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Mortuary variability in the middle Big Darby drainage of central Ohio between 300 B.C. and 300 A.D. (Volumes I and II)

Aument, Bruce Warren, Ph.D.

The Ohio State University, 1990

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MORTUARY VARIABILITY IN THE MIDDLE BIG DARBY DRAINAGE OF CENTRAL OHIO BETWEEN 300 B.C. AND 300 A.D.

Volume I

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy in the Graduate School of the Ohio State University

By

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The Ohio State University

1990

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William S. Dancey
Advisor
Department of Anthropology
To My Wife, Pam, and Son Geoff

Now maybe daddy can be a fun guy again.
ACKNOWLEDGEMENTS

My sincere appreciation goes to Dr. William S. Dancey for his patience and insightful guidance throughout the research and to Dr. Paul Sciulli, who turned an archaeologist into a physical anthropologist. Gratitude is expressed to Martha Otto and Brad Baker, Department of Anthropology, The Ohio Historical Society, Inc. and to the Department of Anthropology, The Ohio State University for access to the site collections and archives. To Don Bier, for word processing, the production of this document would not have been possible without your assistance. Thanks go to my colleagues at Archaeological Services Consultants, Inc. for their moral support and use of the facilities. To my family, words cannot repay your devotion and sacrifices over the past few years.
VITA

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Culture Area Specialization: Eastern North American prehistory

Other Areas of Interest: Site formation processes, Regional settlement pattern analysis, Aerial photo interpretation or archaeology, Lithic use-wear analysis
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CHAPTER I
INTRODUCTION

During the early period of American archaeology, from the late 1800s through the middle 1900s, the south central portion of the state of Ohio was a focal point for research on prehistoric mortuary remains, primarily mound burial sites. Mound excavations in Ohio through the 1930s provided a body of information on which normative models of prehistoric cultures were formulated, two of which are referred to as Adena and Hopewell. The development of these two concepts of mortuary cultures has been a major research focus and an integral part in the understanding of prehistoric social organization within the central Ohio River valley for the period roughly between 500 BC and 400 AD. During this period prehistoric mound construction reached its zenith and then declined. Attempts to understand and explain this phenomenon have guided and continue to guide much of the research in this portion of the midwestern United States.

The present study represents a continuation in the desire to understand the meaning behind patterning of mortuary remains in the burial mounds of central Ohio. Thus, it is rooted in the results and theoretical perspectives of the earlier studies on the concept of an Adena mortuary culture. Five partially excavated mounds clustered around the confluence of the Big and Little Darby Creeks in Franklin and Madison Counties are the focus of this study. These sites represent one of the few instances where a sample of mounds from a small region have been excavated and provide information on regional mortuary variability. Attention has been drawn to these sites because they have been preliminarily interpreted as representing a regional or local variant to the concept of an
Adena mortuary culture (Potter 1967 and Baby 1971). However, detailed site reports and a regional synthesis have not been published to substantiate the interpretation.

The Research Problem

The preliminary interpretation of the five mounds in the middle Big Darby Creek drainage serves as an impetus for this study. Through its history of development the concept of an Adena mortuary culture has acquired three interrelated aspects, which have reduced the known range of variability in mound mortuary remains to a normative model of the typical internal mound structure and the typical mortuary ritual/behavior responsible for the organization of the mortuary remains. The three aspects include 1) a classification scheme based on a set of diagnostic traits, usually taken out of mound context, which identify or distinguish Adena mounds from Hopewell mounds, 2) a set of theoretical assumptions linking social organization and mortuary ritual, which serve to order the normative model of Adena mortuary ritual, and 3) a developmental scheme, which provides a relative chronology of mounds from separate geographical regions to accommodate the range of variability in mortuary remains through an interpretative framework of increasing elaboration and formalization of mortuary ritual over time. The possibility that a regional group of mounds, classified as Adena, contain patterns of mortuary remains which conflict with the normative model of Adena mortuary ritual and the developmental scheme jeopardizes the concept of an Adena and warrants further study.

The preliminary interpretation indicated the occurrences of circular subfloor burial depressions and prone extended burials were the two mortuary traits indicative of the retention of Early Adena mortuary practices into the Middle Woodland Period and justified considering these mounds as a regional variant of Adena. The question is how pervasive were these traits? The preliminary reports indicate they were not the only burial feature type and mode of interment type present in the mounds of the region.
What is the range of variability in the mortuary remains? Are there other traits which may be just as important in characterizing mortuary behavior in the region? Do these types actually represent Early Adena mortuary practices, which continue unchanged for several centuries? If so, why do these traits and practices persist? These are the research questions generated by the preliminary interpretation which guided the present study.

Problems of Previous Mortuary Studies in Central Ohio

Any research which purports to study prehistoric mortuary variability in the central Ohio area related to mound interments immediately faces problems inherited, for the most part, from previous studies and theoretical perspectives. These problems can be grouped under four major headings: 1) the focus of research interests and fieldwork, 2) the quality and reliability of the data base generated from the fieldwork, 3) the use of the data to develop Ohio's prehistoric cultural/temporal framework, and 4) the interpretative models of prehistoric social organization and mortuary behavior generated from the data. These problems are interrelated and, in essence, bring into question the viability of the concept of an Adena mortuary culture as an existing formal prehistoric social entity.

Although previous research was concerned with documenting the range of variation in prehistoric mortuary remains, a normative approach was employed as an organizational tool for handling the growing body of data and the mound/site was selected as the appropriate level of analysis. The normative approach was based on the assumption that similarities in material traits reflected similarities in social group behaviors or cultures. Used for the analysis of the mortuary remains, it focused studies on the search for commonality in sets of mortuary traits, which in turn would define the prehistoric mortuary cultures. Consequently, some of the variation in mortuary remains was subsumed under mound, burial, and artifact trait categories. More importantly, documentation and clarification of traits became a primary research objective at the expense of contextual information and the development of a model of mortuary behavior.
The outgrowth of this approach was a classification scheme in which mounds sharing a set of traits could be grouped and labeled as belonging to one or another mortuary culture, regardless of geographical location and internal site structure.

Mounds within a mortuary culture were seen as sharing a set of formalized mortuary behaviors and a relative chronological ordering of mortuary cultures was constructed using the premise of a developmental trend in the formalization of mortuary behavior.

Most fieldwork and research on prehistoric mounds in central Ohio was conducted in the latter half of the nineteenth century and the first half of the twentieth century. Initially, fieldwork emphasized the recovery of burials with associated artifacts, since these items are described in more detail than the graves and features in which they occur. Although stratigraphy was the only means of dating the remains, very little contextual information was reported. At the turn of the century, the approach to fieldwork changed to more detailed recording of contextual information. The concept of an Adena mortuary culture was born during this period (Mills 1901, 1916, and 1917) and by the 1930s, four Adena mounds in the central Ohio area were excavated and reported in detail (Greenman 1932). This is in contrast to the hundreds of mounds excavated in the thirty years prior to 1900 for which limited or no information was published. Clearly, the quality and reliability of the data generated by the earliest fieldwork are limited. Nevertheless, an organizational framework to handle the mortuary data was developed and eventually included nearly 100 of the early excavated mounds from Ohio under the Adena mortuary culture. Consequently, the organizational framework had to concentrate primarily on artifact traits and had to use the mound as the level of analysis.

Since the 1930s, dozens of mounds have been excavated in central Ohio but not adequately reported. The reason for the lack of reporting is not known but is presumed to be due to time and budgetary constraints. Preliminary reports exist in the form of unpublished manuscripts and contract reports with few brief published accounts.
Therefore, the information potential of museum collections and archives, as well as private collections is unknown. When site information has been published, it has been selective, usually in the form of an interpretative synthesis of a site, or as a description of a particular trait, devoid of its stratigraphic context and used to support an interpretative argument. The presentation of information in this manner has resulted in attempts to preserve the cultural/temporal framework developed by the earlier studies through revision and redefinition of important traits, rather than testing the validity of the concept of an Adena mortuary culture.

The end result of this normative approach has been the construction of prehistoric mortuary cultures, labeled Glacial Kame, Adena, and Hopewell, defined by sets of recurrent diagnostic and generalized traits. These mortuary cultures are also seen as being sequential in time (Late Archaic, Early Woodland, and Middle Woodland, respectively) and demonstrating a developmental trend in mortuary related activities. Although subsequent and continuing research demonstrated that the sets of defining traits are not mutually exclusive and radiocarbon dates indicate the possibility of temporal overlap between the mortuary cultures, the validity and use of the cultural/temporal framework for central Ohio was not questioned. A crisis point was reached by the late 1960s and the early 1970s, in which the existing theoretical perspective and analytical framework were brought into question (Swartz 1971). While studies in central Ohio were at one time in the forefront of prehistoric research in the northeastern United States, the problems inherent in the earlier studies eventually lead to a stagnation of research on mortuary remains.

The focus of research in central Ohio has tended to shift towards the documentation of non-mortuary prehistoric sites, primarily through public archaeology, with the implicit assumption that the information potential of mortuary sites has been exhausted or has limited additional information potential. This assumption is a direct
outgrowth of the problems inherent in previous studies, and is erroneous. Because of the
general lack of published descriptive reports of mortuary sites excavated over the past fifty
years in central Ohio, variability in mortuary remains is not well documented and the
normative model of a developmental trend in the formalization of mortuary ritual
through the temporally sequential mortuary cultures is considered to be an accurate
account of prehistoric mortuary behavior.

The retention of the old cultural/temporal framework is evident in the few
mortuary studies for the central Ohio area which have appeared since 1970. These studies
tend to be site specific and address social organization and paleodemographic research
questions. The sites selected for these studies tend to be "classic" sites, in that the set of
defining traits fits the norms of a particular mortuary culture, and/or radiocarbon dates
place the age of the site within a particular temporal period. The focus of recent studies
has been on Hopewell and Glacial Kame sites because of the large skeletal populations
necessary for the statistical techniques used in the analyses. The information potential of
Adena mortuary sites has been minimally realized.

One of the major criticisms of the cultural/temporal framework developed by
earlier studies is that the set of defining traits for the Adena mortuary culture has been
refined to a point that a select small group of traits, primarily the portable artifacts and
the interment of individuals in conical mounds, have been applied over broad geographical
and temporal ranges; thus producing a picture of cultural cohesion and stability in
mortuary activity which masks regional variation and cultural dynamics (Swartz 1971).
Clearly, certain artifact and burial traits do occur over a wide geographical area indicating
some level of social interaction between regional groups. However, it is the level or
degree of social interaction which is not well understood bringing the model of a
formalized mortuary ritual for Adena into question. Comparing lists of contextless
mortuary traits at the level of the mound accentuates the similarities between sites while
overlooking the possibility of variability in the occurrence and use of such traits within and between sites of different regions. The existence of regional variation in Adena mortuary activity within the central Ohio area has been alluded to, but not fully examined nor documented in the published literature (Potter 1966 and 1971).

The Approach of the Present Study

Since the results of the mound excavations in the middle Big Darby Creek drainage have not been published or exist as preliminary reports and a criticism of previous fieldwork has been the lack of reporting, one intent of this study is to document the range of variability in the mortuary remains from the mounds. The other intent of the study is to understand why these mounds are considered to represent a regional variant of the Adena mortuary culture. In so doing, the study is an inductive search for patterns in the variability of mortuary remains. The search is conducted at several levels of analysis from the mounds in their regional setting through feature and burial types to artifact types. At each level the mortuary remains are compared within and between mounds to determine similarities and differences in their occurrences. In essence, the mounds are dissected to reveal their internal compositions. In some ways this approach is reminiscent of the early Adena studies, however the intent is not to classify mounds but to document the variability in the mortuary remains and to understand its patterns of occurrence within the mounds.

Understanding of the patterns of variability in mortuary remains requires contextual information and theoretical links between mortuary remains and social organization. Contextual information plays a minor role in all aspects of the concept of an Adena mortuary culture, while the theoretical links are assumed through a logical argument. More recent studies have taken a behavioralist approach, in which the contexts of the variability in mortuary traits are examined to deductively test their relationship to social structure and organization. The traits usually considered are age, sex, associated
artifacts, mode of interment, and burial facility type, all of which focus attention on the individual or burial level of analysis. Classification of the site, or determination of cultural or social identity, is circumvented in most studies by analyzing a specific single component site. In other cases, radiocarbon dates and diagnostic artifact types are used to establish relative contemporaneity between the sites.

The present study, in its search for patterns in the variability of mortuary remains borrows from the methodology of the behavioralist approach to mortuary studies. Primarily, the traits are used to organize the data and to search for recurrent patterns. Although implications of the relationship between social organization and patterned mortuary remains maybe generated, the intent is not to establish the level of social organizational complexity. This can not be adequately done with the available data, because the few radiocarbon dates from the mounds indicate two of them are not contemporaneous being separated by approximately a 200-300 year interval. Consequently, the variability in the mortuary remains between these two mounds maybe related to change in mortuary behavior over time rather than reflecting variability in social organization or cultural relatedness. In addition, the sample size is too small for the remains from some of the mounds to be adequate for statistical analysis. Finally, prehistoric and historic disturbances have compromised the contextual integrity of the remains of many individuals from each mound, which further reduces the sample size. Since the mounds are not necessarily contemporaneous, their burial populations can not be pooled to provide an adequate sample. Therefore, the study is concerned with understanding the internal structures of the mounds and the possible variability in the use of mortuary space.

Since the temporal, spatial and formal dimensions of the mounds are not well documented, emphasis is being placed on describing the variability in the mortuary remains along the formal dimension at several levels of analysis. Examination of the
contexts in the formal variability of the mortuary remains using stratigraphic analysis provides insight on the partitioning or use of mortuary space. The stratigraphic analysis involves the vertical and horizontal relationships of mortuary remains within a mound. The vertical stratigraphy provides a relative understanding of the temporal dimension at each site, while the horizontal dimension provides an understanding of the layout of mortuary space. The search for patterns in the variability of mortuary remains along both spatial dimensions provides an understanding of internal mound structure. In essence, where the description of the formal variability in mortuary remains at various levels of analysis dissected a mound, the stratigraphic analysis puts the remains of a mound back together in a meaningful way.

If recurrent patterns in the mortuary remains occur within and between the mounds, then the social implications of the traits borrowed from the behavioralist approach may provide a line of inquiry for explaining the patterns. However, three of the mounds have not been independently dated and their temporal relationship or contemporaneity to the two dated mounds is unknown. If recurrent patterns in the mortuary remains are found, which consistently occur in vertical stratigraphic within and between the mounds, then it may be possible to examine mortuary variability over time.

The lack of published information on this regional group of mounds and the preliminary interpretation of the mortuary remains grounded in the Adena concept and based on two mortuary traits intrigues interest but limits understanding. The present study attempts to rectify this situation by borrowing methodologies from the early Adena studies and the more recent behavioralist approach to mortuary studies. Variability in mortuary remains along the formal dimension is documented at various levels of analysis. The internal structures of the mounds are examined by stratigraphic analysis to understand the formal variability of the remains in mortuary space. In essence, the study
attempts to reconstruct the site formation processes at each site to see if there are recurrent patterns in the use of mortuary space indicative of mortuary ritual or behavior.

Recurrent patterns in the use of mortuary space are established by the analysis, which are more complicated than the preliminary interpretation suggested. Some of the patterns are mound specific, while others link two sites. The circular subfloor burial depression, one of the two mortuary traits emphasized in the preliminary interpretation, does occur at all of the sites, but has different internal composition and different plan layout contexts at the different mounds. The two mortuary traits common to all of the mounds are multiple interments of extended inhumations and periodic prehistoric reuse of the burial facilities for multiple interments. Periodic multiple interments of extended individuals indicates a number of individuals were dying at roughly the same time and this pattern of death was a common occurrence in this local population over an extended period of time. It would appear this pattern conditions at least partially the use of the mortuary space in the mounds and an explanation for its occurrence needs to be determined. The study suggests the relatively high incidence of bone pathologies suggestive of infectious disease may represent a contributing factor.

The organization of this report reflects the concern with understanding variability in mortuary remains at various levels of analysis. The concept of an Adena mortuary culture is traced through its development to establish the current baseline understanding of mound mortuary remains in central Ohio. Likewise, the results of select, recent mortuary analysis studies concerned with social structure and organization are briefly summarized to document current understanding of past mortuary activity from that approach. The results of these studies provide interpretations of past mortuary activity which can be compared and contrasted to the results provided by the stratigraphic analysis of mortuary remains in this study. The descriptive accounts of the mortuary remains begin at the analytical level of the mound and proceed through feature and burial levels to
the artifact level. The variabilities in a number of traits at each analytical level are presented and discussed within and between the sites. In so doing, the mounds are dissected and internal structural similarities and differences are observed. The stratigraphic analysis puts the mounds back together providing relative chronologies of the formation processes at each site and the relationships of the mortuary remains at the analytical level of the feature.
CHAPTER II
THEORETICAL PERSPECTIVES

The springboard for any research endeavor is the existing theoretical perspective. A degree of understanding for a particular phenomenon, in this case prehistoric mortuary remains of central Ohio, exists which serves to stimulate and direct the formulation of research questions. By addressing these questions, the primary intent of the research is to broaden the finite base of understanding of the phenomenon under study. The ability to address research questions rests on existing methodology, which is an integral part of the theoretical perspective. In some cases, the evaluation of a method or technique serves as the research question. Consequently, the understanding of a phenomenon is directly linked to the historical development of the types of research questions addressed, which in turn are conditioned by the related theory and method.

Since the present study represents the continuation of a research interest which has a long history of study in the midwestern United States, theoretical perspectives exist which influence or guide the present study. The theoretical perspectives have their own development histories in the formulation of approaches to the study of mortuary remains, in the theoretical links between patterned mortuary remains and prehistoric social organization, and in the interpretations of the mortuary remains generated by the use of the approaches. Because this study borrows methodologies from the different approaches to organize and analyze the data on the mounds from the middle Big Darby Creek drainage, it is important to understand the history and development of the theoretical perspectives behind the approaches.
The theoretical approaches guiding the present study can be grouped into two approaches, 1) the early mortuary studies which lead to the development of the concept of the Adena mortuary culture and referred to as a normative approach, and 2) the more recent mortuary studies attempting to link mortuary remains to social organization and referred to as a behavioralist approach.

The normative approach follows an inductive line of reasoning in searching the empirical evidence for patterns in the mortuary remains. The end result is the development of the concept of prehistoric mortuary cultures, which reduces the variability in mortuary remains to sets of shared mortuary traits linking some mounds and dissimilarity between sets of traits used to group mounds into mortuary cultures. The traits included in the different sets defining the different mortuary cultures are considered out of context except at the mound level of analysis. An underlying assumption is a universal structure and organization to mortuary behavior exists with the sets of traits defining the different mortuary cultures reflecting the variable expression of it. In contrast, the behavioralist approach follows a deductive line of reasoning in which the variability in mortuary remains is the focus of study. Traits are selected which are considered to reflect dimensions of social organization and the variable expressions of the traits in the mortuary remains are examined to determine the degree of social structure and level of social complexity reflected.

Although the two approaches appear to be very different, they share some similarities. For both approaches the major concern is determining which mortuary traits are important in pattern searching. Both have a basic assumption that a universal structure and organization for mortuary behavior exists. For the normative approach this assumption guides the interpretation of the differences in the sets of mortuary traits defining the mortuary cultures, while for the behavioralist approach it guides the selection of the mortuary traits to be studied. Another assumption is shared by both approaches,
which is that similarity in material remains reflects similarity in behavior. For the
normative approach this assumption guides the selection of the mortuary traits for
inclusion in the mortuary culture defining sets, while for the behavioralist approach it
defines the mortuary universe to be studied.

In essence, both approaches are an attempt to understand the variability in
mortuary remains over space, time and form. The normative approach is concerned with
demonstrating cultural relatedness and interprets variability as representing different
expressions of a universal mortuary structure and organization. The behavioralist
approach is concerned with demonstrating the variability in mortuary structure and
organization as it reflects differences the level of social organizational complexity and
interprets similarity in mortuary remains as representing cultural relatedness.

Overview of the Adena Mortuary Culture Concept

From its inception, the concept of Adena has been an organizational tool for
defining and classifying one set of the prehistoric mortuary remains from burial mound
contexts in the central Ohio River valley. The primary intent in the formulation of this
concept has been to highlight the external and internal differences of mound burial sites,
resulting in two contrasting sets of mound burial traits, labelled the Adena and Hopewell
mortuary cultures. Although both sets of traits have been subjected to several revisions,
the validity of the dichotomous partitioning of mound burial sites into two mortuary
cultures has not been seriously questioned. In fact, the subsequent revisions of the
diagnostic or characteristic Adena mortuary culture traits have tended to emphasize those
material remains which allow for documenting the greatest degree of heterogeneity
between the sites of the two mortuary cultures; while, at the same time, promoting the
greatest degree of homogeneity amongst sites of a particular mortuary culture.

The end result of this revision process has been the clear realization that mutually
exclusive sets of mortuary traits do not exist. The classification of a particular site to one
of the mortuary cultures has rested on the predominance of select traits. However, the select traits vary from site to site depending on the inherent nature of the archaeological record at each site. Predominance has been determined along several lines of argument. Numerical predominance can simply mean the ratio of Adena traits to Hopewell traits; or, it can mean the frequency of occurrence of a particular trait in relationship to the other traits present at a site. Classification by this means simply involves the determination of the highest ratio of traits, or the frequency of occurrence of a particular trait and assigning the site to the appropriate mortuary culture.

When numerical predominance can not be established, qualitative predominance of select traits has been employed to classify a site. The determination of qualitative predominance rests on a relative scale of artistic and stylistic development in mortuary traits. The lower end of this scale has been equated with the Adena mortuary culture; while the high end with the Hopewell mortuary culture. The derivation of this relative scale is not solely based on the attributes of the diagnostic or characteristic traits, but rests on certain sociological and anthropological perspectives, which argue for patterned mortuary behavior and allow for the interpretation of mortuary remains along the lines of social custom and the level of complexity in social organization. Consequently, classification and interpretation have been melded, thus perpetuating the dichotomous partitioning of mound burial remains into two prehistoric mortuary cultures.

The sociological and anthropological perspectives provide a theoretical framework for analyzing and discussing the variability in the burial mound remains. The intended use of this framework is to provide normative models of social customs related to mortuary behavior for comparative studies concerning the relationships between the Adena and Hopewell mortuary cultures. The cornerstone of the theoretical framework consists of a logical argument relating mortuary customs to social group organization, stability, and behavior (Webb and Snow 1974:167-169). The theoretical framework serves as a general
model for the structure of mortuary customs, linking burial traits with mortuary behavior. The theoretical statements of the logical argument appear to be viewed as given conditions rather than testable hypotheses.

As a general model of mortuary customs, the theoretical framework is an organizational tool guiding the regrouping of mortuary remains under several major headings (Webb and Snow 1974:169). Groups of traits, and the variability of each trait, are analyzed as separate units resulting in generalized statements of mortuary practices. The set of generalized statements serves as an interpretative model of the structure and function of Adena mortuary customs and is used as a basis of comparison to a similarly generated model of Hopewell mortuary customs.

These interpretative sociological models are interrelated with, if not conditioned by, the contrasting, dichotomous sets of diagnostic mortuary culture traits. Sites are classified initially to either the Adena or Hopewell mortuary cultures, then the sociological models are generated and compared. For those mounds which do not contain mutually exclusive sets of diagnostic traits, the sociological models are used to qualitatively weight the importance of select traits, thus permitting assignment to one or the other mortuary cultures. The ability to judge the qualitative importance of select traits rests on the perception of a developmental scheme inherent in both, the sets of diagnostic mortuary culture traits and the interpretative sociological models.

The perception of the developmental scheme comes from the observed variability in the formal attributes of select traits, which when ordered serially appear to suggest a development from simple to complex forms. The range of formal variability in all traits is not examined in detail, but is described in general terms in the definitions of the different traits. Likewise, little discussion of the reasoning behind the selection and emphasis on certain trait attributes for comparative analysis is provided. The end result of this process of selection and comparison of certain attributes and traits is a cumbersome, normative
model which attempts to infer and discern the general structure of prehistoric mortuary systems from the burial mound remains. Consequently, the utility of the model for further research has been questioned on the grounds of inappropriate methodology and inability to explain the variability of the mortuary remains.

One reason for the non-utility of the model is the nature of the data base and the reporting of it. Very few detailed site reports have resulted from the numerous mound excavations conducted in the central Ohio River valley. Since the majority of professional fieldwork was done during the infancy of American archaeology, the last two to three decades of the 1800s, one could excuse the lack of detailed description on the state-of-the-art in techniques and the experience of the investigators in dealing with a new and unknown phenomenon. However, a review of the early literature suggests such a position can not be entirely justified. Determining the origin and nature of the mounds and earthworks were primary research objectives and fieldwork to these ends was conducted in several large regions of the United States. Even earlier surveys and test explorations in the central Ohio River valley had documented the variability in external mound size and shape, and internal mound composition traits (Atwater 1820; and Squier and Davis 1848). Thus, the documentation of the variability would seem to be a reasonable outgrowth from this prior knowledge.

Mound explorations in the state of Ohio were basically unsystematic regional surveys along portions of the major tributary drainages of the Ohio River, and were designed to investigate the variability in mound remains (Fowke 1902 and Moorehead 1892). During each field season, numerous mounds of varying size and shape were partially or completely excavated. Although the intent of these excavations was to document the variability of the internal composition between mounds, little contextual and stratigraphic information was reported. Emphasis was placed primarily on describing the formal attributes of the portable artifacts, and secondarily on the burial feature attributes.
Burials associated with artifacts were described in some detail; while burials without associated artifacts were noted or incompletely described. After several mounds had been excavated, investigators could predict with some assurance where in a mound burials with artifacts would be located, usually near the mound center along the mound floor or base. Many mounds were partially excavated as an expedient means to recover such burials. In some cases, mounds apparently did not contain centrally located burials with associated artifacts and were merely described as containing nothing of interest. Given the number of mounds excavated and the way the fieldwork was conducted, it seems reasonable to conclude the primary intent of these early fieldwork endeavors was to recover archaeological specimens and to document the formal variability of mortuary related artifacts, rather than documenting the variability in the internal compositions of the mounds.

In all fairness to the early investigators, they did report some contextual and stratigraphic information. Obviously, their ability to predict the location of burials with associated artifacts rests on observed contextual and stratigraphic information. However, labeling these remains as important central burials implies alternative meanings, which must be cautiously interpreted. Such burials were important to the early investigators because of the expectation of associated artifacts. Whether or not the prehistoric group constructing the mound viewed this particular individual as important can not be readily inferred from the reported data. However, this concept of an important central burial persists in the interpretative model of Adena mortuary culture.

Additional stratigraphic information is presented in general discussions concerning the construction of mounds with schematic profile representations of particular mounds used as examples. Distinctions between primary, secondary, and occasionally tertiary mound construction episodes are noted. Burials occurring within one of these strata are usually explained as individuals dying during the particular construction episode. The
construction episodes are viewed as short term group activities based on the apparent homogeneity of the mound fill, lack of evidence for intrusion of burials, and lack of evidence for buried old land surface horizons. Construction episodes become synonymous with mound strata, clearly infusing observed variation in internal composition with an interpretation of mortuary behavior. Schematic mound cross section profiles suggest each subsequent stratum is a relatively thick, homogeneous deposit extending continuously over the previous stratum. More recent studies discount this simplistic view of mound stratigraphy by documenting thin, discontinuous strata and isolated lenses and features suggesting more complex histories of site use and more varied mortuary related behaviors (Solecki 1952; Dragoo 1963; Clay 1983; and Jeffries and Milner 1987).

Regardless, different models of mound construction sequence for Adena and Hopewell mortuary cultures have been developed based on the general scheme of mound stratigraphy and the locations of burial features within the strata. Basically these models of mound construction argue for contrasting views of the organization of the use of mortuary space between Adena and Hopewell mortuary cultures and are substantiated to some extent by recent research (Clay 1987). Hopewell mortuary space is seen as horizontally organized over a prescribed portion of the prehistoric land surface. Mortuary related behavior occurs on this surface area for a period of time; and when the mortuary use of the locality terminates, a mound is erected over the spot. In contrast, Adena mortuary space is seen to be organized vertically, with the construction of the mound proper being directly related to the number of burial episodes. Burials are added to the locus through accretion; while the initial use of the locality has been postulated to be non-mortuary related.

Although mound fill is considered homogeneous, this does not mean the soil deposits are uniform in color, texture, structure, and inclusions. Evidence for individual basket loads of soil has been noted, but the discussion of them, and their representation in
the schematic profile maps, give the impression the entire mound was constructed in this manner. This information was used to document the artificial nature of mounds in general, rather than describing in detail the variability of the construction episodes from different mounds. The detailed descriptions of select burial features demonstrate the ability of the early investigators to recognize thin, discontinuous strata and lenses. Therefore, it would appear selective reporting of stratigraphic information focused attention on burial features and non-mortuary features associated with the central area of the mound base. Consequently, interpretation of the internal composition of burial mounds has guided fieldwork and the selective reporting of information. In turn, the information is used to bolster and perpetuate the interpretative notions of important central burials and homogeneous mound fill. The validity of these notions, used in the formulation of the general model of Adena mortuary culture, is questionable, but can not be addressed because the published data for the histories of site use are incomplete.

Discrete cultural remains have been reported from mound fill context. If they occur in a tightly clustered arrangement and represent similar artifact types as found in burial context, they are considered caches purposefully placed during the construction episode. If an artifact, similar in type to those found in burial contexts, occurs isolated in the mound fill, its purposeful placement is questioned and the possibility of its accidental loss during the construction episode is postulated. Artifacts occurring in the mound fill, which do not typically occur in burial contexts or broken items of types which do occur in burial contexts, are interpreted as habitation refuse incorporated in the soil used for the mound construction. The interpretation does not discuss if this action represents conscious or unconscious behavior. Regardless, the horizontal and vertical extent of these artifacts are not provided, so the possibility of patterned spatial associations which might infer other activities being performed on the mound can not be assessed. Here again, a recent study of the spatial association of mound fill artifacts suggests the occurrence of
non-burial, but probably mortuary related, activities on the mound surface (Clay 1983). Likewise, the possible relationship between the formal attributes of the basket loads of soil and the distribution of mound fill artifacts has not been documented. Therefore, the interpretative notion that mound fill artifacts represent either caches of mortuary offerings or incidental inclusion of habitation refuse can not be viewed as a conclusive generalizing statement concerning mound construction behavior. Additionally, the lack of reported non-burial features in mounds from the early published literature can not be viewed as conclusive negative data but, rather, probably represents selective reporting or unconscious oversight in field observations.

The foregoing discussion has attempted to outline the major structural components of the Adena mortuary culture concept. Hopefully, the discussion has demonstrated a theoretical framework and methodology does exist from which its function to provide understanding of prehistoric mound mortuary remains can be documented through its historical use and development. To summarize, the major structural components are the diagnostic mortuary trait list, the sociological and anthropological model of mortuary behavior, and the inherent developmental scheme. These components are closely interrelated and their histories of revision and refinement reflect the growing confusion in understanding the nature of prehistoric mound burial in the central Ohio River valley.

What may not be clear from the foregoing discussion is that previous researchers were concerned with some of the research problem facing modern-day archaeologists: identification and explanation of the variability in the archaeological record, specifically mortuary remains. The approach of previous studies has been to focus on similarities in mortuary remains to group sites with the implicit assumption that similarities in material remains in similar context reflect similar customs or behaviors and represent an archaeological culture. Consequently, research interests follow a culture history perspective, in which a primary objective is to place the sets of formal traits into spatial
and temporal contexts. At the same time, the sets of formal characteristic traits, which initially serve to identify the mortuary culture, are employed to reconstruct the structure of mortuary systems of the particular mortuary cultures. The focus of research on culture history and the structure of mortuary systems serves to stimulate all of the basic research questions for understanding the Adena mortuary culture. These questions include delineation of the mortuary cultures, origin of mound burial activities, and the cultural dynamics of mortuary systems. To address these questions detailed contextual information is needed. However, it is the lack of contextual information which characterizes present understanding of mortuary remains in the central Ohio River valley.

Modern-day archaeologists are concerned also with the structure of prehistoric mortuary systems. However, this concern is coupled with research interests focusing on the functions of mortuary systems as they reflect differing levels of prehistoric social organization. Whereas the functional aspect of mortuary systems was assumed by the earlier investigators primarily through ethnographic analogies for their interpretative sociological models, modern-day archaeologists have taken these assumptions as testable hypotheses. In so doing, research on the variability in mortuary remains has concentrated on smaller spatial and temporal units. Many studies have been site specific, focusing on large burial populations. Such studies provide sufficient data for statistical tests of the hypotheses relating mortuary remains to prehistoric social organization. At the same time, they provide synchronic views of prehistoric lifeways.

Regional studies concerned with cultural dynamics have been done on smaller geographical scales than the earlier studies. Portions of main tributary drainages provide the boundaries for these spatial units, in which regional chronologies are developed grouping mortuary remains into archaeological phases. Temporal ordering of the phases is provided by radiocarbon dates for the different sites. Variations in mortuary remains between the phases are enumerated and hypotheses relating social group size and
Complexity to land use patterns are generated and tested by correlation with non-mortuary data.

Clearly, these regional studies are preliminary investigations of prehistoric mortuary variability and subject to revision as comparative data from other regional studies are generated. There is no conclusive evidence that prehistoric social groups recognized and used the same boundaries as the regional studies. Revisions of the geographical extent of particular archaeological phases most assuredly will occur. Likewise, isomorphy of the boundaries between subsequent archaeological phases seems unlikely, given the documentation of apparent increase in complexity of social organization over time. However, this hypothetical stance must be demonstrated and serves as a future research topic. In addition, the regional studies tend to view the sites within their bounded space as representing closed social systems. Whereas earlier studies attempted to explain mortuary variability between widely geographically separated sites of the different mortuary cultures by the cultural dynamic processes of migration and diffusion, the regional studies view the changes in mortuary remains as resulting from local development stimulated by population pressure. Indigenous population increase coupled with changing land use patterns are seen as the factors contributing to population pressure resulting in social reorganization and reflected in changes in the patterning of mortuary remains. Although the use of the old mortuary culture designations has fallen into disfavor, being replaced by temporal period and archaeological phase designations, the terms have remained in discussions of mortuary traits, suggesting some validity of the early concepts exists in explaining the prehistoric mortuary variability.

When reviewing the early work in comparison to modern-day work, all research has relied on the same basic premise, similar material remains in similar context reflect similar behavior. Differences exist in the finer scales of analyses along spatial, temporal, and formal dimensions resulting in refined research questions. The concern has
always been pattern recognition in the archaeological record, and criticism of early research as not having a theoretical and methodological basis is unwarranted. Criticism of the misuse of analytical methods in explaining prehistoric mortuary variability is justified and can be documented. The most important factor in the misuse of analytical methods appears to be the inherently weak data base. Mortuary cultures are identified and models of their mortuary systems are generated from a select group of sites for which the remains are well documented. In some cases, these sites are widely dispersed geographically. In order to gauge the spatial and temporal extent of these mortuary cultures comparisons of different sites were necessary. Unfortunately, numerous sites which contained some of the diagnostic traits but lacked contextual information, were included to document continuous geographical distribution of the mortuary cultures. The diagnostic traits held in common at these sites are primarily portable objects, the burial associated artifacts. Revisions and refinements of the diagnostic mortuary culture trait lists have emphasized the importance of the portable objects usually devoid of their archaeological context. By necessity, the site serves as the basic unit of analysis and the classification of mounds to a particular mortuary culture becomes an important research interest. Since different mounds contain different sets of portable traits, the diagnostic trait list undergoes continual revision and selective reporting of fieldwork is perpetuated. The lack of contextual information fosters the impression of homogeneity in the normative model of Adena mortuary practices between these sites. Consequently, the study of Adena mortuary culture has focused on the ordering of mortuary remains which are incompletely reported, rather than questioning the validity of the interpretative model of the Adena mortuary system.

The concept of the Adena mortuary culture has always been defined by its relationship to the Hopewell mortuary culture. Initially, the Adena mortuary culture was seen as a distinct, early developmental stage of the Hopewell mortuary culture and was referred to as early Hopewell rather than Adena (Mills 1917:266). At this point in time,
the technique of radiocarbon dating had not been developed and the context of mortuary remains within a particular mound suggested cultural homogeneity, or what would be labelled today as a single component site. Consequently, there was no absolute nor relative means of chronologically ordering the sites. Instead sites were ordered ahistorically using the nineteenth century cultural evolutionary view of inherent progress from low to high culture through several stages. What would become the Adena mortuary culture was seen as an intermediate stage between Fort Ancient, the lower culture, and Hopewell, the higher culture (Mills 1917:266). Evidence in the material mortuary remains to document cultural development rested on those traits which demonstrated gradual but progressive changes in artistic technique and elaboration of style. Coupled with artistic development was the gradual replacement of utilitarian objects with non-utilitarian ones as grave offerings. Adena, as an intermediate stage, showed infrequent occurrences of traits related to advanced artistic technique, the possession and use of copper and skillful carving of stone (Mills 1917:266). In addition, the ritual or sacred use of fire had not been fully developed. The most abundantly occurring traits were personal items, objects of adornment or utility, and were seen as evidence linking Adena more closely with the lower culture rather than Hopewell.

Although Fort Ancient has been shown to be chronologically later than Adena and Hopewell, the developmental scheme continues to be a basic component for structuring and relating the concepts of Adena and Hopewell mortuary cultures. Fort Ancient has been replaced in the developmental scheme by several possible Late Archaic mortuary cultures: Red Ochre, Glacial Kame, and more remotely Kentucky Shell Mound (Dragoo 1963). However, well documented Late Archaic burial sites are virtually non-existent in central and southern Ohio, and the ancestral origin of mound building in this area is still a subject of debate. Likewise, emphasis has been placed on material remains whose formal attributes can be subjectively compared on the basis of the level of artistic development
and the utilitarian nature of the object. Consequently, the selective reporting of mortuary remains for mortuary cultures of all temporal periods has been maintained, often without regard to their contexts, resulting in research interests focused on refining the diagnostic mortuary culture trait lists and describing the developmental sequences of particular traits.

**Development of the Adena Mortuary Culture Concept**

The concept of Adena as a distinct culture appears for the first time in Shetrone’s (1920) synthesis of Ohio archaeology. The major theme of his article was to differentiate the prehistoric culture groups occupying Ohio, based primarily on contrasting lists of mortuary traits. The terms culture, culture group, and culture variety were used synonymously to designate a specific social group (Shetrone 1920:144). Although the correlations between the prehistoric mortuary and habitation remains, and the size and complexity of the prehistoric groups are not well developed theoretically, it is apparent that distinctions were made according to the geographical extent of the diagnostic traits. Fort Ancient, Hopewell, and Algonquian are labelled as cultures in their subheadings; while Adena is referred to as a group, with Stone Grave and Iroquoian as areas, and Glacial Kames as burials (Shetrone 1920). Groups labelled as cultures have the widest geographical representations crossing portions of several contiguous states and apparently are the prehistoric correlate to the linguistic family. Adena as a distinct culture is established on the basis of its fundamental differences from Hopewell in its diagnostic traits. However, the apparent restriction of the traits to the Scioto and Miami River valleys of Ohio and the Kanawha River valley of West Virginia are viewed as representing a localized or regional culture synonymous with the concept of a tribe (Shetrone 1920:159). The terms, area and burials, reflect the possibility of distinct culture groups but data is either insufficient or consists of select traits found co-occurring with diagnostic traits of the established prehistoric culture groups.
Shetrone's approach to organizing the archaeological record differs from Mills' cultural evolutionary perspective in that it attempts to employ the direct historical method. Although Shetrone recognized the break in the record of occupancy of Ohio between historic and prehistoric groups at the tribal level, he attempts to make a general argument for the sequential use of Ohio by groups from the Algonquian and Iroquoian linguistic families. The historical portion of the argument rests on the Iroquoian conquest of the area during the seventeenth century A.D. with the displacement of the resident Algonquian groups, who were presumably the direct ancestors of the prehistoric mound building mortuary cultures (Shetrone 1920:148-149). To substantiate the argument from the prehistoric record, material traits selected for discussion had to have parallels with the material remains of ethnographically known linguistic groups and families. From the culture history perspective, the classification of prehistoric cultures by sets of diagnostic material traits had two objectives: 1) to group sites with similar sets of traits to determine the areal extent of their remains, and 2) to select traits or trait attributes which could be used to demonstrate an ancestor-descendent relationship between prehistoric and historic groups. Stylistic pottery attributes are the most fully discussed criteria for establishing these relationships.

Shetrone's classification scheme emphasizes the basic assumption that differences in material remains occurring within the mortuary sites reflect distinct social groups. This particularly true in his discussion of the partitioning of Adena and Hopewell mound types, where he states:

While the affinities of the Adena type of mounds are apparently strongly with the Hopewell culture, and their classification as such, in a marginal sense, doubtless is justifiable in a broad scheme of handling, there are many fundamental differences between the traits of the two groups. Aside from the use of copper and other material from distant sources, very few traits of the Adena will found to correspond in any degree to those of the Hopewell type (Shetrone 1920:160).
Although not well developed, Shetrone has a dynamic view of the formation of the archaeological record, which to some extent justifies his basic assumption. He states:

With reference to a native Ohio tribe, it is obvious that the more or less nomadic habits of the American aborigine would tend to make his residence within a given locality of rather uncertain duration. In this paper the term is intended to represent those tribes who were resident or present within the area prior to historic record, and who were responsible for the archaeological remains thereof (Shetrone 1920:144).

Adena is clearly equated with a tribe occupying a restricted region, while the level of social organization for Hopewell is not specifically discussed. Three statements suggest Shetrone viewed Hopewell as initially representing a tribe located in central and southern Ohio, which expanded geographically and probably grew in social complexity. In his critique of Wissler's classification of Hopewell as a marginal culture to the culture center in Tennessee, Shetrone borrows Wissler's age-area hypothesis model and substitutes Hopewell as the culture center. Justification for this approach rests on the diagnostic trait list.

Comparison of the distinctive traits of Hopewell with those of the culture centering in Tennessee, or with any other archaeological culture complex, will demonstrate the striking individuality and specialized development which they possess (Shetrone 1920:157).

The broad geographical extent of Hopewell traits is then explained by relying on the two basic culture history mechanisms of change, diffusion and migration.

The extent to which the peculiar Hopewell traits appear in the area south of the Ohio River, and vice versa, is very meager; in fact only such as would naturally result from intrusive entry through tribal intercourse, commerce, and other means of diffusion (Shetrone 1920:157).

The extension northward of artifacts apparently of Hopewell manufacture, probably denote(s) migration in that direction of bands marginal to the Hopewell proper in Ohio, rather than indicating northwestern origin of the group . . . (Shetrone 1920:159).

The first passage refers to tribal intercourse and implies Hopewell was of that level of social organization. The second passage argues for smaller social units separating from a
larger social unit and moving away from the area, and implies the maintenance of sufficient social contact to perpetuate social customs in distant areas.

As for the chronological placement of Adena, Shetrone views Mills’ interpretation as not conclusively documented from the available stratigraphic information, and thus, does not place Adena in his tentative temporal model (Shetrone 1920:169). There is general agreement that, based on affinities of material remains, Adena has a close relationship to Hopewell and to no other archaeological nor historical culture group. Shetrone does not completely discount the ancestral position of Adena, but clearly shows a nineteenth century cultural evolutionist’s view of such a possible relationship.

It would be gratifying to find that the Adena type of mounds represents an earlier phase of the Hopewell culture, but . . . we must suppose a very considerable period of time necessary for the Adena people so completely to change their distinctive traits, and to evolve into the typical Hopewell culture variety (Shetrone 1920:161).

In Shetrone’s (1931) subsequent major work, The Moundbuilders, Adena has been elevated from a group to a culture. However, there is little additional site information provided with most of the discussion focusing on an interpretative model of prehistoric mortuary behavior. Hopewell sites and their remains serve as a basis of comparison between low and high culture mortuary practices. Analogies to historic mortuary practices are provided to understand particular mortuary traits and presumably to establish an indirect link between historic and prehistoric Indian groups. Although the issue of temporal ordering of the prehistoric mortuary cultures is not discussed, the emphasis on providing a structural and functional interpretation of the mortuary remains of the different mortuary cultures based on the concept of low and high cultures implies a relative temporal ordering.

The importance of this work lies in the establishment of an interpretative sociological model of mortuary behavior, based on logical arguments, which continue to presently serve as a basic understanding of prehistoric mortuary activities in the central
Ohio area. Just as the diagnostic trait lists of the different mortuary cultures have been subject to revision and refinement, so has the interpretative sociological model. These revisions are concerned with particular aspects of mortuary activities, and the commonality and timing of their occurrences. The basic themes of mortuary activity are not questioned, but the variability in their expressions are. Consequently, the structure of mortuary activities is static over time related to the proper disposal of the dead, which is concerned with the continuity between the physical and metaphysical worlds. Such a view rests on the nineteenth century cultural evolutionary concept of psychic unity of mankind. The variability in the material expressions of the mortuary structure is therefore the result of cultural preference or custom. From this viewpoint, research focuses on problems of culture history, delineation and description of prehistoric mortuary cultures, explanation of their origin and transformation, and determination of their temporal ordering. In the absence of stratigraphic information, single component sites are ordered on the basis of inherent cultural development from low to high culture. Explanation of transformation in mortuary remains and related activities rests primarily on the concept of inherent cultural development, but does not exclude the possibility of migration or diffusion as mechanisms of culture change.

The question of origin of the mortuary cultures does not appear to be a major concern for the early investigators, except for the documentation that mound building was burial related activity of prehistoric native American Indian groups. Subsequent research has addressed the question of the origin of mound building from a culture history perspective, looking for the mechanism of cultural change which introduced this particular mortuary trait. In his tentative temporal model, Shetrone suggests but can not conclusively demonstrate an in situ origin of mound related mortuary activity based on the concept of inherent cultural development.
It would not be illogical to suggest that one or more of the advanced groups, as the Adena and even the Hopewell, may have been progressive offshoots of the Algonquian stock. Popular belief in the greater age of the so-called moundbuilders is very persistent; but recognition of the fact that as a rule a ruder stage may be supposed to have preceded a more highly developed status or culture, favors Algonquian precedence of occupation (Shetrone 1920:170).

The importance of burial mounds lies in their formal properties which can be used to differentiate or serve as diagnostic traits of the prehistoric mortuary cultures. The role of the burial mound in the interpretative sociological model of mortuary behavior is secondary to the burial features and artifacts which it contains.

Shetrone's interpretation of the prehistoric mortuary remains rests on several basic themes, which are used to explain the variability between the traits of different mortuary cultures. The primary concept of his interpretative model is that mortuary ritual based on a concern for life in the hereafter played a predominate role in structuring the lives of prehistoric social groups. This concept, which became synonymous with the term, "cult-of-the-dead", suggests a formalized set of ritual mortuary activities. The diagnostic trait lists serve as the material evidence for such rituals in the different mortuary cultures. The inordinate amount of energy and labor invested in the construction of the more permanent burial mounds and their internal features, in comparison to the scant, almost non-existent, remains of habitation structures is seen as proof of the importance placed on the concern for life in the hereafter (Shetrone 1931:85).

It is not merely the construction of burial mounds that provide evidence of formalized mortuary ritual associated with a belief in the hereafter. The handling of the corpse, and the preparation and provisioning of the grave require more energy and labor than the mere disposal of the dead individual. The inclusion of objects not in direct burial association are seen as offerings to divinities (Shetrone 1931:100). Shetrone points out in several passages the secondary role mound building plays in this belief system.
The amazing expenditure of energy and labor in erecting these structures is not to be fully accounted for by sentiment of respect and reverence for the departed . . . . The erection of earth coverings over carefully prepared graves is almost instinctive, but the placing with the dead of personal ornaments, implements, and utensils, and with important personages of ceremonial artifacts, indicates anticipated needs in an after-life (Shetrone 1931:86).

He goes on to note no great distinction between burial in surface graves in cemeteries and burial within or beneath mounds, since the primary objective is to provide a protective covering of soil over the deceased, and a mound could be viewed as an inverted grave (Shetrone 1931:89). Finally, he argues most forms of graves and related mortuary customs which are associated with mound burials are found in non-mound burial context (Shetrone 1931:100).

Shetrone's comparison of burials in mounds to burials in cemeteries shows a concern with understanding mortuary activities in prescribed areas. However, the repeated attempts to downplay the importance of burial mound construction suggests the real value of this trait lies in its diagnostic role for classifying sites to particular prehistoric mortuary cultures. Consequently, the external attributes of a burial mound represent a set of culturally determined traits for the variable expression of what a burial site looks like. From this viewpoint, the primary concept of Shetrone's interpretative model can not be questioned. Explanation for the shift from cemetery to burial mound, or vice-versa, is not directly provided by the model nor is it needed, since both represent the same type of site. On one hand, cultural preference or group norms provide a partial answer to the variability in the expression of burial site types. On the other hand, migration and diffusion coupled with a local developmental scheme provide a partial answer for the stimulus of this transformation. Therefore, the major structural components, the diagnostic trait list, the interpretative model, and the inherent development scheme of the Adena mortuary culture, as well as the other mortuary cultures are completely intertwined.
In his discussion on handling and treatment of the corpse, Shetrone develops his second basic concept, the meaning of group or cultural norms in the archaeological record. The primary objective behind the enumeration of various forms of corpse treatment is to justify the importance of formalized mortuary ritual in prehistoric social groups. Consequently, the line of argument parallels the one for mound building activities, in that, the variable expressions of corpse treatment are used to identify particular mortuary cultures and substantiate the formalized nature of mortuary ritual. The discussion is complicated by the fact the entire range of variation in corpse treatment is found in mound and non-mound burial sites. Shetrone used the relative frequency of occurrence of corpse treatment types to distinguish the mortuary cultures, although this line of argument is poorly developed except for the Hopewell mortuary culture. The relative frequencies of corpse treatment types are subjectively reported as common, widespread, frequent, uncommon, or rare occurrences with no empirical definition of these labels.

Shetrone recognized four types of corpse treatment; cremation, reburial, bundle, and in flesh inhumation. In the discussions of these corpse treatment types, Shetrone provided several interpretative points concerning related mortuary activities. First, the types are defined by the context of the remains in their final place of deposition. Cremation, reburial, and bundle burial are secondary deposits requiring additional mortuary activities related to corpse handling occurring at some locality other than the final place of deposition (Shetrone 1931:87-88). Shetrone sees no distinction in the mortuary activities and the forms of the final places of deposition between cremated and uncremated remains, presumably reburials and bundle burials (Shetrone 1931:87). What links these three types of corpse treatment is the mortuary practice of removing the flesh from the bones before interment. Consequently, the trait of corpse treatment and
handling can be viewed as having two main types, in flesh inhumation and removal of the flesh prior to final interment, with variable expressions for each type.

The practice of removing the flesh prior to interment appears to be a widespread and common occurrence, based on pragmatic concerns or mortuary customs (Shetrone 1931:88). Pragmatic concerns are important factors when final disposition of the remains can not be efficiently achieved (i.e. death occurs far from the burial local, or death occurs during a period when a grave can not be prepared). Such scheduling problems suggest active behaviors on the part of the survivors in the removal of flesh and imply the customary mode of corpse treatment is inhumation in the flesh. Consequently, secondary deposits of remains should be infrequent and variable in their expressions. When mortuary custom dictates prior handling and removal of the flesh, the frequency of occurrence of secondary deposits of remains should increase and be of more uniform expression.

Shetrone notes this distinction in his analogy of prehistoric reburials and bundle burials with historic accounts of the "Feast of the Dead" among Indian groups of the Great Lakes region (Shetrone 1931:88). The distinction between reburial and bundle burial implies different cultural practices related to the handling and transport of the remains. A bundle burial consists of select portions of the remains, the cranium and long bones, arranged in a manner suggesting they were bundled for convenience in carrying. Whereas, a reburial consists of a pile of disarticulated bones. Although not well developed, Shetrone suggests the difference between these two types of secondary deposits is related to the distance of transporting the remains to the location of final deposition (Shetrone 1931:88). He notes also the high frequency of occurrence of cremated individuals in Hopewell sites, which he interprets as the customary mode of disposition of the average individual (Shetrone 1931:98). When mortuary custom dictates secondary deposit of the remains, either active or passive behaviors for flesh removal can be elucidated.
Inhumation in the flesh occurs in a variety of expressions. The different expressions are reflected in the positioning of the body. Individuals could be extended or flexed, resting on their backs, fronts, or either side. In some cases, individuals are positioned in a squatting or sitting posture. Shetrone observed the variability in positioning of the body as being conditioned by the custom of particular mortuary cultures in different areas (Shetrone 1931:91). Here again, custom was defined as the high frequency of occurrence of a particular expression of a type.

Shetrone meant for the discussion on types of corpse treatment to support his primary concept that formalized mortuary ritual played a predominate role in structuring the lives of prehistoric social groups. Little empirical data were presented to support his interpretation, partially justified by the limited nature of the known archaeological record at that time. Clearly, a variety of corpse treatment types existed and the concept that group norms or customs were defined by the high frequency of occurrence of a particular expression of a type was advanced as partial explanation for their existence. This concept was not well developed nor documented because the primary concern was to substantiate that formalized mortuary ritual existed. In order to accomplish this, Shetrone had to document the use of more energy and labor than the mere disposal of the deceased individual required. Consequently, the descriptions and interpretations of secondary deposits are quite lengthy, since such corpse treatment types require additional processing steps. The practice of transporting remains to a specific locality was apparently insufficient to document formalized mortuary ritual, since Shetrone included discussion of practical and cultural factors conditioning the removal of flesh prior to transporting remains. At this point, the concept of group norms reflected in the frequency of occurrence of particular corpse treatment types became important.

