable

15. Pterygo-alar Bridge: 9 9

0 = absent
1 = trace (spicule only)
2 = partial bridge
3 = complete bridge
9 = unobservable

16. Tympanic Dihiscence: 0 0

0 = absent
1 = foramen only
2 = full defect present
9 = unobservable

17. Auditory Exostosis: 0 0

0 = absent
1 = <1/3 canal occluded
2 = 1/3-2/3 canal occluded
3 = >2/3 canal occluded
9 = unobservable

18. Mastoid Foramen

a. Location: 0 0

0 = absent
1 = temporal
2 = sutural
3 = occipital
4 = both sutural and temporal
5 = both occipital and temporal
9 = unobservable

b. Number: 0 0

0 = absent
1 = 1
2 = 2
3 = more than 2
9 = unobservable

19. Mental Foramen: 1 1

0 = absent
1 = 1
2 = 2
3 = >2

L M R

20. Mandibular Torus: 0 0

0 = absent
1 = trace (can palpate but not see)
2 = moderate: elevation between 2-5 mm.
3 = marked: elevation greater than 5 mm.
9 = unobservable

21. Mylohyoid Bridge

a.Location: 9 9

0 = absent
1 = near mandibular foramen
2 = center of groove
3 = both bridges described, with hiatus
4 = both bridges described, no hiatus
9 = unobservable

b. Degree: 9 9

0 = absent
1 = partial
2 = complete
9 = unobservable

22. Atlas Bridging

a. Lateral Bridging: 0 0

0 = absent
1 = partial
2 = complete
9 = unobservable

b. Posterior Bridging: 0 0

0 = absent
1 = partial
2 = complete
9 = unobservable

23. Accessory Transverse Foramina-in 7th Cervical Vertebra 9 9

0 = absent
1 = partial
2 = complete
3 = unobservable

24. Septal Aperture: 9 0

0 = absent
1 = small foramen (pinhole) only
2 = true perforation
9 = unobservable

CRANIAL DEFORMATION RECORDING FORM

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 6 Date 8/9/97

Present Location of Collection Auburn University at Montgomery

General Category: 3
1. Tabular
2. Circumferential
3. Other (describe)

Posterior Aspect

Cranial deformation present: 1
1. Yes
2. No

Pressure was centered at: 1
1. Lambda
2. Squamous portion of occipital
3. Below inion

Plane of pressure in relationship to transverse plane: 2
1. Perpendicular (90 degrees)
2. Obtuse (>90 degrees)

Are any of the following present? 1,2,3
1. Sagittal elevation
2. Lambdic elevation
3. Lambdic depression

Pad Impressions: 0

0. No pad impressions
1. One pad
2. Two pads
3. More than two pads

Impression of bindings visible 2
1. Yes
2. No

Anterior Aspect

Cranial deformation present: 2
1. Yes
2. No

Bilobate - exhibits earth pressure

Appendix I

Burial 7

INVENTORY RECORDING FORM
FOR COMPLETE SKELETONS

Site Name/Number: Harrington 1 M t 231 Observer: Sharon Kestle Cobb

Feature/Burial Number: Burial 7 Date: 9/8/97

Present Location of Collection: Auburn University at Montgomery

CRANIAL BONES AND JOINT SURFACES

	L(left)	R(right)		L	R
Frontal	1	1	Sphenoid	1	1
Parietal	1	1	Zygomatic	2	2
Occipital	1	1	Maxilla	1	1
Temporal	1	1	Palatine	1	1
TMJ	1	1	Mandible	1	1

POSTCRANIAL BONES AND JOINT SURFACES

	L	R		L	R
Clavicle	1		Os Coxae		
Scapula			Ilium		
Body	2	2	Ischium	1	1
Glenoid f.			Pubis		
Patella			Acetabulum		
Sacrum			Auric. Surface		

VERTEBRAE(individual)

	Centrum	Neural Arch
C1		2
C2		1
C7		
T10		
T11		
T12		
L1		
L2		
L3		
L4		
L5		

VERTEBRAE(grouped)

#Present/# Complete

	Centra	Neural Arches
C3-6	/	/
T1-T9	/	/
	2 / 2	10 / 3

Sternum: Manubrium ____ Body ____

RIBS(individual)

	L	R
1st	1	
2nd		
11th		
12th		

RIBS(grouped)

#Present/# Complete

	L	R	Unsided
3-10	10 /	10 /	/

Burial/Skeleton 1MT231 Burial 7
Observer/Date SK Cobb 8/25/97

LONG BONES

	Proximal Epiphysis	Diaphysis: Proximal Third	Diaphysis: Middle Third	Diaphysis: Distal Third	Distal Epiphysis
Left Humerus		2	2		
Right Humerus			2		
Left Radius			1	1	
Right Radius					
Left Ulna		3	1	1	
Right Ulna					
Left Femur		1	2	2	
Right Femur		2	2	3	
Left Tibia		3	1	3	
Right Tibia		2	3		
Left Fibula		2	1	2	
Right Fibula			2	2	

Left Talus____
Right Talus____
Left Calcaneous____
Right Calcaneous____

HAND(# Present/# Complete)

	L	R	Unsided
# Carpals	/	/	/
#Metacarpal	/	/	/
#Phalanges	/	/	/

FOOT(# Present/# Complete)

	L	R	Unsided
#Tarsals	/	/	/
# Metatarsals	/	/	1 / 1
#Phalanges	/	/	7 /

Comments:
Rib Fragments = 2.5g
Long Bone Fragments = 5.5g
Cranial Fragments = 8.6g
Healed fracture = left rib

IMMATURE REMAINS RECORDING FORM: BONE UNION AND EPIPHYSEAL CLOSURE

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb
Feature/Burial Number Burial 7 Date 8/25/97

Present Location of Collection Auburn University at Montgomery

Stage of Union; blank = unobservable; 0 = open; 1 = partial union; 2 = complete union

EPIPHYSEAL FUSION

Bone	Epiphysis	Stage of Union	
Cervical Vertebrae	superior	0	
	Inferior	0	
Thoracic Vertebrae	superior	0	
	Inferior	0	
Lumbar Vertebrae	superior	0	
	Inferior	0	
		L	R
Scapula	coracoid	0	0
	acromion	0	0
Clavicle	sternal	0	0
Humerus	head	0	0
	distal	0	0
	medial epicondyle	0	0
Radius	proximal	0	0
	distal	0	0
Ulna	proximal	0	0
	distal	0	0
Os Coxae	iliac crest	0	0
	Ischial tuberosity	0	0
Femur	head	0	0
	greater trochanter	0	0
	lesser trochanter	0	0
	distal	0	0
Tibia	proximal	0	0
	distal	0	0

PRIMARY OSSIFICATION CENTERS

Bone	Area of Union	Extent
Os Coxae	Ilium-pubis	0
	Ischium-pubis	0
	Ischium-ilium	0
Sacral Segments	1-2	0
	2-3	0
	3-4	0
	4-5	0
Cervical Vertebrae		
	neural arches to each other	2
	neural arches to centrum	0
Thoracic Vertebrae		
	neural arches to each other	2
	neural arches to centrum	0
Lumbar Vertebrae		
	neural arches to each other	2
	neural arches to centrum	0
Cranium		
	spheno-occipital synchondrosis	2
Occipital		
	lateral part to squama	2
	basilar part to lateral part	0

Estimate of chronological age based on postcranial maturation

Fetal	___	10-15	___
b-5	X	15-20	___
5-10	___	20+	___

Comments:

IMMATURE MEASUREMENTS RECORDING FORM

Site Name/Number Harrington 1 M t 231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 7 Date 8/25/97