Another important concept is implied in the discussion of corpse treatment types. The word "burial" is used synonymously with the idea of the interment of a single
individual. No distinction is made for the treatment of multiple individuals at the same time, even though Shetrone was aware of the occurrence of multiple burials. Presumably, the amount of energy and labor in handling the corpse would be the same for each individual of the multiple burial and not be significantly different from the investment in handling a single corpse. However, the amount of energy and labor invested in the preparation and provisioning of the grave for a multiple burial would be different from the investment in a single interment. The exclusion from discussion of multiple burials as an alternative expression of an interment type is consistent with Shetrone's model of formal mortuary ritual. Mortuary ritual was performed on and for an individual with the appropriate form of ritual determined by custom and the individual's status in the group. The analogy between the "Feast of the Dead" and the secondary deposits in prehistoric ossuaries shows a concern for the proper handling of individual remains in a mass burial facility. Shetrone's discussion of cremation practices points out clearly his interpretation that individual corpse treatment is determined by mortuary custom.

Despite the fact that thousands of mounds and cemeteries with their tens of thousands of burials are scattered over the general mound region, it is probable that not all the aboriginal denizens of the area found their last resting place therein. Perhaps, like the Ancient Egyptians, many of them failed to pass the judgment of the dead and the ordeal of crossing the Stygian Lake, thus forfeiting the honor of mound burial. The widespread practice of cremation gives rise to the thought that burial may not have been deemed essential in all instances (Shetrone 1931:104-105).

Intertwined with the concept of the individual is the concept of status differentiation in burial practices. The previous quotation suggests certain individuals were excluded from mound burial for failing to meet certain customary requirements. Presumably, the actions of these individuals during their lives acquired them certain statuses which were evaluated at their deaths. Shetrone provides an interesting contradiction for status differentiation reflected in the practice of cremation, which can only be understood when his model is viewed in light of the inherent development scheme.
Nearly 75% of the individual remains at the Hopewell sites are cremations, the remainder being primarily extended prone inhumations. Shetrone interprets this discrepancy in the frequencies of the corpse treatment types as representing status differentiation, average individuals being cremated and important personages inhumed (Shetrone 1931:98). Status is also symbolized in the provisioning of burials with certain objects.

The inclusion of objects with burials and in mounds, referred to as sacrificial offerings, is the most important evidence for Shetrone's model of formal mortuary ritual. He concentrates the discussion on the Hopewell mortuary culture, since it represents the highest attainment of culture; however, the statements are applicable to the other, lower cultures. The concept of status differentiation is weakly developed providing a dichotomy between the grave offerings occurring with average individuals and important individuals. Average individuals, if they receive a personal offering, are accorded objects of personal adornment or utility. Whereas, important individuals are accompanied by tribal or ceremonial objects meant as offerings to the gods (Shetrone 1931:101). The importance of this interpretation lies in the distinction between personal and group objects. Offerings included with important individuals do not directly symbolize their status positions. Their status allows them the possession of objects symbolizing the group.

Through his concern for documenting formalized mortuary ritual, Shetrone discusses the importance of sacrificial offerings to the gods over personal offerings to individuals. That sacrificial offerings to the gods are group symbols may not be readily apparent. If the primary purpose of the offering is the appeasement of the gods, the appropriate form of the offering must be revealed to and accepted by the group performing the ritual. Clearly, variability in the forms or nature of the offerings can occur depending on the level of social organizational complexity. Increasing standardization of types and forms of objects would suggest more formalized mortuary custom linking smaller social groups into larger ones (Wobst 1977). This is apparently what Shetrone had
in mind when formulating his model and the diagnostic trait lists of the mortuary cultures. However, he provides little empirical data to substantiate his contentions. Hopewell offerings consist of the choicest and most cherished possessions, personal and tribal, occasionally complemented by whole or partial bird and animal remains (Shetrone 1931:101). Presumably objects of personal adornment and utility, associated with the less important individuals would be excluded. The location of these offerings, not in direct association with a particular burial, is the most definitive empirical evidence of their group symbolic nature.

Shetrone's model of formal mortuary ritual is a static explanation of the variability in mortuary remains. It becomes dynamic through the application of the ahistorical developmental scheme to the diagnostic trait lists of the mortuary cultures. Since Shetrone did most of his fieldwork on Hopewell sites, Hopewell mortuary culture traits serve as the basis for comparison and contrast. Hopewell is seen as high culture, which is a relative term since Shetrone sees Hopewell social organization at a tribal level. The complexity in mound construction, the artistic ability in sculptural arts, the use of exotic (non-local) raw materials, and the sacrificial offerings are seen as cultural attainments, "the elaborateness of which characterize a primitive stage of civilization" (Shetrone 1931:190). In contrast, the lower cultures possess a formalized mortuary ritual, which is characterized by lesser degrees of cultural attainments. Standardization in mound, burial, and artifact traits is present in the lower cultures, as evidenced by the diagnostic trait lists; hence, some degree of formalization in mortuary ritual exists.

The contrasting of Hopewell mortuary culture to lower cultures brings out several important observations and interpretations. In mound construction, the vertical use of space in Adena mortuary culture is contrasted with its horizontal use in Hopewell mortuary culture (Shetrone 1931:93-94). Burials in Adena type mounds have been observed to occur indiscriminately within mounds; while burials in Hopewell type mounds
were placed within vaults or pens of longs and stones constructed on the mound floor. These structures would later be called charnel houses. A functional explanation tied to the developmental scheme of growing formalization of mortuary ritual argues Adena type mounds grew vertically by accretion through repeated reuse; whereas, Hopewell type mounds were constructed over the structures, when their periods of use as mortuary facilities had ended (Shetrone 1931:95 and 101). Additionally, the initial preparation of the mortuary locality entailed a substantial investment of labor and energy at Hopewell burial sites, which was not evident at Adena burial sites. Vegetation was cleared from the surface, topsoil removed, a clay floor was plastered over the subsoil followed by a floor of sand or fine gravel, and the structure was erected (Shetrone 1931:191-192). In contrast, Adena mounds show little initial clearing and preparation of the locality with each subsequent reuse of the site confined to the then existing surface, also, with little preparation of the grave facility (Shetrone 1931:94).

A second observation concerns the use of fire in mortuary activities and the interpretation of its developing role of importance. The high frequency of cremated individuals at Hopewell sites has already been noted. In contrast, the absence of cremation is considered a diagnostic trait for the Adena mortuary culture (Shetrone 1931:169). Shetrone had adequate documentation for only two Adena type mounds, Adena and Westenhaver, when formulating his diagnostic trait list, both of which contained no cremations. Subsequent work has refuted the lack of cremations at Adena sites; however, this particular corpse treatment type always occurs in relatively low frequencies at such sites. Consequently, Shetrone's assertion that cremation was a widespread burial practice amongst the prehistoric mortuary cultures must be viewed as partially observation and partially interpretation. Cremations have been noted for all prehistoric mortuary cultures, but not at the high frequency of occurrence found at the Hopewell sites. In addition, sites of the lower mortuary cultures contain fewer individuals per site than Hopewell sites.
Both observations could have lead to the interpretation that cremated individuals were excluded from mound or cemetery burial.

The formalization of cremation as mortuary ritual can be postulated on the presence of crematory basins, which "are almost invariable accompaniments of Hopewell mounds (Shetrone 1931:98)." The occurrence of such features at lower mortuary culture sites has not been documented. Shetrone continues the argument by connecting the practice of cremation at Hopewell sites with the observance of a sacred fire ritual. Within the compartments dedicated as the depositories for human ashes and votive offering were located highly specialized fireplaces, built basins-shaped upon the floor from carefully puddled and troweled clay. These contained the cold remains of wood fires and showed that they had been used long and perhaps continuously, the earth beneath them being burned red to a comparatively great depth. Their location and condition suggest their use for sacred or ceremonial fires such as among some primitive peoples are kept burning perpetually (Shetrone 1931:199-200).

Shetrone interprets this portion of a Hopewell site as representing only one aspect of the formalized mortuary ritual, for which he draws a direct analogy to the sacred use of fire amongst historic tribes of southeastern United States.

That these mortuary observances were ceremonics and pretentious in the extreme is indicated by the fact that a portion of each structure seems to have been set apart as a chapel or audience room for the assembled congregation. There is also evidence that a space within the structure was used for preparing feasts in connection with the funeral rites; and it appears quite certain that something akin to the sacred perpetual fires of the Cherokee and other historic tribes of the southern region was a trait of the Hopewell peoples. In this connection it is interesting to note that the Cherokee, Natchez, and others believed that perpetual fire burned beneath some of the mounds, while the ceremony of creating or kindling "new fire" at certain intervals was practiced by numerous and widely separated historic tribes (Shetrone 1931:96-97).

The use of fire in sacred or purifying ritual extends beyond the handling and disposition of the corpse to include most aspects of mortuary ritual. In some cases, grave offerings accompanying individuals and caches not found in direct burial association and interpreted as offerings to divinities have apparently been burnt (Shetrone 1931:101). The
mortuary structures are also burnt presumably at the culmination of their functional period and prior to the construction of the earthen mound.

When the available burial space was exhausted, it might be extended by means of additions to the main structure; but usually was abandoned and another structure erected. In the case of abandonment, the prestructure was intentionally burned, in accordance with the concept of the sacred fire with its power of purification, and perhaps of its release of the spirit essence from the material bones deposited within (Shetrone 1931:101).

Shetrone's discussions concerning the sacred use of fire in the history of the site use demonstrates the development of a high degree of complexity and formality in mortuary ritual associated with the Hopewell mortuary culture. There are implications of structure and completeness in the ritual use of fire. The cremation of a deceased individual and the burning of the mortuary structure are synonymous acts symbolizing the termination of the functional life of the individual and the group, respectively. The group symbolic nature of the mortuary structure is evidenced by the collection of individuals within it, and the interpretation that some of the features served as perpetual fires. The perpetual fire within the structure is analogous to the internal warmth of the living body. Consequently, the functional period of the mortuary structure would be symbolic of the living group. The end of this period necessitates ritual reaffirming of individual and group identities to promote and perpetuate social stability and cohesion. Thus, the closing of one mortuary structure initiates the construction of a new one. Although Shetrone does not elaborate on the structure of the formalized Hopewell mortuary ritual, his discussions clearly imply a complex intertwining of the life histories of the individual and the group.

Shetrone's objective is to document and explain his recognition of patterns in the archaeological record. Since the majority of his fieldwork concentrated on Hopewell sites and available comparative data for Adena sites was limited, the bulk of his detailed descriptions and interpretations centered on Hopewell mortuary ritual. Yet, he does provide contrasting information on both mortuary cultures, which suggests a trend of
increasing formalization in mortuary ritual. This trend is evident in the discussions concerning the internal composition of mounds. In contrast to the Hopewell mortuary structures, Adena mortuary facilities are more variable and oriented to the individual. When such facilities reflect an investment of labor greater than the digging of a simple grave, they still represent the interment of one or a few individuals and are referred to as log or stone sepulchers or cists (Shetrone 1920:160 and 1931:169). In contrast to Hopewell mortuary structures within which individuals are accumulated, burials occur indiscriminately throughout the levels of Adena mounds (Shetrone 1931:93). The periodic reuse of the mounds with the initiation and termination of mortuary activity for each burial episode accentuates the importance of mortuary ritual related to the individual over the group. The initial use of the locality for mortuary activities appears to be related to the death and interment of an important individual, since the central, subsoil grave contains an individual accompanied by an inordinate amount of personal objects (Shetrone 1920:160). There is no discussion concerning mortuary ritual associated with the termination of the use of the site.

Although subsequent fieldwork has partially refuted Shetrone's interpretations of Adena mortuary culture (ie. the existence of mortuary prestructures of upright timbers), the basic premise that Adena mortuary ritual reflects a concern with the individual rather than the group remains unchallenged. The group symbolic nature of Adena mortuary sites is weakly developed, but present in the concentration of individuals at a particular locality, the occurrence of artifact caches not in direct association with burials, and the development of artistic ability in sculpturing and engraving stone, and the use of copper for ornamentation. Shetrone's interpretative model of formal mortuary ritual is linked by the developmental scheme to the transformation and intertwining of the concepts of the individual and the group, as reflected in mortuary remains. However, the processes of these changes are unexplained and apparently inherent.
Shetrone's synthesis of prehistoric mound building and his interpretations and concepts concerning mortuary ritual have served as a guide for subsequent work. The primary concept of the existence of formalized mortuary ritual has gone unchallenged. Emphasis has been placed on further and fuller documentation of the mortuary cultures. In so doing, refinements and revisions of the diagnostic trait lists and the developmental scheme have resulted from the increasing data base, which have tended to blur the distinction between Adena and Hopewell mortuary cultures. Existing traits which show continuity and development between the cultures do not change at the same rate and the introduction of new traits occur differentially across time and space. Therefore, considerable overlap and co-occurrence of traits from both cultures have restricted the identification of diagnostic traits. The advent of the radiocarbon dating technique has provided an independent test of the relative temporal ordering of cultures from the developmental scheme and also suggests overlap between the two cultures. In spite of the overlapping characteristics, the dichotomy between the cultures has been maintained.

While Shetrone's major work rested on the detailed description of Hopewell sites; Greenman's (1932) report on the excavation of Coon Mound, in Athens County, Ohio, served as a synthesis of the available data on Adena mounds complementing and partially verifying Shetrone's discussions and interpretations. Greenman's study appeared to have three research objectives: 1) delineate and describe the traits found in Adena mounds and quantify their occurrences, 2) establish the geographical extent of Adena mounds, and 3) discuss the relationship between Adena and Hopewell mortuary cultures. As a complement to Shetrone's work, the research objectives of Greenman's study show no direct concern with the interpretative model of formalized mortuary ritual. The emphasis is on documenting the empirical basis of the Adena mortuary culture and elucidating its placement in the ahistorical developmental scheme. In these endeavors, he was partially successful in providing empirical documentation of the range of variation in mound
mortuary remains. However, the results of his analysis can be best be viewed as inconclusive.

In establishing his characteristic Adena trait list, Greenman proposes to use the zoological method of identification (Greenman 1932:411). Through this biological analogy, the mound is equated with the species (Greenman 1932:418). The Adena Mound serves as the type specimen, since it was the first completely excavated and described. Clearly, the mound, in its entirety, serves as the basic unit of analysis with little concern for the context of features, burials, and artifacts. In other words, the potential information of site use history generated from stratigraphic and spatial analyses of the remains is ignored in devising the trait list. Greenman had to follow this line and level of analysis because of the incompleteness in the execution and reporting of previous fieldwork (Greenman 1932:413).

The biological analogy requires all specimens to exhibit a set of shared basic formal and functional characteristics, both internally and externally. Greenman documents a wide range of variation in the number and types of traits occurring between the mounds which negate this premise. Greenman is aware of this problem and proposes guidelines for deviating from this approach. First, all mounds must possess at least one diagnostic trait (Traits 1-12) found in the Adena Mound (Greenman 1932:418 and 483). Second, mounds containing few traits could be classified as Adena, if they contained no features of any other mortuary culture (Greenman 1932:416). Third, certain traits have a higher identification value; because, 1) they occur in high frequencies in a high percentage of mounds (ie. Trait 4-copper bracelets), and 2) they are found only in Adena mounds (ie. Trait 15-grooved stones)[Greenman 1932:416].

In essence, Greenman does not use the zoological method of classification, but follows and expands upon Shetrone's diagnostic trait list. There is no set of traits nor any one particular trait which occurs inclusively in all of the mounds classified as Adena.
Greenman (1932:423-424) establishes his list of 59 characteristic Adena traits in his Table A, which is divided into two parts. The first part, Traits 1-33, reflect those remains found in the Adena Mound; while the second part lists 26 additional traits not found in the Adena Mound, but which are mortuary remains co-occurring with some of the first 33 traits in other mounds. Traits which occur in other mounds but are limited in distribution to a single site or region are excluded from Table A, since they are interpreted as representing locally developed traits or reflecting trade (Greenman 1932:418). There are forty of these non-characteristic traits comprising his Table C (Greenman 1932:442-443). Many of these traits represent the variable expression in form or raw material type of a characteristic portable object trait. Others represent uniquely formed objects or objects lacking detailed published descriptions (Greenman 1932:478).

Clearly, Greenman is searching for patterned mortuary remains reflected in the frequencies of occurrences of traits. Such an approach rests on the assumption that a culture is represented by similar traits occurring in similar contexts. This assumption is a basic condition of the model of formalized mortuary ritual in which the formal and locational attributes of the traits become standardized. Greenman's accomplishment is the documentation of a high degree of variability in mound related mortuary remains, primarily of portable objects. The characteristic traits in his Table A have generalized descriptive labels which give the impression of uniformity in the formal attributes of these traits distributed amongst widely geographically separated mounds. In his Table B and the discussion of traits, Greenman documents the range of variable expressions of each trait. In so doing, it becomes apparent that the frequency of occurrence of a particular expression of a certain trait will be too low to be useful in grouping and classifying mounds. As such the validity of the concept of an Adena mortuary culture representing a formalized mortuary ritual system would have to be questioned. The regrouping of objects under broader descriptive categories, such as Table A, would increase the
frequencies of occurrences of the traits, promoting the interpretation of mortuary cultural unity. The variable expressions of each trait could be viewed as the perceptions of individual craftsmen and used to access the relative degree of formalization in mortuary ritual. Although Greenman does not discuss his line of reasoning nor provide criteria for his trait categories, it appears objects are grouped according to general similarities in shape, perceived function, and/or raw material.

In his discussion on the relationship between the Adena and Hopewell mortuary cultures, Greenman reduces further the number of diagnostic Adena mortuary culture traits. Of the 59 characteristic traits in his Table A, only the first twelve distinguish the Adena mortuary culture from Hopewell (Greenman 1932:493). The basis for selecting these traits rests on the frequent occurrence of a combination of these traits between the mounds and/or the frequent occurrence of a trait within a specific mound. The first twelve traits of his Table A are a reiteration of the distinctive Adena trait list originally proposed by Shetrone (1920:160).

Greenman provides a fuller description of these traits and the range of variability for some of their formal attributes. Through the descriptions of the traits and the tabulations of their frequencies of occurrences, Greenman provided the supporting empirical data missing from Shetrone's work. Greenman felt Shetrone's distinctive Adena trait list had been verified, except for the occurrence of cremations and mounds within earthen enclosures, which Shetrone considered to be absent from Adena sites (Greenman 1932:412).

However, Greenman was not as adamant as Shetrone concerning the dichotomy between the traits of the Adena and Hopewell mortuary cultures. He noted, except for Traits 5 (subfloor graves) and 7 (important central graves), the diagnostic Adena traits occur to some extent in Hopewell mounds (Greenman 1932:493). Additionally, he questioned the validity of Trait 7 suggesting this mortuary pattern may be the result of the
popular, previous excavation techniques of trenching through the center of a mound and tunneling down from the mound apex, rather than reflecting the prehistoric record (Greenman 1932:453). The classification of a site as belonging to the Adena mortuary culture rests on the numerical predominance of the distinguishing traits and the lack of certain Hopewell traits, which reflect new artifact forms having no development precedent. Consequently, Adena mortuary culture is at least partially defined as not Hopewell.

The numerical predominance, or frequency of occurrence, of a trait between mounds is the primary criterion for establishing the set of diagnostic Adena mortuary culture traits. Although Greenman states he is following the zoological method of identification, using the Adena Mound as the type specimen, the end result of his analysis indicates no set of traits from any particular mound is diagnostic of the Adena mortuary culture. The list of 33 traits from the Adena Mound served merely as a guide for tabulating frequency of trait occurrence. Only about one-third of the Adena Mound traits were considered to be diagnostic of the mortuary culture. It is the pattern of frequent co-occurrence of some combination of these twelve traits amongst geographically widespread mounds that define the Adena mortuary culture. Presumably, the co-occurrence of Adena traits on Hopewell sites does not have the same pattern of frequency amongst those sites and may be considered rare occurrences or unique to a particular site.

Greenman (1932:487) follows Shetrone's lead in identifying the major research problem as the relationship between Adena and Hopewell. Since the mortuary sites in question occur in roughly the same geographical area, the question turns to chronology or to formal differences, which Greenman calls the sociological problem. Actually, the sociological problem is a chronology problem, since the question concerns whether Adena predates or is contemporaneous with Hopewell. In the first case, a developmental process is suggested for the differences in traits between the two mortuary cultures. In the second
case, Adena is seen as a contemporaneous, specialized cult/caste existing within the Hopewell mortuary culture.

Greenman provides examples of differences within certain traits; log tombs, cremations, and copper artifacts, which can be used to support either case. Additionally, he provides examples of traits which occur in both Adena and Hopewell mounds; traits which are distinctive of the two cultures but co-occur in one mound; and traits which have no precedence in Adena. The end result is the inability to answer either question and the assertion that the relationship between Adena and Hopewell is more apparent than real (Greenman 1932:487).

The ability to distinguish Adena mortuary sites from Hopewell ones rests on the different numerical predominance of a select group of twelve traits (Greenman 1932:493). The twelve traits are basically a reiteration of Shetrone's (1920:160) distinctive Adena traits. Of the twelve traits only two, subfloor graves and important central graves, do not occur in Hopewell sites (Greenman 1932:493). Since numerical predominance of the traits is an important aspect of identifying an Adena mortuary site, it should be noted that only the first trait, a steep-sided conical mound, occurs in a relatively high frequency. The remaining eleven traits range between 20-50% in frequencies of site occurrences. In fact, the thirteenth trait, cremations, occurs as frequently as the twelfth trait, disc shell beads; yet it is not included in the set of distinctive traits. The low frequencies of site occurrences of the distinctive traits lead to two conditions being placed on using the numerical predominance of these traits for identifying Adena sites: 1) a combination of two or more traits had to be present at a site, and 2) within a particular mound the traits represented had to occur a relatively large number of times (Greenman 1932:493). Based on the second condition, cremations could be excluded from the distinctive set of traits. Clearly, Greenman's tabulation of traits documented a wide range of variability in mortuary remains exists between the Adena mounds.
Greenman comments very little on the mortuary ritual associated with the mortuary traits. He notes the occurrence of an important central grave in Adena mounds but not in Hopewell mounds. However, this trait occurs in only 35% of the Adena mounds and could be the result of earlier excavation procedures rather than an accurate reflection of prehistoric mortuary behavior (Greenman 1932:453). Also noted is the importance of individual burials rather than cremations in Adena mounds (Greenman 1932:490). Presumably, individual burial is synonymous with inhumation, although such a trait is not listed. Inhumation is apparently subsumed under Traits 2, 5, 7, and 11; log tombs, subfloor graves, important central graves, and bark prepared graves. Although cremation is not considered a distinctive Adena trait, it would appear to support the argument for the importance of individual burials. Cremations occur in 21% of the mounds but not in high frequencies in any one mound. Consequently, they could represent an alternative mode of individual interment. Since the context of the cremations is not discussed, it is not known if they occur in similar burial facilities as inhumations or if they occur in burial facilities at all.

Greenman's analysis is plagued by the lack of contextual information, primarily due to incomplete previous excavations, and to lack of detailed site reports for the majority of the mounds. This is especially important for the few mounds in which Adena and Hopewell traits co-occur, and contemporaneous or sequential occurrence could have been established. Likewise, the stratigraphic contexts of the multiple occurrences of burial and artifact traits in a particular Adena mound are poorly reported resulting in the assumption of homogeneous internal mound structure or single componentcy, and the use of the mound as the level of analysis. Under Trait 16, primary strata, different soil strata and/or different spatial positioning of burial feature types within a mound were observed in 15% of the mounds (Greenman 1932:457 and Table A). It is not clear if the remaining
85% of the mounds had no internal stratigraphy or, if such was present, it was not reported.

The discussion of traits indicates clearly formal variability exists for all mound, burial, and artifact traits (Greenman 1932:450-478 and Table B). The grouping of mounds by present day state boundaries appears to be an inappropriate organizational procedure which masks regional variability in the formal expressions of the traits. Regional variability is considered for a select number of burial and artifact traits and indicates a wider range of formal variability exists in each trait within Ohio as compared to neighboring states (Greenman 1932:Table B). This variability could be explained simply by the fact that Ohio mounds represent almost 70% of sites considered in the analysis and reflects a sampling bias. On the other hand, the more limited range of formal variability in the expressions of traits from mounds in the neighboring states could be alternatively viewed as representing regional or local expressions of the Adena mortuary culture, since the sites tend to cluster along particular tributaries of the Ohio River. The Ohio mounds are considered as a group regardless of which of the several tributary drainages upon which they are situated. Consequently, the potential of regional variation in the formal expressions of traits within the Ohio sites is overlooked.

The intent of Greenman's study was to demonstrate homogeneity in mortuary remains from sites over a broad geographical region by suppressing the formal variability in mortuary traits. This point is substantiated by the exclusion of traits which occur in a single region or mound, and are viewed as products of local development or trade (Greenman 1932:418). Such traits considered to be "generalized" Adena traits are listed separately (Table C) and noted to occur more frequently than the diagnostic Adena traits in a number of mounds (Greenman 1932:419). Given the formal variability within each trait and the variable distribution of traits between mounds over the entire region documented by Greenman's analysis, it is difficult to understand how he could have
considered Adena as representing a specialized cult/caste existing within and contemporaneous to the more regionally restricted Hopewell mortuary culture rather than vice-versa.

The subsequent synthesis of the Adena mortuary culture follows Greenman's approach, although the authors state no such attempt was made (Webb and Snow 1974:12). It is true that numerical predominance or frequencies of site occurrences of traits is no longer used in the ordering of the trait list. The stated ordering scheme is organized by grouping functionally related traits, although a review of the grouped traits appears to be along the lines of formal similarities in site, feature, and artifact types (Webb and Snow 1974:12 and 16-28). The approach is one of documenting the range of variability in mortuary traits and then reducing the variability and the traits to establish a model of the Adena mortuary culture. The implicit basic assumption behind the approach remains, similar material remains in similar contexts are indicative of similar behaviors or a culture. As such, the frequency of occurrence of a trait between mounds does become an important consideration in classifying the mounds (Webb and Snow 1974:13-14). The use of the trait list is merely to document the co-occurrence of traits within a mound and allows the researchers a means to delineate and control the spatial and social boundaries of Adena mortuary culture. Therefore, research interests can focus on formal (characterizing the mortuary ritual) and temporal (the relationship between Adena and Hopewell) questions. The use of the trait list for these research questions becomes selective as to which traits and which mounds are considered.

Since the selection of traits is not strictly based on the numerical predominance of the traits, a new theoretical perspective is introduced linking mortuary customs to social structure and organization. Burial traits are viewed as more important indicators of archaeological cultures than artifact traits and are more useful in understanding the relationship between such prehistoric mortuary cultures (Webb and Snow 1974:167). The
basis for this statement lies in several theoretical assumptions arranged in a logical argument (Webb and Snow 1974:167).

Assumption 1: Burial traits which may first arise from the sheer necessity for the disposal of the dead are developed under the guidance of the social and religious concepts of a people and after long continued usage come to have the authority of law.

Assumption 2: Death is one of the major life crises of the individual and must produce a definite social effect upon the community.

Assumption 3: The magnitude of this effect would be in proportion to the influence and importance of the deceased in the community.

Assumption 4: Community reaction to the death of the individual represents the formal expression of group solidarity.

Corollary A: The manner of expression is determined by many influences: historic precedent and tradition, social customs, economic conditions, and religious beliefs.

Corollary B: Burial practices accomplished by means of ceremonies and procedures require general public approval, as well as, specific approval of the constituted authority.

Corollary C: Burial traits and their resultant traits represent the social act of the body politic; whereas, the manufacture of a particular type of artifact represents an individual act over which the society generally exerted less control.

Based on this line of reasoning burial traits are expected to be less subject to change in form and rate than material or artifact traits (Webb and Snow 1974:168). Consequently, dissimilarity in burial traits indicates a fundamental difference between peoples even if the material or artifact traits are similar.

This statement is a reformulation of the basic assumption that similar remains in similar contexts represent a culture, only reduced to the level of mortuary remains. The importance of the statement lies in the recognition that traits undergo formal transformations at varying rates and, as such, certain traits are more reliable indicators of a prehistoric culture. What is not clear is whether or not the spatial or contextual attributes of the traits are considered to be part of the set of formal attributes. A review
of the trait list indicates contextual attributes are considered for mound and burial traits but not for artifact traits. Regardless, the statement is not used to explore the possibility of local variation/subcultures within the Adena mortuary culture, which is suggested by the expanded trait list. Instead, the trait list is basically abandoned and supplemented by a set of select burial traits including inhumations and cremations at one level, and important central burial, log tomb, and house floor at a second level. Under these traits all of the expressions of formal variability in the various feature and burial traits are subsumed. In so doing, the concept of an Adena mortuary culture, as representing a formalized mortuary ritual, and its spatial and social boundaries are legitimized. In order to accomplish this task, variability in the select mortuary traits must be interpreted as expressing the same mortuary practice, and the practice of cremation interpreted as the general method of disposing of the dead must rely on negative data (Webb and Snow 1974:170-172). The arguments are complicated and intertwined. However, it is apparent that the theoretical assumptions, the selection of particular mortuary traits, and the concept of a formalized Adena mortuary ritual are all tailored to be a rebuttal to Greenman's conclusions that Adena and Hopewell are distinct mortuary cultures for which formal and chronological relationships can not be established.

In their comparison of Adena and Hopewell burial traits, Webb and Snow (1974:198) find close similarities between the two mortuary cultures, which if they could be placed in chronological order would reveal a developmental process. Chronological ordering is based on the assumption that artistic skills in crafting the material items accompanying burials develop over time (Webb and Snow 1974:201). If sites could be consistently ordered according to their relative degree of artistic development, there would be some justification to the assumption. Hopewell sites were ordered first as a guide to determining which material traits would be appropriate for ordering the Adena sites (Webb and Snow 1974:202). The Adena sites selected for their chronological
ordering were the most productive, in that, they contained a number of artifact types and represented the co-occurrence of diagnostic Hopewell and Adena material traits (Webb and Snow 1974:218). The end result of the seriation was the distinction between Early and Late Adena, based primarily on the differences in the use of copper and pipe shape. Late Adena was seen as being possibly contemporaneous with Hopewell, which was represented by the occurrence of a variety of copper objects of adornment and platform pipes at such sites (Webb and Snow 1974:219). In contrast, Early Adena sites were represented by copper finger rings, worked bone or antler handles, and tubular pipes.

Webb and Snow's synthesis crystallized the partitioning of the Adena mortuary culture concept into three aspects; the trait list, the sociological model of mortuary ritual, and the development scheme/chronology. Each aspect of the concept had its own research objective, its own methodological assumptions and procedures, and utilized a different set of mortuary traits and sites. The trait list was employed primarily to control the spatial dimension by identifying similar sites to establish the social and spatial boundaries. The sociological model attempted to characterize the formal dimension by reducing the variability in burial traits to a select set of general traits. The developmental scheme attempted to provide a relative chronology based on a select group of material traits, or more appropriately, on a select set of attributes for the particular traits. The major problem was the inability to adequately integrate the three aspects into a consistent, coherent concept.

The sociological model reduces the variability in burial traits to a select set of traits, which apparently characterize the internal structure of all mounds. The contexts of this set traits are used to establish a link between the archaeological record and prehistoric mortuary ritual. The important interpretations of this ritual include; 1) the inclusion of select, and presumably important, individuals in the mounds, 2) a primary stratum or core of the mound representing the formalized burial ritual, 3) the re-use of
the mound for subsequent interments which apparently are less formalized, 4) the initial ritual is associated with the abandonment of a dwelling and presumably the village, 5) mound fill represents the redeposition of village debris, and 6) the remains of the majority of the individuals were processed elsewhere and may or may not have been purposefully or incidentally included in the mound.

The sociological model appears to be based primarily on the data from the Kentucky mound excavations and may be applicable to that region. Greenman's (1932:453) caution that the trait of important central graves may be the result of the earlier excavation procedures rather than a recurrent pattern of the archaeological record appears to go unheeded. In fact, Webb and Snow (1974:170) in their discussion of the construction of the burial facility in the primary stratum argue: "No Adena mound has ever been properly excavated which did not show either one or another of these traits (log tomb or burial pit)." On this argument, the interpretation of an initial burial ritual could be extended to the entire geographical extent of Adena mounds and the lack of physical supporting evidence could be ignored.

The relative chronology of sites based on a developmental scheme assumes the use of foreign or exotic raw materials and the artistic ability to produce a variety of primarily non-utilitarian artifact types from these materials are cumulative processes. It also implies changes in desires and conscious decisions to acquire such objects. Additionally, some of the Hopewell sites are assumed to have been used for an extended period of time, with no stratigraphic evidence presented to support the contention. By seriating the occurrence of traits at the Hopewell sites, Webb and Snow (1974:217) attempt to circumvent the problem of the chronological versus the sociological relationship between Adena and Hopewell, as noted by Greenman (1932:487).

Seriation of the Adena sites is restricted to those mounds which have co-occurrences of Adena and Hopewell traits. Since stratigraphic information is not
presented, one must assume the co-occurring traits were recovered from primary stratum context, or at least from a particular burial. Otherwise, the single componentcy of the mound could be questioned, which would require reformulating the models of mortuary rituals for the two mortuary cultures. In this way, a chronological relationship, resting on the development of certain traits, between Adena and Hopewell is suggested; while the possibility of contemporaneous, different aspects of a single mortuary system is rejected. However, the possibility of two contemporaneous mortuary systems is not rejected but viewed as a developmental stage between them.

Subsequent studies have concentrated on the chronological relationship between Adena and Hopewell, and the developmental scheme within Adena (Webb and Baby 1957; and Dragoo 1963). The advent of the radiocarbon technique as an independent dating method has complemented the seriation technique; although temporal overlap between the two mortuary cultures is still evident and most of the sites used by Webb and Snow in their synthesis have not been radiocarbon dated. The ability to chronologically order some of the Adena sites lead to an expanded list of traits, which appear to show a development trend in their formal expressions (Webb and Baby 1957:112-113). These traits do not represent the entire Adena trait list; but reflect an attempt to chronologically order and establish a developmental sequence for the variable expressions of the burial traits used for the model of Adena mortuary ritual proposed by Webb and Snow. At the same time, development in the artistic expression in the medium of stone rather than exotic raw materials is chronicled in order to sequence sites which contain only Adena diagnostic traits. Only five mounds figure into the chronology, none of which were considered by Webb and Snow, and little stratigraphic information is presented. Consequently, one must assume the model of Adena mortuary ritual is represented in the remains from these mounds.
The model of Adena mortuary ritual is tangentially expanded upon by an analyses of the animal remains and the engraved stone tablets associated with some burials (Webb and Baby 1957). The cut animal jaws are interpreted as mask remnants, probably the possessions of medicine men or shamans. The animal skulls and paws are interpreted as medicine bags and the personal possessions of the interred individuals. Thus, these remains are viewed as status indicators; an important personage in the first case, and a socially mature individual in the second case. The interpretations are based on ethnographic analogies to native American groups. The limited occurrence of such remains, primarily the medicine bag remnants, are explained by differential preservation and the inability of earlier excavation procedures to recover such items.

The engraved tablets are interpreted as portraying raptorial birds and serve as evidence of a "burial cult" in which some individuals were exposed to be defleshed prior to cremation or interment in a mound. This interpretation is also based on ethnographic analogy to native American groups. This concept is poorly integrated with the model of Adena mortuary ritual, primarily because of the lack of contextual information for the tablets. However, the concept serves as circumstantial evidence to support the idea that the majority of individuals of the Adena culture underwent mortuary processing prior to or instead of mound interment. Additionally, there is a suggestion that the tablets are the possessions of important personages, probably the shamans who were responsible for the ritual processing of the corpses. However, there is no evidence for the co-occurrence of engraved tablets and cut animal jaws. The only evidence is the occurrence of powdered pigments on a couple of the tablets, which is seen as representing the processing of red ochre during the ritual.

The emphasis shifts towards refining the chronological framework with the developmental scheme accommodating the model of Adena mortuary ritual, which in turn, streamlines the diagnostic mortuary traits. Dragoo's (1963) site description of Cresap
Mound and the study of the Upper Ohio River valley mounds is reminiscent of the reporting style in Greenman's study. The principal differences between the two reports is that Dragoo was dealing with a stratified site and the comparative study was initially concerned with documenting the variability in mortuary remains over a smaller region defined by a segment of the main tributary drainage system. In order to address broader research questions concerning the origin, development and structure of the mortuary ritual, Dragoo had to employ and revise the three aspects of the Adena mortuary culture.

The primary objective of the research appears to be the refinement of the relative chronology based on the stratigraphic contexts of select artifact types amongst the mounds in the Upper Ohio River valley. Dragoo (1963:194-197) rejects Webb and Snow's developmental scheme of increasing artistic ability and use of exotic raw materials as a means for establishing a relative chronology. Instead he examines formal changes in the shapes of items from certain artifact classes according to their stratigraphic occurrences. In so doing, he revises Webb and Baby's (1957) relative chronology, which is also based on the formal changes in items from many of the same artifact classes, but are chronologically ordered according to radiocarbon dates for a few select mounds. The relative chronology is used to revise the model of Adena mortuary ritual and the diagnostic trait list.

The trait list is reorganized and reduced to eight artifact classes with variable numbers of artifact types within each class, one burial class which combines burial feature types and burial treatment types, and one feature class representing house types. The reorganization is seen as a necessity because many of the existing mortuary traits are too general in nature and distribution to be useful indicators of cultural and temporal differences within Adena mortuary culture (Dragoo 1963:176). Thus it would appear the reorganization is primarily for understanding mortuary variability within Adena sites, and the reliability of the full trait list for distinguishing Adena from other mortuary cultures is
not directly questioned. The reorganized trait list places emphasis on the temporal
differences of the artifact, burial feature, and house types. The cultural differences are
reflected in the repetitive patterns of co-occurrence of certain artifact, burial feature, and
house types and represent temporally distinct sets of mortuary traits. Thus the trait list
takes on a dual purpose of identifying Adena sites and placing them in the relative
chronology.

The temporally distinct sets of mortuary traits are used to establish the
development of Adena mortuary ritual. Webb and Snow's model of Adena mortuary ritual
is not refuted but relegated to the Late Adena period and seen as representing an abrupt
change in burial practices (Dragoo 1963:211). The noted changes include less variability
in burial treatment, large, extended use burial chambers, fewer number of individuals with
accompanying grave goods, and a switch from primarily utilitarian to ornamental burial
associated artifacts. These changes are considered to represent increased social
complexity in the delineation of class and rank distinctions (Dragoo 1963:212).

Although there appears to be some continuity between Early and Late Adena
mortuary ritual, the apparent abrupt changes in burial and artifact traits/types suggests
external influences conditioning the social restructuring (Dragoo 1963:277). Webb and
Snow's gradual, in situ developmental scheme for the relationship between Adena and
Hopewell is reversed by Dragoo (1963:277) to argue for a migration of a more socially
complex Hopewell group into the region promoting social change amongst the resident
Adena local groups. Such a process of cultural change appears to involve syncretism of
mortuary ritual, since Late Adena and Hopewell are considered to be contemporaneous in
central Ohio with limited influence on Adena groups south of the Ohio River (Dragoo

The distinctly different interpretations of the relationship between the Adena and
Hopewell mortuary cultures center on the rate of change in burial and artifact traits,
which is a problem of timing. Webb and Snow had no means of independently dating their sites. However, in Webb and Baby (1957:109) a few dated mounds were cited as evidence for gradual change in burial and artifact traits between Early and Late Adena, many of which occur unchanged in Dragoo's trait list. Dragoo rejects the use of radiocarbon dates because of the inaccuracies in the practical applications of the methodology at the time (Dragoo 1963:291). Instead, he cites distinct discontinuities between the Early and Late Adena components at the stratified Cresap Mound as evidence for abrupt change (Dragoo 1963:277). Within central Ohio, Toepfner and William H. Davis Mounds are also considered to exhibit such discontinuities (Dragoo 1963:200-201). However, the discontinuities do not appear to be related to observable differences in the soil stratigraphy, but to the stratigraphic occurrences of the sets of burial and artifact traits/types. No information is presented to suggest a long or short period of time between these burial episodes. Perhaps the most important evidence for migration is the distinction in physical characteristics between Adena and Hopewell skeletal populations (Dragoo 1963:280).

The most perplexing aspect of Dragoo's study is the set of mortuary traits distinguishing Early from Late Adena. Almost all of the traits listed by Webb and Baby (1957:112-113) for the different temporal/cultural Adena subperiods are retained and expanded upon by Dragoo (1963:205-208). However, the Early Adena traits considered by Webb and Baby are based on the remains from Toepfner and Dover Mounds. Dragoo (1963:289) rejects Dover Mound as being early, and is non-committal on the temporal position of Toefner Mound; although he does acknowledge the early radiocarbon dates. Interestingly, except for William H. Davis and probably Toepfner Mounds, there are no Early Adena mounds outside of the Upper Ohio River valley (Dragoo 1963:188-204). Although the majority of mounds classified as Adena occur in Ohio and Early Adena artifacts are present in museum and private collections, the lack of stratigraphic
information from the earlier reported mound excavations with their great variability in
mortuary remains prevented determinations of the temporal components in stratigraphic
contexts (Dragoo 1963:199-200).

From the developmental model of Adena mortuary ritual, Dragoo attempts to
answer the broader research question concerning the origin of the mortuary ritual. The
concept of a developmental scheme is extended back into the Late Archaic period to argue
for an in situ origin of mound interment from the earlier mortuary cultures of the
northeastern United States rather than from Central America (Dragoo 1963:233). His
argument follows Ritchie's (1955) concept of a "basic core of religiosity" linking several
broad regional mortuary cultures under a set of shared burial and artifact traits, which is
considered to represent a burial cult with variable regional expressions. Apparently,
Dragoo's concept of the developmental scheme applies to Early Adena, since Late Adena
is viewed as an abrupt change in mortuary traits and ritual resulting from the immigration
of a more complexly organized Hopewell group to the Scioto River valley.

Both Dragoo and Webb and Snow are viewing the same phenomenon from a
gradual developmental scheme. Dragoo rejects a developmental explanation in favor of a
migration explanation for the relationship between Adena and Hopewell because of the
abrupt change, primarily in artifact traits/types. Webb and Snow acknowledge such a
change, but argue the similarities in burial traits are more important indicators of socially
prescribed mortuary activities.

Clearly, the arguments rest on which traits are selected for examination, the
perceived degree of formal change in the traits, and the rate of such change. It is the
appropriateness of the selected mortuary traits for reflecting social structure which is at
question. Justification of the selected traits comes from the theoretical assumptions
rather than testable hypotheses linking the mortuary remains to social structure.
Likewise, the relationship between changes in mortuary remains and the processes
involved in these changes is theoretically assumed to be linked to the rate of change with little discussion on how the processes will be manifested in the archaeological record. Consequently, the same general pattern of changing mortuary trait sets can be explained by different processes. The ability of the researchers to formulate these different perspectives rests on the limited data base and the selection of sites which demonstrate the positions held.

The study of the Adena mortuary culture stagnates following a symposium held in 1970, where regional variability in the formal expressions of the Adena mortuary culture were recognized to exist (Swartz 1971). Arguments against the validity of the Adena mortuary culture concept center on the diagnostic trait list, for which no set of mutually exclusive traits exists over the geographical extent of Adena sites. The majority of the traits considered were the artifact types proposed by Dragoo with burial traits reduced to cremations and inhumations. The contexts of the traits are not considered in detail. Because the trait list is brought into question, the classification of the sites becomes suspect and the model of mortuary ritual is indirectly invalidated since there is no linkage between the sites and no formalized widespread burial cult could have existed. An argument was put forward that some form of social interaction concerned with mortuary ritual occurred over the northeastern United States for an extended period of time, which could only be understood when regional chronologies and formal expressions of mortuary ritual are developed (Swartz 1971:158-159). As such, the emphasis for future research was seen as concentrating on regional data collection to overcome the limited data base.

Overview of Recent Mortuary Studies

Since the early 1970s, mortuary studies have focused on the social meaning behind the patterned distribution of mortuary remains, with the expressed goal of creating a body of theory relating the archaeological record, as it pertains to mortuary remains, to past social organization and structure. The theoretical and methodological approaches of these
studies have been summarized and evaluated by several authors (Bartel 1982; O'Shea 1984, Chapman and Randsborg 1981; and Shanks and Tilley 1987). The impetus for the initial mortuary studies was to demonstrate patterned mortuary remains could be used for more than classification and chronological ordering of prehistoric cultures, and reflected past social organization and structure (Binford 1971; Brown 1971; and Pebbles 1971). As such, these studies required a theoretical shift from the normative approach to the functional and/or structural approach; and, in so doing, accentuated concern with understanding the variability in mortuary remains rather than categorizing their similarities. Likewise, a body of theory had to be developed which linked the variability in mortuary remains to social organization and structure.

Initial studies relied on ethnographic data to establish theoretical links between mortuary behavior and social organization and structure (Binford 1971; and Saxe 1970). From these studies, regularities were noted in the mortuary treatment of individuals which reflected social status and the level of social organizational complexity in a society. Of equal importance is the establishment of the individual along with its mortuary context as the basic unit of analysis. The major problem in prehistoric mortuary studies has been devising methods to identify and measure the variables reflecting social status and level of organizational complexity in the archaeological record.

In using ethnographic data, Binford (1971) noted individuals were differentiated in mortuary ritual along several social dimensions, including age, sex, relative rank of the social position, affiliation with a segment of the broader social unit, condition of death, and the location of death. To test the relationship between the level of social complexity and the complexity of mortuary ritual as regards differential treatment of individuals, a prediction was made concerning which social dimensions should serve more commonly as bases for mortuary distinction among the groups representing the different levels of social complexity.
Age and sex were expected to be more frequently employed social dimensions for hunter-gatherer groups (low complexity), and the results of the study indicated sex was the social dimension employed by 80% of such groups. However, social position and social affiliation were employed more frequently than age as dimensions of status differentiation in mortuary remains for these same groups. In fact, age was employed as a dimensional distinction in only 13% of the hunter-gatherer groups.

In contrast, agriculturalists (high complexity) were expected to more frequently employ social position and subgroup affiliation as dimensions for status differentiation in mortuary remains. It is true that these dimensions are more frequently employed by agriculturalists than hunter-gatherers; but they are employed at relatively the same frequency as sex among the agriculture groups. Except for shifting agriculturalists, sex is the dimension employed by 70-100% of the groups within each subsistence category (level of complexity). For the shifting agriculturalists, only 50% of the groups employ sex as a social dimension of differentiation. Both types of agriculturalists employ sex, social position, and social affiliation at relatively the same frequencies; however, the actual frequencies are substantially lower for the shifting agriculturalists. Consequently, it is the greater average number of dimensional distinctions employed by the different subsistence groups which confirms the correlation between structural complexity of mortuary systems and status systems. On average, settled agricultural groups employ at least 3 dimensional distinctions; while the other subsistence groups employ at least one, and apparently usually two, dimensions. Since the combinations of co-occurring social dimensions are not tabulated, it is difficult to determine the frequencies of co-occurrence of particular dimensions. The high frequency of occurrence of sex for hunters-gatherers and pastoralists suggests the consistent use of this dimension for such groups; while the low frequencies of occurrences of the other dimensions suggest variability in their use and possibly in their co-occurrence with the dimensional distinction of sex. The high,
relatively equal frequencies of occurrences of sex, social position, and social affiliation amongst settled agriculturalists suggest a more consistent use of co-occurring dimensional distinctions. Although the growing importance of the age dimension for this subsistence group cannot be overlooked, which introduces a relative degree of variability in the co-occurrence of the dimensional distinctions. For the shifting agriculturalists, the relatively equal frequencies of occurrences of sex, social position, and social affiliation are low suggesting a greater degree of variability in the combined occurrence of any two dimensional distinctions.

It is the degree of variability in the co-occurrence of dimensional distinctions and the nature of the variability within each dimension for the different subsistence groups which pose the most intriguing questions concerning the relationship between mortuary ritual complexity and social complexity. However, the ethnographic data were insufficient to address these concerns (Binford 1971:18). Instead, variability in the forms of expressions used to symbolize the different social dimensions were tabulated across all groups for the variables of preparation of the body, preparation of the burial facility, and the inclusion of grave goods. It is clear that differences in the form of the expressions for these variables exist within the social dimensions, but the nature of the variability was not known. The different forms of expressions of the variables were tabulated by the social dimensions with all the groups pooled. Consequently, it is not known which of the different forms of expressions existed amongst which of the subsistence groups (levels of complexity) or if similar formal differentiation crosscut the groups. Likewise, there are numerically more different forms of expressions of variables for social position and social affiliation than groups employing these dimensional distinctions, suggesting more than one of the variables has different forms of expressions for some of the groups, but which subsistence groups (level of complexity) is unknown. Although 29 groups employ sex as a dimensional differentiation in mortuary remains, only 19 occurrences of different forms of
expressions for this social dimension are tabulated suggesting no distinctions along these three variables for some of these groups. It could be argued that sex is a self-evident dimension; but this argument could be extended to age, social position, and social affiliation; especially for smaller sized groups were interaction between the members of the group occur on a regular basis. Consequently, some of the groups employing the other social dimensions may not express formal differentiation along the three variables and may not be represented in the tabulation. Therefore, the meaning of the different forms of expressions of the variables as they relate to levels of social complexity is not clear.

Although the intent of the study was to test propositions concerning the positive relationship between social and mortuary ritual complexity, the final generalization states the number and type of social dimensions and the variability in their formal expressions vary significantly with social organizational complexity (Binford 1971:23). There is no mention of a positive, or for that matter a negative, relationship, only that the form and complexity of the social organization condition the form and structure of the mortuary practices. Since the crux of the argument revolves around a positive relationship, most subsequent researchers in mortuary studies apparently believe such a relationship is implied in the generalizing statement and have so used it.

For archaeologists, the different forms of expression of the variables for the social dimensions provide an opportunity to organize and evaluate the relationship between mortuary remains and levels of social complexity. The frequent expression of status differentiation through grave goods and grave locations noted by Binford (1970:22) provided an impetus for the study of ranked societies in the prehistoric record (Brown 1971; Pebbles 1971; and Pebbles and Kus 1977). Although the analytical techniques differ between the studies, the objective is the same, to search for patterns of status differentiation through the different frequencies of occurrences of the variables for particular mortuary traits along the social dimensions of age, sex, and social position.
Brown's formal analysis of Spiro Mound characterizes the structure of the mortuary remains from a particular site and provides a body of comparable data. By his own admission (Brown 1971:110), the study is limited by the lack of definition of the mortuary domain boundary and the appropriate set of variables. The means appropriate to overcome the limitations is considered to be the inclusion of the locational dimension. As such, the analysis provides a model of mortuary structural complexity, but does not test behavioral correlates linking mortuary remains to social structure and organization.

Pebbles (1971) study attempts to define the correlates between mortuary remains and symbols of status in order to identify ranking of individuals. The locational dimension is included in the analysis; but the domain boundary is assumed based on the normative model of a mortuary culture (archaeological phase) containing formal similarities in burial attributes between sites of a region. The correlates are the differential distribution of types of grave goods and the differential location and orientation of graves according to the age and sex of the individuals. As such, the study provides a model of differential distribution of mortuary remains according to mortuary site types.

Continued study of the sites, indicated a pyramidal, hierarchical ordering of burial types, which is interpreted as representing a ranked society (Pebbles and Kus 1977). Other lines of archaeological evidence were included to suggest ranking of status differentiations in mortuary remains and related mortuary ritual were related to the social structural complexity necessary to effectively process information concerning regional environmental factors. The study provides a model for identifying ranked societies archaeologically, and serves to represent an established ranked society with inferences concerning the functioning of the ranked social positions for the processing of information.

Another early mortuary study attempts to develop means by which to measure the degree of structural complexity and the degree of organization in the archaeological
record (Tainter 1977). The approach is based on the application of information theory and requires a means of measuring status differentiation or vertical ranks of social positions. Relative levels of energy expenditure in the construction and provisioning of mortuary facilities are viewed as representing different status positions. The major problem is determining the relative levels of energy expenditure, since the various mortuary facilities are constructed in different forms with different materials. In addition, not all feature types are present at each site, clearly indicating variability between sites; although they are temporally contemporaneous. Consequently, a particular feature type has different relative levels of energy expenditure at different sites (Tainter 1977:Table 2). Thus, it would appear the number of structural components or ranked positions at a site is related to the number of different mortuary feature types occurring at the site rather than the levels of energy expenditure in the various feature types.

An outgrowth of these studies has been the realization of the limitations in these approaches imposed by the nature of the archaeological record. The primary concern is how the observed patterns in the archaeological record came into existence, which entails understanding the site formation processes (Schiffer 1976). Depositional and postdepositional processes affect the patterning of archaeological remains and may be of either cultural or natural origin. Consequently, determining those patterns which reflect past behavior is the most important initial objective of analysis, requiring accurate contextual information. O'Shea (1984) provides a model for understanding the formation processes operating on mortuary sites, and outlines a theoretical framework for identifying and describing the behavioral constraints and their expressions on the variability of mortuary remains. The framework is a means of organizing and describing the observed mortuary variability but does not provide an explanation for its occurrence. The explanation comes from the testing of hypotheses concerning behavioral correlates and models of social features as archaeological phenomena (O'Shea 1984:44)
Another outgrowth of the initial mortuary studies is a concern with the analysis of the spatial organization of mortuary sites. Goldstein's (1980) study of two Mississippian period cemeteries in the lower Illinois River valley was designed to test one of Saxe's (1970) behavioral correlate hypotheses:

To the degree that rights of corporate groups to use and/or control crucial but restricted resources are attained and/or legitimized through lineal descent from the dead, such groups will by ritualization regularly reaffirm the lineal corporate groups. One means of ritualization is the maintenance of a permanent, specialized, bounded area for the exclusive disposal of their dead (Goldstein 1980:8).