Present Location of Collection Auburn University at Montgomery

CRANIAL MEASUREMENTS

	L	M	R
1. Lesser Wing, Sphenoid			
(a) Length:	______		______
(b) Width:	______		______
2. Greater Wing, Sphemoid			
(a) Length:	______		______
(b) Width:	______		______
3. Body of Sphenoid			
(a) Length:		______	
(b) Width:		______	
4. Petrous and Mastoid Portions, Temporal			
(a) Length:	39.69		39.17
(b) Width:	20.01		19.62
5. Basilar, Occipital			
(a) Length:		18.33	
(b) Width:		25.70	
6. Zygomatic			
(a) Length:	44.96		45.47
(b) Width:	47.87		48.34
7. Maxilla			
(a) Length:	31.98		30.67
(b) Height:	16.06		16.54
(c) Width:	45.34		47.42
8. Mandible			
(a) Length of Body:	60.91		59.20
(b) Width of Arc:	28.13		27.53
(c) Full length of half Mandible:		78.33	
9. Clavicle			
(a) Length:	66.80		______
(b) Diameter:	5.97		______

Comments: Sphenoid measurements cannot be calculated.

DENTAL INVENTORY RECORDING FORM
DEVELOPMENT AND PATHOLOGY: DECIDUOUS TEETH

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 7 Date 8/25/97

Present Location of Collection Auburn University at Montgomery

Tooth presence and development: code 1-8. For teeth entered as "1" (presen:, but not in occlusion), record stage of crown/root formation under "Development." **Caries:** code each carious lesion separately (1-7); **Abscesses:** code location (1-2). **Calculus:** code 0-3, 9. Note surface affected (buccal/labial or lingual).

	Tooth	Presence	Dev.
Maxillary Right	51 M2	2	12
	52 M1	2	12
	53 C	2	14
	54 I2	2	14
	55 I1	2	14
Maxillary Left	56 I1	2	14
	57 I2	2	14
	58 C	2	14
	59 M1	2	12
	60 M2	2	12
Mandibular Left	61 M2	2	12
	62 M1	2	12
	63 C	2	12
	64 I2	5	___
	65 I1	5	___
Mandibular Right	66 I1	5	___
	67 I2	5	___
	68 C	2	12
	69 M1	2	12
	70 M2	2	12

Estimated dental age (juveniles only) 4+/-12 months

No Caries, Abscesses, or Calculus. Slight wear evident on molar cusps, canines, lateral and central incisors. All permanent dentition in crypt except M3's. Stage of development not recorded.

DENTAL MEASUREMENTS AND MORPHOLOGY RECORDING FORM

Site Name/Number Harrington 1 MT 231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 7 Date 8/25/97

Present Location of Collection Auburn University at Montgomery

***Dental Measurements**

Record left side of arcade only; substitute antimere when left not observable.

Maxilla

Tooth	I1	I2	C	PM1	PM2	M1	M2	M3
Mesiodistal diameter	5.37	4.47	4.63			6.75	8.42	
Buccolingual diameter	3.89	4.71	5.65			8.18	9.63	
Crown height	4.68	4.84	5.61			5.19	5.17	

Mandible

Tooth	M3	M2	M1	PM2	PM1	C	I2	I1
Mesiodistal diameter		10.06	8.17			5.62		
Buccolingual diameter		8.94	6.38			4.39		
Crown height		5.61	4.57			6.23		

*Deciduous dentition

Skeleton Burial 7
Observer/Date SK Cobb 8/25/97

Dental Morphology

Maxilla

Right							Left					
Tooth	M3	M2	M1	PM1	I2	I1	I1	I2	PM1	M1	M2	M3
Winging (0-4)						1 B	1 B					
Shoveling (0-7)					1	2	2	1				
Double-shoveling (0-6)					0	0	0	0				
Peg-shaped Incisor (0-2)					0			0				
Premolar Root Number (1-3)				0					0			
Hypocone	0	4/D	4/P	Hypocone present						4/P	4/D	0
Metaconule	0	0	0							0	0	0
Carabelli's	0	0	0							0	0	0
Extensions	0	0	0							0	0	0

Mandible

Left					Right			
Tooth	M3	M2	M1	PM1	PM1	M1	M2	M3
Premolar Root Number (0-5)								
Groove pattern								
Cusp Number (4-6)			5P			5P		
Protostylid (0-7)								
Cusp 5 (0-5)								
Cusp 6 (0-5)			5P			5P		
Cusp 7 (0-4)								
Molar Root Number								

D = Deciduous; P = Permanent

PRIMARY NONMETRIC TRAITS RECORDING FORM

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb
Burial Number Burial 7 Date 8/25/97

	L	M	R
1. Metopic Suture		0	
0 = absent 1 = partial 2 = complete 9 = unobservable			
2. Supraorbital Structures			
a. Supraorbital notch	0		2
0 = absent 1 = present, < ½ occluded by spicules 2 = present, > ½ occluded by spicules 3 = present, degree of occlusion unknown 4 = multiple notches 9 = unobservable			
b. Supraorbital foramen	1		1
0 = absent 1 = present 2 = multiple foramina 9 = unobservable			
3. Infraorbital Suture	0		0
0 = absent 1 = partial 2 = complete 9 = unobservable			
4. Multiple Infraorbital For.	1		2
0 = absent 1 = internal divsion only 2 = two distinct foramina 3 = more than two distinct foramina 9 = unobservable			
5. Zygomatico-facial For.	5		0
0 = absent 1 = 1 large 2 = 1 large plus smaller f. 3 = 2 large 4 = 2 large plus smaller foramina 5 = 1 small 6 = multiple small 9 = unobservable			
6. Parietal Foramen	0		0
0 = absent 1 = present, on parietal 2 = present, sutural 9 = unobservable			

	L	M	R
7. Sutural Bones			
0 = absent 1 = present 9 = unobservable			
a. epipteric bone:	0		0
b. coronal ossicle:	0		0
c. bregmatic bone:		9	
d. sagittal ossicle:		0	
e. apical bone		0	
f. lambdoid ossicle	1		1
g. asterionic bone:	0		1
h. ossicle in occipito-mastoid suture:	0		0
i. parietal notch bone:	0		0
8. Inca Bone		0	
0 = absent 1 = complete, single bone 2 = bipartite 3 = tripartite 4 = partial 9 = unobservable			
9. Condylar Canal	1		1
0 = not patent 1 = patent 9 = unobservable			
10. Divided Hypoglossal Can.	0		0
0 = absent 1 = partial, internal surface 2 = partial, within canal 3 = complete, internal surface 4 = complete, within canal 9 = unobservable			
11. Flexure of Sup. Sag. Sul.		0	
1 = Right 2 = Left 3 = Bifurcate 9 = unobservable			
12. For. Ovale Incomplete	0		0
0 = absent 1 = partial formation 2 = no definition of foramen 9 = unobservable			

	L	M	R
13. Foramen Spinosum Incom.	0		9
0 = absent			
1 = paartial formation			
2 = no definition			
9 = unobservable			
14. Pterygo-spinous Bridge:	9		9
0 = absent			
1 = trace (spicule only)			
2 = partial bridge			
3 = complete bridge			
9 = unobservable			
15. Pterygo-alar Bridge:	9		9
0 = absent			
1 = trace (spicule only)			
2 = partial bridge			
3 = complete bridge			
9 = unobservable			
16. Tympani Dihiscence:	2		2
0 = absent			
1 = foramen only			
2 = full defect present			
9 = unobservable			
17. Auditory Exostosis:	0		0
0 = absent			
1 = <1/3 canal occluded			
2 = 1/3-2/3 canal occluded			
3 = >2/3 canal occluded			
9 = unobservable			
18. Mastoid Foramen			
a. Location:	0		0
0 = absent			
1 = temporal			
2 = sutural			
3 = occipital			
4 = both sutural and temporal			
5 = both occipital and temporal			
9 = unobservable			
b. Number:	0		0
0 = absent			
1 = 1			
2 = 2			
3 = more than 2			
9 = unobservable			
19. Mental Foramen:	1		1
0 = absent			
1 = 1			
2 = 2			
3 = >2			

	L	M	R
20. Mandibular Torus:	2		2
0 = absent			
1 = trace (can palpate but not see)			
2 = moderate: elevation between 2-5 mm.			
3 = markedL elevation greater than 5 mm.			
9 = unobservable			
21. Mylohyoid Bridge			
a.Location:	2		2
0 = absent			
1 = near mandibular foramen			
2 = center of groove			
3 = both bridges described, with hiatus			
4 = both bridges described, no hiatus			
9 = unobservable			
b. Degree:	2		2
0 = absent			
1 = partial			
2 = complete			
9 = unobservable			
22. Atlas Bridging			
a. Lateral Bridging:	9		9
0 = absent			
1 = partial			
2 = complete			
9 = unobservable			
b. Posterior Bridging:	9		9
0 = absent			
1 = partial			
2 = complete			
9 = unobservable			
23. Accessory Transverse Foramina-in 7th Cervical Vertebra	9		9
0 = absent			
1 = partial			
2 = complete			
3 = unobservable			
24. Septal Aperture:	9		9
0 = absent			
1 = small foramen (pinhole) only			
2 = true perforation			
9 = unobservable			

CRANIAL DEFORMATION RECORDING FORM

Site Name/Number__Harrington 1 MT 231__________Observer__Sharon Kestle Cobb___

Feature/Burial Number___Burial 7__________Date__8/25/97________

Present Location of Collection___Auburn University at Montgomery__________

General Category:__3__
1. Tabular
2. Circumferential
3. Other (describe)

Anterior Aspect
Cranial deformation present:__2__
1. Yes
2. No

Posterior Aspect

Cranial deformation present:__1__
1. Yes
2. No

Pressure was centered at:__1__
1. Lambda
2. Squamous portion of occipital
3. Below inion

Plane of pressure in relationship to transverse plane:__2__
1. Perpendicular (90 degrees)
2. Obtuse (>90 degrees)

Are any of the following present?_1,2,3_
1. Sagittal elevation
2. Lambdic elevation
3. Lambdic depression

Pad Impressions:__0__
0. No pad impressions
1. One pad
2. Two pads
3. More than two pads

Impression of bindings visible__2__
1. Yes
2. No

Appendix J

Burial 8

ENAMEL DEFECTS (HYPOPLASIAS AND OPACITIES)
RECORDING FORM: PERMANENT TEETH

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Burial/Skeleton Number Burial 7 Date 8/25/97

Present Location of Collection Auburn University at Montgomery

Type: code 0-7 or 9; Location: measure distance from the CEJ to most occlusal portion of the defect; Color: code 1-4 for hypocalcifications (type 6 or 7) only.

Maxilla, Right

Tooth	M3			M2			M1			PM2			PM1			C			I2			I1		
Defect	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Type																								
Location																								
Color																								

Maxilla, Left

Tooth	I1			I2			C			PM1			PM2			M1			M2			M3		
Defect	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Type																								
Location																								
Color																								

Mandible, Left

Tooth	M3			M2			M1			PM2			PM1			C			I2			I1		
Defect	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Type																								
Location																								
Color																								

Mandible, Right

Tooth	I1			I2			C			PM1			PM2			M1			M2			M3		
Defect	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Type	1	1								1	1	1												
Location																								
Color																								

I1(1) = 4.39; I1(2) = 2.56; PM1(1) = 3.20; PM1(2) = 2.56; PM1(3) = 1.65

IMMATURE MEASUREMENTS RECORDING FORM

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 8 Date 8/25/97

Present Location of Collection Auburn University at Montgomery

CRANIAL MEASUREMENTS

	L	M	R
1. Lesser Wing, Sphenoid			
(a) Length:			
(b) Width:			
2. Greater Wing, Sphemoid			
(a) Length:			
(b) Width:			
3. Body of Sphenoid			
(a) Length:			
(b) Width:			
4. Petrous and Mastoid Portions, Temporal			
(a) Length:			
(b) Width:			
5. Basilar, Occipital			
(a) Length:		16.00	
(b) Width:		20.42	
6. Zygomatic			
(a) Length:			
(b) Width:			
7. Maxilla			
(a) Length:			
(b) Height:			
(c) Width:			
8. Mandible			
(a) Length of Body:			62.23
(b) Width of Arc:			27.18
(c) Full length of half Mandible:		74.07	
9. Clavicle			
(a) Length:	66.80		
(b) Diameter:	5.97		

Comments: Sphenoid measurements cannot be calculated.

DENTAL INVENTORY RECORDING FORM
DEVELOPMENT AND PATHOLOGY: DECIDUOUS TEETH

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 8 Date 8/25/97

Present Location of Collection Auburn University at Montgomery

Tooth presence and development: code 1-8. For teeth entered as "1" (present, but not in occlusion), record stage of crown/root formation under "Development." **Caries:** code each carious lesion separately (1-7); **Abscesses:** code location (1-2). **Calculus:** code 0-3, 9. Note surface affected (buccal/labial or lingual).

	Tooth	Presence	Dev.
Maxillary Right	51 M2	2	9
	52 M1	2	10
	53 C	2	11
	54 I2	2	12
	55 I1	2	12
Maxillary Left	56 I1	1	12
	57 I2	1	12
	58 C	1	11
	59 M1	1	10
	60 M2	2	9
Mandibular Left	61 M2	1	9
	62 M1	1	10
	63 C		
	64 I2		
	65 I1	1	12
Mandibular Right	66 I1	2	12
	67 I2	2	12
	68 C	2	11
	69 M1	2	10
	70 M2	2	9

Estimated dental age (juveniles only) 3 years

No Caries, Abscesses, or Calculus. No dental attrition noted. No hypoplasias observed. All permanent dentition scored out of crypt due to destruction of maxilla and mandible.

DENTAL MEASUREMENTS AND MORPHOLOGY RECORDING FORM

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 8 Date 8/25/97

Present Location of Collection Auburn University at Montgomery

***Dental Measurements**

Record left side of arcade only; substitute antimere when left not observable.

Maxilla

Tooth	I1	I2	C	PM1	PM2	M1	M2	M3
Mesiodistal diameter	6.88	5.89	6.76			6.59	9.18	
Buccolingual diameter	4.84	4.90	6.17			8.48	10.07	
Crown height	6.02	6.02	5.70			5.90	5.99	

Mandible

Tooth	M3	M2	M1	PM2	PM1	C	I2	I1
Mesiodistal diameter		10.71	8.28			6.45	4.65	4.42
Buccolingual diameter		9.18	7.08			5.20	3.83	3.54
Crown height		6.35	6.03			5.64	5.26	4.90

*Deciduous dentition

DENTAL MEASUREMENTS AND MORPHOLOGY RECORDING FORM

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 8 Date 8/25/97

Present Location of Collection Auburn University at Montgomery

***Dental Measurements**

Record left side of arcade only; substitute antimere when left not observable.