A corollary to this hypothesis is the more structured and formal the disposal area, the fewer the alternative explanations, and conversely. The use of spatial analysis to mortuary remains provides information on the ordering and partitioning of mortuary space which may reveal social organizational principles beyond status differentiation and level of complexity. Clearly, the hypothesis makes no statement as to status differentiation or level of social complexity; but it may be implied in the corollary. Spatial analysis has the added potential to address the symbolic or ritual use of mortuary space within the site and within the settlement system (Chapman and Randsborg 1981:15).

A third outgrowth of the initial studies of mortuary variability was an increase and diversification in the analysis of human skeletal remains (Blakely 1977; Buikstra 1979; and Hassan 1981). Age, sex, and stature of individuals had been important variables in earlier mortuary studies and continued into the recent studies concerned with status differentiation. Determination of physical types at the population level, for differentiating prehistoric groups or cultures, has been replaced by biological distance studies using epigenetic traits. Recent human skeletal studies go beyond age and sex determinations to the studies of paleodemographics and paleopathologies. These studies are not limited to establishing behavioral correlates between mortuary practices and social organization but can demonstrate population sizes and compositions, and nutritional and disease stresses.
on populations. Such information can be incorporated in status differentiation and level of social complexity studies to provide, what has become known as, a biocultural approach to the understanding of prehistoric groups. However, such studies must be concerned with mortuary behavior as it affects the differential disposition of segments of a skeletal population. In addition, paleodemography and paleopathology have their own assumptions and inferences concerning the appropriate use of the archaeological record.

In general, the various approaches to the study of mortuary variability employ statistical techniques for testing hypotheses relating mortuary remains to social structure and organization. Thus, they require large skeletal populations with discrete contexts of individuals and associated items, which are contemporaneous and culturally related. Consequently, it is not surprising that most of the studies in the midwest United States have concentrated on Middle and Late Woodland period sites, since the archaeological record and the early normative models of mortuary cultures suggest these sites represent relatively large and complex social systems. Most of the mortuary studies are site specific or limited to a few sites from a small region, where the regional chronologies have been established. In this way, the boundaries of the mortuary domains are set providing a close system for analysis. Such a procedure is valid for the level of analysis of these studies, where the objective is to characterize the structure of mortuary remains and ritual within a circumscribed area. At a regional level, the use of a temporal period is valid to establish the range of variability in mortuary remains for contemporaneous sites or portions of sites over the specified area. However, it does not necessarily establish the social boundary of the mortuary system or systems. Apparently, boundary definitions must rely on the assumption of similar remains in similar contexts reflect the same social group. This assumption is evident in the comparative mortuary studies of sites from widely different regions which employ the concepts of Adena and Hopewell mortuary cultures.
Recent mortuary studies in the Illinois River valley have made use of the results of various previously discussed approaches to understand the relationship between mortuary remains and socioeconomic structure. The same approaches were not followed because of the lack of available data for Archaic and Early Woodland period mortuary sites (Charles and Buikstra 1983:118; and Charles et al. 1986:458). In addition, the limitations of the prior studies to adequately define the variables correlating mortuary remains to status and level of complexity were noted. A more general approach was employed, in which some of the relationships between mortuary remains and social structure were assumed to be valid, and the research goal was to characterize the mortuary program of a particular temporal period as it related to resource availability (Charles and Buikstra 1983), followed by a diachronic study demonstrating changes in mortuary behavior over time in relationship to changing resource availability (Charles et al. 1986).

These studies require regional chronologies, since the temporal dimension is being controlled; while pattern searching is conducted over the spatial and formal dimensions. The spatial dimension is partially controlled by restricting the studies to specific tributary drainages. Regional chronologies are available based on a combination of absolute and relative dates, within and between sites. However, not all temporal periods are equally represented. The formal dimension plays a part in the relative dating of sites and burial features within sites, based on the assumption that similar remains in similar contexts represent similar cultures. However, mortuary culture labels have been replaced by temporal period/phase labels, based on the stratigraphic information and absolute dates from some of the mounds which indicate they were used continuously but periodically for extended periods of time. As such, social boundaries of "mortuary cultures" or similar patterns of mortuary remains are established over blocks of time rather than geographical extent.
These studies follow Goldstein's (1980) test of the hypothesis that the occurrence of formal cemetery areas is one means by which a group may symbolize their corporate lineal inheritance right over crucial and restricted resources. The attempt of the studies is to expand upon the relationship between cemeteries and lineal corporate groups through the examination of four postulates derived from the hypothesis:

1. Utilization of formal cemetery areas will correlate with sedentary subsistence strategies employed by the group(s) using the cemetery.

2. The degree of spatial structuring present in the mortuary domain will correlate with the degree of competition among groups for crucial resources.

3. Within the larger society, corporate groups will be distinguished by inclusion in separate cemeteries or in spatially distinct areas within a single cemetery.

4. Inclusion of individuals in the cemetery implies inclusion of those individuals in the corporate group (Charles and Buikstra 1983:119).

Theoretically, proponents of this approach have noted consistently that the maintenance of a permanent, bounded area for the exclusive disposal of the dead is but one means by which a corporate group symbolizes its identity and rights over the control and use of the resources in its territory. The converse statement that the existence of a permanent, bounded area for the exclusive disposal of the dead symbolizes corporate lineal groups and their territorial rights may or may not be valid. However, the statement must be assumed valid, for the application of the approach to prehistoric remains, until such time as non-mortuary archaeological evidence can substantiate or negate the hypothesis. Consequently, the question becomes can formal cemeteries, representing group behavior, come into existence for reasons other than the pressure of territorialism, or more appropriately sedentism.

Thus it becomes apparent that this approach represents a functional interpretation for the origin of mortuary ritual and is a rebuttal to the ideational approach of the earlier researchers. Yet, in its application the approach is similar to the normative approach,
although the terminology is different. Clearly, the permanent, bounded area for the exclusive disposal of the dead is synonymous with the site. By definition the corporate group is a biologically related burial population with cultural relatedness based on a similar set of mortuary traits in similar temporal and spatial contexts, and forms the basic unit of analysis. Consequently, the presence of more than one corporate group at a particular site is possible, and at one level of analysis the corporate group is synonymous with the mortuary culture. Contemporaneity between corporate groups is established by absolute dates, stratigraphic contexts, and diagnostic artifact types. The larger society composed of relatively contemporaneous corporate groups with shared patterns in the formal expressions of mortuary traits across sites or co-existing at site is synonymous with the mortuary culture at a regional level. However, the region does not have the geographical extent as the previously developed concepts of prehistoric mortuary cultures.

Since a number of sites are multicomponent, indicating long term use of the localities for mortuary activities, there is some evidence for local development or change in mortuary activities. The changes in the patterning of mortuary remains by definition reflect changes in the social structure related to changes in resource availability over space and/or time (Charles et al. 1986). The impetus for the changes is not known, but the apparent increase in mortuary ritual complexity developing during the Early Woodland period and reaching fruition in the Middle Woodland period is not considered to be a response to local population density increase (Charles et al. 1986:468). Regional population increase is seen as factor for the widespread occurrence of Middle Archaic mortuary sites in the main and secondary river valleys. However, local population densities appear to be relatively constant and not a factor in the development of regional variability in the patterns of mortuary remains (Charles and Buikstra 1983). The mortuary ritual complexity appears to be relatively low across space during this period, with the primary purpose being the symbolizing of the fixing of territorial boundaries.
From these preliminary studies, there are theoretical implications concerning the nature of mortuary remains which contradict the theoretical assumptions and methods used by Webb and Snow in formulating the concept of the Adena mortuary culture. The first implication is based on the contemporaneous occurrences of different burial traits over restricted spaces, which in the Illinois study are different segments of the tributary drainages. On the surface, this observation does not appear to differ appreciably from Webb and Snow's position that dissimilarities in burial traits reflect fundamental dissimilarities in peoples or mortuary cultures. However, the differences are in select burial traits, of an otherwise homogeneous set of mortuary traits which contemporaneously occur over adjacent valley segments. Thus, one is looking at regional variation within what Webb and Snow would consider a single mortuary culture. The model of Adena mortuary ritual can only accommodate regional differences in mortuary traits as variations on a common theme. For the Illinois studies the regional variations in the burial traits are seen as being related to the differential distribution of resources and the subsistence strategies needed to effectively exploit them; although the possibility of cultural variability across space can not be totally eliminated (Charles and Buikstra 1983:132).

The second implication is the variable rate at which burial and artifact traits change. Webb and Snow (1974:167) present a logical argument for the slow and gradual change of burial traits in comparison to the more rapid change in artifact types. From this argument they attempt to demonstrate similarity and slow transition between Adena and Hopewell mortuary cultures; while at the same time providing a relative chronology of the developmental stages. From the Illinois studies, there appears to be stability in the formal dimension of the mortuary remains within the particular periods. However, there appears to be abrupt changes in mortuary traits between the temporal periods, suggesting long periods of cultural stability with minor variations in the formal expressions of the
mortuary traits followed by short term transformations in the patterning of the sets of mortuary traits.

The apparent variable rates of change in the sets of mortuary traits may be due to organizing the data according to blocks of time and/or small sample size bias. Since the intent of the diachronic study of the mortuary remains in the Lower Illinois River valley was to examine general trends in the demographic changes of the region in relationship to the changes in socioeconomic organization as reflected in the pattern of mortuary remains, the use of general models of mortuary ritual for the different temporal periods is an appropriate means to highlight such basic differences over time. Consequently, the approach of this study does not differ from the approach used to formulate the concept of the Adena mortuary culture, except for the dimensions being controlled. In the Adena studies, the spatial dimension is controlled by grouping geographically dispersed sites on the basis of a general, shared set of mortuary traits with changes or variations in the sets of defining traits and sites examined over time. In the Illinois study, the temporal dimension is controlled by grouping relatively contemporaneous sites on the basis of a general, shared set of mortuary traits augmented by some radiocarbon dates with changes or variations in the sets of defining traits and sites examined over a regional space.

Both studies employ the normative approach but from different theoretical perspectives with the end result being a description or characterization of the different mortuary programs or cultures. In both studies, the answer to the question of the origin of mortuary ritual is assumed under the theoretical perspective. An inability to explain the differences or changes in the sets of mortuary traits and their patterns occurs in both studies, which is partially attributed to the lack of empirical data. However, it would appear that it is the inability to determine the meaning of the formal variability in the expressions of the various mortuary traits without reference to the theoretical
assumptions, which promotes the selection of certain traits for pattern searching and conditions the interpretation of these traits.

The theoretical assumptions emphasize the formal similarities in mortuary traits within groups of sites and dissimilarities between groups of sites over time and/or space. In addition, the studies use the mound/formal cemetery as the basic unit of analysis, which assumes the individuals are either culturally or temporally related, or both, and reduces the examination of internal site variability in the patterning of mortuary remains. However, both theoretical perspectives indicate the relationship between mortuary ritual and social structure must be understood at the level of the individual. Consequently, it is the variability in space, time and form of individual interments which is important for understanding the complexity of mortuary ritual and its relationship to social structure. Thus, importance is placed on the understanding of the site formation processes.

Recent studies of Adena mortuary sites have attempted to go beyond the earlier normative models through the study of mortuary space. The objective has been to relate the patterned mortuary remains to site function and, as such, has attempted to address the limitations noted for the concept of the Adena mortuary culture. The foci of these studies have been the mound fill, the sub or premound structures, and the earthen circles and ovals. In so doing, the boundaries of the social domain have been assumed to be those established by the normative model of Adena. Since the majority of the sites employed for the studies are the better excavated and documented Kentucky sites used by Webb and Snow (1974) for their synthesis and redefinition of the Adena mortuary culture, the assumption of site contemporaneity seems justifiable. However, the selection of a few sites, regionally dispersed, faces the same limitations as the normative models and can only be justified on the grounds of lack of available data for other sites. The replacement of one normative model by another is a distinct possibility; but an argument could be made that the studies represent the analysis of certain aspects of the mortuary program,
not its totality. As such, the sites could represent one level of mortuary ritual which links regional groups; while the other sites, not considered in the studies, represent local aspects of the mortuary system.

The functional approach using visual spatial and stratigraphic analysis provides a means of understanding site formation processes and inferring the social behavior responsible for the creation of the archaeological record. The approach is similar to those employed by earlier researchers in the development of the sociological model of Adena mortuary ritual. Yet, it differs by stressing the contexts of the mortuary remains and does not necessarily subsume variability of mortuary remains under trait categories. It does have an historical perspective, in that, interpretations are inferred from the patterned remains requiring logical arguments to substantiate their validity. Consequently, behavioral correlates for the observed regularities in mortuary remains have not been proposed for testing. Given the current understanding of mortuary remains from the central Ohio River valley conditioned by the normative models of mortuary culture, and the lack of adequate site data; this approach appears to be the most profitable, at this time, for documenting the range of variability in patterned mortuary remains within and between sites.

The consistent research question addressed in the recent Adena mortuary studies has been to determine if certain remains represent domestic or mortuary ritual refuse and site use, as originally proposed by Webb and Snow (1974). The remains occur in a variety of forms and contexts, including pottery sherds from mound fill (Clay 1983), submound postmold patterns (Clay 1986; and Seeman 1986), and artifact assemblages and feature types from earthen circles and ovals (Clay 1987). The invariable conclusion of these studies is that mortuary space was separated from habitation space and represents some degree of mortuary ritual. In the sense that the mortuary remains are not placed on top of and/or incorporated with domestic refuse and features, the interpretation is valid. In
the sense that mortuary sites are physically separated from habitation loci, the empirical evidence is lacking except for some of the Kentucky mounds (Clay 1986:589).

The dichotomy in the interpretations of site use is the most intriguing aspect of these studies. Submound structures in Ohio are viewed as circumscribed areas for mortuary processes (Seeman 1986). While similar structures in Kentucky mounds are viewed as premortuary ritual space used for monitoring the movement of the sun with subsequent interments not directly related to the use of the structure (Clay 1986). Clearly, the conflicting interpretations point out variability in mortuary remains from the central Ohio River valley. They do not have to be competing interpretations, but rather reflect regional variations in mortuary ritual. Not until a fuller range of variability in mortuary remains is documented on smaller regional scales within the central Ohio River valley can a model of a formalized ritual socially linking the local groups be postulated.

At present, it is assumed that the mounds reflect small groups occupying small territories, based on the disperse nature of mound sites. However, there is no body of data adequately documenting the mortuary variability within nor between these smaller regions. Likewise, the level of social organizational complexity is assumed to be less than subsequent prehistoric periods, because of the numerous, dispersed, and small circumscribed mortuary spaces. Such assumptions are clearly an outgrowth of the normative model couched in the terms of the recent studies.

**Approach of the Present Study**

The review of the early and recent mortuary studies indicates a normative and a behavioralist approaches exist for organizing and understanding mortuary data, each having its own theoretical assumptions and limitations. As yet, no clear consensus as to the meaning of patterned mortuary remains has been forthcoming. This is not unfortunate, since it merely reflects a wide range of factors influencing mortuary ritual with the importance of any one subject to change with changing social and natural
conditions. Mortuary remains and associated rituals have been consistently viewed as representing or reflecting some aspect of the living society rather than determining it. As such, there may not be a universal meaning to mortuary ritual.

The present study borrows methodologies from both approaches, primarily the traits used for organizing the data, which in turn requires the borrowing of the basic assumptions. The intent of this study is to examine the use of mortuary space in the mounds from the middle Big Darby Creek drainage through an inductive search for patterns in the variability of mortuary remains. This approach is similar to the previous Adena studies, but differs in that it takes into account the context of the mortuary traits.

Although the five mounds have been classified as representing Adena cultural/temporal period mounds, this study does not assume they are necessarily related. The classification of the mounds was based primarily on the occurrences of diagnostic artifact types in them. Since the range of variability in the mortuary remains in general from these mounds is unknown, the traits selected for organizing the data were borrowed from both the normative and behavioralist approaches with no assumptions as to the importance of any particular trait. The traits were used to organize the descriptions of the formal variability in the mortuary remains. The importance of any particular traits was to be determined by their recurrent patterns of association in mortuary space.

The methods used to document the variability in mortuary remains and examine their contexts are interrelated. The mortuary traits are described and compared at various levels of analysis including the mound, feature, burial and artifact. The contexts of the mortuary traits are examined through stratigraphic analysis, including both the vertical and horizontal dimensions, at the different levels of analysis. Through these methods the internal structures of the mounds are documented and allow for interpretations of their formation processes.
Formal variability in feature, burial, and artifact types is controlled by shared sets of attributes. In many cases, the feature and artifact types are similar to those previously defined as distinctive and/or generalized Adena traits. However, the descriptions of features and items within and between the types emphasizes the variability in their attribute expressions. The concern is with documenting size and shape attributes for the features and artifacts, which can be loosely termed stylistic attributes. Functional attributes are not considered in detail for each item unless evidence exists to confirm or contradict functional interpretations of previously defined traits/types. Burial attributes consist of basic physical characteristics of interred individuals, such as age, sex, pathologies, mode of interment, and burial orientation.

The stratigraphic analysis of the mounds documents the vertical and horizontal spatial relationships between the mortuary remains contained within them at all four levels of analysis. The search for patterns in the use of mortuary space begins with items and builds through higher levels of analysis. The search is conducted visually by examining plan and profile maps and photographs. In the absence of these documents schematic maps are constructed from the fieldnotes. Identification of a pattern rests on the close spatial relationship of items. In some cases, the relationships are quite evident, such as a row of articulated extended inhumations. In other cases, relationships are not as clear, such as artifacts occurring between two individuals. Yet, in the latter case a pattern of mortuary remains does exist, but the context limits interpretation at a particular level of analysis. Through this method recurrent patterns in the use of mortuary space can be documented at the various levels and the internal structure of the mound can be established.

The methods provide an understanding of the temporal, spatial, and formal dimensions of mortuary remains within a mound but not necessarily between mounds. It is the recurrent patterns in the use of mortuary space which link mounds or parts of
mounds. This argument rests clearly on the assumption that similarities in material remains in similar contexts reflect similar behavior. It differs from the previous use of the assumption in Adena studies by requiring the context of the remains be considered at more levels of analysis than the mound. In essence, it is the similarities in the organization and use of mortuary space which are being used to establish relatedness in mortuary behavior. In this way, a more dynamic understanding of mortuary ritual and the variability in its formal and spatial expressions can be provided, since mounds and portions of mounds can be compared.

The temporal dimension can not be controlled with this method, except at a particular mound where vertical stratigraphy differentiating the use of mortuary space exists. The degree of similarity in the organization and use of mortuary space indicates cultural relatedness in mortuary ritual between mounds or portions of mounds, but does not indicate contemporaneity. Contemporaneity must be established by and independent dating method. This argument applies also to recurrent but different patterns in the organization and use of mortuary space within and between mounds. In some cases, the orderly or planned arrangement of the layout of mortuary space at a high level of analysis, such as the mound, may indicate the different patterns of mortuary space at a lower level, such as the feature, can be considered contemporaneous. In other cases where orderly arrangement is not apparent, the co-occurrence of different patterns of mortuary space on the same level of analysis can not be considered to be culturally or temporally related nor indicative of multiple ritual behavior. It is the lack of temporal control which limits the results of this study.

The foregoing discussion demonstrates the importance of the Adena concept in guiding the methodology of this study. However, at the same time, the results of this study have the potential for undermining the normative model of Adena mortuary ritual and the developmental scheme. The influence of the behavioralist approach enters the
study in the attempt to understand the recurrent patterns in the use of mortuary space.

The intent is to go beyond the classification of variability in mortuary space to answering how and why it is ordered. These questions can not be addressed with a normative model of mortuary ritual, which reduces the variability in mortuary remains. Consequently, it is the traits used in the behavioralist approach which provide lines of inquiry into the patterning of mortuary space. The end result of this analysis is not clear because the intent is to characterize the organizational nature of the patterns in the use of mortuary space, which reflect mortuary behavior. Implications of social organization may be generated, but establishing the links between social and mortuary organization may not be possible.

If recurrent patterns of mortuary remains reflect mortuary structure, then explaining the existence of mortuary structure requires relating the mortuary patterns to the living society. Following the behavioralist approach, mortuary variability can be related to social structure, where customs or beliefs require the symbolizing of individual or group social status or position in a particular manner, which is reflected through the frequencies of occurrences of particular traits and/or combinations of traits. In other cases the patterns in the mortuary remains appear to reflect socioeconomic conditions, the fixing of resource extraction territories by local social groups. The differences in these relationships reflect differences in levels of analysis in which the mortuary remains are examined. Consequently, one may question whether or not other aspects of the living society are conditioning the mortuary structure. At the same time, one could question if the boundaries of the mortuary domain are isomorphic with the boundaries of a particular social group.

It would appear mortuary ritual reflects the fluidity of information flow across social boundaries, whether the boundaries be internal or external to the social groups involved. The structure in mortuary remains reflects the structure of social interactions
internally and externally. The degree of similarity in the patterns of associated mortuary remains within and between mounds should reflect the degree of social interactions between groups using these sites. Consequently, a number of social and natural factors could affect the lines of communication, thus making the establishment and maintenance of social boundaries a dynamic process. In this way, the ideational and functional aspects of mortuary remains are intertwined and represent group decision making.

In order to understand prehistoric mortuary systems as they relate to social systems delineation of social boundaries over time and space, as well as the factors affecting their maintenance is necessary. Social boundaries are dynamic, and arbitrarily fixing the spatial and/or temporal dimensions is an inappropriate procedure, except to establish study controls. It is the pattern of associated mortuary remains in similar contexts which reflect similar mortuary activities and in affect represent socially interacting groups.

This line of argument is similar to the reasoning behind the traditional formation of the prehistoric mortuary culture concept. Yet, in its application it emphasizes understanding variability in mortuary traits in context rather than reducing variability to general, static models of mortuary ritual over time and space. The approach has a diachronic perspective requiring understanding of site formation processes for reflecting similarities in mortuary activities. Mortuary remains can change in time, space and form simultaneously and the rate of change along these dimensions must be documented to provide insights as to the possible factors promoting fluctuations in the patterns of mortuary trait associations, which in turn reflect changing social boundaries. Consequently, this study is limited since it provides an understanding of local mortuary variability but can not adequately delineate the spatial boundaries of the mortuary system. It does establish a body of comparable data for future regional studies.
CHAPTER III
REGION AND MOUND SETTINGS

The focus of this study is five partially or completely excavated mounds occurring within 6 km north and south of the confluence of Big and Little Darby Creeks in central Ohio (Figure 1). This region is roughly bounded on the south by the city of Harrisburg in the southwestern corner of Franklin County and extends northward or upstream to the city of West Jefferson in east central Madison County. A portion of Big Darby Creek above the confluence serves as the political boundary between the two counties. The confluence of Big and Little Darby Creeks occurs at the city of Georgesville in southwestern Franklin County and is approximately 10 km southwest of the western outskirts of the city of Columbus.

The five excavated mounds include McMurray Mound I (33 Fr 61-1) [Plate I] and Galbreath Mound (33 Fr 58) [Plate II] along Big Darby Creek, and Sidner Mounds I and II (33 Fr 69-I and II) [Plates III and IV] and Hambleton Mound (33 Ma 4) [Plate V] along Little Darby Creek. All of these mounds are considered to be from the Early Woodland/Adena, temporal/cultural period based on diagnostic burial feature and artifact types (Baby and Potter 1963 and Potter 1967). These are not the only known burial mounds situated within the study region; however, they represent the most completely documented, professionally excavated burial mounds for this particular temporal/cultural period within the region. Ten additional mounds have been recorded, one of which, Voss Mound (33 Fr 52), is attributed to the Late Woodland Period and clearly represents a mortuary practice different from that represented in the Early Woodland/Adena mounds.
Figure 1. Topographic map of the middle Big Darby Creek drainage showing reported mound locations.
Plate I. General overview of McMurray Mound I.
Plate II. General overview of Galbreath Mound.
Plate III. General overview of Sidner Mound I.
Plate IV. General overview of Sidner Mound II.
Plate V. General overview of Hambleton Mound.
One recently discovered mound (33 Fr 307) is attributed to the general Woodland Period; its size, shape and location suggest it is another Early Woodland mound (Dancey et al. 1986). Two conjoined mounds (33 Fr 61-II and III) accompanied McMurray Mound I and were partially excavated and incompletely described; but both are attributed to the Early Woodland/Adena Period based on recovered diagnostic artifacts (Baby and Zierhut 1966).

The remaining six mounds are also attributed to the Early Woodland/Adena Period based on external mound characteristics, location, and artifacts in private collections. Although these mounds have been dug into by collectors or landowners, the excavations have been of limited extent and the mounds are fairly intact. An unnamed and unnumbered mound occurs along Gay Run, a tributary of Big Darby Creek, located approximately 2 km north of Harrisburg, and represents the furthest south documented mound within the study region. Approximately 1.2 km south of the confluence of Big and Little Darby Creeks, Montoney Mound (33 Fr 60) is situated on the eastern bluff edge of Big Darby Creek and on the south side of an unnamed intermittent tributary. Cannon Mound (33 Fr 59) is situated on the northern bluff edge overlooking the confluence. The remaining three mounds comprise the Skunk Hill Mound Group (33 Ma 5-I through III), and are situated on the southeastern outskirts of West Jefferson. This National Register site occurs on a high hill within the Little Darby Creek floodplain, which appears to represent a remnant of a glacial outwash terrace. The Skunk Hill Mound Group is the most northern site within the study region.

In addition to the documented mounds, eight mounds and a circular earthen enclosure have been reported along Big Darby Creek within the study region, but have not been field verified by professional survey (Mills 1914:25). These sites represent early mound accounts from the beginning of the twentieth century made by landowners or interested individuals and contain little, if any, descriptive information justifying the determination of a mound being present and its precise location. The problem with
relying on the inexact information of these early accounts is exemplified by the confusion over the location of the H.C. Adler Works (33 Fr 11). As originally reported, the site was situated on the Adler's property and consisted of two circular earthworks enclosing one half of an acre on a high bank of Big Darby Creek (Wetmore 1888:357). The earthworks were composed of gravel, and human bones were found, presumably within the enclosures, along with numerous groundstone tools and projectile points. The circular enclosure symbolized on Mills' (1914:25) Franklin County map occurs between Harrisburg and Darbydale in the southwestern corner of the county and may represent this site. However, a more recent National Register site survey of mounds and earthworks conducted in the early to mid 1970s indicates the site occurred further upstream and is symbolized as the northernmost occurring mound in Franklin County on Mills’ map and has been subsequently destroyed by quarrying. Circumstantial supporting evidence in the form of landowner or amateur recovered prehistoric human remains has been documented within the immediate vicinity of both suspected locations.

The majority of the professionally unverified mounds included on Mills’ map occur along tributary drainages of Big Darby Creek between Harrisburg and Darbydale. As such, they may actually represent mound locations, since professional survey has been limited to the creek valleys and adjacent bluff edges. The unnamed and unnumbered mound on Gay Run supports this contention, since its location corresponds to one of the mound symbols on Mills’ map. In addition, Montoney Mound, Cannon Mound, Galbreath Mound, Hambleton Mound and the Skunk Hill Mound Group occur in the approximate locations of mound symbols on Mills' map. In contrast, the locations of the Sidner Mound Group and the McMurray Mound group are not symbolized on Mills’ map; although mound symbols appear in close proximity to the correct locations and may represent misplaced map symbols. Consequently, the exact number of burial mounds attributable to the Early Woodland/Adena Period within the study region is unknown. At a minimum
there are 13 mounds from eight documented sites, but the final total could exceed the twenty suspected mound locations from the early accounts.

Environmental Setting

The study region is situated in the Central Interior Lowlands physiographic province and is characterized by areas of low relief (Fenneman 1938:450). Present day landforms are the result of the dynamic processes of glaciation operating on the underlying bedrock strata. The province is divided into six sections based on outstanding topographic characteristics. The study region lies within the Till Plains section and is characterized by nearly flat to gently undulating glacial terrain lacking strong end moraines, having few lacustrine plains, and having an integrated drainage system (Thornbury 1965:228). This undulating topography is generally referred to as swell and swale.

The relatively low relief of the region does not accurately reflect the preglacial terrain, in which the relief could be measured in hundreds of feet. The underlying bedrock consists primarily of limestone, dolomite and shale with minor amounts of sandstone. Mass wasting, due to successive glaciations, has altered preexisting landforms to some extent and has produced pebbly, silty, clay tills which have been spread and cover the preglacial terrain. End moraines, representing the fronts of numerous readvances of the ice front during the last glaciation provide the major relief within the Till Plains section. These end moraines vary between faint topographic swells to ridges standing from 100 to 150 ft above the surrounding the till plain (Thornbury 1965:229). The study region is situated on ground moraine between two end moraines and is relatively flat, except along the entrenched creek valleys (Goldthwait et al. 1961). Drainage integration has proceeded to a point where streams do not flow in, through, or out of swamps or lakes. Loess deposits form a thin mantle conforming to the till plain surface and are only noticeable on bluffs along the major streams (Thornbury 1965:231).
The bedrock underlying the study region is sedimentary in nature, having formed during the Devonian geological period and being represented by the Columbus and Delaware limestone and shale member (Bownocker 1981). The bedrock dips to the east at a rate of 20 to 30 ft per mile, thus exposing the bedrock strata in a long, parallel, north-south oriented sequence (McLoda and Parkinson 1980:2). The tilting of the bedrock has been a factor in the formation of the central Ohio, Scioto River drainage system. The exposed bedrock strata alternate between the more erosion resistant limestones and sandstones and the less resistant shales. Glacial scouring has produced an undulating bedrock topography covered by varying thicknesses of till, in which present day drainages have been established. Strike streams have formed along the bedrock dip in the less erosion resistant strata. Within the study region the narrow, roughly north-south oriented, entrenched drainages of Big and Little Darby Creeks are the result of this process, which is evidenced by their eastern banks tending to be higher and steeper than their western banks (Anderson and King 1976).

Steep escarpments are noted to occur discontinuously along both creek valleys (McLoda and Parkinson 1980 and Gerken and Scherzinger 1981). Although these escarpments are characterized as not being bedrock exposures, isolated bedrock exposures have been noted along both creek valleys (McLoda and Parkinson 1980:2). It is not known if these exposures include flint bearing strata, exploitable by prehistoric groups.

During the Pleistocene geological epoch, at least two glacial advances covered the central Ohio region. The first of these was the Illinoian glacier which covered the area approximately 50,000 years ago. The second was the Wisconsin glacier which had reached the region by approximately 23,000 years ago (Forsyth 1961:9). Prior to these two successive glaciations an earlier glacier, known as the Kansan, covered the northern portion of Ohio, but is not known to have reached central Ohio (Stout et al. 1943).
However, all three glaciations affected the preglacial topography and drainage of central Ohio.

The final Pleistocene glaciation, the Wisconsin glacier, was more massive than the preceding Illinoian glacier, covering approximately two-thirds of the state. This glacier acted to further level the surface created by the previous glaciation. As the glacier advanced over Ohio, several factors affected the direction of flow, including the source of the ice and the topography in the area being covered. These factors caused lobes to form along the major axes of flow. The largest of these lobes, the Scioto lobe, formed in central Ohio (Stout et al. 1943:33). End moraines associated with the Scioto lobe mark alternating episodes of melting and readvancement. The Wisconsin glacier left till deposits in the form of end moraines and eskers which added to the relief left by previous glaciers. In other areas the surface was leveled further to form nearly flat areas of glacial drift (Stout et al. 1943:33).

In the study region, the glacial till was deposited primarily in the form of ground moraine, with discontinuous outwash terraces along the present day creek valleys representing valley outwash trains (McLoda and Parkinson 1980:2 and Gerken and Scherzinger 1981:3). The silty clay soils along the bluff edges appear to represent thin loess deposits. The thickness of the till varies across central Ohio but appears to be at least 70 to 90 ft thick within the study region, as evidenced by the escarpments along the valley walls of both creeks. The entrenched creek valleys provide the major relief of the study region as they cross the relatively level ground moraine between the Powell and London end moraines. The relatively flat ground moraine forming the uplands contain numerous, slightly depressional, poorly drained areas of varying areal extent, resulting in swampy areas in the larger ones and an overall immature dendritic headwater drainage pattern. The headwater tributaries draining the eastern uplands of both creeks are relatively short, less than 250 m in length; while the tributaries draining the western
uplands extend for as much as 2 to 3 km, which supports the interpretation that both creeks are strike streams.

Both creek valleys are relatively narrow with maximum widths not exceeding 1.5 km. Throughout most of the study region, primarily from the confluence upstream, the valleys range from 0.4 to 0.6 km in width. Discontinuous or isolated outwash terraces occur frequently along the creek valleys. The outwash terraces along Little Darby Creek are more extensive than along Big Darby Creek above the confluence. However, the active channel of Little Darby Creek is restricted to a floodplain ranging between 0.2 and 0.4 km in width. The characteristics of Little Darby Creek valley are similar to the Big Darby Creek valley downstream from the confluence.

Several major soil associations occur within the study region and are related to soils developing on the different landforms. Along the Big Darby Creek valley, the Medway-Genessee-Sloan soil association occurs and represents soils developed in recent alluvium (McLoda and Parkinson 1980). Along the Little Darby Creek valley, the Sloan-Eldean-Medway soil association is present with the Eldean type representing soils developed in glacial outwash (Gerken and Scherzinger 1981). Additional minor soil types occurring within the valleys and associated with the outwash terraces are the Ockley and Warsaw types. The bluff edges along both creeks contain soils of the Miamian-Celina association; while the level uplands contain soils of the Crosby-Kokomo-Lewisburg association. All of the various soil types are silt loams, with the exception of the Miami type which is a silty clay loam. The variety of soil types is due primarily to differing slope positions, which affect soil drainage, and differing parent material textures.

The variability in soil types associated with the landforms of the study region is matched by the diversity of natural vegetation communities at the time of earliest Euroamerican settlement (Gordon 1966). Presumably, these vegetation communities were present during the Woodland Period, although they most likely varied in areal extent and
composition from the more recent forest types. An oak-sugar maple forest extended along the Big Darby Creek valley and bluff edges from Georgesville downstream to within 10 km of the mouth. An elm-ash swamp forest extended northwestern from West Jefferson along the Little Darby Creek valley and adjacent uplands and eastward over the uplands to the Big Darby Creek valley. The elm-ash swamp forest extending over the narrow floodplains and level uplands reflected the poor drainage of the soils. The most extensive vegetation community within the study region was the mixed oak forest which covered valley floors, bluff edges and uplands in and around the confluence of Big and Little Darby Creeks. Several prairie isolates of varying extent were situated within the mixed oak forest in the uplands. It is unclear if these areas represented wet or dry prairies or both. Given the known soil associations found in the uplands, the more extensive areas poorly drained soils developing on relatively flat to depressional terrain most likely supported at least seasonally wet prairies if not wet prairies.

The importance of the environmental setting in understanding the regional variability in prehistoric mound mortuary behavior lies in the location and internal composition of the mounds. The space allocated to burying deceased members of the group is just as important an element in the settlement pattern as subsistence related sites, because it reflects prehistoric organization and use of space across the landscape. Whether or not burial site locations are dependent or independent of habitation site locations; or whether or not burial sites occur in focal or diffuse patterns are important research questions concerning prehistoric social organization. The internal composition of the mounds reveals information concerning planning and energy expenditure in the construction of the mound. To what extent was the existing landform modified? Were construction materials available on site or were they brought in? Answers to these questions provide insight on prehistoric groups' understanding of landform and soil characteristics.
Previous Archaeological Work

Professional fieldwork around the confluence of Big and Little Darby Creeks began in 1962. Prior to this time professional interest in the region was limited to recording sites reported by collectors, landowners, and interested individuals to the Ohio State Museum. The majority of the site recording occurred during the late 1800s and early 1900s during an attempt to produce an archaeological map of the state. During this period the Ohio State Museum was in its infancy and professional concerns were focused on mounds, earthworks and large prehistoric villages. Although many of the reported sites were professionally field verified; it would appear none of the reported sites around the confluence of Big and Little Darby Creeks were field checked, since the professional surveys were restricted to the main tributary channels in the state.

As previously mentioned, Mills' (1914:25 and 49) archaeological maps record the locations of 20 mounds, 1 circular earthen enclosure, 5 graves, and 1 village along Big and Little Darby Creeks where they flow through Madison and Franklin Counties. Proceeding northward from the study region into the headwater areas of the creeks in adjacent Union County, mounds are virtually absent being replaced by grave sites. Moving downstream from Harrisburg, the remaining portion of the middle reaches of the Big Darby Creek drainage in Pickaway County contain almost an equal number of reported mounds and several earthen enclosures to those from the study region (Mills 1914:65). Only a few reported mounds were located at or near the mouth of Big Darby Creek at the city of Circleville in Pickaway County. Professional field verification of the mounds within the Big Darby Creek drainage is restricted to four sites near the mouth and six sites in the vicinity of the Big and Little Darby Creeks' confluence.

The archaeological maps provide limited information concerning general site types and their locations, due to the fact most of the sites were reported to the museum via correspondence with informed or concerned citizens. Occasionally some of the more
detailed descriptions were published as letters to the editor in the *Ohio Archaeological and Historical Society Publications, The Archaeologist, and The Antiquarian*, along with brief accounts in the early county histories. Most of the accounts list suspected mounds, based on landform anomalies, and describe mound explorations by curious individuals. As such, much of the early information, when it is available, is brief and provided by untrained observers.

In 1962 the Ohio State Museum under contract with the National Park Service conducted an archaeological survey for a proposed reservoir area along Big Darby Creek (Baby and Potter 1963). This was one of numerous reservoir surveys conducted throughout the state by the Ohio State Museum during a period of rapid urban growth from the late 1950s through the 1960s. Complete and detailed survey fieldnotes are not available for these projects. However, given the number of reservoir projects and the number of sites test excavated annually throughout the state, it would appear temporal constraints limited the amount of actual field survey. Reliance appears to have been placed on local amateur/collector interviews and windshield surveys. No doubt Mills' archaeological maps were employed as a guide to suspected site locations. The reported survey results tend to support this interpretation of survey methodology, in which eight mound sites were field inspected and the only reported habitation sites/surface artifact scatters occurred in close proximity to the mounds. Of the eight mound sites, five correspond to site locations symbolized on Mills' maps: Galbreath Mound (33 Fr 58), Cannon Mound (33 Fr 59), Montoney Mound (33 Fr 60), Hamoleton Mound (33 Ma 4), and Skunk Hill Mound Group (33 Ma 5-I through III). The other three mound sites, Voss Mound and Village (33 Fr 52), McMurray Mound Group (33 Fr 61-I through III), and Sidner Mound Group (33 Fr 69-I and II), were recorded through interviews of amateurs/collectors, who had dug into them. None of the surface artifact scatters in close
proximity to the mounds were assigned site number designations and reference to them can only be found in survey notes.

Although the proposed reservoir was abandoned due to geological problems, four of the mound sites were excavated prior to this decision because they were anticipated to be inundated by the reservoir pool or were within take strip areas. The excavations were conducted between 1962 and 1965 by the Ohio State Museum under the direction of Dr. R.S. Baby, curator of archaeology, and under contract with the National Park Service. The sites included Voss Mound and Village, Hambleton Mound, all three mounds of the McMurray Mound Group, and both mounds of the Sidner Mound Group. Sidner Mound I was excavated over a five week period in 1962 by a five member crew. Sidner Mound II was excavated over a two month period in 1963 by at least a ten member crew, as was Voss Mound and Village. Hambleton Mound was excavated over a two month period in 1964 by a sixteen member crew. The McMurray Mound Group was excavated over a four month period in 1965 by a five member crew. None of the mounds at any of the sites can be considered to be completely excavated; although in all cases one half to two thirds of mounds were examined.

Excavation method was uniform for all the sites, with an east-west baseline established at the southern edge of the mound and a perpendicular baseline crossing the mound center and apex. The mound was staked at five foot intervals with the east-west baseline serving as the zero line. The perpendicular baseline was labeled as to its five foot interval north of the zero line. Auxiliary baselines running parallel to the perpendicular baseline, at five foot intervals, were labeled left or right of the perpendicular baseline and sequentially number in both directions rather than by their five foot interval.

Excavation began at the zero baseline and progressed across the mound with contiguous five foot square units parallel to the zero baseline being excavated
simultaneously. Thus a trench, varying from 10 to 20 feet in width, was opened across the center of the mound. The mound was removed to the mound floor and when features were encountered the trench was widened in the central portion of the mound. Since prepared mound floors were not encountered at the sites, the apparent upper boundary of the subsoil horizon served as the mound floor and was an uneven surface. None of the mounds were completely excavated, since the eastern and western mound skirts were not removed. However, most of the mounds are considered to be completely excavated because the burial features in the central area of the mound were exposed. The only exception to this excavation procedure occurred at Hambleton Mound where the bisecting trench was not completed to the northern mound edge and most of the eastern half of the mound was not excavated (Potter 1967:Map 1).

The excavation procedure was clearly guided by the concept of important central graves occurring on or near the mound floor in Adena mounds. Although, repeatedly, none of the burial facilities were situated directly below the mound apex. Mound fill was characterized as representing primary or secondary mantles/strata, which were basically differentiated by their soil color and inclusions. The primary mound stratum, or primary core, was noted consistently to contain mixed dark and light colored soils, organic inclusions, burnt earth deposits, and occasionally redeposited cremated bones, burials, and artifacts. In contrast, the secondary mantle overlying the primary core consisted for the most part of light colored soil, interpreted as displaced subsoil from the immediate vicinity. However, mottling with darker soil containing organic and cultural inclusions was noted, but not to the extent found in the primary mound stratum. The characterization of the mound fill consisting of primary and secondary mantles parallels the earlier interpretations of the internal composition of a typical Adena mound and focuses attention on the burial facilities occurring at or near the mound floor.
The excavation procedure for the mound fill involved primarily shovel shaving with no screening of the soil, supplemented by troweling when a spatially distinct, or restricted, cultural deposit was encountered. The recording of stratigraphic information was limited to north trench profiles, normally at 10 ft (3.05 m) intervals, and distinguished the general mound strata. Horizontal or plan maps of the mound fill were not produced. Rarely, the maximum dimensions of the distinct cultural deposits in the mound fill along with general descriptions of their internal compositions were recorded in the fieldnotes. The lack of attention to the complexity of the mound fill composition was related to the temporal constraints placed on the fieldwork at each site and the existing theoretical perspective concerning the internal structure of Adena mounds, which guided the fieldwork. Consequently, it is not surprising that the fieldwork is characterized as salvage excavation with a clear implication of limited information on internal mound structure (Baby 1971). The question then becomes a concern over the degree of limitation to the information potential, which can not be addressed without detailed site reports.

The next professional work in the study region was conducted by the newly formed State Historic Preservation Office in the early to mid 1970s and involved a statewide National Register site survey. Some of the professionally verified sites within the study region were revisited and evaluated as to their eligibility for inclusion on the National Register of Historic Places. The location of one of the northernmost mounds symbolized on Mills' map occurring along Big Darby Creek in Franklin County, H.C. Francis Mound (33 Fr 39) was field checked and the mound was considered destroyed by quarrying activities. Human bone was recovered from a gravel knoll in the approximate location of the mound and was recorded as a possible Glacial Kame burial site (33 Fr 78). The possibility that the gravel knoll was synonymous with the mound was apparently not considered, even though the mound was reportedly 200 ft in diameter and 30 ft in height. The other northernmost mound along Big Darby Creek in Franklin County was considered
to be the H.C. Adler Works (33 Fr 11), even though the map symbol was for a mound, and it too was determined to be destroyed by gravel quarrying.

The Darby Dan Project, conducted by the Department of Anthropology, The Ohio State University under the direction of Dr. W.S. Dancey involved the excavation of the Galbreath Mound during two field seasons in 1975 and 1976. Originally designed to test habitation as well as mound sites, the complexity of the mound required the major portion of the fieldwork be concentrated on it (Dancey et al. 1986:viii). The fieldwork was conducted by summer field schools in which the crew size averaged ten individuals, although all crew members were not present throughout the field season since some were volunteers. The second field season was extended with student volunteers working on weekends during the fall of 1976 and the spring of 1977 to finish the recording and removal of exposed burial features.

From its inception the Darby Dan Project was designed to overcome the limitations of the previous mound excavations and, more importantly, to examine the internal complexity of mound structure. The excavation procedure was formulated to provide more horizontal and vertical stratigraphic information through detailed mapping. The recording procedure was designed to point provenience all cultural items, including human remains, to insure against misidentification of items and misinterpretations in the field. Burial and feature designations were not assigned until the remains were sufficiently exposed to determine discrete spatial boundaries to the remains. In some cases involving numerous fragmentary human remains scattered over a restricted area, in which a distinct articulated or partially articulated individual could not be discerned, a bone cluster designation rather than a burial designation was used to denote the spatial relationship of the bone fragments. Soil samples were taken from test unit balks where problems in discerning the mound stratigraphy were encountered. In essence, checks and balances were built into the excavation design to insure against loss of information.
The excavation procedure involved the establishment of a 2 meter square grid system oriented north-south over the mound and including the immediately surrounding off mound area. The main north-south baseline crossed the approximate mound apex and was designated 0E. Ancillary north-south baselines were established and designated according to the 2 m interval east or west of the main baseline. East-west baselines were established and designated as to their 2 m interval north of the southernmost baseline, which was located off mound and designated 0N. The east-west baseline most closely traversing the mound apex was 12N and served as the main east-west baseline.

The 2 meter square units were excavated at 10 cm levels, leaving 10 cm wide balks on all sides, except for 25 cm wide balks along the main baselines. The units were shovel shaved by unit quadrants and the removed soil was screened. When cultural items, including human bone, were encountered the unit quadrants were troweled and in situ items were point provenienced. Displaced and screen recovered items were bagged according to their unit quadrant and excavation level. Horizontal unit maps were drawn for each 10 cm unit level, in addition to burial and feature plan maps.

Separate inventories were kept for objects (OI list) and human bone (HBI list). One crew member served as the field recorder and was responsible for maintaining the maps and inventory lists and insuring all field bags were properly labelled and removed from the field. Initially the human bone recording system included the unit square designation plus a sequential unique number (ie. 14N2W/29). As the excavation proceeded into the second field season, the number of individual interments exposed and the fragmentary and scattered nature of some of the remains required a revision to the human bone cataloging procedure. The labelling was shortened to DDII/ or II/ followed by a sequential unique number. This procedure was applied across units as the bones were exposed, which was the standard procedure for the object inventory list. Small bone fragments, which appeared to be scattered and could not be assigned to specific features,
inhumations nor cremations, were bagged by unit quadrant and arbitrary 10 cm level. This procedure was distinctly different and more accurate than the recording procedure used during the previous mound excavations, in which bone fragments occurring outside of feature context were collected in miscellaneous mound fill bags and provenienced at best to a 10 ft (3.05 m) wide trench interval.

In 1979, the Department of Anthropology, The Ohio State University undertook a survey of the central Darby Creek drainage which is roughly synonymous with the study region. The survey was designed to record archaeological sites within specific survey plots used to sample a variety of landforms (Dancey et al. 1986:36). The intent was to recover information concerning habitation sites and land use patterns to augment the known mortuary information. One mound (33 Fr 307) was located south of Georgesville, which was not indicated on Mills' archaeological map nor was encountered during the reservoir survey in 1962. Habitation sites contemporaneous with the mounds were rarely encountered during the survey and consisted of diagnostic projectile points occurring within three separate multicomponent surface lithic scatters (Dancey et al. 1986:95). Lithic scatters did occur in close proximity to some of the known mounds, not all mounds were revisited, but were either multicomponent or representative of the Late Archaic Period.

From the previous discussion it is clear the primary factor affecting the quality and reliability of the information recovered from the mound excavations, except at Galbreath Mound, was the temporal constraint placed on the length of fieldwork at each site. Another factor is the fact that expertise in a range of disciplines was vested primarily in the director of each project. A multidisciplinary or team research project was unfeasible given the temporal and budgetary constraints placed on each mound excavation. Reliance had to be placed on students to fill field supervisory roles and for each project more advanced students, in terms of educational background and field experience, were used.
Distinct differences exist in the amount of recorded detailed observations on the cultural remains and their contextual information and the number of misidentifications of items, primarily fragmentary human bone, between the directors' and students' notebooks, which is to be expected. In general, students' fieldnotes contain more interpretative statements than observations of the empirical evidence. This factor affects the quality and reliability of the data only for those time periods when the director could not be present at the site. In addition, there are lapses in accurate record keeping of the field inventories, which also occur in the absence of the director. Fortunately, for all projects, the amount of time the director was absent from the excavations was minimal.

The most important factor affecting the reliability of the data occurred after the cultural remains were removed from the field and represent problems with curation. Mislabeling or no labeling of the remains in the accessioning process appears to have occurred during the laboratory analysis stage of the research. Some of these problems are related to the use of students and volunteers in the cleaning and cataloging of the remains. In other cases, the necessity of providing preliminary reports on the results of excavations required the analysis of remains before they were properly curated resulting in the unintentional mixing of some items and the loss of their proveniences. Although such occurrences were rare, they do represent problem pieces which can not be rectified.

In an overall assessment of the quality and reliability of the information generated by the various mound excavation projects, the data are more than sufficient for a regional synthesis of the mortuary remains. Although problem pieces and missing information complicate analysis and interpretation, the fieldnotes, maps, photographs, and extant collections provide empirical evidence for characterizing and comparing the internal structure and organization of the burial facilities within and between the mounds. The structural complexity of the mound fill can only be understood in general terms, but the
detailed observations from Galbreath Mound can serve as a model for understanding the nature of this internal portion of the mounds.

Mound Descriptions

Providing a regional perspective on the range of variability in external mound attributes and site locational settings is the primary concern behind this descriptive section. All fourteen mounds from the nine recorded sites attributable to the Early Woodland/Adena Period are considered. Subsequent chapters dealing with the internal structure and composition of mounds will focus on the five professionally excavated and documented mounds. General internal mound characteristics are considered in this section for their possible relationships with external mound attributes (Table 1). The majority of measurable attributes are close approximations because accurate field measurements of them were not taken. The mound descriptions are organized from the southernmost mound in the study region upstream following Big Darby Creek and then to the northernmost mound on Little Darby Creek.

The unnamed and unnumbered mound (33 Fr ?) is situated in a wooded lot along the western bluff edge of Big Darby Creek where Gay Run exits the uplands and enters the valley, a point approximately 1.5 km north northwest of Harrisburg. The mound overlooks Gay Run from the south side and immediately south of the mound is a short intermittent drainage channel which parallels Gay Run and merges with it at the bluff base. Consequently, the high ground on which the mound occurs is an isolated, narrow, elongated segment of the bluff edge, referred to as a finger-like ridge. The exact position of the mound is not recorded, but appears not to be on the highest elevation, represented by the adjacent level uplands. Rather, it occurs on a small level area or bench immediately below the highest elevation, but at the top of the steepest portion of the valley wall, which can be considered the bluff edge.
Table 1. Comparison of External Mound and Natural Setting Characteristics for Reported Mounds In The Middle Big Darby Creek Drainage.