Maxilla

Tooth	I1	I2	C	PM1	PM2	M1	M2	M3
Mesiodistal diameter	8.62	6.05	6.30			10.27		
Buccolingual diameter	3.71	2.96	3.76			10.22		
Crown height								

Mandible

Tooth	M3	M2	M1	PM2	PM1	C	I2	I1
Mesiodistal diameter			11.53					
Buccolingual diameter			10.34					
Crown height								

*Permanent dentition

Skeleton Burial 8
Observer/Date SK Cobb 8/25/97

Dental Morphology

Maxilla

	Right						Left					
Tooth	M3	M2	M1	PM1	I2	I1	I1	I2	PM1	M1	M2	M3
Winging (0-4)												
Shoveling (0-7)					1	4	4					
Double-shoveling (0-6)						4	4					
Peg-shaped Incisor (0-2)												
Premolar Root Number (1-3)												
Hypocone			5							5		
Metaconule												
Carabelli's												
Extensions												

Mandible

	Left				Right			
Tooth	M3	M2	M1	PM1	PM1	M1	M2	M3
Premolar Root Number (0-5)								
Groove pattern								
Cusp Number (4-6)								
Protostylid (0-7)								
Cusp 5 (0-5)								
Cusp 6 (0-5)			3			3		
Cusp 7 (0-4)								
Molar Root Number								

Permanent dentition not fully developed.

Appendix K

Burial 9

INVENTORY RECORDING FORM
FOR COMPLETE SKELETONS

Site Name/Number 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 9 Date 9/18/97

Present Location of Collection Auburn University at Montgomery

CRANIAL BONES AND JOINT SURFACES

	L(left)	R(right)		L	R
Frontal	2	2	Sphenoid	___	___
Parietal	2	2	Zygomatic	___	___
Occipital	2	2	Maxilla	2	3
Temporal	2	2	Palatine	2	3
TMJ	2	2	Mandible	2	3

POSTCRANIAL BONES AND JOINT SURFACES

	L	R		L	R
Clavicle	1	1	Os Coxae		
Scapula			Ilium	___	___
Body	2	2	Ischium	___	___
Glenoid f.	3	3	Pubis	___	___
Patella	___	___	Acetabulum	___	___
Sacrum	___	___	Auric. Surface	1	___

VERTEBRAE(individual)

	Centrum	Neural Arch
C1	___	___
C2	___	___
C7	1	1
T10	2	___
T11	2	___
T12	2	1
L1	___	___
L2	___	___
L3	___	___
L4	___	___
L5	___	___

VERTEBRAE(grouped)
#Present/# Complete

	Centra	Neural Arches
C3-6	4 / 3	3 / 3
T1-T9	6 /	5 /

Sternum: Manubrium ___ Body ___

RIBS(individual)

	L	R
1st	___	___
2nd	___	___
11th	___	___
12th	___	___

RIBS(grouped)
#Present/# Complete

	L	R	Unsided
3-10	/	/	/

Burial/Skeleton 1MT231 Burial 9
Observer/Date SK Cobb 9/18/97

LONG BONES

	Proximal Epiphysis	Diaphysis: Proximal Third	Diaphysis: Middle Third	Diaphysis: Distal Third	Distal Epiphysis
Left Humerus		1	1	1	1
Right Humerus		1	1	1	
Left Radius	1	1	1	1	1
Right Radius	2	2	2	2	
Left Ulna	1	1	1	1	3
Right Ulna	1	1	3	2	
Left Femur	2	1	1	2	
Right Femur	1	2	1	2	
Left Tibia		3	2	3	
Right Tibia		3	2	3	
Left Fibula					
Right Fibula					

Left Talus____
Right Talus____
Left Calcaneous____
Right Calcaneous____

HAND(# Present/# Complete)

	L	R	Unsided
# Carpals	5 / 5	/	/
#Metacarpal	4 / 4	/	/
#Phalanges	10 / 10	/	/

FOOT(# Present/# Complete)

	L	R	Unsided
#Tarsals	/	/	/
# Metatarsals	/	/	2 / 2
#Phalanges	/	/	/

Comments:

Skull Fragments = 96g
Misc. Fragments = 7.5g

ADULT AGE/SEX RECORDING FORM

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 9 Date 8/20/97

Present Location of Collection Auburn University at Montgomery

SEX

Pelvis	L	R
Ventral Arc (1-3)		
Subpubic Concavity (1-3)		
Ischiopubic Ramus Ridge (1-3)		
Greater Sciatic Notch (1-5)	1	
Preauricular Sulcus (0-4)	1	

Skull	L	M	R
Nuchal Crest (1-5)			
Mastoid Process (1-5)	2		
Supraorbital Margin (1-5)			
Glabella (1-5)			
Mental Eminence (1-5)			

Estimated Sex, Pelvis (0-5) 1 Estimated Sex, Skull (0-5) 2

Comments: Skull too fragmentary for reconstruction and subsequent assessment.
Long bones are extremely gracile and tiny suggesting female individual.
Preauricular sulcus 4.08mm wide and 13.97mm deep = extremely deep.

AGE

Pubic Symphysis	L	R
Todd (1-10)		
Suchey-Brooks (1-6)		

	L	R
Auricular Surface(1-8)	7	

Suture Closure (blank = unobservable; 0 = open; 1 = minimal; 2 = significant; 3 = complete)

External Cranial Vault	1. Midlambdoidal	
	2. Lambda	
	3. Obelion	
	4. Anterior Sagittal	
	5. Bregma	
	6. Midcoronal	
	7. Pterion	
	8. Sphenofrontal	
	9. Inferior Sphenotemporal	
	10. Superior Sphenotemporal	
Palate	11. Incisive	
	12. Anterior Medial Palatine	
	13. Posterior Medial Palatine	
	14. Transverse Palatine	
Internal Cranial Vault	15. Sagittal	
	16. Left Lambda	
	17. Left Coronal	

Estimated Age: Young Adult (20-35 years) ___
Middle Adult (35-50 years) ___
Old Adult (50+ years) X

Comments: No sutural assessment
50 - 59 years according to auricular surface

DENTAL INVENTORY RECORDING FORM
DEVELOPMENT, WEAR, AND PATHOLOGY: PERMANENT TEETH

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 9 Date 2/25/97

Present Location of Collection Auburn University at Montgomery

Tooth presence and development: code 1-8. For teeth entered as "1" (Present, but not in occlusion), record stage of crown/root formation under "Development." **Occlusal surface wear:** use left teeth, following Smith (1984) for anterior teeth (code 1-8) and Scott (1979) for molars (code 0-10). If marked asymmetry is present, record both sides. Record each molar quadrant separate in the spaces provided (+) and the Total for all four quadrants under "Total." **Caries:** code each carious lesion separately (1-7); **Abscesses:** code location (1-2). **Calculus:** code 0-3, 9. Note surface affected (buccal/labial or lingual).

		Tooth Presence	Dev.	Wear/Total	Caries	Abscess	Calculus/Affected	
Maxillary Right	1 M3	4						
	2 M2	1		6|6 6|6 24			1	Circular
	3 M1	5						
	H 4 P2	1		5			1	Circular
	H 5 P1	1		6			1	Circular
	H 6 C	1		7			1	Circular
	7 I2	1		7			1	Circular
	8 I1	1		7			1	Circular
Maxillary Left	9 I1	5						
	10 I2	1		7			1	BL
	H 11 C	1		6		Apical	1	BL
	H 12 P1	1		7			1	Circular
	H 13 P2	1		6			1	Circular
	14 M1	4						
	15 M2	3						
	H 16 M3	1		5|5 5|5 20			s 1	Circular

H=hypercementosis; s = calculus sample taken.