<table>
<thead>
<tr>
<th>Mound Number</th>
<th>East-West Length</th>
<th>North-South Length</th>
<th>Height</th>
<th>Landform</th>
<th>Soil Type</th>
<th>Principal Drainage</th>
<th>Height Above Drainage</th>
<th>Distance From Drainage</th>
<th>Direction To Drainage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fr ?</td>
<td>20.0 Ft 6.1 M</td>
<td>20.0 Ft 6.1 M</td>
<td>7.0 Ft 2.1 M</td>
<td>bluff edge</td>
<td>Kendalville</td>
<td>Big Darby</td>
<td>70 Ft 21.3 M</td>
<td>3117 Ft 950 M</td>
<td>East</td>
</tr>
<tr>
<td>Fr 61-I</td>
<td>20.0 Ft 6.1 M</td>
<td>29.0 Ft 8.8 M</td>
<td>10.0 Ft 0.3 M</td>
<td>bluff edge</td>
<td>Miamian</td>
<td>Big Darby</td>
<td>60 Ft 18.3 M</td>
<td>1050 Ft 320 M</td>
<td>West</td>
</tr>
<tr>
<td>Fr 61-II</td>
<td>41.5 Ft 12.6 M</td>
<td>41.5 Ft 12.6 M</td>
<td>5.8 Ft 1.8 M</td>
<td>bluff edge</td>
<td>Miamian</td>
<td>Big Darby</td>
<td>60 Ft 18.3 M</td>
<td>1050 Ft 320 M</td>
<td>West</td>
</tr>
<tr>
<td>Fr 61-III</td>
<td>40.0 Ft 12.2 M</td>
<td>40.0 Ft 12.2 M</td>
<td>3.1 Ft 0.9 M</td>
<td>bluff edge</td>
<td>Miamian</td>
<td>Big Darby</td>
<td>60 Ft 18.3 M</td>
<td>1050 Ft 320 M</td>
<td>West</td>
</tr>
<tr>
<td>Fr 307</td>
<td>32.8 Ft 10.0 M</td>
<td>32.8 Ft 10.0 M</td>
<td>NA NA</td>
<td>bluff edge</td>
<td>Miamian</td>
<td>Big Darby</td>
<td>60 Ft 18.3 M</td>
<td>1903 Ft 580 M</td>
<td>East</td>
</tr>
<tr>
<td>Fr 60</td>
<td>40.0 Ft 12.2 M</td>
<td>40.0 Ft 12.2 M</td>
<td>2.0 Ft 0.6 M</td>
<td>bluff edge</td>
<td>Miamian</td>
<td>Big Darby</td>
<td>80 Ft 24.4 M</td>
<td>984 Ft 300 M</td>
<td>West</td>
</tr>
<tr>
<td>Fr 59</td>
<td>35.0 Ft 10.7 M</td>
<td>35.0 Ft 10.9 M</td>
<td>3.5 Ft 1.1 M</td>
<td>bluff edge</td>
<td>Crosby</td>
<td>Confluence</td>
<td>70 Ft 21.3 M</td>
<td>787 Ft 240 M</td>
<td>Southwest</td>
</tr>
<tr>
<td>Fr 58</td>
<td>50.0 Ft 15.2 M</td>
<td>50.0 Ft 15.2 M</td>
<td>6.4 Ft 2.0 M</td>
<td>bluff edge</td>
<td>Ockley</td>
<td>Big Darby</td>
<td>60 Ft 18.3 M</td>
<td>262 Ft 80 M</td>
<td>Northwest</td>
</tr>
<tr>
<td>Fr 69-I</td>
<td>40.0 Ft 12.2 M</td>
<td>40.0 Ft 12.2 M</td>
<td>1.8 Ft 0.5 M</td>
<td>outwash terrace</td>
<td>Eldean</td>
<td>Little Darby</td>
<td>30 Ft 9.1 M</td>
<td>525 Ft 160 M</td>
<td>Northeast</td>
</tr>
<tr>
<td>Fr 69-II</td>
<td>70.0 Ft 21.3 M</td>
<td>70.0 Ft 21.3 M</td>
<td>1.6 Ft 0.5 M</td>
<td>outwash terrace</td>
<td>Warsaw</td>
<td>Little Darby</td>
<td>30 Ft 9.1 M</td>
<td>525 Ft 160 M</td>
<td>Northeast</td>
</tr>
<tr>
<td>Ma 4</td>
<td>45.0 Ft 13.7 M</td>
<td>45.0 Ft 13.7 M</td>
<td>6.8 Ft 2.1 M</td>
<td>outwash terrace</td>
<td>Eldean</td>
<td>Little Darby</td>
<td>30 Ft 9.1 M</td>
<td>492 Ft 150 M</td>
<td>West</td>
</tr>
<tr>
<td>Ma 5-I</td>
<td>26.0 Ft 7.9 M</td>
<td>26.0 Ft 7.9 M</td>
<td>1.5 Ft 0.4 M</td>
<td>outwash terrace</td>
<td>Eldean</td>
<td>Little Darby</td>
<td>40 Ft 12.2 M</td>
<td>197 Ft 60 M</td>
<td>Northeast</td>
</tr>
<tr>
<td>Ma 5-II</td>
<td>27.0 Ft 8.2 M</td>
<td>27.0 Ft 8.2 M</td>
<td>2.0 Ft 0.6 M</td>
<td>outwash terrace</td>
<td>Eldean</td>
<td>Little Darby</td>
<td>40 Ft 12.2 M</td>
<td>197 Ft 60 M</td>
<td>Northeast</td>
</tr>
<tr>
<td>Ma 5-III</td>
<td>20.0 Ft 6.1 M</td>
<td>20.0 Ft 6.1 M</td>
<td>1.0 Ft 0.3 M</td>
<td>outwash terrace</td>
<td>Eldean</td>
<td>Little Darby</td>
<td>40 Ft 12.2 M</td>
<td>197 Ft 60 M</td>
<td>Northeast</td>
</tr>
</tbody>
</table>
The McMurray Mound Group (33 Fr 61-I through III) occurs on what has been described as a narrow ridge overlooking the Big Darby Creek floodplain on the east side. The mound group is located approximately 4.2 km upstream from the unnamed and unnumbered mound. The locational setting is similar to the unnamed and unnumbered mound in that the narrow ridge occupied by the three mounds is a wooded lot on a finger-like projection formed by short intermittent tributaries exiting the uplands. The mounds are not situated on the highest elevation with Mound I on the southern slope of the ridge, which demarcates the bluff edge. Mound II sets on the ridge crest approximately 45 m north of Mound I. The southern perimeter of Mound III conjoins the northern perimeter of Mound II forming a figure 8 planview shape for both mounds.

Kesrith Mound (33 Fr 307) occurs along the western bluff edge of Big Darby Creek approximately 1.9 km upstream from the McMurray Mound Group. As with the other two sites, it is situated in a wooded lot on a narrow finger-like ridge formed along the bluff edge by the erosion of tributary drainages. An unnamed permanent tributary flows along the southern edge of the ridge. As with the other mounds, it is situated on a small level area just below the higher level uplands but is on the bluff edge.

Montoney Mound (33 Fr 60) occurs approximately 1.8 km upstream from Kesrith Mound along the eastern bluff edge of Big Darby Creek. It is in a similar wooded setting as the previously mentioned mounds. However, it does not occur at the tip of the finger-like ridge, but at its base adjacent to the head of a short intermittent drainage channel. Consequently, it is situated on the highest elevation associated with the bluff edge, but is situated approximately 100 m back from the edge.

Cannon Mound (33 Fr 59) occurs along the northern bluff edge overlooking the confluence of Big and Little Darby Creeks. It is approximately 1.5 km upstream from Montoney Mound. The mound is situated in a pasture rather than a woodlot. Like Montoney Mound, it occurs at the base of a finger-like ridge on the highest elevation in
the immediate vicinity. It is adjacent to the head of an extremely short intermittent
drainage channel flowing west into the Big Darby Creek valley. The mound is situated
approximately 50 m back from the bluff edge overlooking Little Darby Creek.

Galbreath Mound (33 Fr 58) is located along the eastern bluff edge of Big Darby
Creek approximately 1.7 km upstream from Cannon Mound. The mound setting is similar
to Cannon Mound in being situated approximately 70 m back from the bluff edge on the
highest elevation in the immediate vicinity. Unlike all of the other mounds along Big
Darby Creek, Galbreath Mound is not on a finger-like ridge and is not immediately
adjacent to an intermittent tributary drainage channel, although one does occur
approximately 100 m to the north. In addition, it is unlike all of the other mounds within
the study region in having a layer of limestone slabs, ranging in size from large cobbles to
small boulders, covering the mound exterior. The mound is in a pasture and there is no
good evidence that the rock slabs are the result of field clearance.

The Sidner Mound Group (33 Fr 69-I and II) occurs along the edge of an outwash
terrace in the Little Darby Creek valley and is situated on the western side of the active
floodplain channel. The mound group is approximately 2.7 km upstream from Cannon
Mound and the confluence. The mounds are separated by a distance of approximately 160
m with Mound I being the southernmost. Both occur in agricultural fields and have been
deflated by plowing.

Hambleton Mound (33 Ma 4) lies approximately 1.9 km upstream from the Sidner
Mound Group and is also situated on an outwash terrace in the Little Darby Creek valley.
The terrace is on the east side of the active floodplain channel. The mound sets back
approximately 120 m from the terrace edge, which in this portion of the valley forms a
steep escarpment. The mound has been preserved along a wooded fenceline at the corner
of two adjacent agricultural fields.
The Skunk Hill Mound Group (33 Ma 5-I through III) is approximately 0.8 km upstream from Hambleton Mound. It lies on a landform variously referred to as a high hill, high promontory, or a narrow elongated ridge on the floodplain along the west side of Little Darby Creek. The landform represents a remnant of a small outwash terrace with the active creek channel abutting the eastern side. The western side was eroded by an old creek channel, which now serves as an intermittent drainage channel for the uplands. All sides of the outwash terrace are steeply sloped up to a relatively level crest. The mounds are arranged along the crest in a north-south line paralleling the long axis of this prominence. Mound I is situated at the southern edge with Mound II approximately 37 m north of it. Mound III is approximately 183 m north of Mound II.

In considering the mound setting descriptions, several observable patterns become evident. First is the apparent fairly regular spacing of mound locations along the creek valleys (Figure 1). Secondly, the mounds occur on elevated ground in close proximity or overlooking the active floodplain channel and are associated with steep ascents or escarpments leading from the valley floor. Third, the landforms on which the mounds lie vary between segments of the creek valleys but are consistent or repetitive within a segment. Finally, mound groups co-occur with single mound sites and are interspersed among them.

The regular spacing of mound locations along the creek valleys is the most obvious locational pattern. Although the linear distance between any two mounds varies from 0.8 to 4.2 km, the majority of the sites are spaced between 1.5 and 2.0 km apart. The maximum distance of 4.2 km occurs between the unnamed and unnumbered mound and the McMurray Mound Group at the southern end of the study region. This area is roughly synonymous with the portion of the Big Darby Creek between Harrisburg and Darbydale, which has not been subjected to extensive and intensive professional survey. It is also the area in which five mounds and the circular enclosure are symbolized on Mills' (1914:25)
archaeological map of the county. Consequently, mounds may occur between the
unnamed and unnumbered mound and the McMurray Mound Group and the great
distance between these two sites may, and probably does, represent a gap in present
knowledge. The short distance, 0.8 km, between Hambleton Mound and the Skunk Hill
Mound Group along Little Darby Creek can not be readily explained, but may be related
to the natural occurrence pattern of the appropriate landform for mound settings in this
valley.

The pattern of mounds occurring on elevated ground associated with escarpments
and in close proximity to the active floodplain is recurrent but not as obvious as the
interval spacing of sites (Figure 1). Mounds along Big Darby Creek are consistently
associated with the bluff edge and occur at elevations ranging from 18 to 25 m above the
valley floor (Table 1). Escarpments occur continuously along both valley walls. The
minimum linear distance from the mounds to the active channel varies considerable from
80 to 950 m and is related to the increasing valley width downstream. Outwash terraces,
some of which are rather broad and extensive below the confluence, occur along the Big
Darby Creek valley. However, none have steep escarpments and mounds are not
associated with them. Consequently, the bluff edge is the first elevated ground associated
with a steep ascent encountered back from the floodplain along the Big Darby Creek
valley.

Mounds along Little Darby Creek are situated on outwash terraces at elevations
ranging between 9 and 12 m above the active channel (Table 1). The sites are associated
with terrace escarpments, except for the Sidner Mound Group. However, the terrace
slope at the Sidner Mound Group leading to the floodplain is relatively steeper than any
of the outwash terrace slopes along the Big Darby Creek valley. The minimum linear
distance from the mounds to the active channel ranges from 60 to 160 m. Bluff edges with
steep ascents from the valley floor occur along both sides of Little Darby Creek, but
mounds have not been reported to occur on them. This portion of the Little Darby Creek valley is relatively as wide as the Big Darby Creek valley below the confluence. Consequently, the outwash terrace escarpments are usually the first elevated ground with steep ascents encountered in moving away from the active channel. Thus, it would appear the combination of these three factors, height above the valley floor, steepness of slope, and proximity to the active channel, partially condition the location of mounds.

The fact that mounds occur on different landforms in different segments of the creek valleys is readily apparent in the dichotomy between bluff edge and outwash terrace site locations for the Big and Little Darby Creek valleys, respectively (Table 1). The difference has been partially attributed to the natural characteristics of the valleys. However, there appear to be further distinctions in mound settings, which can not be attributed to natural factors and may be indicative of cultural decisions reflecting burial site locations by different social groups. Below the confluence the mounds along Big Darby Creek consistently occur on the tips of finger-like ridges along the bluff edge. These locations occur slightly below the highest elevation in the immediate vicinity represented by the adjacent relatively level uplands. However, the mounds are situated along an abrupt change in slope, from the escarpment forming the valley wall to a gentler slope leading a short distance to the uplands. The change in slope demarcates the bluff edge and the mounds are situated directly on it. From the confluence upstream along the Big Darby Creek valley, the mounds are situated at the base of the finger-like ridge or occur anywhere from 50 to 100 m back from the bluff edge on the highest elevation in the immediate vicinity. Along portions of Little Darby Creek, bluff edges, comparable in height and formation to those along Big Darby Creek, do occur in as close proximity to the active channel as do outwash terraces on the opposite side of the channel. Yet, the outwash terrace was utilized instead of the bluff edge and appears to be a preferred setting. Consequently, mound settings along Little Darby Creek are somewhat similar to
those along Big Darby Creek below the confluence according to the natural factors, but are on a distinctly different landform. The above mentioned distinctions suggest cultural preferences were considered in conjunction with the natural factors in the selection of particular burial locales within the different segments of the creek valleys.

The final distinction between sites is the co-occurrence of mound group and single mound sites. Although mound site locations occur at regular intervals along the creek valleys, there is no apparent regular or consistent spacing of the mound group sites within this spatial pattern (Figure 1). In other words, the variability in the number of mounds occurring at a particular site can not be predicted by the site's location along the creek valley in relationship to the other mound site locations. No mound group has been recorded along Big Darby Creek above the confluence. Mound groups account for two of the three known sites along Little Darby Creek. Consequently, it would appear mound group sites are in some way related to the wider sections of the creek valleys. They further suggest repetitive or prolonged use of the burial locale. At this point, a definitive explanation for why certain mound site locations have more than one mound is not possible. There are no clear environmental factors distinguishing between the locations of single mound and mound group sites in the various segments of the creek valleys. Thus, cultural and/or historical factors must be affecting the variability in the number of mounds occurring at a particular site.

The regional perspective on mound settings provided insight on recurrent patterns and variability in the organization of mortuary space along segments of the Big and Little Darby Creek valleys. It was suggested that some of the variability may be related to cultural preferences and reflect social group boundaries. The similarities and distinctions between the mound settings also raise questions concerning visibility and contemporaneity of the mounds. The question of mound visibility is related to the concept that the mounds may have served as territorial markers for social groups. Whether or not the visibility of
mounds provided an external message to adjacent groups or an internal message reinforcing group solidarity is a complicated issue conditioned by many political and social factors interacting over time. The dichotomy between mound groups and single mound sites may reflect this dynamic process with the mound groups reflecting an attempt to reinforce group boundaries; while single mounds between the mound groups reflect attempts at promoting group solidarity. Clearly, this issue requires an historical perspective with a broader regional data base than is currently available.

The concern with mound visibility must include external mound attributes, as well as, site setting. The mounds within the study region are relatively small, ranging from approximately 6 to 16 m in diameter and from 0.3 to 2.1 m in height (Table 1). All but two mounds occur in woodlots or pastures and have been minimally deflated by pothunting activities. The Sidner Mound Group occurs in cultivated fields and the mound heights have been reduced almost in half by plowing according to local informant interviews. Consequently, the majority of the mounds approximate their original sizes. Although the mounds occur on prominence with relatively unobstructed views from the floodplain, their relatively small sizes and in some cases their distance from the channel may have made them not easily recognizable anomalies on the landforms. Clearly, surrounding forest vegetation would have had to have been removed and kept clear to accentuate their positions and maintain their visibility.

The concern with contemporaneity between mounds in different segments of the creek valleys is related to the concept of territoriality. The ability to demonstrate simultaneous use of the creek valley segments is primary evidence supporting territoriality or social group boundaries. Otherwise, the distinctions may reflect changes in mortuary practices over time by an homogeneous social group shifting settlements up or down the creek valleys. Unfortunately, too few radiocarbon dates are available from the excavated mounds to adequately address this issue. The few dates, 1675 ± 105 years BP from
Hambleton Mound and 2025 ± 80 years BP and 2175 ± 125 years BP from Galbreath Mound, indicate at least a 400 year period in which mounds were constructed along the creek valleys. At the same time the dates suggest the use period of a particular mound could have been approximately 150 years. Since these two mounds occur in different creek valley segments, the question of simultaneous or sequential use of the segments can not be answered.

The issue of contemporaneity can be addressed indirectly by examining the internal mound characteristics from sites in different creek valley segments. The variability in burial facilities and interment practices along with stratigraphic information can provide information concerning possible group symbols, relative periods of mound use, changing mortuary practices over time, and distinctions in mortuary practices between creek valley segments. Fortunately, the professionally excavated mounds include at least one site from each of the creek valley segments, as well as mounds from mound groups and single mound sites. Unfortunately, small single mound sites have not been excavated and represent a sampling bias.

At this point in the discussion, a general consideration of the internal mound characteristics seems appropriate. A variety of burial feature/facility types are represented in the excavated mounds (Table 2). However, the circular/broad subrectangular burial depression is common to all mounds. In contrast, the elongated narrow rectangular burial pit occurs only at McMurray Mound I. The number of burnt earth deposits is under represented at most of the mounds because concentrations of burnt earth, charcoal flecks, and calcined bone fragments occurring in the mound fill were not subjected to close examination and were minimally described in the fieldnotes. In most, but not all, cases burnt earth deposits occurring in shallow depressions on the mound floor were considered features and recorded in more detail. The number of burial features/facilities and the number of individuals per mound do not appear to be
Table 2. Comparison of External and Internal Mound Characteristics.

<table>
<thead>
<tr>
<th>Mound Number</th>
<th>Mound Name</th>
<th>Diameter (Meters)</th>
<th>Height (Meters)</th>
<th>Minimum Number of Burial Feature Types Per Mound</th>
<th>Minimum Number Individuals/Feature</th>
<th>Minimum Number Individuals/Mound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fr 61-I</td>
<td>McMurray I</td>
<td>8.8</td>
<td>0.3</td>
<td>8 - Elongated Narrow Rectangular Pit</td>
<td>3 with 1 individual</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 with 2 individuals</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>2 with 3 individuals</td>
<td></td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>1 with 5 individuals</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 - Circular/Broad Subrectangular Depression</td>
<td>6</td>
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</tr>
<tr>
<td>Fr 58</td>
<td>Galbreath</td>
<td>15.2</td>
<td>2.0</td>
<td>1 - Circular/Broad Subrectangular Depression</td>
<td>15</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 - Circular/Broad Subrectangular Pit</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td>1 - Mound Floor Burial</td>
<td>3</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 - Redeposited Cremation Pile</td>
<td>4+</td>
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</tr>
<tr>
<td>Fr 69-I</td>
<td>Sidner I</td>
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<td>0.5</td>
<td>1 - Circular/Broad Subrectangular Depression</td>
<td>14</td>
<td>16</td>
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<td></td>
<td></td>
<td>1 - Mound Fill Burial</td>
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<td></td>
<td></td>
<td></td>
<td>? - Redeposited Cremation Pile</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>Fr 69-II</td>
<td>Sidner II</td>
<td>21.3</td>
<td>0.5</td>
<td>2 - Circular/Broad Subrectangular Depression</td>
<td>1 with 24 individuals</td>
<td>52</td>
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<td>1 with 6 individuals</td>
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<td></td>
<td></td>
<td></td>
<td>1 - Circular/Band Subrectangular Pit</td>
<td>22</td>
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<td></td>
<td></td>
<td></td>
<td>? - Redeposited Cremation Pile</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>Mound Number</td>
<td>Mound Name</td>
<td>Diameter (Meters)</td>
<td>Height (Meters)</td>
<td>Minimum Number Per Feature Type</td>
<td>Minimum Number Individuals/Feature</td>
<td>Minimum Number Individuals/Mound</td>
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</tr>
<tr>
<td>Ma 4</td>
<td>Hambleton</td>
<td>13.7</td>
<td>2.1</td>
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<td>8</td>
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<td></td>
<td></td>
<td>1 - Mound Floor Burial</td>
<td>2</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>1 - Burnt Earth Deposit</td>
<td>?</td>
<td></td>
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</tbody>
</table>
necessarily related to the mound size. Only when the shapes and sizes of the burial facilities and their horizontal arrangements on the mound floors are considered, do the number of burial features per mound correlate with the maximum mound diameters. Therefore, a range of variability in the number and types of burial facilities occurring within and between mounds does occur but appears to be limited and not necessarily predictable from external mound characteristics. Understanding the mortuary variability in mound structure and organization of mortuary space requires contextual information on the spatial associations between burial features and between the interments and artifacts within the features.

The general internal characteristics of the mounds have been known, and used to forward the concept that the mounds in this region represent an homogeneous social group with distinctive local burial traits, but basically operating for centuries outside the influence of changing mortuary practices occurring along the main Scioto River drainage and retaining most of the Early Adena mortuary traits (Potter 1967:8). The possibility of a more complicated explanation has been suggested by the discussion of the mound settings. The following chapters deal with documenting the variability in the internal mound characteristics between the excavated mounds and addressing the concerns of social group symbols and relative contemporaneity of the sites.

In so doing, the fundamental ideas of the Adena mortuary concept are brought into question. The interpretation of Adena mortuary ritual is not questioned directly, since the theoretical links between mortuary remains and specific practices are not well founded. The concern is with the normative model relating the diagnostic feature, burial, and artifact traits to the structure of Adena mounds and to the timing of the occurrences of the diagnostic traits, which in turn questions the developmental sequence of mortuary practices.
The conclusions are derived from an historical perspective, where the site formation processes are interpreted for each mound. As such, context is as important as the types or traits of features, burials and artifacts present in the mounds. Understanding of the dynamics of the mound constructions guides the search for explanations for why particular mortuary practices are reflected in the remains. Corroboration of the interpretations rests with an independent testing of the dates of the excavated mounds and a broader data base for the region; neither of which is currently available but could be the focus of future research.
CHAPTER IV
FEATURE DESCRIPTIONS

Proceeding from external to internal mound characteristics, documenting the variability in feature types reflects the next level of analysis. Nine feature types have been identified from the excavated mounds in the study region: elongated narrow rectangular burial pit, circular/broad subrectangular burial depression, circular/broad subrectangular burial pit, mound floor burial, mound fill burial, redeposited cremation pile, burnt earth deposit on the mound floor, burnt earth deposit in the mound fill, and postmold. All of the feature types are not represented in any single mound, but at least two occur in each mound (Table 2).

The majority of the feature types represent burial facilities and there are no indications of prehistoric above ground structural remnants at any of the sites. Only one postmold was encountered at one site and occurred along the mound base perimeter. The elongated narrow rectangular pit and the circular/broad subrectangular depression and pit represent burial facilities in which excavation of the subsoil and the piling of it around the feature perimeter were part of the construction process. Consequently, the mound floor is uneven sloping away from the features. These three feature types were constructed primarily for the disposition of extended inhumations, although cremations and bundle burials occur occasionally in some of them (Table 3). Their general rectangular plan outline shapes reflect this mode of interment. The distinctions between these feature types are based on the number of extended inhumations, the arrangement of burials in the feature, and the depth of the feature, all of which affect the size and shape of the burial
Table 3. Minimum Number of Individuals By Feature and Burial Types.

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<tr>
<th>Features</th>
<th>ENR</th>
<th>CSD</th>
<th>CSP</th>
<th>MFB</th>
<th>MPB</th>
<th>RCP</th>
<th>BED</th>
<th>Total</th>
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<td></td>
<td>Ex</td>
<td>Bp</td>
<td>Cr</td>
<td>Ex</td>
<td>Bu</td>
<td>Bp</td>
<td>Cr</td>
<td>Ex</td>
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<td>2</td>
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<tr>
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<td>Ex</td>
<td>Bu</td>
<td>Bp</td>
<td>Cr</td>
<td>Ex</td>
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<td>Feature 1N (lower)</td>
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</tbody>
</table>

Key to Abbreviations: ENR = Elongated Narrow Rectangular Pit; CSD = Circular/Subrectangular Depression; CSP = Circular Subrectangular Pit; MFB = Mound Floor Burial; MPB = Mound Fill Burial; RCP = Redeposited Cremation Pile; BED = Burnt Earth Deposit; Ex = extended; Bu = bundle; Bp = bone pile; Cr = cremation.
facilities. In turn the variability in the forms of these feature types reflect functional and/or cultural differences in the use of mortuary space.

The elongated narrow rectangular pit was used primarily for the interment of a single adult extended inhumation representing a single burial episode. Multiple interments do occur and involve a subadult and an adult, both of which are situated on the same horizontal plane. When multiple extended adult inhumations occur the individuals are vertically stacked; thus, the narrow rectangular plan outline shape is maintained while the depth of the feature is increased.

In contrast the circular/broad subrectangular depression and pit are burial facilities for the disposition of numerous individuals representing multiple interment groups and multiple burial episodes or periodic reuse of the burial facility (Table 3). The interment of multiple individuals occurs on the horizontal rather than vertical plane, which increases the width of the feature in comparison to the elongated narrow rectangular pit. The individuals are aligned side by side in a row preserving the basic rectangular feature plan shape. The intent appears to be the filling of the horizontal mortuary space in both feature types. Reuse of the burial facility occurs in both feature types with disturbance in the order of horizontal arrangement of interments. However, the nature of the disturbance differs between the two feature types. Another difference between the two feature types is their depths.

The circular/broad subrectangular pit is usually twice as deep as the circular/broad subrectangular depression and evidences vertical stacking of multiple interment groups at various levels. The intent appears to be the filling of the horizontal plane at subsequent levels. Disturbance of prior interments appears to be accidental and related to the amount of time between multiple interment episodes. In the circular/broad subrectangular depression interment occurs on one horizontal level and facility reuse disturbs the orderly arrangement of extended inhumations. In some cases, prior burials
are completely or partially disinterred and the remains piled around the feature perimeter with the new interments put in their places. The disturbance appears to be focused at the center of the burial facility. Consequently, the orderly arrangement of interments is disturbed and facility has haphazard appearance reminiscent of an ossuary. In other cases, additional inhumations are placed around the feature perimeter with minimal disturbance of prior interments. However, the orderly horizontal arrangement of inhumations is distorted because the new interments do not conform to plan layout. For both the pit and depression feature types, the depth of the feature is established by the horizontal level of the initial interments.

The mound floor burial feature type maybe a variant of the circular/broad subrectangular burial depression. The mound floor burial involves a multiple interment group of extended adult inhumations representing a single burial episode (Table 3). There is little indication of burial facility construction other than a bark lining or layer underlying the individuals. It would appear level to slightly depressional areas of the uneven mound floor were used with little modification. Soil covering the burials is undifferentiated from the subsoil on which the bark was placed. Consequently, feature perimeters are difficult to discern except where the bark is preserved.

Only one mound fill burial has been observed and occurred at the interface between the plowzone and mound fill. Because the feature was partially disturbed and not described, the only known characteristic is that it contained an extended subadult inhumation.

Redeposited cremation piles are only described in detail from Galbreath Mound, where they consist of burnt earth nodules, wood charcoal fragments, human bone fragments burnt to various degrees, and burnt and unburnt artifacts. Similar deposits were noted at Sidner Mounds I and II. They occur on top of the burial facilities containing the extended inhumations and the immediately adjacent areas of the uneven
mound floor. The piles tend to be conical with flat bottoms. Some of them have been disturbed prehistorically resulting in the scattering and intermingling of the remains, while others have been disturbed by pothunting. In either case the actual number and extents of these piles and the number of cremated individuals associated with them can not be accurately determined (Tables 2 and 3). This feature type represents a distinctly different mode of corpse treatment and disposition of remains. The cremations in this feature type are distinguished from cremations in the other burial facilities by the inclusion of burnt earth and charred wood fragments in the deposit and their disassociation with extended inhumations.

Burnt earth deposits are distinguished from redeposited cremation piles in that they contain no calcined human bone fragments. Those occurring on the mound floor appear to have cleaned, since they are represented by in situ burnt earth and a minimal amount of ash. Those occurring in the mound fill have the same composition as the redeposited cremation piles except for the apparent lack of calcined bone and clearly are redeposits themselves. The range of variability in size and shape of these deposits are not recorded, although they were encountered frequently over the burial facilities, which is a similar pattern to the redeposited cremation piles. Whether or not the burnt earth deposits are remnants of crematory basins can not be conclusively determined on the present evidence. They could represent an activity unrelated to corpse processing. Therefore, they are considered to represent different feature types, even though their general internal compositions and contexts are quite similar to the redeposited cremation piles.

In devising the classification scheme information was limited on some of the physical attributes due to the nature of the fieldwork. For the burial facilities containing extended inhumations, the composition of the feature fill soil was generally described as being darker than the surrounding subsoil matrix. Whether or not this meant the feature
fill was homogeneous is not clear, since stains representing bark linings and coverings and leather coverings were noted to occur discontinuously over areas of unspecified extents. In other instances pockets of looser fill were noted and considered to represent disturbed areas within a feature. However, the dimensions and shapes of these pockets were not recorded, as well as the number of their occurrences. Clearly, soil structural differences were indicated but it is not clear if they reflect disturbance processes. For the feature types occurring in the mound fill, their internal compositions are generally described to differentiate them from the surrounding mound fill matrix. However their dimensions and shapes are not recorded. Consequently, there probably does exist a greater range of variability in the internal attributes within and between the feature types than indicated in the classification scheme. However, the missing information does not appear to compromise the distinctions between feature types based on their general shapes, the number and arrangement of individuals representing the various burial types, and their locations within the mound.

**Elongated Narrow Rectangular Pits**

**Definition.** The elongated narrow rectangular burial pit feature type is represented only at McMurray Mound I (Figure 2). This burial feature type is characterized by long, parallel, straight to slightly convex, lateral sides and short, rounded or convex ends in planview (Plate VI). With depth the sidewalls are vertical or slightly inward sloping to a flat bottom with similar dimensions to the top. The corners and edges formed by the intersection of the bottom with the sidewalls are rounded. This burial feature type has only been recognized as a subsoil anomaly or submound floor pit in the Big Darby Creek area.

**Discussion.** As originally reported, this burial feature type was divided into two feature types: subrectangular depression and bathtub-shaped pit (Baby and Zierhut 1966:Table 1). The distinction is primarily based on the variability in the depths of the
Figure 2. McMurray Mound I floor plan showing locations of burial features.
Plate VI. Feature 5, McMurray Mound I representative example of elongated, narrow, rectangular burial pit.
various features. Although the deeper features tend to be also slightly longer and broader. The differences in feature size are related to the number of extended inhumations placed within a particular feature. The shallower features contain a single extended inhumation; while the deeper features contain multiple extended inhumations, anywhere from two to four individuals. Since there is no evidence of disturbance in the size and shape of the deeper feature perimeters, it is interpreted the multiple interments represent a single burial episode for each feature. Consequently, tight vertical stacking of the individuals is indicated for these features.

McMurrav Mound I. Eight elongated narrow subrectangular pits (Features 1-8) were recorded from McMurray Mound I (Figure 2). The boundaries of one, Feature 4, could not be accurately determined because it intruded or overlapped adjacent features. The feature fill is not described and it is possibly of similar composition to the dark alluvial soil forming the primary mound fill covering. The features were not recognized until the primary mound fill was removed and the upper surface of the yellowish gravelly subsoil was exposed. All of the features are subfloor pits or subsoil anomalies with no human remains occurring in the overlying primary mound fill nor exposed on the surface of the features at the level of the upper surface of the subsoil, which is considered to represent the mound floor. In the mound floor photographs feature fill is clearly discernible from the subsoil as uniformly dark colored soil anomalies. The excavated subsoil from feature construction appears to have been piled and spread around the feature perimeters, since the black and white photographs of the mound floor indicate it was relatively flat or level with slightly raised areas around the features. All horizontal and vertical feature measurements are based on plan and profile shapes originating at the level of the upper surface of the subsoil.

In considering the attributes of the eight features, several points need to be kept in mind (Table 4). All of the initial measurements reported in feet and hundredths of feet
Table 4. Attributes of Elongated Narrow Subrectangular Burial Pits From McMurray Mound I.

<table>
<thead>
<tr>
<th>Feature Number</th>
<th>Length (Meters)</th>
<th>Width (Meters)</th>
<th>Depth (Meters)</th>
<th>Number of Primary Interments</th>
<th>Burial Number</th>
<th>Number of Reburial Piles</th>
<th>Burial Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.00</td>
<td>0.70</td>
<td>0.27</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1.83</td>
<td>0.56</td>
<td>0.18</td>
<td>2</td>
<td>7, 9</td>
<td>1</td>
<td>4/SA-D</td>
</tr>
<tr>
<td>3</td>
<td>2.07</td>
<td>0.64</td>
<td>0.12</td>
<td>4</td>
<td>11, 12, 13, 22</td>
<td>1(?)</td>
<td>15</td>
</tr>
<tr>
<td>4</td>
<td>?</td>
<td>?</td>
<td>?</td>
<td>1</td>
<td>8</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2.18</td>
<td>1.16</td>
<td>0.74</td>
<td>3</td>
<td>14, 18, 19</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>1.98</td>
<td>0.67</td>
<td>0.18</td>
<td>1</td>
<td>10</td>
<td>2</td>
<td>16, 17</td>
</tr>
<tr>
<td>7</td>
<td>1.60</td>
<td>0.43</td>
<td>0.27</td>
<td>3</td>
<td>23, 24, 25</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1.96</td>
<td>0.79</td>
<td>0.34</td>
<td>1</td>
<td>20</td>
<td>1</td>
<td>21A-C</td>
</tr>
</tbody>
</table>


have been converted to their equivalents in meters (Baby and Zierhut 1966:Table 1). The number of extended inhumations and reburial piles per feature are not equivalent to the originally reported burial number designations per feature. The tabulation of burial number designations is not an effective means of conveying the variability of burial types in the features and the implied function of these burial facilities.

In general consideration of the metric attributes of the features, the variability in size appears to be related to the efficient and expedient disposal of individuals by extended inhumation. The range of variability in feature length is between 1.60 and 2.18 m or 5.25 and 7.15 ft. All shallow or depressional features containing a single extended inhumation are equal to or less than 2.00 m or 6.5 ft in length; while the deep or pit features containing multiple extended inhumations are greater than 2.00 m in length. The range in feature width varies between 0.43 and 1.16 m or 1.40 and 3.79 ft; although most of the features are between 0.56 and 0.70 m or 1.8 and 2.3 ft. There is overlap in maximum feature width between the depressional and pit features. However, the deeper pits are usually greater than 0.76 m or 2.5 ft in width. The variability in width appears to be related to the space necessary for the inclusion of reburial piles or artifacts caches, rather than the number of extended inhumations in the features. The range in feature depth varies between 0.12 and 0.76 m or 0.40 and 2.50 ft, with the distinction between depressional and pit features occurring at the 0.30 m or 1.00 ft level. Clearly, one could argue over the significance of the subjective distinction between shallow depressional and deep pit features. It would appear a minimal investment of energy was expended in the interments of the individuals at this site regardless of the number of individuals per feature, if all features truly originated at the upper surface of the subsoil.

Exceptions occur to the general pattern of distinction between depressional and deep pits, which indicate all of these features should be considered variants of one type. Feature 1 represents the extreme high values in all measurable dimensions for a shallow,
single extended inhumation and borders on being considered a deep pit. Since this feature contains a burial with one of the most diverse and numerically greatest cache of artifact types, there is some indication for a relatively greater expenditure of energy in the construction and provisioning of this burial facility. Conversely, Feature 7, which has the smallest horizontal dimensions and is relatively shallow, contains three tightly stacked extended inhumations. The provisioning of this burial facility can be considered minimal at best with a bone awl associated with one individual. These observations would tend to suggest a minimal expenditure in the interment of these individuals. Feature 8, originally considered to be a deep pit, appears to be of intermediate size reflecting the low range of measurable attributes for a deep pit. The feature contains a single extended inhumation and the larger size in all measurable dimensions in comparison to a shallow burial depression can be explained by the inclusion of the largest reburial pile.

Circular/Broad Subrectangular Burial Depression

**Definition.** The circular/broad subrectangular depression burial feature type is differentiated from the elongated narrow subrectangular pit burial feature type by the arrangement of multiple extended inhumations on an horizontal plane. Rather than the vertical stacking of individuals, the inhumations are placed side by side and usually headed in the same direction. The resulting configuration is either a parallel or flared row of individuals. The flared row pattern is variously referred to as a fan or spoke wheel shaped arrangement. Cremations and disarticulated human bone piles co-occur with the multiple extended inhumations. The depression represents a shallow excavated burial facility with outward flaring side walls and a flat bottom not exceeding 0.6 m (2 ft) in depth below the mound floor. The horizontal dimensions vary depending on the number and arrangement of interments. However, the plan outline shape resembles an irregular circle or a broad subrectangle with convex sides and ends and rounded corners. The arrangement of burials appears to be purposeful and representative of single burial episodes. However, for some
of the features there are indications of prehistoric disturbance or reuse of the burial facilities suggesting multiple burial episodes. Such reuse does not appear to alter the shape and maximum dimensions of the features, suggesting the initial excavations of the burial facilities included an area greater than needed for the initial number of interments.

Discussion. Although piles of disarticulated human bones, as well as, partially articulated skeletons occur within this burial feature type; the feature can not be considered an ossuary, because the bone piles represent in most cases the disturbed remains of articulated extended inhumations. Not all of the piles necessarily represent the disturbed portions of originally extended inhumations. There are a few cases of tightly stacked, disarticulated remains of one complete or nearly complete individual, which must be considered to represent a bundle burial. However, for most cases the piles of disarticulated bones are more spatially dispersed and contain portions of more than one individual. Some of the fragmentary bones in the piles can be crossmended with broken bones from the partial extended inhumations. In other cases, complete bones from the piles can rearticulated with appropriate bones present amongst the partial extended inhumations. All of the bones in the piles can not be accounted form by these two methods. However, the minimum number of individuals represented in the bone piles usually accounts for or is slightly less than the number of partial extended inhumations missing a particular bone. Consequently, not all of the extended inhumations can be completely reassembled.

Additional evidence for burial facility reuse and for the human bone piles representing disturbed extended inhumations is the occurrence of additional horizontal layers of extended inhumations. The upper level burials tend to be complete, except where physical weathering has deteriorated the remains; while the partial extended inhumations occur primarily in the lower level. The piles of disarticulated bones tend to be arranged around the feature perimeter with portions of one disturbed individual in
different piles. The upper level extended inhumations are aligned at slightly different directions than the lower level inhumations but maintain the basic orientation of the long axis of the feature. However, the headings of groups of extended inhumations can be variable including opposing directions. For those features where multiple levels of inhumations occur, they tend to be tightly, vertically stacked resting directly on the underlying extended inhumations.

In many ways the circular/broad subrectangular burial depressions are reminiscent of the elongated narrow rectangular burial pits, only on a larger scale. The depressions are basically rectangular but wide to accommodate the horizontal placement of multiple individuals. Tight, vertical stacking of extended inhumations, in which the heading direction of the individuals is variable, occurs in some of the features of both types.

The principal distinction between the two feature types is the number of interments per feature. The elongated narrow rectangular pits are primarily for the interment of a single extended inhumation, while the circular/broad subrectangular depressions are for multiple extended inhumations. Multiple extended inhumations do occur for some of the elongated narrow rectangular pits but they are always stacked vertically. Amongst the circular/broad subrectangular depressions multiple extended inhumations appear to be represented by the majority of the burial episodes with little evidence for single extended inhumations. Consequently, the number of individuals to be interred during a single burial episode appears to condition the form of the burial facility. Since the interments are primarily extended inhumations, there appears to be a period of time when multiple closely spaced deaths occurred within the population of the region altering the burial facility form.

In addition, there is apparently an anticipation of future multiple deaths on the part of the population. In those cases where the burial depression is reused, there is little evidence of alterations to the size and shape of the burial facility, only the disturbance of
previously interred extended inhumations. This would suggest the location of the burial facility was remembered or marked but the arrangement or positioning of individuals was not. In contrast, the elongated narrow rectangular pits intersect each other at various angles and positions indicating the burial locale was remembered or marked but not the individual burial facilities.

The circular/broad subrectangular burial depression is the most common burial feature type, with at least one occurring in each of the five mounds. This feature type is represented by Feature 2, Sidner Mound I (Figure 3 and Plate VII); Features 1South and 2, Sidner Mound II (Figure 4 and Plates VIII, IX, and X); Feature 2, Hambleton Mound (Figure 5 and Plate XI), Feature 108, Galbreath Mound (Figures 6 and 7); and the amateur excavated feature at McMurray Mound I. These features exhibit internal differences between the mounds, but all exhibit two common characteristics: horizontal use of mortuary space and multiple extended inhumations. Some of the features appear to represent a single burial episode, while others exhibit evidence of reuse. In some mounds, this feature type appears to be the principal burial facility; while in others, it is associated with other burial feature types. Some of the features contain cremations and disarticulated bone piles in addition to extended inhumations. In all but two cases, the disarticulated bone piles represent the partial remains of disturbed extended inhumations in reused features. The two exceptions represent true bundle burials. Regardless, extended inhumation is the principal mode of interment in this feature type in each mound.

McMurray Mound I. The circular burial depression at McMurray Mound I is the most poorly described feature of this type, because it was encountered and removed by an amateur. The overall dimensions are not known, although the feature was reportedly a shallow pit near the top of the mound center. The burial facility contained six extended inhumations, considered to be the remains of children, and arranged in a spoke wheel
Figure 3. Sidner Mound I floor plan showing locations of burial features.
Plate VII. Feature 2, Sidner Mound I, circular/broad subrectangular burial depression.
Figure 4. Sidner Mound II floor plan showing locations of burial features.
Plate VIII.  Feature 1South, Sidner Mound II, circular/subrectangular burial depression conjoined with Feature 1North.
Plate IX. Feature 1North, Upper Level Burials, Sidner Mound II, circular/subrectangular burial pit conjoined with Feature 1South.
Plate X. Feature 2, Sidner Mound II, circular/subrectangular burial depression.
Figure 5. Hambleton Mound floor plan showing locations of burial features.
Plate XI. Feature 2, Hambleton Mound, circular/subrectangular burial depression.
Figure 6. Galbreath Mound floorplan showing locations of burial features.
Figure 7. Feature 108, lower level, Galbreath Mound, circular/broad subrectangular burial depression.
pattern. The heads were closely spaced with the bodies radiating outward in a flared pattern, which suggests more of a fan shaped arrangement than a spoke wheel.

Evidence for the location of the burial depression within the mound comes from the professional excavation of the disturbed central portion of the mound. In an area bounded by Feature 1 to the north and Features 5 and 6 to the south, all three of which were elongated narrow subrectangular pits, the partial remains of two individuals were encountered on a slight depression of the mound floor. One individual, located just north of the center of Feature 6, was represented by an articulated pair of feet. The other individual, located adjacent to the northeast corner of Feature 5, consisted of a partially articulated foot and lower legs. The foot bones of both individuals were not completely fused indicating the individuals were late adolescents. In addition, the disarticulated remains of an infant were found in two separate pile within the disturbed fill portion of the mound.

Thus, the burial facility would have occupied an area roughly 1.8 to 2.1 m (6 to 7 ft) in diameter between Features 1, 5 and 6. The presence of three of the six reported subadults is confirmed and it would appear the heads of the individuals would have been oriented to the north or northwest. It is not clear if the burial depression was dug into the mound floor or made use of an uneven mound floor surface. Clearly, however, the burial facility did not intrude nor overlap the adjacent elongated narrow subrectangular burial pits. The presence of the circular/broad subrectangular burial depression represents a distinct change in the use of mortuary space for multiple interments in this mound from vertical stacking in a narrow rectangular pit to arrangement of individuals on an horizontal plane.

Galbreath Mound. The circular/broad subrectangular burial depression, Feature 108, at Galbreath Mound is also imprecisely known, because of prehistoric disturbance of the burial facility. The prehistoric disturbance involves the excavation of a subsequent
burial pit (referred to as upper level Feature 108) which disinterred major portions of all
of the initial burials and the disturbed remains were reinterred in several disarticulated
bone piles within the pit (Figures 6 and 7). It is not clear if the intruded burial pit
represents a burial episode coeval with the use of the other burial facilities in the mound
or is from a later prehistoric period. The intruded pit contained the remains of three
extended inhumations.

The intrusion of a prior burial facility, the piling of the disinterred bones within
the burial facility and the placement of additional extended inhumations are all
characteristics of the prehistorically accepted mortuary activities associated with the
mounds of the region and suggests the intruded burial pit is contemporaneous to the
general temporal period of mound use. However, the burial pit also intrudes through a
redeposited cremation pile (Features 103, 105, 107, and 109) which appears to have
covered and sealed the circular burial depression (Figure 6). This would suggest an
extended period of time, of unknown duration, between the initial burial facility and the
intruded burial pit. Further it suggests changing mortuary practices over time related to
the principal means of handling the corpse from extended inhumation to cremation and
back to extended inhumation.

The intruded burial pit destroyed the majority of the circular burial depression's
plan and profile outline shapes. Based on the intact portions of the disturbed extended
inhumations, the burial facility would have been roughly 2 to 2.5 m in diameter (Figure 8).
Using the base of the intact portions of the redeposited cremation pile as an indication of
the top of the burial depression, the burial facility would have been approximately 40 cm
in depth. The bottom was relatively flat and contained a lens of ashy material varying
from 5 to 10 cm thick, apparently covering the entire floor. In disturbed areas the ashy
lens was not present, but was evident wherever intact portions of the extended
inhumations were present. The ashy lens appeared to be thickest along the northern and
Figure 8. Feature 108, upper level, Galbreath Mound, intrusive burial pit.
northeastern portion of the burial facility, where cranial and upper torso remains were recovered. The ashy material consisted primarily of a white to gray powdery substance with some small calcined bone fragments, charcoal flecks, and burnt and unburnt broken artifacts including lithic, bone and antler objects.

The burials within the circular burial depression consist of four adults and three subadults. The adults and one of the subadults appear to be extended supine inhumations laid side by side in a slightly flaring or fan shaped arrangement with their heads to the north or northeast (Figure 8). The remains of the other two subadults were too disturbed to determine if they were originally extended inhumations or disarticulated bone piles.

The burial facility appears to have contained only one level of horizontally arranged interments, which distinguishes this burial feature type from the circular/broad subrectangular burial pit. Evidence for this interpretation comes from the disarticulated bone piles in the intruded burial pit, which contain complimentary body parts to the disturbed extended inhumations with no more than seven individuals represented. In some cases disarticulated limb bones were rearticulated with remains from the extended inhumations. In other cases, morphological similarities between paired long bones were used to reconstruct a side of a disturbed extended inhumation. However, when both sides of a portion of a body (ie. lower limbs and pelvic girdle, or upper limbs and torso) were represented more than once in the disarticulated bone piles, it was not possible to assign the remains to a specific inhumation. In such cases, the number of times the portion of the body represented in the bone piles equaled the number of extended inhumations missing that portion.

- Sidner Mound I. The burial depression, Feature 2, at Sidner Mound I is more rectangular than circular in plan outline shape (Figure 3 and Plate VII). The long axis is oriented roughly east to west and measures 2.6 m (8.6 ft); while the north to south axis measures 2.1 m (6.9 ft). The depression extends 0.6 m (1.9 ft) from the mound floor into
the subsoil and contains two distinct levels. The lowest level contains the burials and the fill consists primarily of sand and gravel. Approximately 0.2 m (0.7 ft) below the mound floor a streak of bark extends diagonally across the pit and presumably caps or seals the burials. The fill in the upper portion of the feature consists of dark soil mixed with burnt earth nodules and burnt and calcined bone fragments.

The burial facility contains the remains of at least fourteen individuals, 10 adults and 4 subadults. A wide variety of corpse treatment types are present including one cremation, one flexed inhumation, one partial inhumation, one bundle burial, one disarticulated bone pile, and five extended inhumations. All of the subadult remains are disarticulated bone piles.

The arrangement of the burials is suggestive of prior planning with the flexed and extended inhumations forming a fan shaped pattern. The feet of the individuals are closely spaced around a cremation and an adult bundle burial with the bodies of the extended inhumations radiating outward to the north. The flexed and extended inhumations occur in three pairs with the pairings separated by one or two disarticulated piles of subadult remains. The subadult bone piles are discrete in that one individual is represented in each pile. Within each pair of adult inhumations the remains are closely spaced, partially overlapping, and the skulls tend to face each other.

There is evidence of prehistoric disturbance for one pair of extended inhumations (Burials 9 and 10), where the lower extremities were disarticulated and piled on the individuals' backs to accommodate a subsequent interment. The disturbed burials are along the eastern end of the burial facility and the disturbance was originally attributed to the placements of a partial inhumation (Burial 11), referred to as an isolated or trophy skull, and a disarticulated bone pile (Burial 13). Another possible explanation for the displacement of Burial 9's lower extremities and possibly Burial 10's lower extremities is the interment of the middle pairing of extended inhumations (Burials 7 and 8). The
orientation of the upper portions of Burials 9 and 10 indicate the lower extremities of Burial 9 and possibly the feet of Burial 10 would have underlain the lower extremities of Burials 7 and 8. In addition, the close spacing and overlapping of Burials 7 and 8 suggest they were so placed to fit into available space.

Evidence for the displacement of Burial 9's lower extremities being associated with the interment of the partial inhumation, Burial 11, rests on the copper beads associated with the two burials. Originally considered to be associated with Burial 9's pelvic girdle, the copper beads most likely were associated with Burial 11's neck region. This interpretation is based on the distribution of copper stains on Burial 11's cervical and upper thoracic vertebrae. Since the vertebrae and the mandible were present with Burial 11's cranium, the interpretation of the remains as representing a trophy skull can be questioned. However, the remainder of the body has yet to be adequately documented in the skeletal collection. Pelvic and lower extremity long bone fragments are present in the miscellaneous feature fill remains which can not be crossmended with the known inhumations and may represent the missing portions of Burial 11.

Regardless of the true nature of Burial 11's remains, the interment of this individual had to occur during or after the disturbance of Burial 9's lower extremities. Copper staining on the bones of Burial 9's pelvis are confined to the pelvic basin. Since Burial 9 was originally a prone extended inhumation, the articulated innominates and sacrum had to be turned upright prior to the placement of Burial 11.

If Burial 11 was an extended inhumation, the postcranial remains would have either underlain or more likely overlain the lower extremities of Burials 7 and 8. Since no in situ remains were recovered in association with either burials' lower extremities, Burial 11 must be considered a partial inhumation. However, such an interpretation does not imply a meaning related to prehistoric mortuary behavior since circumstantial
evidence from the feature fill suggests Burial 11's postcranial remains may be represented amongst the bone fragments from the disturbed portion of the feature.

The disarticulate bone pile (Burial 13) represents a distinct deviation from the horizontal arrangement of burials within the feature. Burial 13 can not be considered a true bundle burial because the remains are not of a discrete individual tightly and neatly stacked. A nearly complete individual is represented in the bone pile but is commingled with postcranial remains of Burial 10 and an incomplete set of vertebrae from an adolescent. The epiphyseal rings of the vertebrae have not yet fused and the upper and lower surfaces of the vertebra bodies have a billowy appearance. The size, shape, and stage of development of the vertebrae are similar to those from Burial 7 and compliment the missing portions of Burial 7's vertebral column.

Although detailed observations of Burial 13 were not recorded, it is clear the bone pile was jumbled rather than neatly and tightly stacked, and occurred at a level below the horizontal plane on which all of the other interments were placed. This suggests Burial 13 was a later excavation into the burial facility. If the adolescent vertebrae are the missing portions of Burial 7's vertebral column, which present evidence indicates, then excavation was conducted in two different spots of the burial facility for the interment of Burial 13. Such activity does not conform to the general pattern of prehistoric mortuary behavior related to the reuse of burial facilities in this region and suggests a different disturbance process.

All of the extended inhumations and the flexed inhumation are disturbed primarily in their thoracic cage regions. The disturbance was originally attributed to rodent burrowing; although there are no recorded observations concerning the entry and exit points of the burrow within the feature. Additionally, none of the bones exhibit rodent gnaw marks. The nature and composition of Burial 13 suggests a cultural disturbance of the burial facility which does not necessarily have to be of prehistoric origin. The nature
of disturbed feature fill bones, in which small bones are complete and large bones are highly fragmented in their weaker areas, is also suggestive of cultural disturbance. The consistent confinement of disturbance to the thoracic cage regions between the shoulder and pelvic girdles appears purposeful and suggestive of cultural activity. This would also help to explain the paucity of burial associated artifacts. The few artifacts which were recovered from undisturbed portions of the inhumations consistently occurred in the neck/shoulder region or lower thoracic cage/pelvic region. If the disturbance was related to rodent activity, then any associated artifacts, if they occurred, should have been included with the disturbed feature fill bones. However, none were recovered.

The most parsimonious explanation for the disturbance of the burial facility is a pothunter's trench. Such a scenario does not negate the prehistoric disturbance of Burial 9 by subsequent interments but complicates the ordering of the sequence of burial episodes. The interment of Burials 9 and 10 are viewed as occurring prior to Burials 7 and 8 with initial disturbance of Burial 9 related to the placement of Burials 7 and 8. Burials 11 and 13 were placed on top of Burials 9 and 10. Whether or not Burials 11 and 13 were extended inhumations is indeterminable because of subsequent disturbance. However, both are suggested to have been originally complete individuals and presumably articulated. In this scenario, the pothunter's trench apparently encountered Burials 11 and 13 first and almost completely destroyed any vestiges of their original positions. After exposing these burials, the trenching appears to follow the remaining burials across the burial facility and was confined to following subsequently exposed thoracic cage regions. This would suggest artifacts were associated with the thoracic cage regions of Burials 11 and 13 and most likely removed and the information used to guide the trenching. Partial confirmation of this interpretation are the copper beads around the undisturbed neck region of Burial 11 which were apparently overlooked. Burial 13 is viewed as a
reinterment resulting from the backfilling of the pothunter's trench as the excavation progressed.