Burial/Skeleton 1MT231 Burial 9
Observer/Date SK Cobb 2/25/97

		Tooth Presence	Dev.	Wear/Total	Caries	Abscess	Calculus/Affected
Mandibular Left	17 M3						
	18 M2						
	19 M1						
	20 P2						
	21 P1						
	22 C						
	23 I2						
	24 I1						
Mandibular Righ	25 I1						
	26 I2						
	27 C						
	28 P1						
	29 P2						
	30 M1						
	31 M2						
	32 M3						

Comments: *s = calculus sample taken
Mandibular tooth sockets totally resorbed
Maxillary right M2 probablly not in occlusion with lower molars for some time
Pre-mortem

DENTAL MEASUREMENTS AND MORPHOLOGY RECORDING FORM

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 9 Date 918/97

Present Location of Collection Auburn University at Montgomery

Dental Measurements

Record left side of arcade only; substitute antimere when left not observable.

Maxilla

Tooth	I1	I2	C	PM1	PM2	M1	M2	M3
Mesiodistal diameter		6.02	7.81	6.65	5.78			8.23
Buccolingual diameter		6.34	8.85	10.05	8.92			10.43
Crown height		4.08	5.39	4.85	3.50			4.45

Mandible

Tooth	M3	M2	M1	PM2	PM1	C	I2	I1
Mesiodistal diameter								
Buccolingual diameter								
Crown height								

Maxillary crown height variables may be high due to totally resorbed mandibular sockets

Skeleton 1MT231 Burial 9
Observer/Date SK Cobb 8/20/97

Dental Morphology

Maxilla

	Right						Left					
Tooth	M3	M2	M1	PM1	I2	I1	I1	I2	PM1	M1	M2	M3
Winging (0-4)												
Shoveling (0-7)												
Double-shoveling (0-6)												
Peg-shaped Incisor (0-2)												
Premolar Root Number (1-3)												
Hypocone												
Metaconule												
Carabelli's												
Extensions												

Mandible

	Left				Right			
Tooth	M3	M2	M1	PM1	PM1	M1	M2	M3
Premolar Root Number (0-5)								
Groove pattern								
Cusp Number (4-6)								
Protostylid (0-7)								
Cusp 5 (0-5)								
Cusp 6 (0-5)								
Cusp 7 (0-4)								
Molar Root Number								

Due to extreme attrition this individual cannot be scored

CRANIAL AND POSTCRANIAL MEASUREMENT RECORDING FORM: ADULT REMAINS

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/ Burial Number Burial 9 Date 8/20/ 97

Present Location of Collection: Auburn University at Montgomery

Record all measurements to the nearest millimeter; in the case of bilateral measurements, take measurement on the left side. If right side is substituted, Place and (R) nest to the measurement. If bones are fragmented, measurement should not be taken, but dimensions should be estimated for minor erosion or reconstruction; identify these with an asterick "*"

Cranial measurements

1. Maximum cranial length:___
2. Maximum Cranial Breadth:___
3. Bizygomatic Diameter:___
4. Basion-Bregma Height: ___
5. Cranial Base Length:___
6. Basion-Prosthion Length: ___
7. Maxillo-Alveolar Breadth:___
8. Maxillo-Alveolar Length:___
9. Biauricular Breadth:___
10. Upper Facial Height:___
11. Minimum Frontal Breadth:___
12. Upper Facial Breadth:___
13. Nasal Height:___
14. Nasal Breadth:___
15. Orbital Breadth:___
16. Orbital Height:___
17. Biorbital Breadth:___
18. Interorbital Breadth:___
19. Frontal Chord:___
20. Parietal Chord:___
21. Occipital Chord:___
22. Foramen Magnum Length:___
23. Foramen Magnum Breadth:___
24. Mastoid Length: 16.9
25. Chin Height: 18.7
26. Height of Mandibular Body: 18
27. Breadth of Mandibular Body: 14.3
28. Bigonial Width: 71.9
29. Bicondylar Breadth:___
30. Minimum Ramus Breadth: 32
31. Maximum Ramus Breadth:___
32. Maximum Ramus Height: 64
33. Mandibular Length:___
34. Mandibular Angle:___

Burial/Skeleton__1MT231 Burial 9____
Observer/Date_SK Cobb 8/20/97____

Record all measurements to the nearest millimeter; in the case of bilateral measurements, take measurement on the left side. If right side is substituted, place and (R) next to the measurement. If bones are fragmented, measurements should not be taken, but dimensions should be estimated for minor erosion or reconstruction; identify these with an asterick "*"

Postcranial Measurements

35. Clavicle: Maximum Length:___
36. Clavicle: Ant.-Post. Diameter at Midshaft: 10.2
37. Clavicle: Sup.-Inf. Diameter at Midshaft: 8.7
38. Scapula: Height:____
39. Scapula: Breadth:____
40. Humerus: Maximum Length:___
41. Humerus: Epicondylar Breadth: 49.8
42. Humerus: Vertical Head Diameter:___
43. Humerus: Max. Diametr at Midshaft: 16.2
44. Humerus: Min. Diameter at Midshaft: 12.7
45. Radius: Maximum Length: 210
46. Radius: Ant.-Post. Diameter/Midshaft: 9.5
47. Radius: Med.-Lat. Diameter/Midshaft: 7.9
48. Ulna: Maximum Length: 230
49. Ulna: Ant.-Post. Diameter: 10.3
50. Ulna: Med.-Lat. Diameter: 10.4
51. Ulna: Physiological Length: 200
52. Ulna: Minimum Circumference: 2.7
53. Sacrum: Anterior Length:___
54. Sacrum: Anterior Superior Breadth:___
55. Sacrum: Max. Transverse D. Of Base:___
56. Os Coxae: Height:___
57. Os Coxae: Iliac Breadth:___
58. Os Coxae: Pubis Length:___
59. Os Coxae: Ischium Length:___
60. Femur: Maximum Length:___
61. Femur: Bicondylar Length:___
62. Femur: Epicondylar Breadth:___
63. Femur: Max. Head Diameter:___
64. Femur: Ant.-Post. SD: 28
65. Femur: Medial-Lateral SD: 18
66. Femur: Ant.-Post. Midshaft D: 22
67. Femur: Med.-Lat. Midshaft D: 22.5
68. Femur: Midshaft Circum: 7*
69. Tibia: Length:___
70. Tibia: Max. Prox. Epiphyseal B:___
71. Tibia: Max. Distal Eph. Breadth:___
72. Tibia: Max D/Nutrient Foramen:___
73. Tibia: Med.-Lat. D/Nutrient F:___
74. Tibia: Circum/Nutrient Foramen:___
75. Fibula: Maximum Length:___
76. Fibula: Max. Diameter/Midshaft:___
77. Calcaneous: Maximum Length:___
78. Calcaneous: Middle Breadth:___

PALEOPATHOLOGY RECORDING FORM I & II

SHAPE, SIZE, BONE LOSS, FORMATION, FRACTURES, AND POROTIC HYPEROSTOSIS
VERTEBRAL PATHOLOGY, ARTHRITIS, AND MISCELLANEOUS

Site Name/Number Harrington 1MT231 Observer Sharon Kestle Cobb

Feature/Burial Number Burial 9 Date 8/9/97

Present Location of Collection Auburn University at Montgomery

3.0 BONE LOSS

Bone	3.1.3 C-3	3.1.3 C-4	3.1.3 C-5	3.1.3 C-6	3.1.3 L-1	3.3.2 L-2
Aspect	2/5*	3	3	1	3	3
Obs1	3.1.1	3.1.1	3.1.1	3.1.1	3.1.1	3.1.1
Obs2	3.2.1	3.2.2	3.2.2	3.2.2	3.2.3	3.2.2
Obs3	3.3.3	3.3.3	3.3.2	3.3.3	3.3.1	3.3.1
Obs4	3.4.3	3.4.3	3.4.3	3.4.3	3.4.3	3.4.3
Obs5	3.5.1	3.5.1	3.5.1	3.5.1	3.5.3	3.5.3

*Transverse process

8.0 ARTHRITIS

Bone	3.1.3 C-3	3.1.3 C-4	3.1.3 C-5	3.1.3 C-6	3.3.1 L-1	3.3.2 L-2
Aspect	2	3	3	1	3	3
Obs1	8.3.3	8.3.3	8.3.3	8.3.3	8.1.2	8.1.2
Obs2	8.4.1	8.4.2	8.4.2	8.4.2	8.2.1	8.2.2
Obs3	8.8.2	8.8.2	8.8.2	8.8.2	8.4.3	8.4.2
Obs4	8.9.1	8.9.2	8.9.2	8.9.3	8.7.2	8.7.2
Obs5					8.8.2	8.8.2
Obs6					8.9.3	8.9.2

COMMENTS:

REFERENCES

Acsadi, G., and J. Nemeskeri
1970 *History of Human Lifespan and Mortality.* Akademiai Kiado, Budapest.

Anderson, K. N., L. E. Anderson, and W. D. Glanze
1994 *Mosby's Medical Dictionary.* Mosby, St. Louis.

Aufderheide, A. C., and C. Rodriquez-Martin
1998 *The Cambridge Encyclopedia of Human Paleopathology.* Cambridge University Press, Cambridge, Massachusetts.

Beals, R. L., H. Hoijer, and A. R. Beals
1977 *An Introduction to Anthropology.* 5th ed. Macmillan, New York.

Bass, W. M.
1995 *Human Osteology: A Laboratory and Field Manual of the Human Skeleton.* 4th ed. Missouri Archaeological Society, Columbia.

Berry, A. C., and R. J. Berry
1967 Epigenetic Variation in the Human Cranium. *Journal of Anatomy* 101:361-379

Berry, R. J. and A. G. Searle
1963 Epigenetic Polymorphism of the Rodent Skeleton. *Proceedings of the Zoological Society* 140:557-615. London.

Binford, L. R.
1971 Mortuary Practices: Their Study and their Potential. In *Approaches to the Social Dimension of Mortuary Practices*, edited by James Brown. Memoirs of the Society for American Archaeology 25:6-29.

Blakely, R. L. (editor)
1977 Biocultural Adaptation in Prehistory. *Southern Anthropological Society Proceedings*, No. 11. University of Georgia Press, Athens.

Blakely, R. L.
1996 Biocultural Implications of Mortuary Treatment and Paleopathology at the Isle La Motte Site. Paper presented at the 1996 Annual Meeting of the Southern Anthropological Society, Baton Rouge.

Bridges, P. S.
1991 Degenerative Joint Disease in Hunter-gatherers and Agriculturalists from the Southeastern United States *American Journal of Physical Anthropology 85:379-391.*

Chase, D. W.
1966 A Stratified Archaic Site in Lowndes County, Alabama. *Florida Anthropologist* 19(2-3):91-114).

1967 Facts and Comments: Weeden Island Period Sites in Central Alabama. *Journal of Alabama Archaeology* 12(1):61-63.

1968a The Hope Hull Complex. *Journal of Alabama Archaeology* 14(1):17-29.

1968b New Pottery Types from Alabama. *Southeastern Archaeological Conference Bulletin* 10:17-25.

1977 Original unpublished field notes from the Harrington site. Ms. on file, Archaeology Laboratory, Auburn University at Montgomery, Alabama.

1978 Weeden Island - Swift Creek Affinities in the Middle Chattahoochee Valley. *Journal of Alabama Archaeology* 24(1):60-64.

1979 A Brief Synopsis of Central Alabama Prehistory. Ms. On file, Archaeology Laboratory, Auburn University at Montgomery, Alabama.

Clarke, N. G., and R. S. Hirsch
1991 Physiological, Pulpal, and Periodontal Factors Influencing Alveolar Bone. In *Advances in Dental Anthropology,* edited by M. A. Kelley and C. S. Larsen, pp. 241-266. Wiley-Liss, New York.

Cockburn, T. A.
1967 *Infectious Diseases: Their Evolution and Eradication.* Charles C. Thomas, Springfield.

Cole, G. C., M. C. Hill, and H. B. Ensor
1982 Bioarchaeological Comparisons of the Late Miller III and Summerville I Phases in the Gainesville Lake Area. In *Archaeology of the Gainesville Lake Area: A Synthesis*, edited by Ned Jenkins, pp. 187-250. Report of Investigations No. 23, Office of Archaeological Research, University of Alabama.

Corruccini, R. S.
1972 The Biological Relationships of Some Prehistoric and Historic Pueblo Populations. *American Journal of Physical Anthropology* 37:373-388.

Corruccini, R. S., K. P. Jacobi, J. S. Handler, and A. C. Aufderheide
1987 Implications of Tooth Root Hypercementosis in a Barbados Slave Skeletal Collection. *American Journal of Physical Anthropology* 74(2):179-184.

Cottier, J. W.
1982 *The Archaeology of Ivy Creek.* Archaeology Monograph 3, Auburn University. Auburn, Alabama.

Cottier, J. W. and G. A. Waselkov
1982 Chapter Sixteen: Interpretation and Summary. In *The Archaeology of Ivy Creek.* Archaeology Monograph 3, Auburn University. Auburn, Alabama.

Dickens, R. S., Jr.
1971 Archaeology in the Jones Bluff Reservoir of central Alabama. *Journal of Alabama Archaeology* 17(1):1-114.

Ericksen, M. F.
1976 Cortical Bone Loss with Age in Three Native American Populations. *American Journal of Physical Anthropology*, 45:443-452.

Fazekas, I. G. and F. Kosa
1978 *Forensic Fetal Osteology.* Akedemiai Kiado, Budapest.

Finnegan, M.
1974 Cranial and Infracranial Non-Metric Traits: Those Traits Which Are Most Important and How They May Be Handled. Abstract. *American Journal of Physical Anthropology* 41:478-479.

Genoves, S.
1967 Proportionality of Long Bones and Their Relation to Stature Among Mesoamericans. *American Journal of Physical Anthropology* 26:67-78.

Gilbert, B. M., and T. W. McKern
1973 A Method for Aging the Female *Os Pubis. American Journal of Physical Anthropology* 38:31-38.

Gilbert, R. I., and J. H. Mielke (editors)
1985 *The Analysis of Prehistoric Diets.* Academic Press, New York.

Goodman, A. H., and G. J. Armelagos
1985 Factors Affecting the Distribution of Enamel Hypoplasias Within the Human Permanent Dentition. *American Journal of Physical Anthropology* 68:479-494.

Goodman, A. H., and J. C. Rose
1991 Physiological, Pulpal, and Periodontal Factors Influencing Alveolar Bone. In *Advances in Dental Anthropology*, edited by M. A. Kelley and C. S. Larsen, pp. 241-266. Wiley-Liss, New York.

Hartnady, P., and J. C. Rose
1991 Abnormal Tooth-Loss Patterns Among Archaic-Period Inhabitants of the Lower Pecos Region, Texas. In *Advances in Dental Anthropology*, edited by M. A. Kelley and C. S. Larsen, pp. 267-278. Wiley-Liss, New York.