Detailed and conclusive stratigraphic evidence for a pothunter's trench is not present but suggested in the fieldnotes. Since the mound is located in an agricultural field any surficial vestiges of a pothunter's trench would have been eradicated by plowing. Some of the disturbed feature fill bones were found in the plowzone horizon and attributed to deep plowing. The bark covering, primarily along the feature perimeter, occurred at the base of the plowzone but was situated slightly deeper towards the center. The areal extent of the bark covering is not reported but appears to be discontinuous. Loose earth was noted in the planview of feature separating areas of the bark covering and was attributed to rodent activity. However, the horizontal size, shape, and extent of the loose soil is not recorded but is noted to occur in the general area overlying the disturbed portions of the inhumations. All of the stratigraphic evidence indicates relatively recent disturbances of the feature. Plow disturbance is limited and restricted to the uppermost portion of the feature. The deeper disturbance involving the inhumations can not be attributed to any specific disturbance process based on the stratigraphic evidence; but clearly is not of prehistoric origin. The nature of the internal composition of the disturbed area is suggestive of pothunting rather than rodent burrowing.

Hambleton Mound. The circular/broad subrectangular burial depression, Feature 2, at Hambleton Mound is reminiscent of the burial depression at Sidner Mound I (Figure 5 and Plate XI). There is a horizontal arrangement of extended inhumations with a cremation at the feet of the individuals, evidence of prehistoric reuse or multiple burial episodes, and a general paucity of burial associated artifacts with the notable exception of gorgets. However, there are subtle differences between the two features in internal composition.
The burial facility measured 2.2 m (7.1 ft) (north-south) by 1.7 m (5.5 ft) (east-west). The depth of the feature below the mound floor is reported as shallow with no precise measurement given. A photograph of the feature indicates the thickness of the feature fill to between 0.1 and 0.3 m (0.5 and 1.0 ft), which presumably represents the feature depth (Potter 1967:Figure 5). The feature fill consisted of dark soil with miscellaneous bone fragments from the inhumations incorporated. Since the feature was completely sealed by mound fill with no evidence of an intrusive pit, the disturbance can not be attributed to pothunting. Some of the disturbance was attributed to rodent burrowing but may be related to prehistoric mortuary activities. In addition, all of the burials in the feature were noted to be placed on a bark lining or layer and covered with a bark lining or layer, which is similar to the burial depression at Sidner Mound I. As with the bark layer at Sidner Mound I, the extent and integrity of the bark layers are not reported and implied to be intact overall.

Three of the burials (#'s 1, 2 and 3) are extended inhumations lying parallel and oriented with their heads to the southeast. The individuals are closely spaced with Burial 2 resting partially on top of and between both Burials 1 and 3. The lack of disturbance of the remains of Burials 1 and 3 indicates Burial 2 was interred at the same time or shortly after Burials 1 and 3. At the feet of these individuals is a cremation (Burial 6) and adjacent to Burial 3’s pelvic region is a bundle burial (Burial 5). This arrangement of burials closely parallels the arrangement in the burial depression at Sidner Mound I. Another extended inhumation (Burial 4) lies adjacent to Burials 3 and 5; however, it is headed in the opposite direction and is slightly flexed at the waist to conform to the feature perimeter. Consequently, Burial 4 is not parallel to the other inhumations and its positioning suggests a separate burial episode making use of available space or even possibly an extension to the original burial facility.
Prehistoric disturbance of the inhumations is evident for Burials 2 and 4, where the pelvic region and upper leg bones have been rotated so the anterior surfaces point upwards. This pattern of bone manipulation is reminiscent of the disturbance of Burial 9 at Sidner Mound I. However, unlikely Sidner Mound I, there is no indication the disturbance is related to the interment of additional individuals. Originally, the rotation of body parts was interpreted as representing the interment of partially decomposed individuals (Potter 1967:5). Given the occurrences of in situ bone manipulation at the other mounds in the region and the presence of bone fragments in the feature fill at Hambleton Mound, the rotation of the bones from Burials 2 and 4 appear to represent prehistoric disturbance of extended inhumations rather than prior corpse processing.

The disarticulated bone pile (Burial 5) appears to represent a true bundle burial rather than a disturbed extended inhumation. The deposit is tightly and neatly stacked, consisting of the nearly complete remains of a single individual. The bones appear to be weathered with eroded exterior surfaces and longitudinal splitting of the long bone shafts and ilium blades. In addition, leather stains were noted to be associated with the bone pile, but were not described in detail.

Sidner Mound II. Two circular/broad subrectangular burial depressions, Features 1 South and 2, occur at Sidner Mound II. Feature 1 South measures 2.9 m (9.5 ft) (north-south) by 2.5 m (8.2 ft) (east-west) with the northern edge of the burial facility intruding the southern perimeter of Feature 1 North, a circular burial pit (Figure 4 and Plate VIII). The distribution of human remains conforms to the northern perimeter of Feature 1 South indicating it was a later and separately constructed burial facility and available space in Feature 1 North was not utilized for interments. The depth of the feature was not recorded but indicated to be approximately 0.1 m (0.5 ft) below the mound floor. The mound floor is synonymous with the plowzone/subsoil interface and the presence of bones
protruding from the surface of the feature and being incorporated in the plowzone horizon suggest the feature has been partially truncated by plowing.

Feature 2 is more subrectangular in planview shape measuring 2.5 m (8.2 ft) (east-west) by 1.7 m (5.7 ft) (north-south) (Figure 4 and Plate IX). The depth of the burial facility is not recorded, but one of the burials is noted to occur 0.6 m (2.1 ft) below the mound floor. Since the burials occur on a horizontal plane at the bottom of the feature, the depth of the feature would be slightly more than 0.6 m (2.0 ft), making it the deepest of the circular/broad subrectangular depressions. It is considered to be a burial depression because it contains a single level of horizontally arranged inhumations rather than the multiple levels characteristic of the circular/broad subrectangular pit burial feature type.

Both burial depressions have slightly outflaring side walls and flat bottoms, also referred to as bath-tub shaped. Both features have fill consisting of dark soil mixed with yellowish clay of the subsoil and charcoal flecks. Feature 2 also contains reddish brown clay, which may be the result of staining from the bark layers sprinkled with red ochre underlying and overlying the burials. In addition, distinct thin deposits of sand and gravel outlined the perimeter of Feature 2. These additional deposits and bark layers were similar to the internal composition of the lowest level of the pit burial, Feature 1 North, and were not observed in the other burial depression, Feature 1 South.

Feature 1 South has the most complicated internal composition of all the burial facilities, due primarily to prehistoric disturbance or reuse (Figure 9). At least nineteen burials are represented by the original burial designations, although the exact number of individuals can not be accurately determined. Thirty-three individuals are indicated by the remains within the originally numbered burials. However, most of the individuals are represented by few fragmentary remains. The types of burials represented include extended inhumations, partial extended inhumations, disarticulated bone piles, and
cremations. Some of the bone fragments from different numbered burials have been crossmended indicating the remains of a particular individual are dispersed in the burial facility. None of the disarticulated bone piles contains the discrete remains of a single individual and, therefore, they can not be considered to represent true bundle burials. Because of the disarticulated, fragmentary and disperse nature of the bones and bone fragments, complete individuals could not be reassembled. However, it would appear more than nineteen and substantially less than thirty-three individuals are represented.

The arrangement of complete and partially complete extended inhumations suggests individuals were oriented at various angles approximating an east-west direction with the headings of individuals often times reversed. Multiple burial episodes are suggested by the variability in the direction of heading of the individuals. Additionally, there is evidence of vertical stacking of individuals on two horizontal planes, which appears to be related to the last burial episode in the facility.

The general pattern for the use of the burial facility appears to involve the filling of the bottom of the central portion with extended inhumations with subsequent interments intruding and partially displacing the initial interments. The disinterred portions of individuals are placed around the perimeter of the burial facility. Evidence for prehistoric disturbance or reuse lies in the facts that the complete extended inhumations overlie the partial extended inhumations, portions of the partial inhumations are contained in the disarticulated bone piles, and burial associated artifacts are included in the disarticulated bone piles. Post depositional disturbance processes (ie. rodent burrowing, plowing and pothunting) can not account, singly or in combination, for these observations. Consequently, prehistoric disturbance is indicated, although the pattern is unlike that represented in the other circular/broad subrectangular burial depressions. It does, however, approximate the degree and nature of the disturbance associated with the lowest
level burials in Feature 1 North, the burial pit, into which it intrudes. This tends to suggest a mound specific pattern of prehistoric mortuary activity.

Feature 2 contains an arrangement of inhumations suggestive of a single, multiple interment burial episode (Figure 9). All of the known inhumations are headed to the west and are closely spaced with three adults extended on their left sides and a subadult/infant extended on its back between Burials 2 and 3. The northern portion of the burial facility has been disturbed up to and including a portion of Burial 3's torso. Within the disturbed area the partial remains of two additional subadults (one 2.5-3.5 years old and the other 10.5-11.5 years old) were recovered. Their original burial positions and the whereabouts of the rest of their remains are unknown. Presumably, they were adjacent to Burial 3 and the remains were incorporated in the plowzone.

The disturbance was originally attributed to rodent burrowing, which would had to have been fairly extensive. The possibility of a pothunter's trench can not be ruled out, since others were noted to occur in the immediate vicinity of the feature. There are no detailed descriptions concerning the internal composition characteristics differentiating a rodent burrow from a pothunter's hole. Evidence for prehistoric disturbance of the burial facility is present in the form of manipulation of Burial 2's lower extremities. The disturbance does not entail the displacement nor the disarticulation of bones from their correct anatomical positions. Instead, the femora, tibiae and fibulae are marked with red ochre in a series of short parallel lines perpendicular to the long axes of the bones, extending from just above the knees to the ankles. The placement of the lines indicate the bones were marked in situ following the exposure of the decomposed corpse. Since there appears to be a concern with not disturbing the position of the skeleton during this marking, it seems unlikely the disturbance of Burial 3 is related to this prehistoric activity.

Feature 2 shares many similarities in internal composition with the upper level burials in Feature 1 North, the burial pit. Included in the similarities are the apparent
single, multiple interment burial episode; extended inhumations resting on one side, and close spacing of individuals in the central portion of the burial facility with the perimeter area unused. In contrast, the other burial depression, Feature 1 South, is similar to the lower level burials of Feature 1 North, where multiple burial episodes involving either single or multiple interments disturbing prior interments is characteristic. Consequently, two different patterns of prehistoric mortuary activity, each occurring at two different periods of time, are indicated for this mound.

Circular/Broad Subrectangular Pit

**Definition.** The circular/broad subrectangular pit burial feature type is similar in size and planview shape on the mound floor to the circular/broad subrectangular depression burial feature type. However, in cross section profile the burial pit extends between 0.9 and 1.2 m (3 and 4 ft) below the mound floor; clearly doubling the depth of the burial depression feature type. In profile shape the burial pit is similar to the burial depression in having a relatively flat bottom, rounded corners, and vertical to slightly outward flaring side walls. In contrast to the burial depression the burial pit feature type exhibits isolated occurrences of minor modifications to the feature perimeter to accommodate subsequent inhumations.

**Discussion.** Multiple interments and multiple burial episodes characterize the mortuary use of the burial pit feature, as is the case for the burial depression feature. In contrast, no clear overall horizontal pattern of arrangement of individuals is evident in the burial pit. Each group of multiple interments contains tightly spaced individuals along the horizontal dimension. In some cases, several groups of multiple interments occur on the same horizontal plane and give the semblance of horizontal arrangement over the entire feature. However, the directions and orientations of the individuals vary between the groups of multiple interments but do not vary within a specific multiple interment group. Thus the pattern of parallel or flared rows of extended inhumations characteristic of the
circular/broad subrectangular burial depression is maintained in the burial pit feature
type for a specific group of multiple interments but not necessarily in the arrangement of
individuals over the space of the entire burial facility. In fact, cases exist where groups of
multiple interments are vertically stacked, with each group oriented in a different
direction. Consequently, at any particular level within the burial pit, the entire available
space on an horizontal plane is not utilized for interments and consists of fill with
occasional artifact inclusions.

Within the circular/broad subrectangular burial pit, the primary mode of
interment appears to be extended supine inhumation. Subtle variations of this interment
type are present and result from the tight spacing of individuals within a multiple
interment group. In some cases, the legs are slightly flexed, but for all intents and
purposes are extended, and in other cases, one arm is draped over another individual. In
such situations, the individuals are not truly supine, resting flat on their backs, because the
individuals are not placed side by side but partially overlap each other in a row. As such,
one side of the back of an individual is raised slightly and resting on one side of the front
of the adjacent individual. The few occurrences of tightly flexed individuals and
semiprone or prone extended inhumations are also related to the tight spacing of
individuals within a multiple interment group.

Cremations and disarticulated bone piles occur within the burial pit feature type.
The few occurring cremations were usually placed on the abdominal region of and
extended individual within a multiple interment group rather than adjacent to an
individual or separately placed in the feature, as were the cases with cremations from
other burial feature types. Disarticulated bone piles which could be interpreted as bundle
burials occur just as rarely as cremations and are restricted to subadults under the age of
five. In such cases, the remains of a nearly complete individual were draped over or lying
adjacent to one of the extended adult inhumations within a multiple interment group.
Although the bones of the subadults were noted not to be in anatomical order, they did not occur in a pile but over a restricted, uneven horizontal space; and may represent extended individuals which were displaced by settling following decomposition. The piles of disarticulated adult and older subadult bones occur in a variety of sizes and shapes from a horizontal scattering of whole and fragmentary bones to large subconical stacks of predominately whole bones. In no case do these piles represent the complete or nearly complete remains of a single individual. Through crossmending fragments, rearticulating bones, and determining minimum number of individuals represented by specific bones, it was possible to determine that the disarticulated bone piles represent the missing portions of disturbed extended inhumations. In general the disarticulated bone piles occur at a level within the feature slightly higher than their corresponding disturbed extended inhumations and are placed at the periphery of the subsequent multiple interment group.

Returning to the point concerning the disturbance of the feature perimeter, it would appear the modifications to burial pit were to accommodate additional interments and are feature specific. This would suggest either a prolonged period between burial episodes, filling of the feature after each burial episode, or a combination of both factors such that the original size, shape and location of the burial facility was not accurately known for subsequent interments. This would also exclude the possibility of accurately placed, above ground grave markers. Obviously the locale, as well as the burial facility, was well known enough, by whatever means, to return to the approximate spot. The recorded observations on the feature fill composition suggests homogeneity in soil color, texture and structure; although pockets of looser fill were noted and attributed to rodent activity. There were no recorded observations of stratigraphy within the feature fill suggesting the pits were left open for extended periods of time. However, the vertical stacking of multiple interment groups oriented in different directions and the presence of disturbed bark lens suggest an extended period of use of this burial facility type.
The period of use of the circular/broad subrectangular burial pit feature type appears to be relatively longer than the use period for the circular/broad subrectangular burial depression feature type based on the limited stratigraphic evidence and the disturbance of the feature perimeter. The number of interments and their spatial arrangement are not sufficient temporal indicators for determining the relative duration of the use period of the burial facility types, since cultural practices may be an influencing factor. It is the nature of the prehistoric disturbances and the fact that different burial facility types co-occur in mounds that suggest differential periods of use. Otherwise one would have to consider the possibility of co-occurring or sequentially occurring differences in mortuary activities, which cannot be refuted on present evidence.

The circular/broad subrectangular burial pit feature type occurs in only two of the Big Darby Creek mounds; Feature 1 North at Sidner Mound II (Figure 4), and Feature 110 at Galbreath Mound (Figures 6 and 9). In both mounds, the burial pit is closely spatially associated with at least one circular/broad subrectangular burial depression. Although the burial pit is not the only burial feature type occurring these two mounds, the spatial arrangement of the features suggests this feature type was the initial burial facility constructed at Sidner Mound II and was a subsequent facility built on the southern slope of Feature 108, lower level, at Galbreath Mound.

At Sidner Mound II, two circular/broad subrectangular burial depressions accompany the burial pit with one to the south and one to the north. While at Galbreath Mound, a circular/broad subrectangular burial depression occurs to the north of the pit and a mound floor burial occurs to the west. Within both mounds spacing between the burial features is not uniform and at Sidner Mound II, the southern burial depression, Feature 1 South, overlaps and intrudes the southern perimeter of the burial pit, Feature 1 North. This represents the most convincing evidence for the earlier construction of the burial pit feature type.
Evidence for the early construction of the burial pit at Galbreath Mound is suggested by the oldest of two radiocarbon dates, 225 + 125 BC, which came from a charred wood sample at the bottom of the burial pit. The more recent date, 75 + 80 BC came from a redeposited cremation pile overlying all of the other burial features and does not directly date those adjacent to the burial pit. However, the northern edge of the burial pit appears to be banked on the southern rim of the subsoil piled around the perimeter of Feature 108, lower level, indicating the circular/subrectangular burial depression was present prior to the burial pit. The mound floor burial is situated at the approximate level for the top of the burial pit and appears to rest on the soil removed during the construction of the burial pit. This would suggest the mound floor burial postdates the initial burial pit construction but not necessarily the use period of the burial pit. For the mound floor burial to be contemporaneous with one of the burial episodes in the burial pit, an explanation must account for the homogeneous mound fill covering both features and why the individuals in the mound floor burial were excluded from interment in the burial pit. Complicated scenarios could be postulated for which no supporting empirical evidence would be available. Consequently, at present, the most parsimonious explanation is that the burial features represent sequential use of mortuary space.

Sidner Mound II. The circular/broad subrectangular burial pit feature type exhibits the widest range of variability in internal structure and composition of the various burial feature types. At Sidner Mound II, two distinct levels of interments are present, one at the bottom of the pit (Figure 9 and Plate XII), and one near the top (Plate IX). Between the two levels is a disturbed level containing the disarticulated partial and complete remains of at least 6 subadults and 4 adults, which were confined to the eastern half of the feature. Crossmending of fragments and rearticulating bones indicated the remains were associated with the lowest level of interments. Examination of the cross
Figure 9. Feature 1North, lower level, Sidner Mound II, circular/broad subrectangular burial pit.
Plate XII. Feature 1North, lower level burials, Sidner Mound II, circular/broad subrectangular burial pit.
section profile of the feature suggests the disturbance of the lowest level interments resulted during a multiple interment burial episode in the upper level.

At the mound floor level the burial pit dimensions were 3.3 m (10.7 ft) (east-west) by 2.7 m (9.4 ft) (north-south), which reduced to 1.9 m (6.35 ft) (east-west) by 1.7 m (5.5 ft) (north-south) at the bottom. Initially, the side walls were relatively vertical to a depth of about 0.5 m (1.5 ft). At this point they slope inward for another 0.5 m (1.5 ft) in depth with the north wall more acutely angled than the other sides. Then the side walls are again oriented vertically over a depth between 0.1 and 0.2 m (0.4 and 0.6 ft) to the bottom of the pit, giving the feature an overall average depth of 1.1 m (3.7 ft) below the mound floor. The pit bottom is virtually flat with the lowest level interments resting on it. Discontinuous traces of bark were noted on the vertical portions of the side walls at the bottom of the pit but not on the floor.

The feature fill covering the lowest level interments consists of a yellowish-brown and black mottled silty clay with charcoal fleck inclusions. The upper horizon boundary of the fill is demarcated by a thin lens of sand overlain by an equally thin layer of bark. These lens begin along the feature perimeter at the mound floor level and slope downward and inward. They are truncated at a depth between 0.5 and 0.6 m (1.5 and 2.0 ft) below the mound floor. The feature fill covering the lowest level interments was increasing in thickness from the side walls towards the center of the feature up to the area where the lens were truncated. This would suggest the lowest level interments were sealed at one time with a sand and bark lens covering the fill, the central portion of which was subsequently disturbed.

The feature fill above the sand and bark lens appears to relatively homogeneous consisting of a dark and reddish-brown mottled silty clay. The relative homogeneity of the fill complicates the interpretation of the disturbance of the lowest level interments. The upper level multiple interment is centered along the east-west feature axis beginning at
the mound floor and extending southward on an inclined bark covered surface. As such, the interment is isolated within the relatively homogeneous upper level fill, with the lowest edge of the bark covered surface being approximately 0.3 m (1 ft) above the bottom of the disturbance intruding the lowest level interments and the truncated area of the sand and bark lens. Consequently, it does not appear the upper level multiple interment is directly responsible for the disturbance of the lower level interments.

It is within the 0.3 m (1 ft) thick area of disturbance of the lower level interments that the disarticulated partial and complete remains of ten individuals occurred. The cross section profile of the perimeter of the disturbance is reminiscent of the original pit shape with relatively vertical side walls except for the more sloping north wall. However, a sand and bark lens covering is not present. Since the partial remains can be attributed to disturbed individuals from the lowest level interments, another burial episode represented by the disarticulated complete individuals is suggested to have occurred between the upper and lower interments and is responsible for the disturbance of the lower level interments.

The disarticulation of the complete individuals is being interpreted as resulting from disturbance from the upper level multiple interment. As such, the complete individuals are viewed as originally being extended inhumations. However, there is no empirical evidence to substantiate this position, since the disarticulated remains were not mapped, photographed, nor described in detail. Consequently, they could have been bundle burials or flexed inhumations; although given the predominance of extended inhumations in the various burial facility types of all the mounds in the region such a situation seems unlikely.

Following the disturbance of the lowest level interments, the entire burial pit appears to have been filled, accounting for relative homogeneity of the upper feature fill. Therefore, the upper multiple interment would have to have been intruded into the fill
and covered by the displaced fill. Interestingly, the inclined surface on which the upper multiple interment rests closely parallels the angle for the north wall of the original pit shape and the northern perimeter of the disturbance. This tends to suggest a consistent pattern in the excavation procedure for the multiple burial episodes and the gradual restriction in the use of available space in the burial facility. Disturbance of previously interred individuals could indicate an extended period of time between burial episodes, in which the exact location of interred individuals was forgotten or disturbance of individuals was not culturally relevant or taboo. Disturbance of the sand and bark lens covering, a clear delineation of the level of prior interments, suggests avoidance of disturbing prior interments was not practiced.

Returning to the lower level of interments, there is some indication for the occurrence of multiple burial episodes within this level. The clearest empirical evidence is the modification of the original burial feature shape in southwest corner. Over a 0.4 m (1.3 ft) wide section, an horizontal extension 0.3 m (1.1 ft) long was excavated into the subsoil to accommodate two burials. Circumstantial evidence lies in the placements and orientations of individuals, as well as, disarticulation and manipulation of portions of some individuals; which suggest several burial episodes and the intent to fill horizontal space of the facility by accommodating individuals to the plan of the feature. Since none of the remains of the individuals exhibit weathered bone surfaces indicative of exposure, it would appear the lower level of the facility was opened for a relatively short period of time. Such a situation would indicate a period of high mortality rate and anticipated deaths. As such, the sand and bark lens covering would signify not only the termination of the use of the facility but the end of anticipated deaths. The subsequent disturbances of the interred individuals and the additions of multiple interments in what appear to be single burial episodes imply relatively longer periods between deaths and the lack of anticipated deaths.
Galbreath Mound. At Galbreath Mound, the overall dimensions of the circular/broad subrectangular burial pit (Feature 110) are not readily apparent due to pothunter disturbance of the western end of the feature and the nature of the burial feature construction (Figure 10). Rough approximations of the maximum dimensions based on intact extended inhumations suggest the pit was 4 m (east-west) by 2 to 2.5 m (north-south) at the presumed mound floor and extended to a depth of about 75 cm. The bottom of the pit varied in depth resulting in a relatively flat but sloping floor of approximately the same maximum horizontal dimensions as the top of the feature. At the deepest portion of the pit bottom, the horizontal space was reduced to a relatively level 2 m by 2 m area.

The subsoil excavated from the pit appears to have been piled around the feature and spread radially outward from it. Consequently, the true level of the original mound floor is not known; and it would appear the upper portion of the original pit perimeter would have been above ground. Undisturbed portions of the feature profile indicate the side walls were slightly outflaring, but could be considered basically vertical; and the floor was flat but uneven. The western half of the feature is the deepest and contains the reduced relatively level horizontal floor space. The pit floor slopes up near the center of the feature to another relatively level floor area on the eastern third of the feature. The depth of the pit at the eastern end is reduced to approximately 50 cm. Thus the feature bottom has a stepped or bilevel longitudinal cross section outline.

At least five burial episodes, each involving multiple interments, are indicated by the vertical stacking of tightly spaced groups of individuals oriented at different directions. The western half of the pit was used first with the multiple interment groups oriented at various angles roughly approximating an east-west direction. The centering of each subsequent multiple interment group moves slightly to the east. Where the pit floor slopes upward and in the eastern third of the feature the orientation of the multiple
Figure 10. Feature 110, Galbreath Mound, Circular/Broad Subrectangular Burial Pit.
interment groups changes to various angles roughly approximating a north-south direction. The unevenness of the pit floor and the change in burial orientation suggests the eastern portion of the feature is an addition or extension to the original pit as available was filled.

In many ways the burial pit is reminiscent of the conjoined circular burial pit and depression (Features 1 North and I South) at Sidner Mound II. However, there are differences in the internal structure and composition of the burial pit at Galbreath Mound which distinguishes it from the one at Sidner Mound II. The eastern extension of the pit at Galbreath Mound appears to be an attempt to extend the use life of the original burial facility. The extension is smaller in areal extent but approximates the depth of the original pit. The intended use of the extension appears to be a continuation of the practice of vertical stacking of multiple interment groups. In contrast, the circular burial depression partially overlapping the burial pit at Sidner Mound II appears to represent the construction of a new burial facility. The upper portion of the burial pit had available space for additional interments but was not used. The burial depression was of similar areal extent as the burial pit but was extremely shallow. Interments were centrally placed within the depression and because of the shallowness of the feature subsequent interments partially disturbed some of the individuals with the remains piled around the feature perimeter. Thus, the use of mortuary space was oriented to an horizontal plane rather than vertical stacking.

Within the burial pit at Galbreath Mound, there appears to be a restriction on the areal extent of the burial facility with individuals of a multiple interment group closely spaced either overlapping or stacked. The concern appears to be with the vertical filling of the pit with subsequent interments. In addition, there is no sand and bark lens covering separating and sealing levels of multiple interment groups, which suggests a continuous use period for the facility.
Although the western portion of the burial pit was severely disturbed by pothunting, the intact portions of individuals suggests the subsequent placements of multiple interment groups did not substantially disturb previously interred groups. The pothunter's pit (Feature 106) was backfilled with the fragmented remains which compliment the missing portions of the disturbed extended inhumations from the western end of the burial pit. Because of the recent disturbance, prehistoric disturbance of the lowest level interments in the western end of the burial pit can not be conclusively refuted. However, if it did occur, it would have been of limited extent, since there are no intact disarticulated bone piles within the western portion of the pit. Evidence for prehistoric disturbance of individuals is restricted to the lowest level multiple interment group from the eastern end of the pit.

In contrast, the burial pit at Sidner Mound II shows a concern with the horizontal placement of individuals on the pit floor resulting in some disturbance of previously interred individuals. Following the filling of the floor space, the interments were sealed and the pit was, at least partially filled, suggesting an hiatus in the use period. Subsequent multiple interments restricted to the central area of the facility and appear to disturb underlying interments. Consequently, horizontal use of mortuary space appears to be a more important concern than vertical space.

**Redeposited Cremation Pile**

**Definition.** Redeposited calcined human bone fragments occurring outside of subfloor burial feature context occur at Sidner Mounds I and II, and Galbreath Mound. Only at Galbreath Mound were such deposits assigned feature number designations (Figure 6). When in undisturbed context, the redeposited cremations resemble small, amorphous planview shaped, somewhat conical piles situated on the mound floor or overlying a circular/broad subrectangular depressional burial feature. Disturbed redeposited cremation piles occur as broad narrow lens and when the disturbance agent is
plowing, some of the remains are incorporated in the plowzone horizon. Those redeposited cremation piles occurring on the mound floor are incorporated in the primary mound fill, which consists of a discontinuous, narrow lens of dark earth covering and surrounding the subfloor burial features. Consequently, the redeposited cremation piles are in close proximity, less than 3.5 m, to the subfloor burial features. However, the redeposited cremation piles are not incorporated in the fill of the subfloor burial features and stratigraphically represent a separate burial episode.

Discussion. The redeposited cremation piles are distinctly different in composition from the cremation piles located within the subfloor burial features. The redeposited cremation piles contain relatively fewer burnt human bone fragments than the cremation piles in feature context and are more dispersed. In contrast to the cremation piles, which tend to be homogeneous in the nature of the burnt human bones and suggestive of the remains of a single individual; the redeposited cremation piles are more variable. The larger piles contain the partial remains of more than one individual and exhibit a wide range of variability in the degree of burning from partially smoked or blackened to completely calcined. However, the smaller piles contain very few small bone fragments, usually less than two dozen, and are invariably calcined. All of the calcined bone fragments exhibit deep checking, transverse fracturing, and longitudinal warping characteristic of in-flesh cremation. None of the human bone fragments in these piles is unburnt.

All of the redeposited cremation piles are similar in composition containing a mixture of burnt human bone, burnt clay nodules, and wood charcoal fragments. The soil matrices of these piles are not usually described in detail, but generally appear to be highly mottled with dark to light colored soils; completely disintegrated burnt clay nodules ranging from various shades of red and orange to buff; and small pockets of powdery white ash. The wood charcoal fragments range in size from minute flecks to discernible
small branch segments. Artifacts are associated with some of the redeposited cremation piles and are incorporated at various positions and orientations suggesting they were not purposefully placed beneath, within, on top, or adjacent to the pile. The conditions of the artifacts are variable being burnt or unburnt, and whole or broken.

**Sidner Mound I.** At Sidner Mound I, an unreported number of loads of mottled black, red and buff earth containing charcoal and burnt clay nodules were observed along the plowzone/subsoil interface. Most of these loads were extensively plow disturbed and presumably the upper boundary of the subsoil is synonymous with the mound floor. Only three of the loads are described in any detail and represent deposits adjacent to the subfloor features. However, the fieldnotes indicate clearly the loads containing burnt clay nodules, occasional cremated human bone, and charcoal flecks occur in the dark earth extending over the top of Feature 2, a circular/broad subrectangular burial depression. The dark earth, synonymous with the primary mound fill, reaches a thickness of 21 cm in some areas and presumably the redeposited cremation loads could be of similar thicknesses.

One small deposit, measuring 18 cm in diameter and 6 cm in thickness, was located within the primary mound fill between Features 1 and 2, Sidner Mound I. Human remains consisted of a few calcined cranial vault fragments. A complete stemmed base point (3733.1/6) was associated with this deposit. A second deposit, measuring 76 cm in diameter and 2 cm in thickness, was located on the mound floor adjacent to the western perimeter of Feature 2, a circular/broad subrectangular burial depression. The composition of this deposit is not described except to note it consists primarily of burnt clay nodules. The third described redeposited cremation pile occurred on the mound floor immediately north of Feature 2, between a postmold and Burial 14, a mound fill inhumation. The deposit measured 52 cm (north-south) by 82 cm (east-west) and was 6 cm thick. The composition of this deposit was observed to be similar to the smaller one
south of the feature between Features 1 and 2. However, the number of calcined fragments and the body parts represented are not recorded.

**Sidner Mound II.** Two redeposited cremation piles were recorded in the fieldnotes for Sidner Mound II. Both apparently occur within a discontinuous mottled dark earth lens, considered to represent the primary mound covering the subfloor burial features. One deposit consisting of several calcined long bone and cranial vault fragments was situated along the southern perimeter of the primary mound, approximately 3.5 to 4.0 m from the southern edge of Feature 1.

The second deposit was uncovered by the previous amateur excavation on the northern half of the mound. During the clearing of the mound for the professional excavation, calcined human bone fragments were observed on the surface of the northeastern quadrant of the mound. These remains were attributed to the backdirt from one of the three amateur excavated pits, in which burnt material, charcoal, and artifacts were removed. The associated artifacts in the private collection included a broad, oval cache blade, a stemmed base point, a biface, and an unspecified number of worked pieces of graphite. None of the amateur excavated pits intruded the subfloor burial features and the remains are interpreted as coming from the primary mound fill or the mound floor. The amateur excavated pits were situated between the two subfloor features. There is no mention of burnt clay nodules associated with either deposit or the primary mound fill. However, the dark or black soil is mottled with dark reddish-brown silty clay to clay subsoil, which could have masked the presence of burnt clay nodules.

**Galbreath Mound.** At least four redeposited cremation piles were present at Galbreath Mound (Figure 6). Features 103 and 109 were located along the western perimeter of Feature 108, a circular/broad subrectangular burial depression; while Features 105 and 107 were situated along the eastern perimeter. The potential for additional redeposited cremation piles originally covering Feature 108 is evidenced by the
scatter of burnt clay nodules, burnt human bone, charcoal, and artifacts encircling Feature 108 and overlying the numbered redeposited cremation piles. These remains do not have a separate feature number designation because they were initially considered to be portions of the four numbered features. However, the remains occur within the fill of the upper portion of Feature 108, which represents a later intrusive pit extending into the lower level burials. The distinction between the numbered redeposited cremation piles and the scatter of redeposited cremated remains is based on the characteristics of the deposits and the crossmended calcined human bone fragments and broken artifacts. The scatter of redeposited cremated remains encircles the intrusive pit portion of Feature 108 and extends outward in all directions. The calcined human bone fragments, burnt clay nodules, charcoal, and artifacts occur as an even light scattering in all directions including depth. A few of the calcined bone fragments from opposite sides of Feature 108 have been crossmended indicating contemporaneity of the encircling remains. Additionally, the calcined bone fragments within the upper portion of Feature 108 are intermingled with the darker soil of the feature fill surrounding the intrusive burials. A few of these calcined fragments have been crossmended with the scattered remains encircling the feature.

Further, the fragments of a broken stemmed base point were refitted, in which the tip (II/301) came from the bottom of the intrusive pit in Feature 108 and the base (II/255) came from the western perimeter of the encircling redeposited cremation scatter. On the basis of this information it would appear the upper portion of Feature 108 represents an intrusive pit which disturbed or displaced at least one, if not several, redeposited cremation piles.

The four redeposited cremation piles with feature number designations are distinctly different from the encircling redeposited cremation scatter. Internally, the redeposited cremation piles have denser concentrations of burnt bone, burnt clay nodules and charcoal, and these remains tend to be larger in size. However, the amount of burnt
human bone and its spatial concentration is still much less than the cremation piles occurring in subfloor burial feature context. The mottles in the fill are relatively smaller and more distinct with abrupt boundaries. Small pockets of grayish-white ash are present, which were not as discretely evident in the encircling scatter. Crossmendable calcined bone fragments occur only within the horizontal and vertical perimeters of the respective features. There were no crossmendable burnt bone fragments nor broken artifacts between the redeposited cremation piles or between a particular pile and the overlying encircling redeposited cremation scatter.

Mound Floor Burial

Definition. Extended inhumations lying on the mound floor with no apparent excavated burial facility are reported from Hambleton Mound and are indicated for Galbreath Mound. The extended inhumations at Galbreath Mound were not completely excavated and no feature number designation was assigned. At both mounds, the mound floor burials contain multiple extended inhumations resting on a level to slightly depressional surface. A bark layer lined the surface of the feature at Hambleton Mound and a remnant of a bark lining was indicated for the feature at Galbreath Mound.

Hambleton Mound. At Hambleton Mound, Feature 1 reportedly occurs as a shallow or slightly depressional area of the mound floor covered with a thin bark layer (Potter 1967:1). Although the feature had been disturbed by rodent burrowing and tree roots, the approximate horizontal dimensions were determined to be 1.7 m (5.6 ft) by 1.1 m (3.5 ft) with the long axis oriented southwest to northeast. It is not clear if these dimensions reflect the area occupied by the extended inhumations or the extent of the bark lining. Two extended inhumations, one prone and one supine, were placed side by side in the feature and both were headed to the southwest. The descriptions of the burials suggests their stature could account for the reported feature length, but their combined widths would not account for the feature width. Regardless of how the feature dimensions
were determined, the shallow bark lined depression appears to represent a minimal expenditure of effort in burial facility construction to accommodate these two individuals.

Because of the disturbance processes, the planview feature shape is not readily discernible. From the illustrations, it appears to be subrectangular with poorly defined or wavy borders (Potter 1967:Map 1 and Figure 2). This feature does not appear to be a variant of the elongated narrow subrectangular burial pit type, as represented at McMurray Mound I. The feature does not have vertical side walls nor are the multiple extended inhumations vertically stacked. Organization of mortuary space is along an horizontal plane, thus making this feature more similar to the circular/broad subrectangular burial depression type.

Galbreath Mound. The probable mound floor burial at Galbreath Mound was not completely exposed and described during the fieldwork. There appears to be sufficient information to characterize the multiple extended burials as occurring on a surface rather than in an excavated burial facility. No feature boundaries were evident surrounding or above the inhumations and for this reason no feature number designation was assigned.

The soil covering the inhumations was undifferentiated from the soil comprising the surrounding mound fill. The crania of Burials 33 and 34 were lying on a thin (2 cm thick) lens or deposit of ashy gray matter, which may represent a bark lining remnant. This deposit was roughly circular in plan outline shape and confined to the around the crania. The exposed portions of the postcranial skeletons suggest the inhumations were inclined slightly downward from the northeast to the southwest and were resting on mound fill comprised of disturbed subsoil. These facts suggest the burials were placed on a gradual westward sloping surface formed from the subsoil excavated during the construction of either Features 108, a burial depression, or Feature 110, a burial pit, or both. As such, these inhumations could be considered mound floor burials, since they were placed on an exposed surface. The length of time this surface was exposed is
unknown, although the internal structure of Feature 110 suggests periodic reuse of that burial facility. It is not clear if the mound floor burial is contemporaneous with any burial episode in Feature 110 or is subsequent to the use period of that burial facility.

The incomplete excavation of the mound floor burial prohibits an accurate description of this feature and complicates its interpretation. Burials 33 and 34 are assumed to be complete extended inhumations, because the exposed portions of the skeletons, the cranium through the thoracic cage, are completely represented and essentially articulated. Burial 33's thoracic cage was disturbed by a large tree root, but the constituent parts were present although extremely deteriorated. A nearly complete cranial vault (HBI II/1036) was mapped as resting on the lower left side of Burial 34's thoracic cage with the distal portion of the right humerus resting on top of the skull. The cranial vault was not present in the human skeleton collection and presumably was left in situ.

The presence of a fourth individual is indicated on the mapping by the occurrence of an articulated foot adjacent to Burial 33's cranium and an articulated femur and tibia in the balk of the northeast corner of the adjacent excavation unit to the south of the one containing Burials 33 and 34. If the articulated leg and foot do represent a fourth extended inhumation, it would have lied parallel to Burial 33 but headed in the opposite direction, to the southwest. As with the cranial vault, the long and foot bones were not present in human skeleton collection and presumably were left in situ. Neither the cranial vault nor the articulated leg bones were assigned separate burial number designations, most likely due to the incomplete exposure of the burial feature. It would appear, on present evidence, the feature represents a mound floor burial containing four closely spaced and stacked extended inhumations.
Mound Fill Burial

Only one occurrence of a mound fill burial has been noted from the five Big Darby Creek mounds. Burial 14, Sidner Mound I, contained the remains of an infant (2 years + 8 months) and was situated at the interface of the plowzone and mound fill along the northwestern side of the mound. Although the remains had been partially disturbed by plowing, it appeared to be an extended inhumation headed towards the northeast.

There is no mention of a prepared burial facility, only that the burial occurred in the mound fill. The mound fill is not described and it is not clear if the reference refers to primary mound fill or a secondary mantle. Since the fieldnotes do not mention a secondary mantle and only a dark band of soil along the upper surface of the subsoil interspersed with loads of redeposited cremations, it is interpreted the burial occurred in this band. This contention is further substantiated by a fieldnote indicating the close proximity of the burial to one of the described redeposited cremation piles. However, the observation does not clarify the question of whether the burial was in a prepared burial facility or incorporated in the mound fill. It is clear this burial was isolated from the burials in the subfloor circular/broad subrectangular burial depression.

Burnt Earth Deposit on Mound Floor

One burnt earth deposit situated on the mound floor has been reported from Hambleton Mound (Potter 1967:1). It was not assigned a feature number designation nor were its physical characteristics recorded in detail. However, there is an implication the deposit resulted from in situ burning and may represent part of a cremation basin (Potter 1967:5). The deposit had an amorphous planview boundary, which roughly approximates a kidney shaped (Figure 5). The long axis was oriented east-west and measured 1.58 m with the maximum north-south dimension being 0.85 m. The thickness of the deposit is not recorded; although scaled photographs indicate it was shallow, not greater than 12 cm,
with an uneven bottom (Potter 1967:Figure 3). The deposit was situated approximately 45 cm south of Feature 1, a mound floor burial feature.

A similar feature may have been present at Sidner Mound I, being represented by Feature 1 (Figure 3). This feature was oval or egg shaped in planview on the mound floor (Baby and Potter 1963:Appendix A). The long axis was oriented northwest-southeast and measured 1.02 m. The maximum northeast-southwest dimension was 0.62 m and was located near the southeast end. A schematic profile map of the long axis in the fieldnotes indicated the feature was a shallow basin pit with a maximum depth of 26 cm below the mound floor. The feature fill was comprised of dark earth mixed with charcoal, burnt earth nodules, and cremated human bone fragments. The fill inclusions were concentrated around the feature perimeter and a thin layer of silt was observed separating the perimeter fill from the bulk of the feature fill.

Since the mound floor planview map of the excavations is missing from the archival collection, the exact location of this feature is unknown. However, it was situated between 1.50 and 2.00 m south of Feature 2, a circular/broad subrectangular burial depression. This feature is distinctly different from the redeposited cremation piles. The fill composition is similar but no stratification is evident in the redeposited cremation piles. This feature is the only subfloor feature or subsoil anomaly in all five mounds which does not contain an inhumation. Because of its similarity to the burnt earth deposit at Hambleton Mound in size, shape, and spatial association to other subfloor burial features, this feature is interpreted as the remnant of a dug up in situ burnt earth deposit. Clearly, there is no empirical evidence of in situ burning at this locality. However, the depth and shape of the pit are of sufficient size to have eradicated any vestiges of a shallow crematory basin.
Burnt Earth Deposit in Mound Fill

A burnt earth deposit was recorded on the zero north-south trench profile at McMurray Mound I (Baby and Zierhut 1966:Map 1). It was situated in the secondary mantle immediately above the primary mound of dark alluvial soil overlying the subfloor burial features. This deposit did not receive a feature number designation nor was it mentioned in the fieldnotes.

Based on the profile map, the deposit is between 0.61 and 0.76 m or 2.00 to 2.50 ft in north-south length with a maximum thickness of 38 cm or 1.25 ft. The cross section outline shape is thick lenticular or biconvex. In size and shape, it resembles Feature 1, Sidner Mound I, the burnt earth deposit on the mound floor. The map legend indicates the deposit consists of burnt earth but does not indicate if it is an in situ deposit. Since the fill composition of the deposit is not described in detail, it could alternatively represent a redeposited cremation pile. Although it is of similar size to the redeposited cremation piles, the latter tend to have relatively flat bases rather than basin shaped. Consequently, the interpretation of this deposit is problematical and it has been assigned a separate feature type designation.

The validity of the type designation is contingent on the recovery of better documented, similar features from other mounds in the region. At this point, the feature is clearly related to activities occurring after the closure of the subfloor burial features. Whether or not the feature reflects subsequent mortuary activities has yet to be demonstrated.

Postmold

No evidence of a circular postmold pattern suggestive of a premound structure was recovered from any of the Big Darby Creek mounds. A single postmold was uncovered along the northeast perimeter of Sidner Mound I and represents the only known postmold from the five mounds. Since the postmold originated at the bottom of the plowzone, it is
not clear if the postmold is associated with the use and construction of the mound. The postmold measured approximately 17 cm in diameter with slightly tapering sides extending about 46 cm into the subsoil. Sufficient area was cleared around the postmold to indicate it was not a remnant of an historic fenceline. The isolated nature of the postmold along the mound perimeter makes it tempting to interpret it as a marker pole for the mound.
CHAPTER V
BURIAL DESCRIPTIONS

Skeletal analysis generates an important body of information for understanding the nature of prehistoric social groups. The age and sex distribution of the skeletal population provides insight on the mortality rate affecting the composition of the prehistoric group (Acsadi and Nemeskeri 1970 and Moore et al. 1975). Changes in the mortality rate between groups over time can be an indication of changing settlement/subsistence patterns (Blakely 1971). The frequencies of occurrences of pathologies amongst the different age and sex groups can also provide information concerning groups' reactions to environmental stresses and reflect social organization promoting differential access to subsistence resources. Analysis focused along these lines of inquiry compliment traditional mortuary studies aimed at relating individuals of different ages and sexes to feature and artifact contexts.

Initially, the Big Darby Creek mounds were considered to contain sufficient skeletal populations and preliminary studies were conducted (Sciulli et al. 1981 and 1983; Sciulli and Schneider 1985; and Sciulli and Mahaney 1986). During these studies it was noted the minimum number of individuals in the skeletal collections differed from the reported figures. There were no burial descriptions for the individuals from Sidner Mound II and Galbreath Mound. In addition, bone pathologies were noted which appeared to more severe and widespread than initially reported (Baby and Zierhut 1966; and Potter 1967). These problems did not affect the preliminary studies, because they were limited to certain body parts of complete adult individuals, the number of which
provided the minimum number of individuals, and the analysis was done on a populational level.

In order to look at mortuary patterning related to age, sex and the occurrences of pathologies, the analysis must be conducted at the individual level and include all age groups. Consequently, the skeletal collections were reanalyzed for this study. The procedure followed was to indicate the bones and parts of bone for each individual present in the collections on an anatomy diagram, along with age and sex determinations and descriptions of observed bone anomalies and pathologies. In reviewing the skeletal illustrations, it became apparent the missing portions of incomplete extended inhumations were represented in adjacent bundle burials. Crossmending of fragments, rearticulation of joints, and determining complimentary body parts established this relationship. In addition, the miscellaneous bone bags were examined for subadult remains. Consequently, the number of individuals at the reported sites have been changed.

Since much of this information has not been published and published accounts have been modified, a brief description for each individual is provided. Where discrepancies from the published burial descriptions occur, they are more fully discussed. Following the presentation of the skeletal data base, the information is summarized to provide a description of the composition of the burial populations and the types of anomalies and pathologies, which were present in these groups.

Initially, the determination of age at death for the individuals from the mounds was to be made upon multiple criteria following the method proposed by Meindl et al. (1983). However, the fragmentary nature of some of the remains and the prehistoric and historic disturbances of some of the extended inhumations resulted in incomplete representation of many burials at each site and prohibited the use of this method. For the adult remains reliance was placed on morphological changes of the auricular surface of the ilium for age determination following the method proposed by Lovejoy et al. (1985).
When possible morphological changes of the pubic symphysis were also used following the method proposed by Meindl et al.(1985). For subadult remains, the lengths of the long bone shafts and breadths of the ilia were measured and the extent of epiphyseal union was noted for age determination following standard forensic methods summarized by Bass(1971) and Ubelaker(1978). Sex determination also followed standard forensic methods concerning the morphological characteristics of the pelvis.

The dental analysis was also affected by the fragmentary nature of the remains resulting in incomplete dentition for many individuals and frequent postmortem loss of teeth. Dental wear was determined according to the scoring method proposed by Molnar (1971). Each tooth was examined for the presence of occlusal, non-occlusal and root caries following the method proposed by Koritzer (1977). Occurrences of abscesses and premortem tooth loss were also recorded.

McMurray Mound I Burials

As originally reported, McMurray Mound I contained 28 burials accounting for 33 individuals (Baby and Zierhut 1966:4 and Futrell 1966:Table 1A). These figures reportedly did not include the remains of approximately six individuals disturbed by previous amateur/collector excavation and suggests the total number of interred individuals was thirty-nine. In the burial descriptions the number of individuals accounted for does total thirty-three. However, six of the burials, accounting for seven individuals, were described as bone piles in disturbed mound fill and representing the partial remains of the previously excavated individuals. The number of individuals occurring in undisturbed burial features totaled twenty-six.

The reanalysis of the skeletal collection confirmed the partial remains of at least four of the reported seven individuals disturbed by the amateur/collector excavation and occurring in the six described burials. These remains represent at least one subadult/infant (newborn-6 months), one subadult/juvenile (3 to 5 years), and two
subadult/mid-late adolescents (16-18 years). One adult is suggested by a femur fragment with a fused head, but cannot be confirmed since the missing shaft and distal epiphysis may not have been fused. The remains in the miscellaneous bone bags from the disturbed mound fill suggest the complimentary bones to the partial remains of the four individuals are probably represented along with the remains of a subadult/juvenile (5-9 years), which can be distinguished from the other subadult/juvenile by the relative differences in the size of the centra. Although duplication of body parts cannot be established, an older subadult/infant (6 months-1 year) may be present based on the relative widths and lengths of unidentified long bone shaft fragments in comparison to the confirmed infant remains.

Many of the fragmentary long bones from the miscellaneous mound fill remains exhibit the fusion of at least one epiphysis. Since none of the fragments could be crossmended to form a complete bone, the presence of an adult cannot be established by this means. The presence of whole vertebrae with complete fusion of the epiphysial rings does suggest at least a late adolescent if not an adult is represented. Therefore, the amateur/collector account of excavating six children does not seem to be entirely accurate unless middle to late adolescents are considered children.

The reanalysis of the skeletal collection for the remains from the undisturbed burial features indicated the presence of nineteen individuals rather than twenty-six. The discrepancy between the two counts is explained by the fact that the partial remains of individuals in bundle burials represent the missing portions of the partial, extended inhumations with two exceptions in the various features. Consequently, the bundle burials represent the prehistoric disturbance of the features with displacement of portions of previously interred individuals by the subsequent construction of an intersecting burial facility. The displaced bones were piled adjacent to the interment in the intruding feature. Therefore, the total number of individuals recovered from the mound has been revised from thirty-three to twenty-five. Likewise, the interpretation of the bundle burials and
partially articulated extended inhumations as representing scaffold burials with the interment of selective parts of partially or completely decomposed individuals and as being a common mortuary practice must be revised.

Burials 1, 3, 6, 26, 27 and 28 represent the partial fragmentary remains of the amateur/collector excavated burial facility, containing six children arranged in a fan or spoke wheel pattern with their heads closely spaced. Burials 1, 3, 6 and 27 consist of small concentrations of bones occurring at various horizontal and vertical positions within the disturbed mound fill. Remains from Burials 6 and 27 have been crossmended. Burials 26 and 28, each contain the partial but articulated remains of one individual occurring on the mound floor and provide a means for roughly approximating the position of the burial facility.

Burial 1 was originally reported to contain the partial remains of an adult female. The reanalysis indicated at least three individuals were represented and were designated Burials 1A, 1B and 1C. Burial 1A consisted of a fragmentary left maxillary, malar and frontal which were crossmended, a right mandibular condyle, two sternum body fragments, a right scapula axillary border fragment, ten rib fragments, three thoracic arch fragments, a left radius shaft fragment, and the distal end of a right fibula. The epiphysis of the fibula was completely fused and moderate marginal lipping suggestive of traumatic arthritis was evident on the margin of the articular surface. The maxillary M3 had erupted but was lost postmortem. These two characteristics suggest an adult. The other facial bones are too incomplete to determine sex. Burial 1B consists of an upper thoracic, which has billowy superior and inferior body surfaces and no evidence of the fusion of the epiphyseal rings which suggests a subadult/mid-late adolescent (16-18 years). A right maxillary is included with this burial because it does not crossmend with the left and the dental wear is slight. However, the M3 had erupted and was lost postmortem. Burial 1C
consists of a left tibia shaft fragment from a subadult/juvenile (3-5 years) roughly estimated on the relative size of the bone.

Burial 3 was originally reported to contain fragmentary remains of two immature individuals, which were separated in the skeletal collection as 3A and 3B. Burial 3A consists of a complete right parietal, an erupted, minimally worn, left maxillary M3, and two other cranial vault fragments. The parietal is relatively thin with sharp distinct jagged suture lines and is considered to represent a juvenile according to the field bag label. Even though it is relatively small and thin it appears to represent at least an adolescent if not a small adult. Burial 3B consists of postcranial remains from the burial which originally considered to be too large and robust to be associated with the cranial fragments, also according to the bag label. Included within Burial 3B is a proximal right femur with a completely fused head, a left distal fibula shaft fragment, a right talus, a left first cuneiform, a left third cuneiform, and the proximal of a metatarsal, which is completely fused. Minimally these remains represent a late adolescent, and more likely, an adult.

Burial 6 consists of the incomplete remains of a subadult/infant. Burial 27 contains complimentary bones to Burial 6, as well as, crossmendable cranial and long bone shaft fragments. Long bone shaft lengths indicate the age at death between newborn and 6 months. The deciduous mandibular left central and lateral incisors are fused and unerupted. The mid thoracic centrums exhibit a linear series of macropores around the circumference and on the anterior side they coalesced to form a transverse linear fissure.

Burial 26 was originally reported to be the partial remains of a male between 16 and 17 years old. The remains consist of a pair of feet which were articulated on the mound floor adjacent to the center of the northern side of Feature 6. The left foot is complete and includes the unfused left fibula distal epiphysis. The right foot is missing the calcaneus, talus and second row phalanges. The proximal and distal epiphyses of all
metatarsals, as well as, the proximal epiphyses of all first and second row phalanges are unfused. The posterior surface of the calcaneus is recently fused. The age of death estimate as a middle adolescent seems correct but a sex determination from these remains does not seem warranted.