Hatch, J. W.
1976 *Status in Death: Principles of Ranking in Dallas Culture Mortuary Remains*. Ph.D. dissertation, Department of Anthropology, Pennsylvania State University.University Microfilms No. 77-9676.

Hauser, G., and G. F. De Stefano
1989 *Epigenetic Variants of the Human Skull*. E. Schweizerbart'sche Verlagsbuchhandlung, Stuttgart, Germany.

Hildebolt, C. F., and S. Molnar
1991 Measurement and Description of Periodontal Disease in Anthropological Studies. In *Advances in Dental Anthropology*, pp. 225-240. Wiley-Liss, New York.

Hillson, S.
1996 *Dental Anthropology*. Cambridge University Press, Cambridge, Massachusetts.

Hoeprich, P. D.
1977 *Infectious Diseases, A Modern Treatise on Infectious Processes*. 2nd ed. Harper and Row, Philadelphia.

Holt, C. A.
1978 A Re-examination of Parturition Scars on the Human Female Pelvis. *American Journal of Physical Anthropology* 49:91-94.

Howells, W. W.
1988 *Skull Shapes and the Map: Craniometric Analysis on the Dispersion of Modern Homo*. Papers of the Peabody Museum of Archaeology and Ethnology, Vol. 79. Peabody Museum, Harvard University, Cambridge, Massachusetts.

Hrdlička, A.
1952 *Practical Anthropometry*, 4th edition, edited by T. D. Stewart. Wistar Instiitute of Anatomy and Biology, Philadelphia.

Iscan, M. Y., S. R. Loth, and R. K. Wright
1985 Age Estimation from the Rib by Phase Analysis: White Females. *Journal of Forensic Sciences* 30:853-863.

Iscan, M., and S. Loth
1986 Estimation of Age and Determination of Sex from the Sternal Rib. In *Forensic Osteology: Advances in the Identification of Human Remains*, edited by K. J Reichs, pp. 68-89. Charles C. Thomas, Springfield, Illinois.

Jantz, R. L., D. W. Owsley, and P. Willey
1977 Craniometric Relationships of Central Plains Populations. In *Central Plains Tradition*, edited by D. J. Blakeslee, pp. 144-156. Report 11. Office of the Iowa State Archaeologists, Iowa City.

Jenkins, N. J.
1982 *Archaeology of the Gainesville Lake Area: A Synthesis.* Report of Investigation No. 23, Office of Archaeological Research, University of Alabama, Tuscaloosa, Alabama.

No date

Jeter, M. D.
1973 An Archaeological Survey in the Area East of Selma, Alabama: 1971-1972. Unpublished report submitted to the Alabama Historical Commission, Montgomery, Alabama.

1977 Late Woodland Chronology and Change in Central Alabama. *Journal of Alabama Archaeology* 23(2):112-136.

Jurmain, R. D.
1977 Stress and Etiology of Osteoarthritis. *American Journal of Physical Anthropology* 46:353-366.

Katz, D., and J. M. Suchey
1986 Age Determination of the Male Os Pubis. *American Journal of Physical Anthropology* 69:427-435.

Kelley, M. A.
1979 Parturition and Pelvic Changes. *American Journal of Physical Anthropology* 51:541-546.

Kelley, M. A.
1982 Intervertebral Osteochondrosis in Ancient and Modern Populations. *American Journal of Physical Anthropology* 59:271-279.

Kelley, M. A., and C. S. Larsen
1991 *Advances in Dental Anthropology*. Wiley-Liss, New York.

Kerley, E. R., and W. M. Bass
1978 Evolutionary Response to Human Infectious Diseases. In *Health and the Human Condition: Perspectives on Medical Anthropology*, edited by G. J. Armelagos and J. R. Dewey. Duxbury Press, North Scituate, Massachusetts.

Lallo, J.
1973 *The Skeletal Biology of Three Prehistoric American Indian Societies from Dickson Mounds.* Unpublished Ph.D. dissertation, Department of Anthropology, University of Massachusetts, Amherst.

Larsen, C. S.
1987 Bioarchaeological Interpretations of Subsistence Economy and Behavior from Human Skeletal Remains. In *Advances in Archaeological Method and Theory*, edited by M. B. Schiffer. 10:339-445. Academic Press, San Diego.

Larsen, C. S., and R. L. Kelly
1995 Bioarchaeology of the Stillwater Marsh. American Museum of Natural History, Anthropological Papers, No. 77. New York.

Little, K., H. Holstein, C. Hill, and P. Jones
1996 Archaeological Investigations of the Dry Creek Site. Jacksonville State University Archaeological Resource Laboratory, Jacksonville, Alabama.

Lovejoy, C. O., R. S. Meindl, T. R. Pryzbeck, and R. P. Mensforth
1985 Chronological Metamorphosis of the Auricular Surface of the Ilium: A New Method for the Detemination of Age at Death. *American Journal of Physical Anthropology* 68:15-28.

Mann, R. W., and S. P. Murphy
1990 *Regional Atlas of Bone Disease: A Guide to Pathological and Normal Variation in the Human Skeleton.* Charles C. Thomas, Springfield.

Massett, C.
1989 Age Estimation on the Basis of Cranial Sutures. In *Age Markers in the Human Skeleton*, edited by M. Y. Iscan, pp. 71-103. Charles C. Thomas, Springfield, Illinois.

Mayhall, J.
1992 Techniques for the Study of Dental Morphology. In *Skeletal Biology of Past Peoples: Research Methods*, edited by S. R. Saunders and M. A. Katzenberg, pp. 59-78. Wiley-Liss, New York.

McCoy, R.
1996 Legal Briefs. *American Indian Art Magazine*, Spring, pp. 83-84.

McKern, T. W., and T. D. Stewart
1957 *Skeletal Age Changes in Young American Males*. U.S. Army Quartermaster Research and Development Command, Technical Report EP-45.

Meindl, R. S., and C. O. Lovejoy
1985 Ectocranial Suture Closure: A Revised Method for the Determination of Skeletal Age at Death Based on the Lateral-Anterior Sutures. *American Journal of Physical Anthropology* 68:57-66.

1989 Age Changes in the Pelvis: Implications for Paleodemography. In *Age Markers in the Human Skeleton*, edited by M. Y. Iscan, pp. 137-168. Charles C. Thomas, Springfield, Illinois.

Mickell, G. A.
1982 The Osteopathology of the Harrington Site. Ms. on file, Archaeology Laboratory, Auburn University, Montgomery, Alabama.

Milner, G. R.
1984 Dental Caries in the Permanent Dentition of a Mississipian Period Population from the American Midwest. *Collegiate Antropologist* 8:77-91.

Montagu, M. F. A.
1960 *A Handbook of Anthropometry*. Charles C. Thomas, Springfield, Illinois.

Mouri, T.
1976 A Study of Non-Metrical Cranial Variants of the Modern Japanese in the Kinki District. *Journal Anthropological Society of Nippon* 84:191-203.

Neilsen, J. J.
1976 Archaeological Salvage Excavations at Site 1Au28. *Journal of Alabama Archaeology* 22(2):89-173.

Neumann, G.
1942 Types of Artificial Cranial Deformation in the Eastern United States. *American Antiquity* 7:306-310.

Olsen, S. J.
1979 *Osteology for the Archaeologist*. Papers of the Peabody Museum of Archaeology and Ethnology, vol. 56, no. 3-5. Harvard University, Cambridge.

Olsen, S. J.
1979 *Mammal Remains from Archaeological Sites*. Papers of the Peabody Museum of Archaeology and Ethnology, vol. 56, no. 1. Harvard University, Cambridge.