Burial 28 was originally reported to contain the partial remains of a young individual. The remains reportedly consisted of an articulated foot and distal fibula and tibia shaft fragments, situated on or slightly below the mound floor adjacent to the northeast corner of Feature 5. A nearly complete right foot, missing the phalanges, is present in the collection. The posterior surface of the calcaneus is not fused. The metatarsals are represented by shaft fragments and it is unknown if the epiphyses were fused. These bones are relatively but only slightly smaller in size to those from Burial 26. An unfused right tibia distal epiphysis is present, as well as, right tibia and fibula midshaft fragments. This individual appears to be at the relatively same stage of skeletal maturation as Burial 26 and is considered to represent a middle adolescent (16-18 years).

During the reanalysis, body parts were rearticulated or crossmended from the bundle burials to the partial extended inhumations in adjacent features. Consequently, most of these disarticulated bone piles do not represent bundle burials. As originally reported there were five bundle burials accounting for the partial remains of nine individuals, including Burials 4, 5, 16, 17 and 21. This figure was reduced to two individuals which may actually represent true bundle burials. One consists of a nearly complete infant in Burial 4, and the other, the incomplete remains of an adult in Burial 21. Consequently, there are no partial, extended inhumations in this mound.

Burial 2 consists of the nearly complete remains of an adult male, based on morphological characteristics of the pubis and ischium and the width of the greater sciatic notch. It does have a faint preauricular sulcus. The age at death is estimated between 18 and 19 years based pubic symphysis characteristics and the low side between 25 and 29
years based on auricular surface characteristics. The individual was interred in an extended prone position, oriented west to east, and headed to the west in Feature 1.

Several pathologies or bone anomalies were observed on this individual. A series of linear macropores around the circumference of the vertebra body is evident from the middle thoracics through the lumbar. The superior anterior margins of the vertebra bodies from T8 to T12 show the beginning of destruction in the form of irregular margins associated with macro and micropores. What appear to be Schmoral nodes or elongated oval depressions filled with micropores occur on the anterior portion of the superior surface of the bodies from L3 to L5. L1 and L2 are too fragmentary to determine if they have the same condition. The spinous processes on the sacrum are blunted and malformed. The humeri, radii, clavicles, tibiae, fibulae and left femur exhibit bone lesions similar to osteomyelitis or periosteal reaction. The most severely afflicted bones; tibiae, fibulae, and humeri, have a swollen, thickened shaft with an undulating surface covered by micropores and small linear striae oriented longitudinally. The less severely afflicted bones exhibit the swollen shaft and micropores and the lesions are restricted to portions of the shafts around the nutrient foramen.

An artifact cache was placed between the left shoulder and cranium of this individual and included projectile points, flakes, a sandstone bar and a variety of bone implements. The cache was referred to as a shaman's kit, but appears to be a set of utilitarian objects (Baby and Zierhut 1966:5). In addition, a quadraconcave gorget was placed between the thoracic cage and right arm.

Originally, Burials 4 and 5 were considered to represent a bundle burial situated adjacent to the left side of Burial 7 in Feature 2. The burial numbers refer to two crania occurring near the top of the bone pile. Two additional individuals were encountered in the lower portion of the pile and the number designations were changed to 4/5A through D, with 4/5A representing the original cranium 4, and 4/5B representing cranium 5. In
the skeletal collection Burial 4/5A contained postcranial remains in addition to the cranium, which presumably associated with it. Included in the collection were a left tibia and fibula, a right ulna, a lumbar and a sacrum fragment. The cranium articulates with the mandible from Burial 15, Feature 3, and the right ulna articulates Burial 15's humerus. The lumbar and sacrum fragment compliment missing portions of Burial 15. The left tibia and fibula articulate with the femur from Burial 11, Feature 3.

Burial 4/5B also contains postcranial remains in addition to the cranium, including a mandible, the shoulder girdle, a pair of humeri, an almost complete set of ribs, a cervical and a lower thoracic. The remains represent a subadult/juvenile with an age at death estimated between 7.5 and 8.5 years based on humerus shaft length. These remains compliment the missing portions of Burial 12, Feature 3 which is also a subadult/juvenile with an estimated age of 9 ± 1 years.

Burial 4/5C consists of a nearly complete subadult/infant with an estimated age at death between newborn and 6 months, based on long bone shaft lengths. This individual appears to represent a true bundle burial. Since it was found at the bottom of the disarticulated bone pile, it is possible it was placed in the feature with Burial 7 and was not displaced from Feature 3. No infant remains were found amongst the remains of individuals in Feature 3.

Burial 4/5D consists of a left fibula and the right and left tibia of an adult, and compliment the missing portions of Burial 13, Feature 3. Severe bone lesions suggestive of osteomyelitis or periosteal reaction are evident on the entire lengths of all three shafts with the most swollen and thickened portions of the shafts occurring around the nutrient foramen.

Burial 7 consists of the nearly complete remains of an adult female individual based on characteristics of the pubis and ischium and the presence of a preauricular sulcus and associated pits. The age at death is estimated between 25 and 29 years based on
characteristics of the auricular surface. The individual was interred in an extended prone position, oriented west to east, headed to the west, and facing to the north. The left arm was extended beneath the torso with the hand resting under the left innominate. The feet were hyperextended to the left. A bone awl tip was placed behind the cranium.

Several pathologies or bone anomalies were observed on this individual. There was an extra lumbar vertebrae between T12 and L1, exhibiting thoracic-like superior articular processes and lumbar-like inferior articular processes. All of the lumbar vertebra bodies exhibited minor lipping of both the superior and inferior anterior margins. Bone lesions suggestive of osteomyelitis or periosteal reaction were evident on the shafts of the left humerus, ulna and radius. The entire radius shaft was involved, while the portions of the shaft adjacent to the nutrient foramen were affected on the other two bones. The shafts were swollen with undulating surfaces containing micropores.

Burial 9 consisted of a small pile of cremated bones lying adjacent to the left knee of Burial 7, and between Burial 7 and the disarticulated bone pile, Burial 4/5. All of the bone fragments were calcined and ranged in from bluish gray to chalky white in color. The long bone fragments were warped and transversely fractured. Cranial, rib and long bone shaft fragments were present. Given the relatively small size, thinness, and narrow diameters of the long bone shafts, the remains probably represent a subadult, somewhere between infant and juvenile.

Burial 8 consists of the incomplete remains of an adult individual. Originally it was sexed as a female, presumably based on the small size of the cranium the gracile facial features; because the innominates, the lower extremities and the lower right arm were removed during the amateur/collector excavation (Baby and Zierhut 1966:6). The intact portion of the individual was in an extended supine position including the feet, with the head at the northwest end of Feature 4. This feature extended into the southern portion of Feature 5, but did not disturb any of the burials.
Several pathologies or bone anomalies were noted on the remains of this individual. A series of linear macropores around the circumference of the vertebra body was noted on all thoracics. On the upper thoracics the macropores on the anterior side of the bodies appeared to be healed or at least partially covered by a fibrous bone growth resembling a sheath. This covering resulted in a puffed out appearance of the anterior portion, which was evident in a convex longitudinal outline shape of the bodies. The maxillary exhibited a dished out or concave surface between the nasal foramen. The surface contained abundant micropores suggestive of a periosteal reaction. In the area between the inferior nasal border and the alveolar margin and between the maxillary canines, a series of longitudinally oriented, small, linear fissures occurred. Micropores were also noted on the palate around the anterior foramen and associated with the formation of osteophytes.

Burial 10 consists of the nearly complete remains of an adult female individual, based on characteristics of the pubis and ischium and the presence of a preauricular sulcus and associated pits. The age at death is estimated between 45 and 49 years based on characteristics of the pubic symphysis and the auricular surface. The individual was interred in an extended prone position, oriented southeast to northwest, and headed to the northwest in Feature 6. This feature intruded portions of Features 5 and 7. The face of Burial 10 rested on the cranium of Burial 14, Feature 5. Portions of Burials 23 and 25, Feature 7 were disturbed by the construction of Feature 6 and the displaced remains were included in disarticulated bone piles, Burials 16 and 17, accompanying Burial 10.

Several pathologies or bone anomalies were observed on the remains of this individual. Bone spurs occurred on the lateral margins of the distal articular surfaces of the right ulna and radius. The series of linear macropores around the circumference of the vertebra body were present from the middle thoracics through the lumbar series and exhibited the sheathing or filling of the macropores by bony growth. The posterior
margins of the vertebra bodies and the margins of the facets on the articular processes of the lower cervicals exhibited minor lipping. There a clear case of spondyloysis for L5 with the missing portion including the inferior articular processes and the spinous process. Slight anterior margin lipping of the vertebra body was present on L1 and L2, with moderate lipping on L3 and L4, and extensive lipping along the inferior lateral margins of L5. Feathered bridging of the superior margin between the superior articular processes was present on all lumbar.

Burial 11 consists of the incomplete remains of an adult, probably male, individual based on the characteristics of the pubis and ischium. However, there is a faint preauricular sulcus and the greater sciatic notch is not pronouncedly wide but does flare. The individual was interred in an extended supine position, oriented west to east, and headed to the west. It was the uppermost interment in Feature 3, overlying Burial 13 with Burial 12 located adjacent to its right side.

Feature 3 has been prehistorically disturbed by the placement of Feature 2 across its western end and Feature 8 across the eastern end. At the time of excavation the articulated portion of Burial 11 included the remains from the mandible through the pelvic girdle and left femur. However, most of the right side of the individual was missing including the upper and lower extremities and innominate. The left tibia and fibula and some foot bones occurred in the disarticulated bone pile, Burial 4/5A, Feature 2; while the cranium occurred in the disarticulated bone pile, Burial 21A, Feature 8. The bones of the right side of the body have not been located in the skeletal collection. However, a complete right arm and ilium blade fragments do occur in Burial 21A and may belong to this individual. Accurate determination is not possible, since Burial 21A also contains a cranium and left arm which duplicates parts in Burial 11. Further complicating the interpretation is the fact that the bones of Burials 11, 12, 13, and 15 are mixed in the collection.
Several pathologies were noted on Burial 11’s vertebrae. Beginning with C4 and extending through T1 lipping of the anterior margin of the body is present. However, on T1 the condition appeared more as margin destruction rather than bone growth as evidenced by an irregular and wavy edge. Schmoral nodes or oval depressions containing macropores were associated with the anterior margins on the inferior surfaces of C5 and C6, and on both the inferior and superior surfaces of C7 and T1. Severe erosion and destruction of the superior, anterior margins occurred on L3 and L5, producing a jagged edge appearance. The inferior anterior margins appeared normal. Extensive feathered bridging and osteophyte formation between the superior articular processes occurred on L3 and L4. The vertebra bodies between T1 and L3 were too fragmentary to determine if this condition was continuous along the vertebral column.

Burial 12 consists of the incomplete remains of a subadult/juvenile with an age at death estimated as 9 ± 1 years based on long bone shaft lengths and ilium breadths. The individual was interred in an extended position, presumably supine. The remains laid adjacent and parallel to the right side of Burial 11 but the body was oriented with the feet to the west, opposing the heading of Burial 11. When excavated the skeleton was complete and articulated from the lumbar to the feet. The missing upper portion of the body occurred in the disarticulated bone pile, Burial 4/5B, Feature 2. Both lower arms and hands are not represented in the remains from either feature.

Burial 13 consists of the incomplete remains of an adult female individual, based on the width of the greater sciatic notch and the presence of a preauricular sulcus. The age at death is estimated between 40 and 44 years based on the auricular surface characteristics. The individual was interred in an extended prone position, headed to the west, and underlying Burial 11 and overlying Burial 15. When excavated the remains were complete and articulated from the mandible through the femora. The cranium occurred in
the disarticulated bone pile, Burial 21B, Feature 7 and the lower leg bones and some foot bones occurred in the disarticulated bone pile, Burial 4/5D.

Several pathologies were noted on the remains from this individual. Degenerative joint disease of the spine or arthritis was evidenced by continuous anterior margin lipping of the bodies from C2 through L5, and increased in severity from slight on the cervicals and upper thoracics to moderate on the middle thoracics through the lumbars. Margin lipping of the facets of the superior and inferior articular processes occurred discontinuously and was slight on the cervicals and upper thoracics, but moderate and nearly continuous on the middle thoracics through the lumbars. Feathered bridging and moderate osteophyte formation between the articular processes was evident from T9 through L2. Bone lesions suggestive of osteomyelitis or periosteal reaction were present on the tibiae, fibulae, left femur and right ulna. The tibiae and fibulae were the most severely afflicted with the entire shafts swollen and thickened with an undulating gnarly surface appearance. The femur and ulna were less severely affected with swelling and microporosity evident of the portions of the shafts around the nutrient foramen.

Burial 15 consists of the incomplete remains of a late adolescent/young adult female individual based on the width of the greater sciatic notch and the presence of a preauricular sulcus. The age at death is estimated between 18 and 19 years based on pubic symphysis characteristics and between 20 and 24 years based on auricular surface characteristics. The distal epiphyses of both radii, the right tibia, the iliac crests, and the epiphyseal rings of the lumbars are not fused. The proximal epiphyses of the radii, femora, and left ulna, the distal epiphyses of both humeri, and all of the metacarpals are fused. When excavated, the remains of this individual represented a disarticulated, scattered pile of bones underlying Burial 13 and overlying the thin bark lens covering Burial 22 in the bottom of Feature 3. The nature of the disturbance is unknown, but clearly prehistoric in origin and may be related to the interment of Burials 11-13. The
disturbed nature of the remains is evidenced by the occurrence of the cranium, sacrum and a lumbar vertebra of this individual in the disarticulated bone pile, Burial 4/5A, Feature 2; and a right tibia, unfused distal metaphysis fragment from the disarticulated bone pile, Burial 21B, Feature 7.

Several pathologies were observed on the remains of this individual. The lumbar exhibited the series of linear macropores around the circumference of the vertebra body, but were restricted to the lateral sides. Similar macropores were observed in the sacral foramen. The tips of the billowy superior and inferior surfaces of the vertebra bodies appeared to resorbed from the anterior and lateral margins. The thoracics were missing and the extent of these conditions can not be determined. The mandible exhibited a slight periosteal reaction continuously on the buccal surface from the left M2 to the right M2. The inferior arch appeared swollen and thickened with an undulating surface.

Burial 22 consists of the complete remains of an adult male individual, based on characteristics of the pubis and ischium, width of the greater sciatic notch and the absence of a preauricular sulcus. The age at death is estimated between 25 and 26 years based on the pubic symphysis characteristics and between 20 and 24 years based on the auricular surface characteristics. The individual was interred in extended prone position, oriented west to east, headed to the west with the head turned to the south or facing left in the bottom of Feature 3. Burials 11, 12 13 and 15 were stacked above this individual and separated from it by a thin bark lens covering.

Two bone pathologies were observed on the remains of this individual and appear to represent trauma or stress induced arthritis. Marginal lipping of the articular surface was evident on all bones forming the right elbow joint and on the right distal radius. Lipping of the anterior margins of the anterior margins of the vertebra bodies and the facet margins of the articular processes occurred discontinuously along the vertebral column and included C2, C5-C7, T4-T5, T8-T12, and L2-L3. Lipping varied from slight to
moderate, or moderate to extensive within the localized areas and was the most severe in C5-C7 and L2-L3. Feathered bridging occurring between the superior articular processes was evident on T11, T12, L2 and L3.

A large cache of assorted artifacts, referred to as a chipping kit, occurred between the left shoulder and cranium. Since some of the artifacts were beneath the torso and face, it would appear the individual was placed partially on the cache. The presence of three unmodified turtle carapaces and one unmodified freshwater bivalve shell suggests these items were containers and possibly some of the artifacts were originally placed in them. The distribution of artifacts within the cache is not recorded. The remaining set of artifacts included points, caches blades, whetstones, a celt, and a variety of bone and antler implements.

Burial 14 consists of the nearly complete remains of an adult male individual based on characteristics of the pubis and ischium, width of the greater sciatic notch, and the absence of a preauricular sulcus. The age at death is estimated between 20 and 24 years based on auricular surface characteristics. The individual was interred in basically an extended supine position with the lower legs semiflexed. The body was oriented west to east, headed west with the face turned north or to the left side, in upper portion of Feature 5. The remains overlaid Burial 19, and Burial 18 laid parallel and adjacent to Burial 14's lower extremities. The Flexing of the lower legs appears to be an attempt to accommodate the interment of Burial 18. The right side of Burial 14 had settled into the feature.

Several pathologies or bone anomalies were observed on the remains of this individual. The series of linear macropores around the circumference of the vertebra body was evident on the middle and lower thoracics but not on the lumbar. On the middle thoracics the macropores coalesced on the anterior side to form linear fissures. On the lower thoracics the macropores were restricted to the lateral sides. Traumatic
arthritis was evident on the posterior portions of C5 an C6, with erosion of C5's inferior surface and C6's superior surface of the body and osteophyte formation along the posterior margins. Discontinuous slight margin lipping occurred on pairs of adjacent thoracics between T5 and T12 and was restricted to the anterior-right lateral margin in all cases. A case of spondylolysis involved the inferior and posterior portion of L4's neural arch. L5 exhibited withered and malformed inferior articular processes. The sacrum was too fragmentary to determine the nature of its superior articular processes.

Burial 18 consists of the incomplete remains of a subadult/infant with an age at death estimated between newborn and 6 months based on long bone shaft lengths. The individual was interred in an extended, presumably supine, position adjacent to Burial 14's lower extremities. It was oriented west to east and headed east, opposing the heading of Burial 14. Only three centra, thoracic and/or lumbar, were recovered but showed the series of macropores around their circumferences.

Burial 19 consists of the complete remains of an adult male individual, based on characteristics of the pubis and ischium, width of the greater sciatic notch, and the absence of a preauricular sulcus. The age at death is estimated between 45 and 50 years based on pubic symphysis characteristics and between 40 and 44 years based on auricular surface characteristics. The individual was interred in an extended prone position, oriented west to east, headed to the east and facing south on the bottom of Feature 5.

Several pathologies were observed on the remains of this individual. Traumatic arthritis or degenerative joint disease of the spine was observed from C3 through C7, as moderate anterior margin lipping, and from T6 through L4, as moderate lipping and osteophyte formation alternating from right to left sides on the thoracics, and confined to the anterior margins on the lumbars. Degenerative joint disease was evident as slight lipping of the articular surface margins of the bones from all of the joints. Probable
traumatic arthritis was evidenced by moderate margin lipping and small facet formation on the articular surfaces for the talus and cuboid on the right calcaneus.

Burials 16 and 17 consist of the intermingled partial remains of two adult individuals. Both were disarticulated bone piles, with Burial 16 resting on top of the lift tibia and fibula of Burial 10, Feature 6, and Burial 17 lying just beyond Burial 10's feet at the western end of the feature. Burial 16 consists of the cranium, mandible, clavicle, and both scapulae and humeri of a single individual. Burial 17 consists of a cranium, mandible, right scapula fragment, right humerus, eight thoracic vertebrae and associated ribs. The cranium and mandible in each pile articulate, but the maxillary fragment of Burial 16 occludes with the mandible in Burial 17 and vice versa. The bones in these two piles are the disturbed remains from Burials 23 and 25, Feature 8. Feature 7 intrudes the northern end of Feature 8. All of the remains from Burial 16, except the maxillary fragment belong to Burial 23. The cranium, mandible, right scapula fragment, and the right humerus of Burial 17 belong to Burial 25; while the maxillary fragment, thoracics and ribs belong to Burial 23.

A freshwater bivalve shell was found in front of the cranium from Burial 16 and a bone awl tip was behind the cranium. Since the remains were disturbed from their original positions, the association between the artifacts and Burial 23 can not be conclusively demonstrated. However, the purposeful placement of the objects on either side of the cranium suggests they were displaced along with the human remains. In addition, the placement of the objects indicates association with the bone pile rather than Burial 10.

No pathologies were observed on the remains from Burial 17. Several pathologies were observed on the remains from Burial 16. Bone lesions suggestive of osteomyelitis occurred on the distal halves of both humeri shafts and the entire clavicle shaft. Periosteal reaction in the form of micropores occurred around the mental foramen of the
mandible and the inferior arch appeared swollen and thickened with an undulating surface. A bony protuberance occurred on the lateral surfaces of both ascending rami. Evidence of cribra orbitalis was present with the left eye orbit more severely afflicted. Periosteal reaction in the form of micropores extended from the malars onto the zygomatic arches.

Burial 20 was originally reported to represent a nearly complete adult male. Although the greater sciatic notch is relatively wide, the characteristics of the pubis and ischium are consistently female and there is a distinct preauricular sulcus and associated pits. Consequently the individual is considered to be female. The age at death is estimated between 45 and 50 based on pubic symphysis characteristics and between 40 and 44 years based on auricular surface characteristics. The individual was interred in a basically extended supine position, oriented north to south, and headed to the north in Feature 8. The legs were slightly flexed, apparently to accommodate the pile of disarticulated bony, Burial 21, lying adjacent to its right side. Feature 8 cut across the western end of Feature 3 and intruded the southern end of Feature 7. Burial 20's left pelvic region had settled into the fill of Feature 8. An unmodified freshwater bivalve shell was placed beneath the midshaft of the right humerus.

Several pathologies or bone anomalies were observed on the remains of this individual. The series of linear macropores around the circumference of the vertebra body were evident from the middle thoracics through the lumbar. However, bone growth sheathing or filling the macropores occurred on the anterior side of all the affected vertebrae. Thus open macropores were restricted to the lateral sides. Degenerative joint disease or arthritis of the spine was present along almost the entire vertebral column but was more severe on the cervicals and lumbers involving moderate to severe margin lipping with osteophyte formation, and erosion of the superior and inferior surfaces of the bodies, and distortion and surface erosion of the facets of the superior and inferior articular
processes. The thoracics exhibited discontinuous slight margin lipping which alternated from the right to left sides. Degenerative joint disease in the form of extensive margin lipping and facet formation associated with eroded articular surfaces was present on the bones for both knee joints, left elbow joint, right shoulder joint, and left tempomandibular joint.

Burial 21 consists of the partial remains of at least seven individuals in a disarticulated bone pile adjacent to Burial 20. Three crania were oriented in a north-south line and sequentially labeled A through C beginning at the northern end. The postcranial remains associated with the crania were collected and labeled in the same manner. Some of these remains have been discussed as they represented portions of Burials 11, 13, and 15.

The third cranium, 21C, occludes with an associated mandible and they can not be assigned to any known burial and have retained the Burial 21 designation. The nearly complete right and left arms, right clavicle, right scapula, assorted thoracic and lumbar vertebrae, and a fibula shaft also can not be confidently assigned to any known burial and are included with the cranium and mandible of Burial 21 as a provisional bundle burial. Since most of the remains represent the upper portion of an individual, there may be another feature, which intersects Features 7 or 8 and went unnoticed, present under the unexcavated portion of the western mound skirt adjacent to the features.

Several pathologies were observed on the remains assigned to Burial 21. Two lower thoracic bodies exhibit slight anterior margin lipping, while two lumbar bodies exhibit moderate to severe margin lipping with osteophyte formation. The distal left humerus shaft, the proximal left radius shaft, and the entire fibula shaft exhibit extensive bone lesions suggestive of osteomyelitis. In addition, the epicondyles of the humerus appear reduced in size with a gnarled surface appearance. There is an oblong depression paralleling the lateral edge of the lateral olecranon arm. The depression and the bone
lesions are suggestive of a trauma induced infection. Such an interpretation can not account for the bone lesions on the fibula shaft.

A right femur, tibia and fibula in Burial 21A are morphologically similar and compliment Burial 25, Feature 7. A right humerus in Burial 21B is morphologically similar and compliments Burial 24, Feature 7. A set of pathological left and right tibiae and fibulae in Burial 21C articulate with Burial 23’s femora in Feature 7 and shaft fragments from the two burials have been crossmended. The pathology consists of extensive bone lesions suggestive of osteomyelitis involving the entire shafts of all four bones.

Burials 23, 24 and 25 were vertically stacked on top of each other in Feature 7. Burial 23 was the uppermost individual and was extended supine, oriented northeast to southwest, and headed to the northeast. When excavated the remains represented a partial but articulated individual from T10 through the femora including both lower arms and hands. Burial 23 is considered to represent an adult male individual based on characteristics of the pubis and ischium and the width of the greater sciatic notch; however, there is a faint preauricular sulcus. The age at death is estimated between 25 and 29 years based on pubic symphysis and auricular surface characteristics. Bone lesions suggestive of osteomyelitis or periosteal reaction were noted along the entire shafts of both ulnae and radii, and the distal half of the left femur shaft.

When excavated, Burial 24 consisted of a nearly complete adult individual considered to be a male. A relatively wide greater sciatic notch and the presence of a preauricular sulcus and associated pits indicates the individual was a female. The age at death is estimated between 20 and 24 years based on auricular surface characteristics. The individual was interred in an extended supine position, oriented northeast to southwest, and headed to the southwest at the bottom of Feature 7. The heading of this individual is in the opposite direction of the headings of Burials 23 and 25 overlying it. A
bone pin was placed above the left shoulder beside the cranium. Two pathologies were observed on this individual. Localized traumatic arthritis was evidenced by lateral margin lipping of the articular surfaces between the right calcaneus and cuboid. From T12 through L1 the superior and inferior articular processes had distorted and enlarged margins of the facets with feathered bridging between the processes. The vertebra bodies appeared normal. L3 and L4 exhibited initial destruction of the superior anterior margin of the bodies in the form of an irregular and jagged edge associated with erosion of superior surface adjacent to the edge forming a distinct depression. L5 exhibited distortion of the articular processes but the body was normal.

When excavated, Burial 25 consisted of the partial remains of an adult female individual based on characteristics of the pubis and ischium and the presence of a preauricular sulcus and associated pits. The age of death is estimated between 27 and 30 years based on pubic symphysis characteristics and between 20 and 24 years based on auricular surface characteristics. The individual was interred in an extended prone position, oriented northeast to southwest, and the heading is not recorded but presumed to be northeast. It was placed between Burials 23 and 24. No pathologies were observed on the remains of this individual.

Sidner Mound I

As originally reported, thirteen individuals were recovered from Sidner Mound I with 12 from Feature 2, a circular subrectangular burial depression and one from a mound fill burial, no feature number assigned (Baby and Potter 1963:10). Fourteen burial numbers were originally assigned, 1 through 13 for Feature 2 and 14 for the mound fill burial. Burials 5 and 6 were determined to represent one individual and the burial designation was modified to 5/6. No burial was recovered from Feature 1, a burnt earth deposit; although it was suggested the cremation, Burial 1, could have come from the deposit. Since no calcined bone fragments were recovered from the deposit, this
interpretation can not be conclusively demonstrated. The reanalysis of the skeletal collection indicated the presence of two additional individuals, whose partial and disarticulate remains were associated with Burials 8 and 9 and Burial 12. These individuals were assigned burial numbers 9B and 12B, and raise the total number of individuals in this burial facility to fourteen.

The disturbance processes, both prehistoric and recent, of Feature 2 complicated the reanalysis by mixing body parts within and between the numbered burials, which was maintained the skeletal collection. In addition, many of the remains were mislabeled, according to the accession list and field bag notes. Through sorting the remains, it became evident the missing portions of known burials were contained in the miscellaneous mound fill remains or with the remains of adjacent burials.

Burial 1 consists of the partially incinerated remains of an adult, probably female, individual. A partially charred and unburnt left auricular surface was present and exhibited a distinct preauricular sulcus. Originally, this individual was considered to be an adult male between 40 and 45 years (Baby and Potter 1963:10). However, the greater sciatic notch is too incomplete to determine its relative width. The age at death has also been reinterpreted and estimated between 20 and 24 years based on the auricular surface characteristics.

Cremation of this individual was done in the flesh as evidenced by the differing degrees of burning. All major body parts were partially represented. Portions of the represented by charred and/or unburnt bone include the posterior portion of the cranium, the elbow joint, the middle to lower thoracics and lumbers, portions of the ribs, the pelvic girdle around the hip joint and the knee joint. However, in the cases of the elbow, hip and knee joints one side is calcined and the other is charred. This would suggest the body was articulated and resting on one side when incinerated. Given the size and shape of Feature 1, the burnt earth deposit, the only way Burial 1 could have processed in it, is if
the body were tightly flexed. There were no observed cut marks on the charred and unburnt bone fragments.

Burial 1 was deposited in the eastern corner of Feature 2 and adjacent to the lower legs of Burial 3, which was extended inhumation but slightly flexed at the knees. Burial 4 lying parallel and adjacent to Burial 3 was also an extended inhumation slightly flexed at the knees. The manipulation of the lower extremities of both burials appears to be an attempt to avoid the space occupied by Burial 1.

Burial 2 consists of the nearly complete remains of a subadult/juvenile with the age at death estimated between 5.5 and 6.5 years based on long bone shaft lengths. The remains occurred as a discrete, disarticulated bone pile and can be considered a bundle burial. The cranium and innominates were at the east end of the pile, while the long bones were stacked at the west end. The bundle burial was situated between Burials 4 and 7 and extended from their pelvic regions to their knee joint region. None of the burials overlapped.

Burial 2 was virtually covered with red ochre, which occurred as stains and powdery substances adhering to the bone. An ashy grayish white substance was also adhering to some of the bones and may represent decomposed portions of the bark on which the burial reportedly rested. Red ochre was present on articular surfaces and unfused metaphyses and epiphysis indicated it was applied after decomposition and disarticulation.

The only pathology or bone anomaly observed on the remains of this individual was the occurrence of a series of linear macropores on the circumference of the centra. They began with the middle thoracic and increased in severity through the lower thoracic and were restricted to the lateral sides on the lumbaris. In the lower thoracics the macropores coalesced to form a continuous linear fissure which nearly split the centra in half. The unfused arches of the lower thoracics and lumbaris also exhibited macropores
extending from the unfused surface posteriorly and laterally onto the anterior surfaces of
the transverse processes.

Burial 3 consists of the incomplete remains of an adult female individual based on
characteristics of the pubis and ischium and the presence of a preauricular sulcus and
associated pits. The age at death is estimated between 30 and 34 years based on auricular
surface characteristics. The shoulder region, thoracic cage and upper extremities have
been disturbed and displaced. The individual was interred in an extended position on its
right side, oriented southwest to northeast and headed to the southwest along the eastern
side of the feature. Burial 4 lied adjacent and parallel to Burial 3’s back.

The only pathology observed on the remains of this individual was an apparent
trauma induced arthritis of the right knee. The arthritis was manifested as lipping along
the anterior and lateral margins of the condyles of the femur and lipping of all margins of
the lateral epicondyle of the tibia. A freshwater bivalve shell with cut margins was placed
on top of the cranium.

Burial 4 consists of the incomplete remains of an adult, probable male, individual
based on the relatively narrow width of the greater sciatic notch, although a faint
preauricular sulcus is present. The age of death is estimated between 30 and 34 years
based on auricular surface characteristics. The pelvic girdle and the lower arm and hand
bones had been disturbed and displaced. Vertebrae from T12 through L5, the sacrum, and
the pubis and ischium of both innominates were missing. The individual was interred in
an extended prone position, oriented southwest to northeast and headed to the southwest.
The pelvic girdle of Burial 3 appears to partially overlie and rest on the posterior left hip
joint of Burial 4. The lower legs and feet of Burial 4 were flexed slightly to the right with
the left lower leg underlying the right. The positioning of the lower legs appears to be an
attempt to accommodate the body in the space between Burial 1 to the left (east), Burial 2
to the right (west), and Burial 12 below the feet (northwest); as was the case with the positioning of Burial 3's lower extremities.

Several pathologies or bone anomalies were observed on the remains from this individual. A narrow elongated oval shaped depression occurs along the center of the popliteal line adjacent to the nutrient foramen on both tibiae. A rectangular depression, 17 mm by 4 to 7 mm, occurs on the superior half of the posterior surface of the right calcaneus, with a similar sized oval depression occurring in roughly the same position on the left calcaneus. The surfaces of both depressions exhibit abundant micropores and few macropores. The left distal fibula has a swollen and thickened shaft with abundant micropores on the surface suggestive of osteomyelitis or periosteal reaction. On the posterior surface of the right femur immediately above the medial condyle is a localized area of periosteal reaction. Degenerative joint disease or arthritis of the spine is evident from C2 through C7 and on T10 and T11. Lipping and moderate osteophyte formation occurs along the anterior margins of the bodies with the superior and inferior surfaces exhibiting moderate to severe erosion. The series of linear macropores around the circumference of the vertebra bodies is evident from the middle to lower thoracics with sheathing or filling of the macropores on the anterior sides by bony growth. Two bony protuberances occur on the surface of the palate along a plane between the M1's and are spaced equidistant from the midline of the palate.

Burial 5/6 consists of the nearly complete remains of a subadult/juvenile with the age at death estimated between 4.5 and 5.5 years based on long bone shaft lengths. The individual was interred as a disarticulated bone pile organized similar to Burial 2 with the cranium adjacent to a circular pile of stacked postcranial bones. The pile had been partially disturbed with some of the postcranial remains recovered from the overlying disturbed portion of the feature fill. This interment is considered to represent a bundle burial, but the disturbance of the remains and the location of red ochre staining on the
bones suggest it may have originally been extended. The red ochre stains were confined to the vertebral column, associated vertebral extremities of the ribs, the superior portion of the sacrum, and the posterior surfaces of both scapulae. This suggests the red ochre was applied to the back of the individual while it was still, at least, partially articulated.

The only bone anomaly observed on this individual was the series of linear macropores around the circumference of the centrum, which were evident from the middle thoracics through the lumbars. The thoracics were severely involved with the macropores coalescing to form a fissure around the circumference. On the lower thoracic and lumbar, the billowy formations of the superior and inferior surfaces were clearly demarcated from the middle portion of the centrum by a line of what appeared to arrested growth, since the billowy surfaces did not extend to the margins.

Burial 7 consists of an incomplete skeleton of a subadult/late adolescent with the age at death estimated between 17 and 18 years based on long bone shaft lengths. The individual is considered to be a male based on morphological characteristics of the pubis. Most of the body between the shoulder and pelvic girdles was disturbed and displaced. The upper torso was represented by three cervical and one lumbar vertebrae, a clavicle shaft and two metacarpal shafts. Some of the upper torso remains, including most of the vertebral column, were recovered from Burial 13, a disarticulated bone pile intruding Burial 10 in the northern corner of the feature. The individual was interred in an extended prone position, oriented southwest to northeast across the approximate center of the feature. The head was turned to the right facing Burial 8, which lies parallel to Burial 7 and appears to partially overlap it.

Two pathologies or bone anomalies were observed on the remains of this individual. From the incomplete vertebral column, the series of linear macropores around the circumference of the vertebra body were observed on five thoracic fragments representing the upper and middle thoracics and on one lower thoracic or lumbar. A
severe case of cribra orbitalis was evident on the superior surface of the right eye orbit with a moderate case on the left eye orbit.

Burial 8 consists of the nearly complete remains of a subadult/late adolescent with the age at death estimated at 18+ years based on long bone shaft lengths. The proximal femora, distal tibiae and distal humeri epiphyses are recently fused indicating this individual was slightly older at death than Burial 7. Originally, Burial 8 was reported to be a male; presumably this determination was made in the field because the innomates are not present in the skeletal collection. The individual was interred in basically an extended prone position with the left side partially overlapping Burial 7's posterior right hip joint region. The body was oriented southwest to northeast, headed to the southwest with the head turned to face Burial 7. The upper torso was disturbed and displaced with some of the remains intermingled with Burial 9's remains, which lie adjacent and parallel to Burial 8.

The only observed bone anomaly was the series of linear macropores around the circumference of the vertebra body. From the incomplete vertebral column, four middle thoracics exhibited macropores restricted to the anterior side, and two lower thoracics with macropores on the entire circumference.

Four large copper beads were associated with Burial 8 but their provenience was not recorded. Heavy copper stains were observed during the reanalysis on the right cranial vault, beginning at postorbital constriction and extending posteriorly onto the sphenoid and temporal. An equally distinct copper stain occurred in the left wrist/hand region on the carpals, metacarpals and first row phalanges. A faint copper stain occurred along the superior surface of the left clavicle midshaft. Based on the degree or copper staining and the different places it occurred, it would seem more copper objects than the four beads were originally associated with this individual. Red ochre stains were noted to overlay the copper stains on the right cranial vault and extend over a greater portion of it.
Red ochre stains were also associated with the copper stains of left wrist/hand region but not to the degree as found on the cranium. Additional red ochre stains occurred on the proximal and distal ends of the right humerus, the distal end of the left humerus, the body and arches of one cervical vertebra, and the bodies of two middle thoracic vertebrae.

Burial 9 consists of the nearly complete remains of an adult female individual based solely on the width of the greater sciatic notch. The age at death is estimated between 30 and 34 years based on the auricular surface characteristics, which is a substantially older age than the originally reported determination of 19 to 20 years (Baby and Potter 1963:11). The discrepancy can not be explained, but all the bones have fused which would corroborate an age greater than 20 years. The individual was interred in an extended prone position, oriented southwest to northeast, headed southwest with the head turned to the right and facing Burial 10. The pelvic girdle had been turned upright and left in approximately it correct anatomical position. The lower extremities were disarticulated, turned upright, and placed on the back. The disturbance was attributed to subsequent interment of Burial 11, the cranium of which rested in Burial 9's pelvic basin. It is just as likely the disturbance is related to the interment of Burials 7 and 8, which would have overlain Burial 9's lower extremities. The left upper torso of Burial 9 was also disturbed and the remains intermingled with the remains of Burial 8's disturbed upper torso. This disturbance appears unrelated to the disturbance of the lower extremities.

Several pathologies were observed on the remains from this individual. A small, oval slightly eroded facet occurred on the articular surface of the medial condyle of the right femur. The series of linear macropores around the circumference of the vertebra body was noted on the middle to lower thoracics, with the lumbars too fragmentary to observe. The anterior superior surface of the first sacral body exhibited severe erosion and destruction evidenced by deep pits exposing interior bone. Moderate lipping with osteophyte formation occurred on the anterior and lateral margins. A series of elongated
macropores occurred in the central portions of the articular surfaces or the innominates on the sacrum.

Copper beads were reportedly associated with the cranium, thoracic cage and pelvic girdle. A heavy concentration of copper stains covered the pelvic basin, with additional smaller and localized concentrations occurring on the right femur, left tibia and right clavicle. No stains were noted on the cranium, mandible, vertebrae and ribs. Red ochre stains, primarily in the form of powdery concentrations adhering to the bone, were noted to occur in localized areas on almost every major long bone. The copper stain in the pelvic girdle was overlain by red ochre concentrations.

Burial 9B consists of the incomplete remains of a subadult/infant with an age of death estimated at 6 ± 3 months based on dental eruption and long bone shaft lengths. The remains of this individual were found in the miscellaneous fragment bags from Burial 8's disturbed upper torso and Burial 9's disturbed upper left torso. The original placement of the individual is unknown and presumed to be between the two adult burials. The left eye orbit exhibits a slight case of cribra orbitalis. Two long bone shafts appear to exhibit periosteal reactions in the form of an uneven exterior surface with abundant micropores and a raised gnarly appearance. Other long bone shafts have a smooth appearance and the affected surfaces flake easily from the shaft. Two cranial and one long bone shaft fragment were copper stained suggesting the individual was more likely associated with Burial 9.

Burial 10 consists of a nearly complete adult female individual based on the characteristics of the pubis and ischium and the presence of a preauricular sulcus and associated pits. The age at death is estimated between 30 and 34 years based on auricular surface and pubic symphysis characteristics. Originally, the individual was reported to an adult male between 40 and 45 years (Baby and Potter 1963:11). Part of the discrepancy can be explained by the disturbance of Burial 10 by the interment of Burial 13 in which
the remains of the individuals were commingled. The mixing of bones was maintained in the skeletal collection and duplicated body parts were accessioned to one individual. Both sets of innominates were accessioned to Burial 10. The innominates were reassigned by rearticulating the femora which were not mixed. In so doing, the innominates assigned to Burial 13 do represent an adult male between 40 and 44 years. Thus, it would appear the reanalysis switched the innominates from the original analysis. However, the original determination of Burial 13 was an adult male between 35 and 40 years. The age determination is roughly correct for the other set of innominates, now assigned to Burial 10, but the sex determination is wrong. This discrepancy cannot be explained, since the innominates do clearly represent a female.

Burial 10 was interred in an extended prone position, oriented southwest to northeast, headed to the southwest with the head turned to the south or towards the left side facing Burial 9. The skeleton from the cranium to the pelvic girdle was articulate in correct anatomical position. The original report indicates only the lower leg bones of Burial 10 were displaced and stacked on the pelvis and thoracic cage to accommodate Burial 13. However, a photograph of the feature indicates the lower arm bones were not present and pelvic region was disturbed. The missing bones and disturbance may have been the result of excavation prior to the photograph being taken. Regardless, there is little provenience information to clarify the mixed body parts in the skeletal collection. This becomes important in the assigning of pathological ulnae to the correct individual. Originally, the pathological ulnae were assigned to Burial 13. However, they articulate with Burial 10's humeri, which are known from the photograph to be correctly assigned, and they are too large to articulate with Burial 13's humeri. Consequently, this changes the number of individuals exhibiting severe bone pathologies. Burial 10's tibiae exhibited the same degree and type of bone pathology as the ulnae. Burial 13's distal left tibia exhibited a slighter degree of the same bone pathology, but the right tibia appeared
unaffected. Consequently, the reassignment of the pathological ulnae to Burial 10 reduces the number of individuals exhibiting bilateral symmetry in the expression of this pathology from two to one at this site.

The bone pathology is manifested by a swelling or thickening of the shaft with an undulating or gnarly surface appearance. Abundant micropores and few longitudinally oriented linear striae occur on the exterior surface giving the bone a porous appearance. The severity of the swelling is greatest around the nutrient foramen and decreases distally. The articular surfaces are not involved although affected bone lesions occur to their margins. The characteristics of the affected bone are suggestive of bone lesions associated with osteomyelitis or periosteal reaction.

Both tibiae of Burial 10 exhibit similar bone lesions at similar degrees of severity as the ulnae. For both sets of bones, the left side appears more severely and extensively involved than the right. The right humerus is noticeably thicker, or has a swollen appearance in comparison to the left. However, the exterior surface is smooth with no microporosity. The left femur has an isolated oval shaped bony growth centered around the nutrient foramen and extending along the linea aspera. It forms a gnarly appearing ridge of bone with abundant micropores and few macropores. It is not clear if this bone lesion is representative of the same kind of pathology as found on the tibiae and ulnae. Its position around the nutrient foramen suggests it may reflect the initial stage of involvement for this bone shaft.

Two quadraconcaave gorgets were associated with Burial 10. One was placed adjacent to the pelvic region. The other was found in the thoracic cage region below the thoracic vertebrae or associated with the front of the individual.

Burial 11 was originally reported as an isolated or trophy skull resting on the innominate of burial 9 and representing a subadult/late adolescent female (Baby and Potter 1963). However, the skeletal collection contains a mandible, the second, third and
two lower cervicals, and two upper thoracics representing a nearly complete neck region. This would suggest more than an isolated skull was represented. There is no information concerning the possibility that the bones were in correct anatomical order. The bones do occur in the general area of disturbance associated with Burials 9, 10 and 13, and it is possible the postcranial remains of Burial 11 have been displaced. The postcranial remains of almost an entire individual have not been found amongst the miscellaneous bones from the disturbed feature fill. However, these remains are highly fragmentary, can not be always be identified as a portion of a particular bone, and have not been crossmended with the remains of any known burials. Consequently, at this point in time, Burial 11 can be considered as a partial inhumation.

Circumstantial evidence indicating Burial 11's cranium was articulated with the vertebral column comes from the distribution of copper stains on the vertebrae. On the cervicals, the copper stains are restricted to the spinous and transverse processes; while on the upper thoracic the heaviest concentrations are restricted to the anterior and lateral sides of the vertebra bodies with occasional spots on the transverse processes. There are no copper stains on the cranium nor mandible. This distribution pattern is suggestive of a copper necklace. Additionally, the right lateral sides of the thoracic bodies have red ochre concentrations adhering to them. Both types of stains suggest the remains of Burial 11 were articulated, placed upright on the pelvic basin of Burial 9, and the copper beads associated with Burial 9's pelvic basin were originally a necklace on Burial 11. Finally, there are no cut marks on the vertebrae to suggest Burial 11's head and neck were severed from the body.

The epiphyseal rings of Burial 11's vertebrae are fused and the third molar has erupted suggesting the individual is older than late adolescence. The only observed pathology was a slight case of cribra orbitalis on the superior surface of the right eye orbit.
Burial 12 consists of the nearly complete remains of an adult female based on the characteristics of the pubis and ischium and the presence of a preauricular sulcus and associated pits. Originally the age of death was estimated between 35 and 40 years. However, none of the major long bones are completely fused and the epiphyseal rings of the vertebra bodies are just beginning to fuse. Characteristics of the pubic symphysis and auricular surface indicate an age at death between 20 and 24 years.

Burial 12 was interred as discrete, disarticulate pile of bones representing a true bundle burial. It was situated at the east end of the burial facility with the cranium at the north end of the pile and the postcranial remains tightly and neatly stacked to the south. The feet of Burials 3, 4, 7 and 8 are all flexed in the same direction, northwest, to conform and demarcate the western perimeter of the bone pile.

Several pathologies were observed on the remains of this individual. The series of linear macropores around the circumference of the vertebra body was noted from the middle thoracic through the lumbar. In addition, the last three lumbar exhibited destruction of the anterior portion of the superior surface of the body producing a jagged irregular anterior margin and a linear depression in the superior surface adjacent and parallel to the affected margin. The surface of the depression was covered with numerous macro and micropores. The characteristics are similar to those found on Burial 9's sacrum with the exception of anterior margin destruction rather than lipping. Although Burial 12's sacrum was incomplete it exhibited a case of spina bifida from at least the third to the fifth segments. The auricular surfaces of both innomates exhibited series of deep linear fissures in their central portions. The articular surfaces of the sacrum were missing and could not be examined for corresponding fissures. However, the pattern of fissures on Burial 21's auricular surfaces of the innomates are reminiscent of the macropores on the articular surfaces of Burial 9's sacrum.
Burial 12B consists of an incomplete skeleton of a subadult/infant found amongst Burial 12's remains during the reanalysis. The infant remains include cranial fragments, left scapula, one rib, both tibiae, left fibula, and one unidentified long bone shaft. The lengths of the tibiae and fibula are below the range for a newborn to 6 months, and Burial 12B is considered to be a pre or neonate.

Burial 13 consists of the nearly complete remains of an adult male based on the width of the greater sciatic notch and the absence of a preauricular sulcus. The age at death is estimate between 40 and 44 years base on the auricular surface characteristics. The composition of the disarticulate bone pile containing Burial 13 has been discussed in relationship to the remains associated with Burials 7 and 10, as well as, its placement in relationship to Burial 10 and do not bear repeating.

Several pathologies were observed on the remains of this individual. The series of linear macropores around the circumference of the vertebra body were observed from T3 through L4. The partial destruction of the anterior portion of the superior surface of the vertebra body was observed on L4. The destruction was characterized by a series of macropores paralleling the anterior margin. Behind the macropores was an area or of micropores paralleling the macropores. The anterior margin exhibited slight lipping. This case appears to represent a similar, less severe condition or an early stage of the condition associated with Burial 12's lumbars and Burial 9's sacrum. The spinous process of C7 is blunted and thickened with a gnarled tip. The distal left tibia shaft exhibits bone lesions associated with osteomyelitis or periosteal reaction. The left talus exhibits a small oval depression or facet at the anterior lateral corner of the articular surface for the tibia. The left calcaneus exhibits three macropores on the superior portion of the posterior surface and is reminiscent of the condition of both calcanei of Burial 4.

Burial 14 consists of the incomplete remains of a subadult/infant with an age of death estimated at 2 years ± 8 months based on dental development and the long bone
shaft measurements suggest an age between 0.5 and 1.5 years. The remains were interred in the mound fill with no apparent burial facility. The body was apparently extended and oriented southwest to northeast with the head to the northeast. Whether the individual was prone, supine or on one side was not recorded. The orientation of the body is roughly the same as the extended inhumations in Feature 2 but the heading is reversed. No pathologies were observed on the remains of this individual.

Sidner Mound II

There is no report on the results of the excavation of Sidner Mound II and all information on the burials has to be garnered from the fieldnotes, maps and photographs. Originally thirty-three burial number designations were assigned to remains in Feature 1 and four to the remains in Feature 2. Since bundle burials were present and possibly contained the remains of more than one person, and the remains from an extensive disturbed area in the northern half of Feature 1 were not described nor assigned burial number designations; the thirty-seven burial number designations do not necessarily represent the minimum number of individuals occurring in this mound. Feature 1 represented two conjoined burial facilities with the remains from the southern, a circular burial depression, containing burials numbered 1 through 19, and the northern facility, a circular burial pit, containing the remains from burials numbered 20 through 33 along with the unnumbered disturbed remains. Feature 2, another circular burial depression, contained remains from burials designated II-1 through II-4.

The analysis of the skeletal collection and field documents indicates a minimum number of 22 individuals present in the southern burial facility of Feature 1, a minimum of 24 individuals in northern burial facility of Feature 2, and a minimum of 6 individuals in Feature 2. The original burial number designations have been maintained and sequential letter designation has been added when more than one individual is represented in a
particular burial. When remains from one burial crossmend, articulate or compliment the remains from another burial, the burial designations have been combined.

The nineteen burials in Feature 1South represent four cremation piles (Burials 2, 4, 12 and 16), eight extended inhumations (Burials 6 through 10, 14, 17 and 19), and seven bundle burials (Burials 1, 3, 5, 11, 13 and 18). The bundle burials are more properly considered disarticulated bone piles, since they do not contain the remains of a single, tightly and neatly stacked individual, or some of the remains in a bundle can be crossmended with remains from another bundle or extended inhumation. Amongst the seven disarticulated bone piles at least 10 individuals are represented. The four cremation piles are discrete concentrations, each containing the partial remains of one individual. The remains from one cremation pile could not be crossmended with fragments from the other three, so the cremations are considered to represent 4 individuals. The extended inhumations account for the remaining eight individuals. Remains of two of the extended individuals were crossmended or demonstrated to be complimented by remains in disarticulated bone piles located immediately adjacent to them.

A disarticulated bone pile (Burial 1) contains the partial remains of three individuals and was situated along the eastern perimeter of the feature and adjacent to the cranium of Burials 10 and 14. The remains of a nearly complete male adult (Burial 1A), based on the width of the greater sciatic notch and a faint preauricular sulcus, are represented. The age at death is estimated between 25 and 29 years based on characteristics of the auricular sulcus. Two incomplete subadults are also represented in the remains and both have been crossmended or compliment remains from the disarticulated bone pile (Burial 11) along the western perimeter of the feature. One of the subadults (1B/11A) is a late adolescent or young adult male, based on the width of the greater sciatic notch and a faint preauricular sulcus. The age at death is estimated between 20 and 24 years based on the auricular surface characteristics and between 25 and
26 years based on the pubic symphysis characteristics. The long bones of this individual have not completely fused suggesting an age in the early twenties. The other subadult (1C/11C) is a juvenile with an age at death estimated between 5.5-6.5 years based on long bone shaft lengths.

No pathologies were observed on the remains from the adult individual (Burial 1A). Both of the subadults exhibited bone lesions suggestive of osteomyelitis or periosteal reaction. The femora, fibulae, humeri, and left tibia of Burial 1B/11A were affected; the right tibia was missing. The left tibia and both fibulae were the most severely afflicted bones. The femora, humeri, and the left radius, ulna and fibulae of Burial 1C/11C were affected; the right arm bones were missing. The femora, humeri and left radius were most severely afflicted bones. Both subadults exhibit the series of linear macropores around the circumference of the vertebra with only the thoracic centrums affected on the juvenile and from the lower cervicals through the lumbar affected on Burial 1B/11A.

A disarticulated bone pile (Burial 11) occurred along the western perimeter of the feature adjacent to the feet of Burial 10. In addition to Burials 11A and 11C, the remains also contained portions of a subadult/late adolescent (Burial 14/11B), a subadult/infant (7B/11D), and an assortment of loose teeth and mandible fragments (Burials 11E-11I), which could not be crossmended with any known burials. Burial 11D's remains compliment the missing portions of an infant associated with Burial 7, which was not recognized during the excavation and probably was disarticulated. Burial 11B compliments the missing portions of Burial 14, an extended inhumation in the disturbed central portion of the feature. The remains of both of these individuals will be discussed with the burials to which they belong.

A disarticulated bone pile (Burial 3) occurred at the southern end of the feature adjacent to Burial 6, the southernmost extended inhumation. The partial remains of three individuals are represented. Burial 3A consists of the incomplete remains of an adult
female, based on the width of the greater sciatic notch and the presence of a preauricular sulcus and associated pits. The age at death is estimated between 30 and 34 years based on auricular surface characteristics. The remains include the portion of the body between the shoulder and pelvic girdles and the right humerus. These bones do not crossmend nor compliment the remains of any known burial. The only pathology observed on the remains of this individual was degenerative joint disease of the spine, involving slight lipping of the anterior margin of the body and the facet margins of the articular processes from T1-T5; moderate anterior margin lipping of the body associated with Schmoral nodes on T7 and T8; and slight anterior margin lipping of the body associated with Schmoral nodes on L3. Burial 3B consists of limited and fragmentary remains of a late adolescent/young adult, which compliment the remains from Burial 5, another disarticulated bone pile situated adjacent to Burial 3. Burial 3C consists of the partial remains of an adult male, based on the width of the greater sciatic notch and a faint preauricular sulcus. The age at death is estimated between 25 and 29 years based on auricular surface characteristics. The portions of the body represented in these remains include the right shoulder and arm, and the pelvic girdle and lower legs. These remains do not crossmend nor compliment any known burial. No pathologies were observed on the remains of this individual.

A disarticulated bone pile (Burial 5) was situated on the left innominate of Burial 6 and adjacent to a disarticulated bone pile (Burial 3). The remains consist of a nearly complete late adolescent/young adult female, based on the width of the greater sciatic notch and the presence of a preauricular sulcus. The age at death can not be accurately estimated because the pubis and auricular surface were too fragmentary. However, the proximal femur, distal tibia, proximal ulna, iliac crest, and calcaneus were not fused suggesting an age in the early twenties. The fragmentary bones from the right side of the body were in Burial 3B. No pathologies were observed on the remains of this individual;
but a concentration of copper staining was noted on the pelvic basin portion of the ilium blade fragment.

A disarticulated bone pile (Burial 13) consists of a small number of fragmentary remains situated on top of Burial 14, an extended inhumation in the disturbed central portion of the feature. A quadraconcave gorget occurred at the east end of the pile and bone awl occurred at the west end. It is not clear with which of the remains these items were associated, and they might even be associated with Burial 14. Right and left proximal femur fragments were crossmended with remains from Burial 9, an extended inhumation adjacent and south of the pile. A right ilium and a left proximal femur crossmended with the remains from Burial 18A, a disarticulated bone pile immediately north of Burial 13 and situated on top of Burial 17. A femur head fragment (Burial 13C) could not be crossmended with any adjacent burials, but their proximal femurs were broken. The right ilium, and left femur, tibia, fibula and radius of a subadult/infant (Burial 13D) compliment another individual in the disarticulated bone pile (Burial 18).

A disarticulated bone pile (Burial 18) was situated on top of the lower extremities of Burial 17, the northernmost extended inhumation and adjacent to the feature perimeter. The partial remains of two individuals are represented. Burial 18A/13B represents an incomplete adult female, based on characteristics of the pubis, width of the greater sciatic notch, and the presence of a preauricular sulcus and associated pits. The age at death is estimated between 30 and 35 years based on characteristics of the pubic symphysis and auricular surface. Several pathologies were observed on the remains of this individual. Degenerative joint disease of the spine was evident with moderate anterior margin lipping of the bodies from T4-T6, and moderate to severe margin lipping of the entire body circumference on L4 and L5. The series of linear macropores around the circumference of the vertebra body was present from T6-L5. The right auricular surface contained a cluster of linear fissures along the inferior posterior margin. Trauma related pathologies
included a bone spur on the shaft of a first row hand phalange, a gnarled and distorted proximal articular surface of the big toe, and a facet with an eroded surface on the articular surface for the talus of the left calcaneus. Burial 18B/13B consists of the left ilium, and right arm and clavicle of a subadult/infant with the age at death estimated between 0.5 and 1.5 years.

A disarticulated bone pile (Burial 15) was situated on Burial 17 at the northern end of feature and adjacent to Burial 18. A partial cranium was on the upper thoracic cage and a left proximal femur and right femur midshaft were over Burial 17's left shoulder and intermingled with a small cremation (Burial 16). No age nor sex determination was possible and the remains do not crossmend nor compliment any known burial.

Burial 2 consists of the cremated remains of one partial adult individual. The majority of the bone fragments are less than 1 cm in length and can not be identified to specific bone. The largest fragment was a lumbar arch, with the rests of the remains representing portions of the cranial vault and long bone shafts. Variable burning between the exterior and interior surfaces was common with only a few completely calcined fragments. Exterior surfaces ranged from bluish-gray to chalky in color; while interior surfaces ranged from black to bluish-gray. The long bone shaft fragments were too small to determine if they were warped. The few cranial vault fragments had checked exterior surfaces. This cremation pile was situated on Burial 10's feet, an extended burial, with a portion of a disarticulated bone pile (Burial 1) resting on top it.

Burial 4 consists of the incompletely incinerated, partial remains of an adult, probably male, individual based on a charred and unburnt ilium fragment which contains a portion of a narrow greater sciatic notch and exhibits no preauricular sulcus. The auricular surface was fragmentary and partially charred and no age at death estimation was attempted. All major body parts were represented except for the hands and feet.
Variable degrees of burning were evident with the pelvis and cranial vault fragments exhibiting unburnt, charred and calcined portions of one bone. The postcranial fragments were almost exclusively calcined and consisted of medium to large sized fragments. Long bone shaft fragments exhibited warpage and transverse fractures while articular surfaces of joints and vertebra body fragments were warped and checked. An innominate fragment and a humerus shaft fragment exhibited small bluish-green spots suggesting a copper object was associated with the remains; although none was recovered. The cremation pile was placed on top of a disarticulated bone pile (Burial 5) at southern end of the feature. In turn, Burial 5 was resting on the left innominate and proximal femur of Burial 6, the southernmost extended burial in the feature.

Burial 12 consists of the incompletely incinerated and partial remains of an adult. The major body represented include cranium, upper and lower extremities, vertebrae and ribs and few unidentified flat bone fragments. The remains repeat the pattern of variable degrees of burning noted in Burial 4, with the exception of no charred and unburnt innominate fragments. The postcranial fragments are smaller and almost exclusively calcined and warped. Portions of the cranium have been crossmended and exhibit a charred or unburnt interior vault with the frontal and parietals calcined on the exterior. The calcined exterior surface extends posteriorly on the left side, while the right mastoid area is charred. The cremation pile was placed on top of and was intermingled with the remains from a disarticulated bone pile (Burial 11), at the eastern perimeter edge of the feature.

Burial 16 consists of the cremated remains of one partial adult. The deposit was small consisting of 6 cranial and 23 long bone shaft fragments, all less than 1 cm long. All fragments were completely calcined but too small to determine if they were warped. The deposit partially overlaid and underlaid the postcranial remains along the northern edge.
of the disarticulated bone pile (Burial 15) at the northern end of the feature. In turn, Burial 15 overlaid a portion of Burial 17, the northernmost extended burial in the feature.

Burial 6 represents the southernmost of the extended inhumations. As with all the extended inhumations, the placement of the pelvic region approximates the north-south axis of the feature. The remains consist of an incomplete adult male, based on the width of the greater sciatic notch and the absence of a preauricular sulcus. The age at death is estimated between 20 and 25 years based on auricular surface characteristics and all bones are fused. The individual was interred in an extended supine position, oriented east to west, headed west and facing north. Burial 5, a disarticulated bone pile, rested on Burial 6's left innominate with Burial 8, an extended inhumation, lying parallel and adjacent to the right side. Burial 7, another extended inhumation, was parallel and rested on top of Burial 6's right lower extremities. Only one pathology was observed on the remains of this individual. Bone lesions suggestive of osteomyelitis/periosteal reaction occurred along the entire shafts of both tibiae with the left being slightly medially bowed. Lesions were also noted on the distal halves of the shafts of both femora and fibulae; however the tibiae were the most severely afflicted.

Burial 7 contains the partial remains of two individuals. Burial 7A was originally a complete extended inhumation but the remains were weathered and fragmentary. Only a portion of an adult female, based on the width of the greater sciatic notch and the presence of a preauricular sulcus and associated pits, was in the skeletal collection. The age at death is estimated between 25 and 29 years based on auricular surface characteristics. The individual was interred in an extended supine position, oriented east-west and headed west, and was situated on top of Burials 6 and 8. Only one pathology was observed on the remains of this individual. From the incomplete vertebral column, one upper thoracic exhibited distortion and erosion of the facets of the superior articular processes.
Burial 7B was not originally noted during the excavation and the remains of the individual were found in the skeletal collection mixed with the remains of Burials 7 and 8. The remains represent an incomplete subadult/infant with an age at death estimated as 6 ± 3 months based on dental development. The remains include cranial and long bone shaft fragments, several deciduous teeth, neural arch and rib. These remains are complimented by the right radius, ulna, tibia and fibula in Burial 11D. All of the long bones from both burials exhibit bone lesions suggestive of osteomyelitis/periosteal reaction and are characterized by a raised bony growth on the shaft that has abundant micropores giving the affected area a porous appearance. The lesions are always associated with the portion of the shaft around the nutrient foramen but extend over the entire shaft on the more severely afflicted bones.

Originally, Burial 8 consisted of the weathered and fragmentary remains of a complete extended inhumation. In the collection, an incomplete adult female, based on the width of the greater sciatic notch and the presence of a preauricular sulcus and associated pits, is represented. The age at death is estimated between 25 and 29 years based on auricular surface characteristics. The individual was interred in an extended supine position, oriented east-west, headed west and facing south. Burial 6 laid parallel and adjacent to its left side; while Burial 9 was parallel and adjacent on the right side with Burial 8's right forearm draped over Burial 9's back. Only one pathology was observed on the remains of this individual. From the incomplete vertebral column, the series of linear macropores around the circumference of the vertebra body was evident on the middle and lower lumbers.

Burial 9 also consisted of the weathered and fragmentary remains of a complete extended individual. In the collection, an incomplete adult male, based on the width of the greater sciatic notch and the absence of a preauricular sulcus, is represented. The age at death is estimated between 25 and 29 years based on auricular surface characteristics.
The individual was interred in an extended prone position, oriented east-west, headed west and facing north. Right proximal femur shaft fragments of this individual were crossmended with a femur head from Burial 13, a disarticulated bone pile lying adjacent to the north. The only observed pathology was bone lesions suggestive of osteomyelitis/periosteal reaction on the distal half of the right tibia and the entire shaft of the left fibula. The tibia was more severely afflicted. Several artifacts were associated with this individual including two quadraconcave gorgets beneath the left elbow, and burnt gorget fragments, a clay pipe fragment and a cache blade in front of the face.

Burial 10 consists of the remains of an incomplete adult individual, which was highly weathered and fragmentary when discovered. No age nor sex determination was possible from the available skeletal material. The individual was interred in an extended prone position, oriented east-west, headed east and facing north. Burial 9 lay parallel and adjacent to its left side with Burial 14 on the right side, Burial 2, a cremation, on its feet, and Burial 11, a disarticulated pile of bones beyond the cranium. The only observed pathology was bone lesions suggestive of osteomyelitis/periosteal reaction on both tibiae shafts. The extent of the lesions can not be determined because the shafts are broken.

As excavated, Burial 14 consisted of the incomplete remains of an incomplete middle to late adolescent represented by the upper torso, upper extremities and cranium. The individual was interred in an extended supine position, oriented east-west, headed east and facing north. It was situated in the disturbed central portion of the feature between Burial 10 to the south and Burial 17 to the north. Burial 13 was on top of the thoracic cage and Burial 11 laid beyond the cranium. The left ulna exhibited bone lesions suggestive of periosteal reaction on the proximal third of the shaft. The complimentary pelvic region and lower extremities for burial 14 are represented by Burial 11B. The remains in Burial 11B represent a late adolescent male, based on characteristics of pubis, width of the greater sciatic notch and absence of a preauricular sulcus. The age at death
is estimated between 18 and 19 years based on pubic symphysis characteristics and the lack of fusion of the long bone epiphysis. Several pathologies were observed on these remains. The series of linear macropores around the circumference of the vertebra body were noted from middle thoracic to the lumbar. Both femora were anteriorly bowed but showed no bone lesions. Slight periosteal reaction was observed on the exterior surface of the ilium blade from the acetabulum to the greater sciatic notch and on all nonarticular surfaces of the tarsals and metatarsal shafts.

Burial 17 represents the northernmost extended inhumation on the feature bottom and consists of an incomplete adult male, based on the width of the greater sciatic notch and the absence of a preauricular sulcus. The age at death is estimated between 45 and 49 years based on auricular surface characteristics. The individual was interred in an extended supine, oriented east-west and headed to the west. The only observed pathology on the remains of this individual were the bone lesions suggestive of osteomyelitis which occurred along the entire shafts of the tibiae and fibulae, and the proximal shafts of the right radius and ulna.

Burial 19 consists of the partial remains of a subadult/infant with an age at death estimated between newborn and 0.5 year based on dental development and long bone shaft lengths. It was extended supine, oriented east-west and headed west. It was isolated from the other burials and situated on the margin between Feature 1South and Feature 1North at a slightly higher level. It appears to be unrelated to the burials in either feature. The individual was laid on bark with a small pile of red ochre placed on the feet and covered with bark which had leather stains over it. The series of linear macropores were observed on the incomplete set of centrums which appear to be thoracic and lumbar. The long bone shafts may have bone lesions suggestive of periosteal reaction but the surfaces are weathered and too exfoliated to accurately determine.
The fourteen burials in Feature 1 North represent twelve extended inhumations (Burials 20-22 in the upper level and 23-28 and 30-32 in the lower level), one cremation (Burial 29 in the lower level), and one bundle burial (Burials 33A and B in the lower level). The bundle burial is more properly considered a disarticulated bone pile. Each of the extended burials and the cremation account for one individual. The disarticulated bone pile contains two individuals. Between the upper and lower levels of burials, a disturbed area containing human remains was encountered. Amongst the disarticulated and scattered bones were the remains of six incomplete subadults and three nearly complete adults.

When excavated Burial 20 was extremely weathered and fragmentary but did appear to be a complete extended adult inhumation. The fragmentary remains in the collection are insufficient to determine age, sex and the presence of pathologies. The individual was interred in an extended supine position, oriented east-west and headed to the east.

Burial 21 was in the same state of preservation as Burial 20. All that could be determined was it represented an adult extended supine, oriented east-west, headed to east and lying parallel between Burials 20 and 22.

Burial 22 consists of less severely weathered remains of an adult extended inhumation; however age and sex determinations were not possible. The individual was interred in an extended supine position, oriented east-west and headed west. This individual represented the southernmost burial of the upper level and was situated approximately on the east-west axis of the feature. All three upper level burials were on an inclined surface towards the center of the feature. A cache of artifacts occurred below the lower legs and contains points, flakes, bone and antler implements and freshwater bivalve shell.
Burial 23 consists of the nearly complete remains of an adult female, based on the width of the greater sciatic notch and the presence of a preauricular sulcus and associated pits. The age at death is estimated between 20 and 24 years based on auricular surface characteristics. The proximal humeri, tibiae, distal radii, ulnae, femora and the epiphyseal rings have not fused. The individual was interred in an extended supine position, oriented east-west, headed east and facing north. It was situated just south of the center of the pit with Burial 31 to the north, and Burial 28 to the south. Several pathologies were observed on the remains of this individual. The series of linear macropores around the circumference of vertebra body were evident from T3-L5. A moderate case of cribra orbitalis occurred on the superior surface of the eye orbits. A series of small linear fissures, oriented longitudinally occurred between the inferior nasal border and the alveolar margin and between the maxillary canines. The fieldnotes indicate copper beads were associated with this individual but their are no copper stains on the bones and the copper beads are accessioned to Burial 24, which does have copper stained bones. It would appear the fieldnotes are in error.

Burial 24 consists of the nearly complete remains of an adult male, based on the width of the greater sciatic notch and the absence of a preauricular sulcus. The age at death is estimated between 25 and 29 years based on pubic symphysis and auricular surface characteristics. The individual was interred in an extended supine position, oriented east-west and headed east. The remains were reported to be disturbed with the skeleton articulated from the cranium through the pelvic region. The left femur was placed on top of the thoracic cage along with both arms and the body was resting on the left side of Burial 27. It was pressed against the southern perimeter of the pit and the positioning seems to be a means to accommodate the body into available space.

Several pathologies were noted on the remains of this individual. The series of linear macropores around the circumference of the vertebra body were evident from C5-
L5. Traumatic arthritis was noted by discontinuous marginal lipping of the vertebra bodies. C6 had moderate lipping on the inferior anterior margin associated with erosion of the adjacent inferior surface. T12 showed distortion and moderate lipping of the facet margins on the inferior articular processes. Slight to moderate anterior margin lipping occurred from L3-L5. A facet was present on the articular surface for the talus of the left calcaneus, and the left navicular had two linear grooves on the articular surface for the first cuneiform.

Copper stains occurred on the right clavicle at the sternal extremity, the rib bodies, the spinous and transverse processes of T12-L2, and the neck of the right femur. According to the fieldnotes copper beads came from these positions on Burial 23, but the artifact accession list indicates they were from Burial 24. In addition, almost two dozen disc shell beads and a stone bead are accessioned to this individual but are not mentioned in the fieldnotes. Copper stains were not observed on these beads.

Burial 25 consists of the nearly complete remains of a subadult/juvenile with an age at death estimated between 3.5 and 4.5 years based on long bone shaft lengths. The individual was interred in an extended supine position, oriented east-west, headed east and facing north. The cranium rested on Burial 27's femora with the thoracic cage on Burial 27's feet and the lower extremities in an extension in the southwest corner of pit wall. The only observed pathology was the series of linear macropores around the circumference of the vertebra body (centrum) from the lower cervicals through the lumbar.

Burial 26 consists of a nearly complete adult female, based on characteristics of the pubis and ischium, width of the greater sciatic notch, and the presence of a preauricular sulcus and associated pits. The age at death is estimated between 30 and 35 based on pubic symphysis characteristics and between 35 and 39 based on auricular surface characteristics. The individual was extended supine, oriented east-west, and
headed east. The cranium rested on Burial 27's left innominate and the thoracic cage on Burial 27's lower extremities. The lower legs and feet were missing, but would have projected into the wall of the pit. The absence of the lower legs does not appear to be related with the placement of Burial 25. Several pathologies or bone anomalies were observed on the remains of this individual. The series of linear macropores around the circumference of the vertebra body were noted from C7-L5. Degenerative joint disease of the spine involving distortion and enlargement of the facet margins of the articular processes occurred from C5-sacrum with anterior margin lipping of the body beginning at T4 and continuing through the sacrum. An extra lumbar vertebra was present between T12 and L1. A quadraconcave gorget was recovered from the pelvic inlet and an antler handle came from under the thoracic cage, resting on Burial 27's femur. Given the prone position of the body, these artifacts would have been placed in front of Burial 26 prior to interment.

Burial 27 consists of a nearly complete subadult/juvenile with an age at death estimated between 7.5 and 8.5 years based on bone shaft lengths and ilium breadths. The individual was interred extended on the right side with the legs slightly flexed at the knees, oriented east-west, headed east and facing north. The body lied diagonally across Burial 28. Two pathologies were observed on the remains of this individual. The series of linear macropores around the vertebra body (centrum) were present on all thoracics. On the middle and lower thoracics the macropores coalesced to form linear fissures. This condition appeared to be inhibiting the fusion of the centrums with the neural arches. Bone lesions suggestive of osteomyelitis/periosteal reaction were observed on the midshafts of both humeri, proximal shafts of both radii, and proximal shafts of both tibiae, where grooves occurred along the popliteal lines. The afflicted areas appeared as gnarly surfaces with numerous micropores and linear striations.
Burial 28 consists of a nearly complete subadult/juvenile with an estimated age at death of 3.5-4.5 based on long bone shaft lengths and ilium breadths. The individual was interred extended on its right side, oriented east-west, headed east and facing north. Burial 26 crossed over the body forming a narrow X-shape in planview. Burial 23 laid adjacent to this individual to the north. The only pathology observed on this individual was the series of linear macropores around the circumference of the vertebra body (centrum), which occurred from the upper thoracics through the lumbaras. The fieldnotes indicate copper stains were observed on the clavicle and mandible but the objects were recovered. During the reanalysis, copper stains were observed on the left clavicle and cervical centrums and neural arches but not on the mandible.

Burial 29 is the only cremation occurring in Feature 1North and consists of the partial remains of single individual. Most of the fragments are less than 1 cm in length and represent cranial and long bone fragments which can not be identified for a particular bone. Some fragments are not completely calcined exhibiting a bluish-gray to chalky white color but are warped, transversely fractured and checked. The cremation pile was placed on Burial 31's upper thoracic cage and was immediately above, or west of, Burial 30's cranium. A bone awl and a cut dog maxilla, both unburnt, were associated with the cremation but may actually be associated with either Burial 30 or 31.

Burial 30 consists of an nearly complete adult male based on the characteristics of pubis and ischium and the width of the greater sciatic notch, however it has a faint preauricular sulcus. The age at death is estimated between 25 and 29 based on auricular surface characteristics. The individual may be slightly younger since the proximal humeri, left distal radius and ulna, and right distal femur are not fused, although the opposite bones are. The individual was interred in an extended supine position, oriented east-west and headed west. The individual was placed on Burial 31's lower thoracic cage and lower extremities. Burial 30's lower extremities were disarticulated and placed on its own
thoracic cage. Several pathologies were observed on the remains of this individual. The series of linear macropores around the circumference of the vertebra body were evident from T4-L5. Several linear fissures occurred on the right auricular surface but were not present on the corresponding articular surface of the sacrum. Bone lesions suggestive of osteomyelitis/periosteal reaction occurred along the entire shafts of both femora and tibiae, right radius and right fibula. Bone lesions were restricted to the proximal shaft of the right ulna. The mandibular arch appeared swollen and thickened along the inferior margin but had no lesions.

Burial 31 consists of a nearly complete adult female, based on the width of the greater sciatic notch and the presence of a preauricular sulcus. The age at death is estimated between 25 and 29 years based on auricular surface characteristics. The individual was interred in an extended supine position with the lower legs crossed, and was oriented east-west and headed west just north of the east-west axis of the feature. Burial 23 lay adjacent and parallel to its right side, while the disarticulated bone pile (Burial 33) was on its left side. Several pathologies were observed on this individual. The series of linear macropores around the circumference of the vertebra body occurred from the upper to lower thoracic. Traumatic arthritis or possibly degenerative joint disease of the spine occurred in two areas of the vertebral column. Moderate anterior margin lipping of the body was evident from C2-C6, and slight anterior margin lipping from L3-sacrum. A localized periosteal reaction occurred on the posterior surface of the left femur immediately superior to the posterior margin of the lateral condyle.

Burial 32 consists of the nearly complete remains of an adult male based on characteristics of the pubis and ischium, width of the greater sciatic notch, and the absence of a preauricular sulcus. The age at death is estimated between 28 and 30 years based on pubic symphysis characteristics and between 30 and 34 years based on auricular surface characteristics. The individual was interred in an extended supine position,
oriented east-west and headed west. The individual was situated along the northern edge of the pit and the lower legs were disarticulated and placed under the femora. The right tibia was under the pelvis and the right foot under the elbow. No pathologies were observed on the remains of this individual.

A disarticulated bone pile (Burial 33) was originally reported to contain the partial remains of two individuals, an adult (Burial 33A) and a subadult (Burial 33B) based on the presence of two crania. The bone pile occurred between Burials 31 and 32. Burial 33A consists of an incomplete adult male based on characteristics of the pubis and ischium, width of the greater sciatic notch and the absence of a preauricular sulcus. The age at death is estimated between 25 and 29 years based on pubic symphysis and auricular surface characteristics. Bone lesions suggestive of osteomyelitis/periosteal reaction occur on the shafts of the femora, and the right tibia and humerus. A healed circular lesion is present on the frontal anterior to bregma on the exterior surface. Burial 33B consists of the nearly complete remains of a subadult/juvenile with an estimated age between 7.5 and 8.5 years based on long bone shaft lengths. The associated cranium consists of a complete left temporal and several fragments. The temporal crossmends with an adult cranium from the miscellaneous remains from the overlying disturbed area, and the temporal has been designated Burial 33D. A subadult/juvenile mandible was present and represented an individual aged 3 ± 1 years and is designated Burial 33E. It occludes with a maxillary fragment from the miscellaneous remains. A subadult/middle adolescent mandible fragment (12 ± 2.5 years) was also present and designated Burial 33C. It crossmends with a mandible fragment from the miscellaneous remains. The only observed pathology on Burial 33B was the series of linear macropores around the vertebra body (centrum) which were evident from the upper thoracics through the lumbar and were apparently inhibiting the fusion of the centrums and neural arches.
A disturbed area occurred immediately over the lower level burials in the approximate central portion of the pit. A miscellaneous scatter of human remains occurred within this area but was concentrated in the eastern half of the pit. Amongst these bones were the partial remains of at least six subadults represented by postcranial or five by cranial remains. These remains were designated miscellaneous subadult postcranial (MSP)A through F and miscellaneous subadult cranial (MSC)A through E.

From the postcranial remains: 2 subadult/juveniles (MSP A and B) 7.5 to 8.5 years, 1 subadult/juvenile (MSP C) 3.5-4.5 years, 1 subadult/juvenile (MSP D) 2.5-3.5 years, 1 subadult/infant (MSP E) newborn-0.5 year, and 1 subadult/middle adolescent (MSP F) 15 ± 1 years are represented. From the cranial remains; 3 subadult/juveniles (MSC A, C and D) 9 ± 2 years, 1 subadult/juvenile (MSC B) 4 ± 2 years, and 1 subadult/juvenile (MSC E) 3 ± 1 year are represented. The subadult/middle adolescent is represented by the crossmended mandible (Burial 33C), which suggests the cranium could be represented amongst the uncrossmended cranial fragments in the miscellaneous remains.

The postcranial and cranial remains consistently represent three nearly complete individuals and one partial individual. The remains of the partial individual represent the missing long bones from Burial 33A and all of them have bone lesions along their entire shafts. The three nearly complete individuals represent two females between the ages of 25 and 29 years and one male also between the ages of 25 and 29 with sex and age determinations based on the width of the greater sciatic notch, presence or absence of a preauricular sulcus, and the auricular surface characteristics.

Several pathologies were observed on the remains of the miscellaneous individuals. MSP A exhibited bone lesions suggestive of osteomyelitis or periosteal reaction on the femora, tibiae, fibulae, and left ulnae. MSP C exhibited similar lesions on the femora and the right fibula, humerus and radius. MSP D and MSCE, which represent the same 3 ± 1 year old individual, exhibited bone lesions on the femora, tibiae, and
frontal superior to glabella on the exterior surface. In addition, this individual exhibited a severe case of cribra orbitalis and the congenital loss of the left maxillary I1 and I2. Of the nearly complete adult individuals, the only observed pathology was the flattening and distortion of the right glenoid cavity of the tempo-mandibular joint.

The four designated burials from Feature 2 probably represent four extended inhumations. However, the remains from Burial II-1 were missing from the skeletal collection and could not be accessed. Field maps indicate one extended adult inhumation. Burial II-3 contained the partial and disturbed remains of two subadults (Burials IIB and C), in addition to the mapped adult extended inhumation (Burial II-3A). Burials II-2 and 4 do represent a single extended inhumation. Consequently, six individuals are represented in this feature.

According to the field documents, Burial II-1 consisted of the remains of a complete adult inhumation. The individual was interred in an extended position on its left side with the lower extremities slightly flexed at the knees. It was oriented east-west, headed west and facing down, or towards the chest. This inhumation represents the southernmost burial in Feature 2 and like the burials from Feature 1South, the pelvic region was placed along the approximate north-south axis of the feature.

Burial II-2 consists of the nearly complete remains of an adult female, based on the width of the greater sciatic notch and the presence of a preauricular sulcus and associated pits. The age at death is estimated between 20 and 25 years based on auricular surface characteristics. In addition, the distal radii and tibiae, and the iliac crest are not fused. The individual was interred in an extended position on its left side, oriented east-west, headed west and facing down. It was situated immediately adjacent and parallel to the front of Burial II-1.

Several pathologies were observed on the remains of this individual. The series of linear macropores around the circumference of the body were noted on the middle and
lower thoracic. The right femur was anteriorly bowed. A rectangular hole 8 mm by 2 mm with minimal regrowth occurred on the medial side of the posterior surface of the right tibia immediately below the condyles. The left femur exhibits slight marginal lipping along the superior margin of the femoral head. The pathologies of the legs are seen as being interrelated and resulting from the trauma, a probable penetrating wound, to the right tibia. Red ochre stains were observed on the vertebral column from T11 through the sacrum and on the femora, tibiae, fibulae and both feet. A series of short, bright red lines, oriented perpendicular to the long axis of the body and regularly spaced, were noted beginning at the distal end of the femora and extending through the midshafts of the fibulae where they became faint. The lines were placed on the posterior medial surface of the right leg bones and the posterior lateral surfaces of the left leg bones.

Burial II-3A consists of the incomplete remains of an adult female, based on the characteristics of the pubis and ischium. The age at death is estimated between 27 and 30 years based on pubic symphysis characteristics. The individual was interred in an extended position on its left side, oriented east-west, headed west and facing down. It was situated adjacent and parallel to Burial II-2. Field maps indicated the individual was recently disturbed in the region between the shoulder and pelvic girdles.

Several pathologies were observed on the remains of this individual. The series of linear macropores around the circumference of the vertebra body were evident from the middle thoracics through the lumbar with sheathing or filling of the ones on the anterior side of the body. Degenerative joint disease of the spine involved slight anterior margin lipping of the bodies from C5-C7 and the middle thoracic. Moderate anterior margin lipping associated with Schmoral nodes occurred on the lumbars. The femora and right tibia were slightly anteriorly bowed. An artifact cache was placed by the left side of the cranium above the left shoulder, suggesting the individual was resting on it. The artifact cache included stem points, a pendant, a gorget and a bone awl. Cut skunk and dog
maxilla and copper beads were recovered from the disturbed area in front of or north of Burial II-3A and were accessioned to it. However, there are no copper stains on the remains of this individual.

Burial II-3B consists of the partial remains of a subadult/early adolescent with an age at death estimated between 10.5 and 11.5 years based on long bone shaft length. The portions of the body represented include the right scapula, humerus, fourth and fifth metatarsals, and two first row foot phalanges. All were recovered from the disturbed area.

Burial II-3C consists of the partial remains of a subadult/infant with an age at death estimated between 2.5 and 3.5 years based on long bone shaft length. The remains contain a left radius and several unidentified long bone shaft fragments, cranial fragments, and an ilium blade fragment. All of the remains were recovered from the disturbed area. Copper stains were noted on the posterior surface of the radius and covering exterior but not broken surfaces of the ilium blade. This would suggest the copper beads accessioned to the adult inhumation may have been associated with this individual.

Burial II-4 consists of the incomplete remains of a subadult/infant with an age at death estimated between 0.5 and 1.5 years based on dental development, long bone lengths, and ilium breadth. The individual was interred in an extended supine position, oriented east-west, headed east and placed between Burials II-2 and 3A. The only observed pathology was the series of linear macropores around the circumference of the vertebra body (centrum), which were present on the thoracics and had coalesced to form linear fissures. A yellowish stain indicative of a leather covering was reported to have been encountered but no stains were evident on the bones.

Hambleton Mound Burials

Eight burials were reported from two burial features at Hambleton Mound with two from Feature 1 and 6 from Feature 2 (Potter 1967:2-5). The reanalysis of the skeletal
collection found no discrepancies in the minimum number of individuals nor in their reported spatial arrangements. However, there were discrepancies in the sexing and aging of some of the individuals. Complicating the reanalysis was the mixing of body parts in the skeletal collections for Burials 1 through 3, Feature 2 and the highly fragmented and weathered condition of the remains from Burials 1 and 2, Feature 1.

Burial 1, Feature 1 consists of the partial remains of an adult female based on the presence of a preauricular sulcus. The age at death is estimated between 30 and 34 years based on auricular surface characteristics. The individual was interred in an extended prone position, oriented southwest to northeast with the head to southwest.

Several pathologies or bone anomalies were observed on the remains of this individual. A probable healed fracture was evident on a metacarpal shaft, probably the left fifth, in the form of a transverse bone spur projecting from the ventral surface. The sacrum exhibited no spinous processes for the first and second segments, but normal processes for the third and fourth. One middle/lower thoracic body fragment exhibited moderate lipping and osteophyte formation along the anterior superior margin. The anterior and left side of the vertebra body exhibit a series of linear macropores around the circumference.

Burial 2, Feature 1 consists of the highly fragmented and partial remains of an adult individual. Originally reported as being a male, there are no fragments in the skeletal collection which can be used to sex this individual. Presumably, sex determination was made in the field prior to the removal of the remains. None of the fragmentary remains were sufficient for an age at death estimation. The individual was interred in an extended supine position parallel to the right side of Burial 1, and oriented in the same direction. No pathologies were observed on the fragmentary remains of this individual.

Burial 1, Feature 2 consists of a nearly complete skeleton of an adult female, based on the characteristics of the pubis and ischium. The age at death is estimated
between 40 and 44 years based on the characteristics of the auricular surface and pubic symphysis. The individual was interred in an extended supine position along the western edge of the feature, and oriented southeast to northwest and headed to the southeast.

Several pathologies or bone anomalies were observed on the remains this individual. The vertebrae showed discontinuous lipping of the anterior margins of the bodies, with slight to moderate lipping on the inferior margin of C4 and the superior margin of C5. Beginning with the inferior margin of L1 and continuing through the superior margin of the first sacral segment, lipping increases from moderate to severe. The series of linear macropores around the circumference of the vertebra body was evident from C4 through L3, and increased in severity or number of macropores per body through the middle to lower thoracics, then decreased in the lumbar. Bone lesions suggestive of osteomyelitis or periosteal reaction are evident along the anterior and lateral sides for the entire shaft lengths of both tibiae, the distal half of the left fibula beginning at the nutrient foramen, the posterior and lateral surfaces of the proximal left ulna, and the anterior and lateral surfaces of the proximal left radius. Both tibiae also exhibit anterior bowing.

Objects associated with Burial 1 Feature 2 include a charred slab of wood placed across the shoulder region and from which the radiocarbon date of 1675 ± 105 years BP was secured. A pelvic fragment from an immature, medium sized mammal was encountered during the reanalysis intermingled with this burial's vertebra fragments. Presumably it was associated with this burial. Because of its relative size, the relative degree of exterior surface weathering which is similar to the human remains, and the lack of additional animal remains; this bone is not considered to represent a recent groundhog.

Burial 2, Feature 2 consists of a nearly complete skeleton of an adult male individual based on the width of the greater sciatic notch; although a faint preauricular sulcus is present. The age at death is estimated between 20 and 25 years based on the
auricular surface characteristics. The individual was interred in an extended prone position, oriented southwest to northeast, headed to the southwest and placed on top of Burials 1 and 3. The pelvic region had been prehistorically disturbed with the bones turned up right but left in place.

Complicating the reanalysis of the remains of this individual were the sacrum and second right ilium fragment with an auricular surface which are accessioned to this individual. The sacrum does not articulate with the pair of auricular surfaces considered to belong to Burial 2. The sacrum does articulate with the second auricular surface which represents an adult male, based on the width the greater sciatic notch but having a faint preauricular sulcus, between 40 and 44 years old. The second auricular surface is not morphologically similar to either Burial 1's or Burial 3's left auricular surface in that the notch is relatively wider and does not contain a distinct sulcus. It is similar to Burial 3's left auricular surface in exhibiting a few macropores on the lower portion. Consequently, the estimated age at death corresponds closely for the two fragments. However, right ilium and sacrum fragments in Burial 3's remains do not crossmended Burial 2's second right auricular surface fragment. Given the positioning of the burials and the disturbance of Burial 2, it would seem Burial 2's sacrum and second auricular fragment belong to Burial 3. If the sacrum and second auricular surface in Burial 2 are assigned to Burial 3, then Burial 3's sex determination becomes questionable.

Pathologies or bone anomalies were noted for Burial 2's vertebral column. Schmoral nodes were observed on two of the three lower lumbers with nodes on the superior and inferior surfaces of one and the superior surface of the other. The spinous processes of three cervical vertebrae are irregularly shaped and one is distinctly blunted and thickened. The transverse processes of two upper/middle thoracic and the spinous of another are blunted with gnarled and thickened tips. It is not clear if these abnormalities are stress or trauma induced or represent a developmental anomaly.
A quadraconcave gorget was associated with the repositioned lower lumbar vertebrae of this individual. One face of the gorget was stained with red ochre and a black organic substance. However, the lumbars and innominates were not stained. Only the articular surface of the lateral condyle of the right tibia exhibited a red ochre stain. Consequently, the gorget also may have been displaced from its original position. The most likely original placement of the gorget would have been adjacent to the right pelvis or in the right hand of Burial 3, since the right ischial tuberosity, and the right navicular and first row phalanges of the hand were stained with red ochre. The hand bones also exhibited organic staining. Given the disturbance of Burial 2's pelvic region and its position in relationship to Burial 3, this interpretation is most plausible.

Burial 3, Feature 2 consists of a nearly complete skeleton of an adult individual, originally reported to be a male. However, the left ilium exhibits a distinct preauricular sulcus and associated pits suggesting the individual is a female. The age at death is estimated between 45 and 50 years based on characteristics of the auricular surface. The individual was interred in an extended prone position, oriented southeast to northwest and headed to the southeast. It was parallel and adjacent to Burial 1 with Burial 2 on top of its right side.

The only observed bone anomaly was the series of linear macropores around the circumference of the vertebra body. They occurred from C3 through the upper lumbar and increased in severity through the middle thoracics then decreased to the lumbars, where they were restricted to the lateral sides.

In addition to the previously mentioned occurrences of red ochre and organic staining, the superior surfaces of all of the left foot phalanges were stained with red ochre. The lower legs and feet were reportedly covered by a charred slab of wood, which extended to cover the thoracic cage and shoulder region of Burial 4. None of the leg or foot bones exhibited organic staining. Photographs and schematic maps suggest the lower
extremities were not covered by the charred wood which terminated adjacent to them (Potter 1967:Map 1 and Figure 7).

Burial 4, Feature 2 consists of a nearly complete skeleton of an adult male individual, based on the characteristics of the pubis and ischium and the absence of a preauricular sulcus. The age at death is estimated between 20 and 25 years based on auricular surface characteristics. The individual was extended basically supine along the eastern perimeter of the feature and was oriented northwest to southeast and headed northwest. The heading is in opposition to those of Burials 1, 2 and 3 and Burial 4 does not lie parallel to them. The body was slightly flexed at the waist with the upper body resting partially on its right side, while the lower body was supine. The arms were crossed in front of the body with right hand in the pelvic region and the left hand on the proximal right femur. The orientation of the body parts was originally interpreted as representing an exposed or scaffold burial prior to interment (Potter 1967:4). However, it appears more likely the body was inhumed in the flesh and positioned to conform with the shape of the burial feature perimeter.

Several pathologies or bone anomalies were observed on the remains of Burial 4. An healed fracture of the left first rib body was evidenced by the formation of a pseudoarticulation. A healed bone lesion, probably due to a penetrating wound, was evidenced by an oval depression 13 mm long and 9 mm wide on the anterior crest of the right tibia at the midshaft. The series of linear macropores around the circumference of the vertebrae body were evident from T3 through L3. Moderate to severe anterior margin lipping of vertebra bodies along with extensive osteophyte formation, and erosion of the superior and inferior surfaces associated with Schmoral nodes occurred between T11 and L5.

Two objects appear to be associated with Burial 4. An irregularly shaped flat sandstone cobble laid adjacent to the back of the cranium. An unfinished limestone semi-
keeled gorget laid along the northern perimeter of the feature approximately a foot away from the top of the cranium and at a slightly higher elevation than the burial. A charred wood slab rested on the shoulder region and partially stained the bones.

Burial 5, Feature 2 consists of the fragmentary and weathered remains of an adult male based on the width of the greater sciatic notch and the absence of a preauricular sulcus. The age at death is estimated between 35 and 39 years based on auricular surface characteristics. The burial occurred as a disarticulated bone pile lying adjacent to and partially overlapping the left pelvic region of Burial 3. Given the longitudinally splitting of the long bone shafts and ilium blades, and the weathered exterior surfaces of the bone, the remains indicate this individual represents a bundle burial.

Leather stains, indicative of wrapping of the remains, were noted in the field to be associated with this individual, but were not observed on the bones during the reanalysis. Red ochre stains were evident on almost every bone except the cranial vault; instead of just the long bones as originally reported. The red ochre occurred in powdery or granular form adhering to the weathered bone surfaces indicating it was applied after the flesh was removed.

Two pathologies were noted on the remains of this individual. The left distal fibula shaft exhibited a swollen or thickened appearance with no distinct bone lesions. Moderate marginal lipping was observed along the posterior superior, and inferior anterior margins of C6 and the inferior and superior anterior margins of C7. Erosion associated with macropores was noted for superior and inferior surfaces of C6 and the inferior surface of C7.

Burial 6, Feature 2 contains the burnt partial remains of an adult individual. Aging and sexing of the individual does not appear possible, although it was originally reported to represent a female based on weak muscle markings and small, thin bones (Potter 1967:10). The majority of bone fragments are calcined, warped and transversely
fractured. A few of the fragments are charred and do appear to be relatively small. All portions of the body are minimally represented. The possibility of an associated copper artifact, presumably beads, is evidenced by small circular bluish-green spots along a clavicle shaft fragment.

Burial 6 occurred as a small, discrete, roughly circular redeposit of cremated bones at the feet of Burials 1 and 2. It was suggested the cremated remains may have originally processed in the burnt earth deposit adjacent to Feature 1, but the burnt gorgets in the burnt earth deposit were viewed as being associated with Feature 1 (Potter 1967:5). The dimensions of the burnt earth deposit closely approximate those for a shallow depression accommodating an extended individual. Therefore, it is quite likely the remains in Burial 6 could represent an extended in-flesh cremation from the burnt earth deposit redeposited in Feature 2. This interpretation brings into question the previous interpretations that the gorgets are not associated with Burial 6 and the remains represent the selective burning of parts of a decomposed corpse, either a scaffold or bundle burial (Potter 1967:5 and 10). Since no calcined bone fragments were recovered from the burnt earth deposit, no direct evidence linking Burial 6 to it is present. Circumstantial evidence supporting the alternative interpretation rests on the size and shape of the burnt earth deposit, the minimal representation of all major portions of the skeleton in the cremated remains, and the morphological similarities between the gorgets from the burnt earth deposit and the one recovered from Burial 2, Feature 2.

**Galbreath Mound Burials**

There is no report on the results of the excavation of Galbreath Mound and all information on the burials has to garnered from the fieldnotes, maps and photographs. Originally, forty-one burial number designations were assigned to remains from Features 104, 106, 108 and 110 and two unnumbered potential features. Scattered remains, primarily burnt fragments, from Features 103, 105, 107 and 109 were given bone cluster
designations. Since bundle burials, potentially containing more than one individual, were present and scattered calcined remains were not assigned numbers, forty-one represented the original minimum number of individuals at the site.

The analysis of the skeletal collection and field documents indicated extensive prehistoric and recent disturbances of the burials, in which portions of the remains of individuals were disinterred, intermingled and reinterred in another portion of the mound. Consequently, the minimum number of individuals was changed to forty-four, with 15 individuals in Feature 108, 22 in Feature 110, 3 from a mound floor burial, and 4 from Features 103, 105, 107 and 109 combined. Since Features 103, 105, 107 and 109 are burnt earth deposits containing literally thousands of small fragments, the minimum of four individuals is most likely a gross underestimation of the true number.

The remaining forty individuals are not synonymous with the original 41 burial designations. Burials 4, 6 and 7 are more appropriately considered bone clusters with the intermingled remains of pothunter's backdirt and calcined fragments from Features 103, 105, 107 and 109, and are no longer considered valid designations. Burials 3 and 17 contain the reinterred remains of pothunter's excavations. Burial 18 also appears to be recently reinterred remains but can not be conclusively demonstrated. Some of the designated burials represent prehistoric reinterment of disturbed individual burials; while others, primarily bundle burials, contain the remains of more than individual. At least two bone clusters represent distinct, partially intact and articulated individuals, which were not assigned burial number designations.

Feature 108, a circular burial depression, contained three distinct levels of burials. The upper level inhumations (Burials 1, 2A and B, and 35) represent an intrusion into the original burial facility. The lower level inhumations (Burials 36, 37A and B, 38 and 39) represent the disturbed remains from the original burial facility. A middle level consisting of disarticulated bone piles (original Burial 40 and 41 and a bone cluster) represents the
displaced portions of the original burials plus five additional individuals (40B and 41A through D), which are considered to be associated with the original burial facility.

Burial 1 consists of the incomplete and fragmentary remains of an adult individual. No sex nor age determination was possible. The individual was interred in an extended prone position, oriented northeast-southwest and headed northeast. It was the northwesternmost burial in the upper level. No pathologies were observed on the remains.

Burial 2A represents the incomplete remains of a subadult/infant with an age of death estimated between 0.5 and 1.5 years based on ilium breadth. The remains were associated with a disturbed adult inhumation (Burial 2B) and the burial type and orientation are not known. No pathologies were observed on the remains.

Burial 2B consists of the incomplete remains of an adult female, based on the width of the greater sciatic notch. The age at death is estimated between 35 and 39 years based on auricular surface characteristics. Although extensively disturbed by pothunting, the individual appeared to be interred in a flexed position on the left side, oriented northeast-southwest and headed west. The back of the individual was parallel and adjacent to Burial 1’s right side. The only observed pathology occurred on the incomplete vertebral column and appears to be traumatic arthritis. Moderate anterior margin lipping of the body with osteophyte formation and erosion of the body surface was observed on the inferior portion of C3 and the inferior and superior portions of C4.

Burial 35 consists of the incomplete remains of an adult male, based on the width of the greater sciatic notch and the absence of a preauricular sulcus. The age at death is estimated between 30 and 34 years based on auricular surface characteristics. The individual was interred in an extended supine position, oriented northeast-southwest, and headed southwest. The lower extremities lied parallel and between the remains of Burials 1 and 2B. From the incomplete vertebral column moderate to severe anterior margin
lipping associated with moderate to severe osteophyte formation was observed from T12-L4. Anterior margin destruction associated with severe erosion of the adjacent superior surface occurred on L4.

Burial 36 consists of the incomplete remains of an adult male, based on the characteristics of the pubis and ischium, width of the greater sciatic notch and the absence of a preauricular sulcus. The age at death is estimated between 27 and 30 years based on pubic symphysis characteristics and between 30 and 35 years based on auricular surface characteristics. The individual was interred in an extended supine position, oriented northeast-southwest and headed northeast. It represented the southwesternmost interment in the lower level burials. Two pathologies were observed on the remains of this individual. From the incomplete vertebral column, moderate anterior margin lipping was present on the lower thoracic and lumbar vertebrae. Bone lesions suggestive of periosteal reaction were observed on the right humerus and both radii. The affliction was not severe exhibiting slight swelling with abundant micropores. A flint nodule/hammerstone was found by thoracics.

Burial 37A consists of the nearly complete remains of a subadult/juvenile with an age at death estimated between 4.5 and 5.5 years based on dental development and long bone shaft lengths. The individual was interred in an extended supine position, oriented northeast-southwest and headed northeast. It was situated adjacent to the right arm of Burial 36 and overlaid the lower extremities of Burial 38. There were no observable pathologies. The teeth of a bone comb were found adjacent to the left side of the skull and a pile of marginella beads were adjacent to the right side of the skull. A bone awl and a burnt antler tine fragment were found in area below this individual and between it and Burial 36.

Burial 37B consists of the incomplete remains of a subadult/infant with an age at death estimated between 1.5 and 2.5 years based on long bone shaft length and ilium
breadth and 2 ± 8 months based on dental development. The remains of this individual were scattered over Burial 37A and 38.

Burial 38 consists of the incomplete remains of an adult female, based on the characteristics of the pubis and ischium, the width of the greater sciatic notch and the presence of a preauricular sulcus and associated pits. The age at death is estimated between 40 and 44 years based on pubic symphysis and auricular surface characteristics. The individual was interred in an extended supine position, oriented northeast-southwest and headed southwest. It was situated parallel and adjacent to Burial 36's right side. Several pathologies were observed on the remains of this individual. The series of linear macropores around the circumference of the vertebra body were noted on the upper and middle thoracics of the incomplete vertebral column. Traumatic arthritis involving the partial destruction of the anterior body margin and superior surface of C4 was noted; while adjacent vertebrae appeared normal.

Burial 39 consists of the incomplete remains of an adult female, based on the width of the greater sciatic notch and the presence of a preauricular sulcus. The age at death is estimated between 30 and 34 years based on auricular surface characteristics. The individual was interred in an extended supine position, oriented northeast-southwest and headed southwest. It was situated parallel and adjacent to Burial 38. No pathologies were observed on the remains.

The original Burial 40 represented a stack of disarticulated long bones overlying the area were Burial 36 lower extremities would have been. The original Burial 41 also represented a stack of disarticulated long bones overlying Burial 38 and immediately west of Burial 40. The disarticulated bones of the thoracic cage, upper extremities and cranial fragments were on top of the stacks and spreading down them to the south. These upper body parts were overlain by calcined fragments and disturbed burnt earth comprising
Features 103 and 107. Burial 35 overlaid the northern portion of the piles. A bone cluster consisting of a stack of lower arm bones occurred between Burial 1 and 39.

Burial 40B consists of the incomplete remains of an adult female, based on the width of the greater sciatic notch and the presence of a preauricular sulcus and associated pits. This individual consists of rearticulated innominates and femora which duplicate body parts of known burials. No pathologies were observed on these remains.

Burial 41A consists of the incomplete remains of a subadult/infant with an estimated age at death of newborn to 6 months. The remains came from the bottom of the stack of adult long bones. The bones are distinctly smaller than and duplicate body parts of Burial 37B. No pathologies were observed on these remains.

Burial 41B consists of the incomplete remains of a subadult/juvenile with an age at death estimated between 2.5 and 3.5 years based on long bone shaft length. The remains came from the bottom of the stack of long bones. The bones appear relatively larger than those of Burial 37B and duplicate body parts. No pathologies were observed on these remains.

Burial 41D consists of the incomplete remains of an adult male based on characteristics of the pubis and ischium, width of the greater sciatic notch and the absence of a preauricular sulcus. The age at death is estimated between 25 and 29 years based on pubic symphysis and auricular surface characteristics. The remains of this individual consist of rearticulated sacrum, innominates, femora, and right tibia and duplicate body parts of all other adults in this feature. No pathologies were observed on the remains of this individual.

Feature 104 contains the partial remains of three adults, originally designated Burial 17. The adult remains consist primarily of fragmentary duplicated parts of the cranium, mandible, shoulder girdle, upper thoracic cage and upper extremities, and the fragmentary remains of the lower legs of one individual. A left scapulae glenoid cavity
fragment from these remains was crossmended with a fragment from a bone cluster between Burials 1 and 2B, upper level Feature 108. A tibiae shaft fragment was crossmended with a proximal tibia shaft fragment from a bone scatter (originally Burial 7) on top of Feature 107, located approximately 1.5 m south of Feature 104 and adjacent to the eastern edge of Feature 108. Feature 104 represents an intrusive pit into Feature 105, which originates at the mound surface. This would suggest the remains of Burial 7 represent the recently reinterred partial remains of the burials from the upper level of Feature 108.

Features 103, 105, 107 and 109 represent the burnt earth deposits encircling the perimeter of Feature 108. They consist of burnt earth, charcoal flecks, artifacts and burnt bone. Fragmentary unburnt bone occurs on top of these deposits immediately below the humus. Of the thousands of fragments only a handful have been crossmended. These crossmended pieces establish the contemporaneity of deposits on opposite sides of Feature 108 and demonstrate that some portions of the deposits have been disturbed and incorporated in the fill of the intrusive pit in the upper level of Feature 108. At least four individuals are represented amongst all of the burnt remains, including a subadult/infant and a subadult/ juvenile based on relative long bone size, and two adults based on duplicated portions of a right femur. One of the femur fragments exhibits a bone lesion suggestive of osteomyelitis. Not surprisingly, the identifiable fragments are charred rather than calcined.

Feature 110, a circular burial pit contains the remains of at least 21 individuals represented by 2 cremations, 3 disarticulated bone piles, and 22 extended inhumations. All but one of these individuals were originally assigned burial designations (5, 8, 10-16, 19-27, and 29-32). Burial 9 represents disarticulated piles which compliments either Burials 13 or 14. Burial 5 is also a disarticulated bone pile and does not compliment Burial 13 because it contains a complete mandible, which duplicates a body part in Burial
13. Burial 28 actually represents the left arm of Burial 30 and is no longer considered a valid burial distinction. Feature 106, a pothunter's hole, intruded the western end of Feature 110 and disturbed portions of seven of the designated burials. The minimum number of individuals represented by these fragmentary remains (originally Burial 3) in Feature 106 has yet to be determined. However, the placement of the hole and the crossmending of a few fragments with the remains of designated burials, indicates the adult remains compliment the missing portions of the disturbed burials in this portion of the feature. At least one of the individuals has lesions suggestive of osteomyelitis on the bones of the lower legs. The partial and fragmentary remains of a subadult/infant and a subadult/juvenile, based on relative bone size, in Feature 106 have not yet been crossmended nor demonstrated to compliment any known burial and may represent additional individuals associated with the lowest level interments in Feature 110.

The known inhumations occur in tightly spaced groups, each of which is oriented in a different direction. The groups occur at slightly higher levels of west to east across the pit and sometimes overlap, suggesting multiple burial episodes. The groups from the western half tend to be oriented roughly east-west; while the ones from the eastern half tend to be oriented north-south.

Burial 8 consists of the remains of a nearly complete adult individual. The innominate were too fragmentary to provide accurate age and sex estimates. The individual was interred in an extended supine position, oriented north-south and headed south. It was situated parallel and on top of Burial 12's left side and Burial 11's right side. The only observed pathology was the series of linear macropores around the circumference of the vertebra body, which was evident on the middle and lower thoracics.