Ortner, D. J., and W. G. J. Putschar
1981 *Identification of Pathological Conditions in Human Skeletal Remains.* Smithsonian Contributions to Anthropology 28. Smithsonian Institution Press, Washington, D.C.

Peebles, C. S.
1971 Moundville and Surrounding Sites: Some Structural Considerations of Mortuary Practices II. In Approaches to the Social Dimensions of Mortuary Practices, edited by James Brown. *Memoirs of the Society for American Archaeology* 25:68-91.

Phenice, T. W.
1969 A Newly Developed Visual Method of Sexing the Os Pubis. *American Journal of Physical Anthropology* 30:297-302.

Powell, M. L.
1986 Late Prehistoric Community Health in the Central Deep South: Biological and Social Dimensions of the Mississippian Chiefdom at Moundville, Alabama. In *Skeletal Analysis in Southeastern Archaeology*, edited by J. E. Levy, pp. 127-150. North Carolina Archaeological Council Publication No. 24, Raleigh.

1988 *Status and Health in Prehistory: A Case Study of the Moundville Chiefdom.* Smithsonian Institution Press, Washington, D.C.

Putschar, W. G. J.
1976 The Structure of the Human Symphysis Pubis with Special Consideration of Parturition and its Sequelae. *American Journal of Physical Anthropolgy* 45:589-594.

Rathbun, T. A.
1986 The Contributions of Skeletal Biology to Southeastern Archaeology. In *Skeletal Analysis on Southeastern Archaeology*, edited by J. E. Levy, pp. 1-28. North Carolina Archaeological Council Publication No. 24, Raleigh.

Regan, M. H., and D. T. Case
1997 Probable Etiology of Articular Surface Defects in the Third Metatarsal and Cuneiform. *American Journal of Physical Anthropology*, Supplement 24:195.

Reichs, K. J.
1986 The Dickerson Skeletal Series: Bits and Pieces of Carolina Prehistory. In *Skeletal Analysis in Southeastern Archaeology*, edited by J. E. Levy, pp. 61-79. North Carolina Archaeological Council Publication No. 24, Raleigh.

Reitz, E. J.
1997 *Vertebrate Fauna from Fusihatchee* (1EE191). Zooarchaeology Lab, Museum of Natural History. University of Georgia, Athens.

Resnick, D., and G. Niwayama
1988 *Diagnosis of Bone and Joint Disorders*. 2nd ed, vols. 1-6. W. B. Saunders, Philadelphia.

Roberts, C., and K. Manchester
1995 *The Archaeology of Disease*. 2nd ed. Cornell University Press, Ithaca, New York.

Robertson, B.
1996 *Cranial Discreet Trait Analysis of Four Mississippian Sites: An Investigation of Genetic Relationships between Prehistoric Populations in Alabama.* Unpublished Master's Thesis, Department of Anthropology, University of Alabama, Tuscaloosa, Alabama.

Rogers, J., and T. Waldron
1995 *A Field Guide to Joint Disease in Archaeology*. John Wiley and Sons, Chichester, England.

Roger, S. L.
1983 *The Human Skull: Its Mechanics, Measurements, and Variations.* Charles C. Thomas, Springfield, Illinois.

Rose, J., K. Condon, and A. Goodman
1985 Diet and Dentition: Developmental Disturbances. In *The Analysis of Prehistoric Diets,* edited by R. Gilbert and J. Mielke, pp. 281-306. Academic Press, Orlando.

Ruff, C.
1992 Biomechanical Analysis of Archaeological Human Skeletal Samples. In *Skeletal Biology of Past Peoples: Research Methods*, pp. 37-58. Wiley-Liss, New York.

Sandison, A. T.
1968 Pathological Changes in the Skeletons of Earlier Populations due to Acquired Disease and Difficulties in their Interpretations. In *Skeletal Biology of Earlier Human Populations*, edited by D. R. Brothwell. Pergamon Press, London.

Schmorl, G., and H. Junghanns
1971 *Human Spine in Health and Disease*. 2nd ed. Grune and Stratton, New York.

Scott, E. C.
1979 Dental Wear Scoring Technique. *American Journal of Physical Anthropology* 51:213-218.

Sjøvold, T.
1984 A Report on the Heritability of Some Cranial Measurements and Non-metric Traits. In *Multivariate* Statistics *in Physical Anthropology*, edited by G. N. Van Vark and W. W. Howells, pp. 223-246. D. Reidel, Dordrecht, The Netherlands.

Smith, B. H.
1984 Patterns of Molar Wear in Hunter-Gatherers and Agriculturalists. *American Journal of Physical Anthropology* 63:39-56.

Steinbock, R. T.
1976 *Pathological Diagnosis and Interpretation: Bone Disease in Ancient Human Populations*. Charles C. Thomas, Springfield, Illinois.

Stewart, T. D.
1953 The Age Incidence of Neural Arch Defects in Alaskan Natives, Considered from the Standpoint of Etiology. *Journal of Bone and Joint Surgery*. [am.] 35:937.

1979 *Essentials of Forensic Anthropology*. Charles C. Thomas, Springfield, Illinois.

Sobotta, J.
1906 *Atlas and Textbook of Human Anatomy*, edited by J. P. McMurrich. Vol. 1, W. B. Saunders, Philadelphia.

Suchey, J., and D. Katz
1986 Skeletal Age Standards Derived from an Extensive Multiracial Sample of Modern Americans. Abstract. *American Journal of Physical Anthropology* 69:269.

Tenney, J. M.
1991 Comparison of Third Metatarsal and Third Cuneiform Defects Among Various Populations. *International Journal of Osteoarchaeology* 1:169-172.

Todd, T. W.
1920 Age Changes in the Pubic Bone. I: The Male White Pubic. *American Journal of Physical Anthropology* 3:169-172.

1921 Age Changes in the Pubic Bone. I: The Male White Pubis. *American Journal of Physical Anthropology* 3:285-334.

Trotter, M., and G. C. Gleser
1952 Estimation of Stature from Long Bones of American Whites and Negroes. *American Journal of Physical Anthropology* 10:463-514.

Turner, G. C., C. R. Nichol, and G. R. Scott
1991 Scoring Procedures for Key Morphological Traits of the Permanent Dentition: The Arizona State University Dental Anthropology System. In *Advances in Dental Anthropology*, edited by M. A. Kelley and C. S. Larsen, pp. 13-32. Wiley-Liss, New York.

Turner, K. R.
1982 *The Archaeology of Ivy Creek*. Archaeological Monograph 3, Department of Sociology and Anthropology, Auburn University.

Ubelaker, D. H.
1978 *Human Skeletal Remains*. Smithsonian Institution, Aldine Publishers, Chicago.

1989 *Human Skeletal Remains*. 2nd edition, Taraxacum Press, Washington, D. C.

Waldron, T.
1994 *Counting the Dead: The Epidemiology of Skeletal Populations*. John Wiley and Sons, Chichester, England.

Walthall, J. A.
1980 *Prehistoric Indians of the Southeast: Archaeology of Alabama and the Middle South*. University of Alabama Press, Tuscaloosa.

Webb, W. S. and D. L. DeJarnette
1942 An Archaeological Survey of Pickwick Basin in the Adjacent Portions of the States of Alabama, Mississippi, and Tennessee. In *Smithsonian Institution Bureau of American Ethology*, Bulletin Number 129, United States Government Printing Office, Washington, D.C.

Whatley, B., and N. Asch
1974 Implications for Demographic and Nutritional Studies. Paper Presented before the Annual Meeting of the American Association of Physical Anthopologists, Denver.

Willey, G. R., and P. Phillips
1958 *Method and Theory in American Archaeology*. University of Chicago Press, Chicago.