Burial 12 consists of the incomplete remains of an adult female, based on the width of the greater sciatic notch and the presence of a preauricular sulcus and associated pits. The age at death is estimated between 25 and 29 years based on auricular surface
characteristics. The individual was interred in an extended supine position, oriented north-south and headed south. It was the easternmost burial in the feature. No pathologies were observed on the remains of this individual.

Burial 11 consists of the nearly complete remains of an adult male based on the width of the greater sciatic notch and the absence of a preauricular sulcus. The age at death is estimated between 20 and 24 years based on auricular surface characteristics. The individual was interred in an extended supine position, oriented north-south and headed south. It was situated parallel and adjacent to Burial 12 and overlaid Burial 13. No pathologies were observed on the remains of this individual.

Burial 13 consists of the incomplete remains of an adult individual. No age nor sex determination was possible from the remains. The burial was disturbed but appeared to represent an extended inhumation on the right side, oriented north-south and headed south. It was situated below Burial 11 with Burial 14 lying to its east or in front of it. Both tibiae exhibited bone lesions suggestive of periosteal reaction/osteomyelitis on the proximal halves of the shafts.

Burial 14 consists of the incomplete remains of an adult individual. No age nor sex determination was possible from the remains. The burial was disturbed and consisted of an articulate partial vertebral column with disarticulated long bones of the left side of the body around it. These long bones compliment the missing portions of Burial 13 and the left femur has bone lesions similar to those on Burial 13’s tibiae. However, the articulated portion of the vertebral column duplicates portions of the vertebral column associated with Burial 13. Burial 13’s vertebral column exhibits unfused epiphyseal rings and may be the missing portion of Burial 11. This would mean Burial 13’s thoracic cage is missing and the determination of its burial position rests on the relationship of the cranium to the articulated right leg. Complicating the matter further Burial 9, a disarticulate bone pile situated south of Burial 8’s cranium consisted of both ulnae, hand
bones and a portion of a thoracic; all of which compliment Burials 13 and 14's remains combined. In addition, Burial 9's cervicals exhibit slight anterior margin lipping which is consistent with Burial 14's vertebrae that exhibit moderate anterior margin lipping on the lumbars and destruction of the anterior superior margin on L2 and L4. Burials 9, 13 and 14 appear to represent one individual; however, a mandible in Burial 5, another disarticulated bone pile situated northeast of Burials 8 and 12 duplicates a body part from Burial 13 and suggests another individual is present in this portion of the feature. However, there are no remains of another individual. Therefore, the designation of Burials 9, 13 and 14 as a single disturbed individual must remain provisional, although it seems most likely that they do.

Burial 16 contains the nearly complete remains of an adult male based on the width of the greater sciatic notch and the absence of a preauricular sulcus. The age at death is estimated between 25 and 29 years based on auricular surface characteristics. The individual was interred in an extended supine position oriented north-south and headed north. The lower extremities of this individual were situated immediately west of Burial 14 and Burial 15 rested on its right side. Several pathologies were observed on the remains of this individual. Bone lesions suggestive of periosteal reaction/osteomyelitis occurred on the left femur and tibia and both radii and clavicles. An accessory facet occurred on the proximal left tibia adjacent to the normal articular facet for the fibula. From the incomplete vertebral column four lower thoracic and one lumbar exhibited Schmoral nodes on the inferior and superior surfaces with destruction of the superior anterior margin occurring only on the lumbar.

Burial 15 consists of the nearly complete remains of an adult female based on the width of the greater sciatic notch and the presence of a preauricular sulcus. The age at death is estimated between 30 and 34 years based on auricular surface characteristics. The individual was interred in basically extended supine position, oriented north-south,
headed south and facing west. The body rested on Burial 16 and the upper half of the body was rotated and inclined slightly to the west. The crania of Burials 20 and 21 were adjacent to Burial 15's face. No pathologies were observed on the remains of this individual. A projectile point was recovered from the fill above this individual.

Burial 20 represents the nearly complete remains of an adult female, based on characteristics of the pubis and ischium, width of the greater sciatic notch, and the presence of a preauricular sulcus and associated pits. The age at death is estimated between 35 and 39 based on auricular surface characteristics and between 39 and 44 based on pubic symphysis characteristics. The individual was oriented east-west and headed east. This burial represents the southernmost inhumation in the western half of the feature. It laid parallel and adjacent to Burial 21 with it's pelvis overlaying Burial 21's pelvis and with Burial 22's feet lying in Burial 20's pelvis. Two pathologies were observed on the remains of this individual. The proximal right tibia shaft exhibited bone lesions suggestive of periosteal reaction/osteomyelitis. The inferior anterior margin of C2 was destroyed and the inferior surface was eroded, as was the superior surface of C3. Moderate anterior margin lipping was evident on the rest of the cervicals and became slighter and continued through T11. Two antler points placed on a chipped slate rectangle were on the pelvis but were associated with Burial 22.

Burial 21 consists of a nearly complete male, based on the width of the greater sciatic notch and the absence of a preauricular sulcus. The age at death is estimated between 20 and 24 years based on auricular surface characteristics. The individual was extended supine, oriented east-west and headed east. It was situated adjacent to Burial 21 with Burial 24 lying parallel and adjacent to it and with Burial 25 between their lower extremities. The only observed pathology was bone lesions suggestive of periosteal reaction/osteomyelitis on both tibiae, fibulae, humeri and clavicles and the right radius
and ulna. A projectile point was lying on the right hand and a flint nodule was adjacent to the lateral side of the knee.

Burial 25 consisted of a pile of cremated human remains representing at least one adult individual. The pile was situated between the lower extremities of Burial's 21 and 24 and partially overlapped Burial 24, and the long axis of the pile was oriented east-west.

Burial 24 consists of the incomplete remains of an adult female based on the width of the greater sciatic notch and the presence of a preauricular sulcus and associated pits. The age at death is estimated between 20 and 24 years based on auricular surface characteristics. The individual was interred in an extended supine position, oriented east-west and headed east. Burial 23 was lying on Burial 24's right lower thoracic cage. Burial 24's right lower extremity had been removed by a pothunter's hole (Feature 106). Burial 22's pelvis overlaid Burial 24's cranium and left shoulder. No pathologies were observed on the remains of this individual. An ovate cache blade placed in a freshwater bivalve shell was situated on Burial 24's left shoulder.

Burial 19 consists of the nearly complete remains of a subadult/infant with an age at death estimated between newborn and 0.5 years based on long bone shaft lengths and newborn ± 2 months based on dental development. The individual was interred in an extended supine position, oriented northeast-southwest and headed northeast. The only observed pathology was bone lesions suggestive of periosteal reaction/osteomyelitis occurring on the shafts of both femora and the right humerus, radius and ulna.

Burial 22 consists of the nearly complete remains of an adult male based on the width of the greater sciatic notch and the absence of a preauricular sulcus. The age at death is estimated between 30 and 34 years based on auricular surface characteristics. The individual was extended supine, oriented northeast-southwest and headed northeast. Burial 22's pelvis and lower extremities were lying diagonally across and over the upper extremities of Burials 20, 21 and 24. Burial 23 laid adjacent to Burial 22's left lower
extremity. Two pathologies were observed on this individual. Slight anterior margin
lipping began on the inferior portion of T10 and continued to increase in severity through
L5. Bone lesions suggestive of periosteal reaction/osteomyelitis occurred on the shafts of
both tibiae and fibulae and the left femur. A cache of four chipped slate rectangles were
spaced along the lateral side of the left leg, with two antler points placed on top of the
one by the feet. A large quantity of shell disc beads occurred in the neck region. Burial
26 consists of the remains of a nearly complete subadult/juvenile with an age at death
estimated between 3.5 and 4.5 years based on long bone shaft lengths. The individual was
interred in an extended prone position with the knees slightly flexed to the west, oriented
north-south and headed to the north. Burial 26's feet were lying in Burial 22's pelvis, and
Burial 27's cranium was adjacent and probably under Burial 26's cranium. No pathologies
were observed on the remains of this individual.

Burials 27, 29, 30 and 31 consist of the partial remains of four adult individuals
whose bodies had been disturbed by a pothunter's hole (Feature 106). All were cut off
across the lower thoracic cage and lower arm bones. No age nor sex determinations were
possible. All were interred in basically an extended supine position and where overlapped
with the right side of one on the left side of the next. All were oriented slightly north of
an east-west line and were headed east and facing south. Burial 27 was the southernmost
of this group of burials. Burial 30's left arm was draped across Burials 27 and 29. No
pathologies were observed on the remains of Burials 27 and 31. The right lateral margin
of Burial 27's C4 was destroyed with erosion of the inferior surface, the same was true for
the superior portion of C5. Adjacent vertebrae appeared normal. Slight margin lipping
was noted for Burial 30's middle and lower thoracic on the right lateral side, with
moderate anterior margin lipping on the lower lumbars. A localized bone lesion occurred
on the medial surface of the right ulna near the midshaft.
An unnumbered burial occurred immediately north of Burial 31 and consisted of an articulated pelvis and right proximal femur. The lower extremities had been cut off by the pothunter's hole (Feature 106). The upper portion of the body had been disturbed and the remains apparently scatter over the area. The nature of the disturbance is not known, but presumably was not by pothunters because a projectile point was found immediately above the pelvis and was oriented vertically on one of its sides. These remains represent an adult male based on the width of the greater sciatic notch and the absence of a preauricular sulcus. The age at death is estimated between 25 and 29 years based on auricular surface characteristics. The remains were extended supine, oriented east-west and headed east.

Burial 32 consists of the cremated remains of an adult. All fragments are calcined dark gray to white and warped. All major body parts are minimally represented. The remains were scattered in a north-south direction over and adjacent to Burials 27, 29, 30 and 31. Twelve long bone shaft fragments exhibit bone lesions suggestive of periosteal reaction/osteomyelitis.

Burial 10 consists solely of an adult cranium situated on the western edge of the pothunter's hole (Feature 106). The hole disturbed the entire postcranial skeleton. The cranium was at the same level as Burial 24 and the skeleton probably was extended parallel to Burial 24 immediately north and slightly west based on the positioning of the cranium, which was headed west and facing south. Adjacent to the face laid a cache blade.

The mound floor burial (unassigned feature number) contains the partial remains of at least three individuals (Burials 33 and 34 and an unassigned burial number). A fourth individual (unassigned burial number) is indicated on the field maps by another cranium; however, it is missing from the collection. These individuals were not completely excavated and some of the remains were left in situ.
Burial 33 consists of an incomplete adult represented in the collection only by a cranium. The individual was interred in an extended supine position, oriented northeast-southwest and headed northeast. No pathologies were observed on the cranium.

Burial 34 consists of an incomplete adult represented by the cranium mandible, cervical vertebrae, and the left scapulae, humerus, and ulna. The individual was interred in an extended supine position, oriented northeast-southwest, and headed northeast. The right side of Burial 34 was on top of Burial 33. Moderate to severe anterior margin lipping of the body associate with extensive surface erosion was observed on C3 through C7.

The remains of the unassigned burial number individual were not excavated because they extended into the adjacent unopened pit, just as Burial 33 and 34 did. From the field maps, an articulated left foot lies adjacent to the left side of Burial 34's cranium. In the opened excavation unit to the south an articulated right femur and tibia are in the balk of the northwest corner at the same level. This leg is oriented roughly parallel to the foot. It would appear these remains represent the lower extremities of another individual lying parallel and adjacent to Burial 34. This individual would be interred in an extended supine position, oriented northeast-southwest and headed southwest.

Age and Sex Distributions

The reanalysis of the skeletal collections provides a broader and, at times, a conflicting data base from the earlier burial descriptions. Unfortunately, the number of adult individuals which could not be accurately aged and sexed is quite high, 25% for Sidner Mound II and 39% for Galbreath Mound. Consequently, accurate determination of the mortality rate for these mounds is not possible. However, it should be noted that most of these individuals appear to be early to middle aged adults based on the degree of dental wear. The inability to age and sex these individuals is partially related to the
recent disturbances of the mounds, which fragmented and scattered bones, and to
differential weathering of some of the remains.

General statements concerning the mortality rate can be provided by the age and
sex distribution information. Subadults account for between 33% and 46% of the skeletal
populations from the mounds, excluding Hambleton Mound, which has none (Table 3).
However, these figures are somewhat misleading because their appears to be an increase
in the number of subadults dying after infancy and before early adolescence at Sidner
Mound II and Galbreath Mound. In contrast, the remains from Sidner Mound I suggest
higher infant mortality. McMurray Mound I actually has a low number of subadults, if the
mortuary context is considered. Six subadults were placed in one burial facility as the
terminal use of the mound. This burial facility and mortuary pattern is completely
different from the pattern in the other features, and suggests an event uncharacteristic for
the population. If this subadult group is excluded from consideration, the remaining
subadults account for 22% of the burial population with relatively equal numbers of
infants and early juveniles represented.

Given the imprecise counts, adult males and females appear to be fairly equally
represented at each mound with females tending to be slightly older at death (Table 5). It
would also appear a proportionately greater number of individuals of both sexes reached
late adulthood at McMurray Mound I and Hambleton Mound, than at Sidner Mounds I
and II and Galbreath Mound. If the adults of undetermined age, but which appear to be
early to middle aged at all of the mounds, are considered the distinctions between the
mound burial populations would be even more pronounced.

In general, the mound burial populations conform to the mortality rate pattern for
hunting and gathering groups in which high infant mortality is followed by relatively few
deaths until early adulthood, where the rate increases and then steadily drops through old
age. However, the burial populations from Sidner Mound II and Galbreath Mound are
Table 5. Age and Sex Distributions Of Mound Burial Populations.

<table>
<thead>
<tr>
<th>Age Group (Years)</th>
<th>McMurray I</th>
<th>Sidner I</th>
<th>Sidner II</th>
<th>Hambleton</th>
<th>Galbreath</th>
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KEY TO ABBREVIATIONS:
NB = newborn; In = infant; Ej = early juvenile; Mj = middle juvenile;
Ea = early adolescent; Ma = middle adolescent; La = late adolescent;
EA = early adult; MA = middle adult; LA = late adult; A = adult.
variations from this pattern, which cannot be explained completely by the duration of use of the mound. Mortality appears to increase through infancy into early and late juvenilehood and the increase in mortality during early adulthood is matched by an equally rapid decrease, where the vast majority of the individuals are dead by the age of 35. Consequently, the variability in the mortality patterns between the mounds may be conditioning the retention of supposedly earlier mortuary practices. Thus, an examination of the paleopathologies evidenced in the remains may provide an answer to the mortuary pattern.

From the descriptions of the individuals from the various burials in each mound, it is clear both sexes are equally represented, as well as, a high frequency of subadults. Both of these facts compromise some of the basic tenets of the Adena mortuary concept. The idea that few individuals, primarily adults, are interred in the mounds with important individuals, primarily males, being placed in central graves can not be supported from the mound burial information in the Big Darby Creek valley. This basic contention has been challenged previously resulting in a modification of the concept allowing for a development and formalization in mortuary practices from Early to Late Adena. The inability to document the developmental scheme with the burial data from Big Darby Creek was noted by the previous professional excavators, whom suggested the retention of Adena mortuary traits into the Middle Woodland Period by an isolated group. The problem then becomes one of attempting to explain the apparent cultural continuity in this region.

Dental Anomalies

Four types of dental anomalies have been observed on the remains of individuals from the five mounds, three of which are of genetic origin and one of cultural origin. None of the genetic anomalies appears to have affected the well being of the individuals. However, their occurrences may be a means to establish biological relationships between
the mound populations. The cultural anomaly, chipped teeth, can not be conclusively attributed to either purposeful or accidental breakage.

Supranumerary teeth were noted for three individuals. A mesodon was present on the maxillary of Burial 8, Sidner Mound I. A peg shaped tooth was erupted on the buccal side of the left maxillary of Burial 11, Sidner Mound I between P3 and P4. Two peg shaped teeth were erupted on the mandible from Burial 14, McMurray Mound I. Both occurred between the P3's and P4's, with the one from the left side on the buccal surface and the one from the right side on the lingual surface.

The congenital loss of teeth in the individuals from these mounds is primarily related to the variable expression in the size of the third molar. Of the eleven suspected cases of congenital tooth loss, ten involve the absence of one, two or four M3's. In the cases of one or two missing teeth, they involve either the maxillary M3 being present and the occluding mandibular one being absent or vice versa. There are two cases where the erupted M3's are peg shaped. Two cases involving the absence of all four M3's were from individuals with small arches and insufficient room for the M3's. The individuals missing M3's include Burials 11, 19, 20 and 21, McMurray Mound I; Burials 8, 9 and 11 Sidner Mound I, Burials 23, 24 and 30, Sidner Mound II; and Burial 16, Galbreath Mound. The congenital loss of the left maxillary, deciduous and permanent, central and lateral incisors was evident in Burial 33E, Sidner Mound II, and maybe related to the infectious disease afflicting this individual.

Rotated teeth were observed on the remains of 15 individuals from the mounds. In eight cases rotation was slight and reflected misalignment of the anterior teeth or the impaction of the M3's. Individuals representing either of these cases included Burial 22, McMurray Mound I; Burial 10, Sidner Mound I; Burials 8, MAC B and MAC C, Sidner Mound II, Burials II-3 and 4, Hambleton Mound; and Burials 11, 35 and 38, Galbreath Mound. Rotation of the teeth between 45 and 90 degrees occurred in seven cases and
involved P3 in five of them including Burials 7, 11 and 21, McMurray Mound I; Burial 10, Sidner Mound I; and Burial II-2, Hambleton Mound. One case each of M2 rotation and I2 rotation occurred in Burial 19, McMurray Mound I; and Burial 8, Sidner Mound II, respectively.

Of the genetic dental anomalies examined, McMurray Mound I and Sidner Mound I exhibited the most frequent occurrences. Within and between these mounds the type of genetic anomaly and its expressions on particular teeth are fairly consistent. Therefore, a biological link is suggested between these two mounds. Whether this relationship is spatially or temporally conditioned has yet to be determined.

Chippage of the crowns of the teeth is a common characteristic occurring frequently in the burial populations of each mound, with a total of 46 documented cases involving one or more teeth (Table 6). Slight chippage, in the form of restricted, shallow chips not exposing the dentin, are to be expected given the rigors of a hunting-gathering lifestyle; and such chips are evident all 46 cases. However, moderate chips, which terminate at the CEJ and are deep, exposing dentin, and severe chips, extending onto the root occur in 29 of the 46 cases (Plate XIII). These types of chippage tend to occur most frequently between the P3's and M1's. For individuals with complete dentition preserved, a recurrent chippage pattern is evident including the mandibular P3 and M1 and the maxillary P3. Such a pattern could be related to some type of subsistence activity. However, the frequency of moderate and severe chippage evident amongst these skeletal populations has not been documented in other prehistoric populations in the region and may reflect a cultural practice. However, males and females of all ages equally exhibit moderate to severe chippage suggesting it is not a means of differentiating individuals along these two social dimensions.
Table 6. Occurrences of Chipped Teeth and Their Severity.

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KEY TO ABBREVIATIONS:
M = male; F = female; Unk = unknown;
X = maxillary; L = mandible;
Sl = slight; Mo = moderate; Sv = severe; Wn = worn.
Plate XIII. Burial 27, Galbreath Mound, example of dental chipping of the mandibular P3 and M1.
**Dental Caries**

Dental caries occur infrequently in all of the mound skeletal populations. The most common form are root caries occurring at the CEJ between teeth, suggesting they are the result of food particles being lodged and not removed from between the teeth. The molars are the most frequently occurring caries site ranging between 10 and 20% of the observed teeth at each mound (Tables 7 and 8). The premolars are the next most frequently affected, between 5 and 10% of the observed teeth at each mound. Caries are virtually absent from the anterior teeth with the exception of the mandibular teeth from Sidner Mound II. Dental caries occur more frequently with worn teeth suggesting an age dependency. Caries associated with chipped teeth occur no more or no less frequently than on the other teeth.

In considering the acquired dental pathologies, chippage, caries and dental wear, the observations conform to the results of a preliminary study of these populations (Sciulli et al. 1981). The present study expands the data base. Consequently dental wear appears to be a contributing factor to caries formation, primarily around the cemento-enamel junction, and a factor in the occurrence of abscesses and premortem tooth loss. A hunting-gathering subsistence base is indicated by the relative lack of crown caries suggestive of low dietary carbohydrates and the extent of dental wear suggestive of hard fibrous diets. Based on the age distribution of the individuals, the acquired dental pathologies appear to occur in early adulthood and become rather severe by middle adulthood. Almost complete postmortem loss of the dentition characterizes all of the few late adulthood individuals from the mound burial populations. Consequently, a rigorous lifestyle is indicated in which no individuals of either sex or any age are exempt. This would suggest no differential access to food resources occurred and the possibility for individual status differentiation along this line is not evident.
Table 7. Percentage Distribution of Dental Caries According To Degree Of Dental Wear For Mandibles.

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Bone Anomalies

Two types of bone anomalies of genetic origin were observed on the remains of a few individuals from three of the mounds. There were two occurrences of an extra lumbar vertebra; Burial 7, McMurray Mound I; and Burial 26, Sidner Mound II. In both cases, the extra vertebra was situated between T12 and L1. The McMurray Mound burial exhibited a typical thoracic superior articular facet on the right side and a typical lumbar facet on the right side. The Sidner Mound II burial showed partial fusion of the extra lumbar with T12.

Spondylolysis, the separation of the inferior portion of the neural arch from the rest of the vertebra, occurred in five individuals; Burial 10 and 14, McMurray Mound I; Bone Cluster 20 and Burial 36, Galbreath Mound; and the miscellaneous bone (Burial MAP) from the disturbed area of Feature 1, Sidner Mound II. There is a debate whether or not this defect is genetic or age and stress related. In all cases a lower lumbar vertebra is involved with evidence of degenerative arthritis of immediately adjacent vertebrae or sacrum. For Burial 10, McMurray Mound I, one of two of the burials with complete vertebral columns preserved, the degenerative arthritis is localized to the area around the defect; while the other, Burial 14, McMurray Mound I, shows degenerative arthritis of the cervical vertebrae as well. In addition, the multiple occurrence of this anomaly in two separate burial populations suggests it could be genetically controlled.

Trauma Related Pathologies

Trauma related pathologies were fairly common amongst the remains from all of the mounds, and although initially severe, did not appear to be of a long term debilitating nature. None of these cases can be considered the primary cause of death, since all were in the process of healing. Only six cases of healed fractures were observed. Two involved the shaft of the fifth metacarpal and were from Bone Cluster 31, Galbreath Mound; and Burial MAP, Sidner Mound II. One fractured toe phalange shaft from Burial MAP,
Sidner Mound II exhibited the formation of a bone spur. The complete fracture of the body of the left first rib with the formation of a pseudoarticulation occurred in Burial II-4, Hambleton Mound. The two most severe healed fractures were a transverse fracture of the distal end of a left radius from Bone Cluster 5, Galbreath Mound, and a complete midshaft break of a left femur with misaligned healing resulting in the slight bowing of the proximal half in compensation from Burial MAP, Sidner Mound II.

Healed bone lesions resulting from deeply penetrating wounds were also rare with three observed cases. A hole in the right patella of Burial 3, Sidner Mound I appears to be the catalyst for the arthritic condition of the other bones forming the knee joint. A partially healed rectangular hole on the back of the right tibia near the knee on Burial II-2, Sidner Mound II appears to be responsible for the slight anterior bowing of the right femur and the lipping of the superior margin of the left femoral head. A circular lesion was observed on the front of the right tibia at the midshaft for Burial II-4. Whether or not these lesions are the result of accident or violence is not known, but there is the common area of occurrence around the knee joint which suggests a common cause.

Traumatic arthritis occurs commonly with 27 observed occurrences; however, several individuals had multiple affected joints with the actual number of afflicted individuals be 23. Traumatic arthritis affects the joints and results from injury where the synovium is destroyed and the bone-on-bone contact produces an inflammatory response stimulating bone growth. The most commonly affected joints are the ankle and the articular surfaces of the foot bones with 10 occurrences, including Burials 1A, 19, 24 and 2 from the miscellaneous mound fill, McMurray Mound I; Burial 4, Sidner Mound I; burials 18, 24, and 33A, Sidner Mound II; and Bone Cluster 19, Galbreath Mound. The next most common joints are the middle cervicals with 6 occurrences; Burial 14, McMurray Mound I; Burial 13, Sidner Mound I; Burials II-2 and 5, Hambleton Mound, and Burial 8, Galbreath Mound. Typically, one vertebra body is anteriorly compressed with the immediately
adjacent vertebrae showing moderate to severe degeneration of the margins of the bodies and articular facets (Plate XIV). In two cases, where the vertebra bodies were missing the spinous processes were abnormally thick, blunted and gnarled, suggesting a blow to the back of the neck and the possibility of healed fractures. There were four cases involving the knee joint; Burials 3 and 9, Sidner Mound I; and Burial 9/13/14 and Bone Cluster 24, Galbreath Mound, and two cases involving the elbow joint, Burials 8 and 13, Sidner Mound II. Marginal lipping of the articular surfaces characterized the traumatic arthritis of these joints with only one severe case involving eburnation of the articular surface. The hand/wrist, Burial 10, McMurray Mound I and burial 18, Sidner Mound II, and the tempomandibular, Burials 4/5d/13/21B and 20, McMurray Mound I, joints each showed moderate marginal lipping of the articular surface. There was one case involving the shoulder, Bone Cluster 24, Galbreath Mound.

Evidence for stress and age related degenerative arthritis is rare amongst the limb bones. However, this may be misleading because this type of arthritis results from long term inflammatory response to infection or trauma to the joint. Therefore, all of the previously mentioned occurrence could represent early stages of this process since many of the individuals are young to middle aged adults and many exhibit bone lesions suggestive of infection. Two severe cases of traumatic arthritis involving older individuals may be correctly diagnosed as degenerative arthritis. Three criteria were used to diagnose degenerative arthritis: 1) multiple afflicted joints, 2) severe marginal lipping, and 3) bilateral symmetry. The two observed cases were Burials 19 and 20, McMurray Mound I and showed bilateral symmetry involving the knee and elbow joints and to a lesser degree the shoulder joints (Plate XV).

Degenerative arthritis of the spine is fairly common with 38 observe cases. The cervical and lumbar are the most frequently and severely involved vertebrae. In those cases where a trauma site was observed on the cervicals, the involvement of more than the
Plate XIV. Burial 13, McMurray Mound I, example of traumatic/degenerative arthritis of the cervical vertebrae.
Plate XV. Burial 20, McMurray Mound I, example of degenerative joint disease of the upper limb bones.
immediately adjacent vertebrae indicated the accumulated effects of stress over time. Involvement of the thoracics is normally restricted to those vertebrae adjacent to the cervicals or lumbars. Since infectious diseases involving the spine occur frequently in these populations the rate of degenerative arthritis of the spine may be accelerated. The emerging pattern is that afflicted adolescents do not show degeneration, while less severely afflicted young adults do show moderate to severe degenerative arthritis of the spine.

The trauma related pathologies and dental disease patterns indicate responses to stresses related to a hunting and gathering lifestyle. The pattern of bone involvement for degenerative arthritis of the spine, severe in the neck and lower back, is characteristic for individuals who routinely carry heavy loads. Sedentary agriculturalists tend to have more severe arthritis of the thoracic region. Chipped and worn teeth and the lack of apical caries indicate hard fibrous diet without a reliance on starchy foods high in carbohydrates and sugars associated with sedentary corn agriculturalists.

Infectious Diseases

A high frequency of paleopathologies occurring in these skeletal populations was initially unexpected. Earlier studies noted afflicted long bones when they would bias measurements. However, these studies were concerned with more the complete adult individuals. The reassembling of individuals, crossmending of fragmentary remains and examination of subadult remains showed the prevalence of infectious disease and suggested its importance in understanding the mortuary activities. This local grouping of burial sites stands as anomaly in the prehistoric record for the central Ohio River valley. Published accounts of burial sites in adjacent areas have not noted such high incidence of paleopathologies; although this may be due to differing research interests. Whether or not these sites remain unique awaits the reanalysis of extant collections and additional fieldwork to document the variability in the remains from adjacent regions.
Evidence of infectious diseases occurs commonly in these skeletal populations. Diagnosis of specific diseases from skeletal remains is limited because of overlapping characteristics, with accurate determinations relying on tests of blood and tissue samples (Shadomy 1981:25). However, a strong case can be made for the occurrence of treponemal infection. Less strong cases for the occurrences of North American blastomycosis and Pott's disease (spinal tuberculosis) can be put forward.

North American blastomycosis is a fungal infection entering the body through the respiratory tract. Although death can occur, the infection is more frequently disseminated through the blood system to the skeleton (Wilson and Plunkett 1965:84). In this state it is a chronic disease with recurrent skin lesions on the face, neck, groin and limbs being the most frequent form of manifestation. When bone involvement occurs the most common sites are the vertebrae and ribs. The disease is manifested by circular to oval shaped osteolytic lesions with sharp borders (Ortner and Putschar 1985:224). In severe cases it resembles tuberculosis, but vertebral collapse is rare (Wilson and Plunkett 1965:88). Historically, the main distribution of the disease is the Mississippi and Ohio River valleys (Wilson and Plunkett 1965:86).

Tuberculosis is a chronic infectious disease caused by bacteria entering through the respiratory tract with dissemination to the skeleton through the bloodstream. The disease is contracted in early childhood and the spine is the most common site for skeletal involvement (Ortner and Putschar 1985:145). The disease is manifested by circular or oval osteolytic lesions leading to cavitation of the interior of the vertebral body with possible vertebral collapse. The lumbar vertebrae are the most frequent site of occurrence. Multiple foci of involvement separated by intact bones occurs rarely.

The distinction between tuberculosis and blastomycosis rests on which vertebrae are involved and the distribution of lesions on the vertebral bodies. No evidence for involvement of long bones has been noted to substantiate the diagnosis of either disease.
Macropores, which appear to be osteolytic lesions, occur in the skeletal populations. However, they tend to be elongated oval, lenticular or S-shaped with minimal cavitation of the interior of the vertebral body (Plate XVI). The high frequencies of occurrences of these types of lesions led initially to the assumption that they were part of the degenerative arthritis process. However, their occurrence in infants, juveniles, and adolescents, some of which show the most extensive amount of macropores, led to a reassessment of the adult remains. Because these macropores are not characteristic in form and distribution to osteolytic lesions associated with tuberculosis and blastomycosis, they may represent some other unknown infectious disease.

Thirty-eight individuals exhibiting a similar arrangement of macropores on the vertebrae bodies are considered possible cases of blastomycosis. The characteristic traits include a series of macropores suggestive of osteolytic lesions arranged in a line around the circumference of the vertebral body and restricted to the midline. Lesions can occur in the sacral foramen. The inferior and superior anterior margins of the vertebral bodies are not involved. Involvement normally begins around the fourth thoracic, although cases beginning as high as the sixth cervical have been noted. All vertebrae inferior to the foci of involvement are affected, with severity of lesions increasing through the middle and lower thoracics and lessening in the lumbar where they tend to be restricted to the lateral sides. Even in the most severe cases, vertebral body collapse does not occur.

Of the thirty-eight cases, individuals of all ages are involved (Table 9). Adult females exhibit the series of linear macropores twice as often as adult males. Subadults account for approximately 25% of those affected and tend to have the largest number and size of macropores. Evidence of healing, in the form of thin sheaths of bone covering or filling the macropores, occurs in a few of the adults and not amongst the subadults. The anterior side of the vertebra body is the most frequently healed area with the bone growth having a puffed out appearance producing a distinct convex surface. Between the mounds,
Plate XVI. Burial 23, Sidner Mound II, example of series of linear macropores around the circumference of the vertebra body from T8 to L1.
Table 9. Occurrence of Series of Linear Macropores Around Circumference of Vertebra Body Suggestive of North American Blastomycosis or Spinal Tuberculosis.

<table>
<thead>
<tr>
<th>Burial Number</th>
<th>Sex</th>
<th>Age (Years)</th>
<th>Vertebrae Involved</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>McMurray I:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 M</td>
<td>25-30</td>
<td>middle thoracic-lower lumbar</td>
<td>appear to be healing</td>
<td></td>
</tr>
<tr>
<td>6/27 NB-0.5</td>
<td>middle thoracic centrums</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Unk Adult</td>
<td>upper and middle thoracic</td>
<td>incomplete column</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 F 45-50</td>
<td>middle thoracic-middle lumbar</td>
<td>appear to be healing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4/5B/12 8.5-9.5</td>
<td>thoracic and lumbar centrums</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4/5D/13/21B F</td>
<td>40-50</td>
<td>middle and lower thoracic</td>
<td>appear to be healing</td>
<td></td>
</tr>
<tr>
<td>14 M 20-24</td>
<td>middle and lower thoracic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4/5A/15 F 20-25</td>
<td>lumbar and sacrum</td>
<td>incomplete column</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 NB-0.5 centrums</td>
<td>incomplete column</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 F 50-45</td>
<td>middle thoracic to upper lumbar</td>
<td>appear to be healing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25/21A F 20-25</td>
<td>middle and lower thoracic</td>
<td>appear to be healing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sidner I:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 5.5-6.5</td>
<td>middle thoracic to upper lumbar</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 M 30-34</td>
<td>middle and lower thoracic</td>
<td>appear to be healing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/6 4.5-5.5</td>
<td>middle thoracic to lumbars</td>
<td>body surfaced appear resorbed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 16-20</td>
<td>middle and lower thoracic</td>
<td>incomplete column</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 F 30-35</td>
<td>middle and lower thoracic</td>
<td>incomplete column</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 F 20-25</td>
<td>middle thoracic to lumbars</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 M 40-45</td>
<td>upper thoracic to upper lumbar</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sidner II:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1C/11C 5.5-6.5</td>
<td>thoracic and lumbar centrums</td>
<td>incomplete column</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 F 25-30</td>
<td>thoracic, lumbar and sacrum</td>
<td>incomplete column</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 M 45-50</td>
<td>thoracic</td>
<td>incomplete column</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>lower cervical to lumbar</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burial Number</td>
<td>Sex</td>
<td>Age (Years)</td>
<td>Vertebrae Involved</td>
<td>Comments</td>
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<td>---------------------------</td>
</tr>
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<td>Sidner II:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>NB</td>
<td>NB-0.5</td>
<td>cervical to lumbar centrums</td>
<td>incomplete column</td>
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<tr>
<td>23</td>
<td>F</td>
<td>20-24</td>
<td>thoracics to sacrum</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td></td>
<td>3.5-4.5</td>
<td>lower cervical to sacrum</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>F</td>
<td>30-35</td>
<td>lower cervical to sacrum</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td></td>
<td>7.5-8.5</td>
<td>lower cervical to sacrum</td>
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<td></td>
</tr>
<tr>
<td>30</td>
<td>M</td>
<td>25-30</td>
<td>upper thoracic to lumbar</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>F</td>
<td>25-30</td>
<td>middle and lower thoracics</td>
<td></td>
</tr>
<tr>
<td>33A</td>
<td>M</td>
<td>25-30</td>
<td>thoracic and sacrum</td>
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</tr>
<tr>
<td>33B</td>
<td></td>
<td>7.5-8.5</td>
<td>thoracic and lumbar centrums</td>
<td></td>
</tr>
<tr>
<td>MAP 2</td>
<td>Unk</td>
<td>Adult</td>
<td>lower thoracic to lumbar</td>
<td>incomplete column</td>
</tr>
<tr>
<td>II-2</td>
<td>F</td>
<td>20-25</td>
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<td></td>
</tr>
<tr>
<td>II-3A</td>
<td>F</td>
<td>25-30</td>
<td>middle thoracic to lumbar</td>
<td>appear to be healing</td>
</tr>
<tr>
<td>II-4</td>
<td></td>
<td>0.5-1.5</td>
<td>thoracic centrums</td>
<td></td>
</tr>
<tr>
<td>Hambleton:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I-1</td>
<td>F</td>
<td>30-35</td>
<td>lower thoracic</td>
<td>incomplete column</td>
</tr>
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<tr>
<td>II-4</td>
<td>M</td>
<td>20-25</td>
<td>upper thoracic to lumbar</td>
<td>incomplete column</td>
</tr>
<tr>
<td>Galbreath:</td>
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<td></td>
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</tr>
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<td>8</td>
<td>Unk</td>
<td>Adult</td>
<td>upper to lower thoracic</td>
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</tr>
<tr>
<td>38</td>
<td>F</td>
<td>40-45</td>
<td>middle to lower thoracic</td>
<td>incomplete column</td>
</tr>
</tbody>
</table>

**KEY TO ABBREVIATIONS:**

M = male; F = female; Unk = unknown; NB = newborn.
the macropores rarely occurred on individuals at Galbreath in sharp contrast to the high frequency at the other mounds.

Twelve possible cases of spinal tuberculosis were observed (Table 10). Characteristic traits include destruction of the superior anterior margin of the vertebral body and the anterior surface immediately adjacent to the margin; multiple foci separated by unaffected vertebrae; and involvement restricted to the sacrum, lumbar and lower thoracic (Plate XVII). This disease is distinct from the series of linear macropores around the circumference of the vertebral body, because some individuals do not exhibit the macropores. The cases involve adults of both sexes equally represented and primarily older than 25 to 29 years. Most of the cases do not appear to be severe.

A debate exists over the occurrence of treponemal infection in the Americas prior to European contact. A growing body of data indicate it was present; however, the cases are widely scattered geographically involve isolated poorly provenanced cases, or few cases in large skeletal populations. Detailed descriptions of the bone lesions and deposits, and the bones involved are needed for accurate diagnosis. Generalized periostitis and/or osteomyelitis of long bone shafts and metaphyses, associated with swelling, thickening and anterior bowing of the shafts; along with the nutrient foramen as the foci of infection are the common manifestations (Plate XVIII). Epiphyses and joints are not affected and bilateral symmetry of afflicted bones is common. Distinction from trauma related infection and hematogenous osteomyelitis must be made. In the former case, localized infection involving one bone with the lesion randomly located in response to the foci of the trauma is diagnostic. In the latter case, multiple bone involvement is common with sequestra and cloacal openings being present, as well as, joint involvement in chronic cases. These traits are not found in treponemal infections. The severity of reactive bone growth may be indicative of the stage of treponemal infection.
Table 10. Occurrence Of Vertebral Body Destruction Of Superior Anterior Margin Suggestive Of Tuberculosis.

<table>
<thead>
<tr>
<th>Burial Number</th>
<th>Sex</th>
<th>Age</th>
<th>Vertebral Involved</th>
<th>Associated Diseases</th>
<th>Macropores</th>
<th>Ostomyletis</th>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>McMurray I:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>M</td>
<td>25 - 30</td>
<td>L3 - L5</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>4/5D/11/21A</td>
<td>M</td>
<td>25 - 29</td>
<td>L2 - L4</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>F</td>
<td>20 - 25</td>
<td>L3 - L4</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Sidner I:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>30 - 35</td>
<td>T11</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>F</td>
<td>30 - 35</td>
<td>Sacrum</td>
<td>Yes</td>
<td>No</td>
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</tr>
<tr>
<td>12</td>
<td>F</td>
<td>20 - 25</td>
<td>L3 - L5</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>M</td>
<td>40 - 45</td>
<td>L4</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
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<td>Sidner II:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>M</td>
<td>30 - 35</td>
<td>T8 - 10, L4 and L5</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
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<tr>
<td>MAP 2</td>
<td>Unk</td>
<td>Adult</td>
<td>L4</td>
<td>Yes</td>
<td>Unknown</td>
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<tr>
<td>Hambleton: II-4</td>
<td>F</td>
<td>45 - 50</td>
<td>T11 and L4</td>
<td>Yes</td>
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<tr>
<td>Galbreath: 13/14</td>
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<td>L2 and L4</td>
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<td>Yes</td>
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<tr>
<td>35</td>
<td>M</td>
<td>30 - 35</td>
<td>L4</td>
<td>No</td>
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</tr>
</tbody>
</table>

KEY TO ABBREVIATIONS:
M = male; F = female; Unk = unknown; L = lumbar; T = thoracic.
Plate XVII. Burial 11, McMurray Mound I, example of superior anterior margin destruction of vertebra body suggestive of tuberculosis.
Plate XVIII. Burial 23, McMurray Mound I, example of bone lesions on the distal femur shaft suggestive of periosteal reaction/osteomyelitis.
Twenty-three cases of periosteal reaction/osteomyelitis suggestive of treponemal infection have been noted and are characterized by bilateral symmetry and multiple bone involvement (Table 11). Three additional cases have multiple bone involvement but not bilateral symmetry. Four more cases involve single bone involvement where bilateral symmetry can not be demonstrated. Afflicted individuals range in age from 1 year to late adulthood. However, subadults under the age of 5 may be under represented because of the fragile nature of their bones, which show rapid weathering of the exterior surfaces. Additional diseased bone is present amongst the feature fill fragments and amongst the cremated remains from Galbreath Mound, which cannot be attributed to a specific individual. An estimate for the frequency of occurrence of this disease is approximately 13% for each of the skeletal populations, except for Sidner Mound II where the figure reaches 25%. The estimate for Galbreath Mound is probably low, since it does not take into account the fragmentary diseased bone.

Accurate determination of which forms of treponemal infection are represented is problematical. Endemic syphilis is the most likely conclusion because of the temperate environment and the lack of severe involvement of the cranium. Congenital syphilis is suggested by the occurrence of afflicted infants. However, malformation of developing teeth, a characteristic of this form of the disease, has not been observed; although the congenital loss of deciduous and permanent incisors occurs in one subadult at Sidner Mound II.
Table 11. Distribution Of Bone Lesions Suggestive Of Periosteal Reaction/Osteomyelitis.

<table>
<thead>
<tr>
<th>Burial Number</th>
<th>Sex</th>
<th>Age</th>
<th>Fibula</th>
<th>Tibia</th>
<th>Femur</th>
<th>Radius</th>
<th>Ulna</th>
<th>Humerus</th>
<th>Clavicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>McMurray I:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2 M 25-30</td>
<td></td>
<td></td>
<td>+ + + +</td>
<td>+ + +</td>
<td>+</td>
<td>+ + + +</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>4/5D/13/21B</td>
<td>F</td>
<td>40-45</td>
<td>+ + + +</td>
<td>+</td>
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<td></td>
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KEY TO ABBREVIATION: ? = swollen, thickened with no bone lesions.
MORTUARY VARIABILITY IN THE MIDDLE BIG DARBY
DRAINAGE OF CENTRAL OHIO BETWEEN 300 B.C. AND 300 A.D.

Volume II

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree of Doctor of Philosophy in the Graduate
School of the Ohio State University

By

Bruce Warren Aument, B.A., M.A.

* * * * *

The Ohio State University

1990

Dissertation Committee:
W.S. Dancey
P.W. Sciulli
A. Zaharlick

Approved By

William Z. Dancey
Advisor
Department of Anthropology
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<td>Longitudinally Cut/Split Animal Long Bone Pieces</td>
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<td>13. Schematic Diagrams of Internal Mound Chronologies</td>
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CHAPTER VI

ARTIFACT DESCRIPTIONS

Description of mound and burial associated artifacts has a long history in the categorization of such sites to particular prehistoric cultures and temporal periods (Dragoo 1963; Greenman 1932; Shetrone 1920; Webb and Baby 1957; and Webb and Snow 1974). In most cases, these studies represent syntheses and generalized artifact type descriptions of objects found within mounds. Consequently, there is a tendency to ignore the formal variability in artifact types within and between mounds. However, the named artifact types do provide an organizational framework, even if the implied artifact function is not valid, which will be maintained in the following discussion. The intent of this chapter is to provide detailed descriptions of the formal variability in the artifact types within and between mounds, to determine if recurrent patterns are evident. As such, limited contextual information is provided. Further discussion of the artifact contexts will be provided in a subsequent chapter. Much of the artifact variability involves qualitative attributes, requiring extended verbal descriptions.

The following artifact descriptions follow conventional organizing categories, with detailing of types under broad class headings of groundstone items, chipped stone items, animal bone items, antler items, metal items, mineral items, and ceramic items. There is no implied importance nor diagnostic potential to this ordering scheme. It is merely an accounting of items occurring in the Big Darby Creek mounds. An ancillary intent of this chapter is to provide a full and detailed accounting of the artifacts recovered from the
mounds in this region, which do not exist in the published literature nor in unpublished reports and manuscripts.

Thirty-three artifact types are represented amongst the artifacts recovered from various contexts in the mounds from the middle Big Darby Creek region. In total 627 items representing eight groundstone types, seven chipped stone types, ten bone types, three antler types, two shell types, one mineral type, one metal type, and one ceramic type are present in the mound artifact collections (Table 12). However, items representative of only two types, gorget and point, occur at all five mounds. Although morphological variability exists for the items of these two types within and between mounds, the type varieties conform to the general size and shape of diagnostic Adena artifacts. Of the remaining 31 artifact types, fifteen are represented by one or few artifacts from a single mound (Table 12). Included in this group of artifact types are pendant, sandstone disc, pipe, concretion paint cup, drill, hafted scraper, chipped slate rectangle, bone pin, bone comb, bone pendant, cut animal maxilla, animal claw, antler point, antler handle and plain ceramic sherd. Items representing the remaining 16 artifact types occur in at least two of the five mounds.

In considering the total artifact assemblages from the mounds, a clear dichotomy in the number of items and the number of artifact types they represent exists, which partitions the mounds into two groups. Sidner Mound I and Hambleton Mound contain a relative paucity of items and represented artifact types (Table 12). There are no bone, antler nor shell items and relatively few ground and chipped stone items. However, there is a consistent set of artifact types represented by the few items occurring in these two mounds, including the gorget, point, copper bead/stain, and red ochre stained human bone types. In contrast McMurray Mound I, Sidner Mound II and Galbreath Mound have many items representing a wider variety of artifact types. A consistent set of artifact types occurs also amongst these three mounds, including items representative of the gorget, celt,
Table 12. The Occurrence of Artifact Types By Mound, Feature and Burial Provenience.

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point, cache blade, debitage, bone awl, split animal long bone, antler flaker, shell container, and shell bead types.

At the mound and artifact type levels of analysis the variability in the number of items and the represented artifact types can be subsumed to demonstrate similarity in artifact occurrence and presumably culture amongst the five mounds. Such a procedure is no different from the earlier Adena studies and is one reason for why these mounds were preliminarily classified as Adena. In so doing reliance must be placed on the gorget and point types, since items of these two types are the only common links between all of the mounds. The infrequent occurrences of the other artifact types is also considered characteristic of Adena mounds but is based on negative data and can not be used to establish links between the mounds.

Although this classification procedure has been questioned, there appears to be a general validity in using it for preliminary grouping of mounds because a basic recurrent pattern of similar artifact types does exist. The analysis of the mortuary remains must document the range of variability in the artifact types, both in form and context, attempt to explain it, and determine if the preliminary grouping of mounds is valid. The following artifact descriptions document the range of formal variability in the items representative of the established artifact types. In some cases the validity of the functional interpretations of artifact types is questioned. In other cases, the attributes of the artifact type varieties are emphasized to demonstrate similarities and differences amongst items within and between mounds. Contextual information is provided at the mound, feature, and burial levels of analysis to examine the spatial occurrences of the artifacts. In so doing the concern is with searching for patterns in artifact variability which go beyond the classification procedure at the mound level of analysis and which may provide insight on the structure and organization of mortuary remains within and between the mounds.
Gorgets

Gorgets represent one of the few artifact classes which occur in all five mounds; two at Galbreath Mound, two at McMurray Mound I, two at Sidner Mound I, nine at Sidner Mound II, and at least six at Hambleton Mound (Figure 11). The occurrence of items from this artifact class may not be characteristic for all mounds in this region, since none are reported for the excavations at McMurray Mounds II and III (Baby and Zierhut 1966). However, the extent of these excavations are not well documented and appear to have only partially examined the mounds.

Whole and broken gorgets occur with none of the fragments crossmendable. As such, each item, regardless of completeness, is considered to represent a distinct object. Several of the gorgets appeared to have been broken in place with crossmendable fragments in close spatial association. The broken gorgets for which no crossmendable fragment was recovered, appear to represent the placement of an already broken object in the mound or an object broken with a portion retained during placement in the mound. The broken gorgets represent one-third of the twenty-one gorgets recovered from the five mounds and are consistently characterized by transverse snap fractures with snap edges occurring along the transverse midline or intersecting one of the drill holes. This breakage pattern is distinctly different from the crossmended objects where diagonal snap fractures are characteristic. The breakage pattern of the incomplete gorgets is also distinct from edge corner damage, which appears to have occurred prior to the placement of the object in the mound. Edge corner damage was observed on four of the gorgets and was evidenced by the removal of the corner producing a straight edge on one side and several hinged flake scars on the reverse side. In all cases the edges and flake scar boundaries were rounded and worn indicating the continued use of the object after breakage.
Figure 11. Gorgets recovered from feature and burial contexts.
Figure 11 (Continued).
A variety of gorget forms are represented and occur in a variety of contexts including burial association, feature fill, and mound fill. Varieties of the quadraconcave type (Converse 1978:48 and Dragoo 1963:182) are the most prevalent accounting for 15 of the 21 gorgets or 71%, with the semi-keeled gorget type (Converse 1978:34 and Dragoo 1963:182) represented by two items only at Hambleton Mound. One item represented at Sidner Mound II may be more properly identified as a trapezoidal pendant (Converse 1978:82 and Dragoo 1963:183). Two untypeable fragments, one burnt and the other a corner edge, occur at Hambleton Mound, as well as, a burnt fragment at Sidner Mound II. Two unfinished objects can not be accurately classified and represent a gorget/celt from Sidner Mound II and a gorget/tablet from McMurray Mound I. The former object is considered to be most likely a gorget and is discussed in this section; while the latter object, although resembling the general shape of a rectangular two-holed gorget, is discussed under the tablet/abrading stone section.

Amongst the items classified as quadraconcave gorgets there is a great deal of formal variability, although these objects tend to conform more closely to the quadraconcave type than other gorget types. The primary deviation from the type description lies in the lack or slightness of concavity for the sides and ends. In general, the long sides tend to exhibit various degrees of concavity in planview; while the short ends tend to be straight or slightly convex. The degrees of concavity and convexity never reach a point where items could be considered representative of the biconvex (Converse 1978:46) or bowtie (Dragoo 1963:183) gorget type. In fact, the degrees of concavity and convexity are so slight for most of the gorgets that they could be considered rectangular. However, they are not nearly as proportionately long and narrow as the rectangular two-holed gorget type (Converse 1978:32 and Dragoo 1963:183).

The two quadraconcave gorgets recovered from McMurray Mound I include a complete but weathered object (3748/15A) from Burial 2, Feature 1, and a crossmended,
partial gorget (3748/16) from the mound fill in Trench 5. Because of its weathered and fragmentary nature, the complete gorget has been soaked in a preservative, presumably Zapon. The raw material appears to be a brown slate, although the coloration may be due to the preservative. The plan outline shape is basically rectangular; however, the left end appears to be shorter than the right giving the piece a slightly trapezoidal appearance. The lower left corner has been damaged, as well as, the tip of right upper corner. The upper left corner is squared with straight edge; while the lower right corner and edge are rounded and flat-sided. The sides and ends are flat with roughly right-angled edges, which taper almost indistinguishably. The piece has an uniform thickness of 12.1 mm which is reflected in its biplano longitudinal and transverse cross section outline shapes. Both faces taper slightly at the edges near the corners where the thickness is reduced to 10.0 mm. The holes have been drilled from one side, spaced equidistant from their respective ends, and are slightly asymmetrical in planview shape. On the obverse face, the longitudinal diameter of the right drill hole is 7.9 mm, while the transverse diameter is 8.7 mm. The hole tapers to 3.8 mm longitudinal diameter and 4.0 mm transverse diameter on the reverse face. The longitudinal diameter of the left drill hole, obverse face, is 7.7 mm and the transverse diameter is 7.9 mm. This hole tapers to a longitudinal diameter of 4.5 mm and a transverse diameter of 3.5 mm. The drill hole edges are distinct but slightly rounded. The piece weighs 112.1 gm.

The partial gorget is roughly half complete with a small remnant of the right drill hole present on the reverse face. The raw material is a yellowish-brown, fine grained sandstone. The plan outline shape is quadraconcave with a slighter degree of concavity for the left end in comparison to the sides. The left corners and edges are rounded and flat sided, as are the left end and sides. Both faces taper slightly and uniformly to the edges and corners. The maximum thickness of the piece is 12.7 mm which tapers to 10.3 mm along the side edges and 8.2 mm along the left end edge and corners. The left hole
has been drilled from both sides and has a symmetrically circular plan outline shape with an obverse face diameter of 6.3 mm and a reverse face diameter of 6.2 mm. The right drill hole is too incomplete to estimate its diameter. The broken piece weighs 74.4 gm.

Although these two gorgets differ in basic outline shape, method of drilling, and raw material type, they are of roughly the same size and have similar spacing of the drill holes. The pieces have similar maximum thicknesses and taper slightly to the edges. The sides and ends are flat. The drill holes are placed along the longitudinal midline, closely spaced to the transverse midline, and equidistant from their respective edges. The space between the edges of the drill holes for the complete gorget is 17.0 mm; while for the partial gorget it is 13.0 mm. The space from the end to the edge of the drill hole varies between 29.4 and 30.8 mm indicating a relatively consistent spacing for both objects. The maximum length of the complete gorget is 95.0 mm and the maximum width along the right end is 65.5 mm. The maximum width of the broken piece is 67.0 mm and the minimum width, corresponding to the transverse midline is 58.0 mm. Given the spacing of the drill holes and assuming symmetry, the broken piece would have been of roughly similar length as the complete gorget.

The two complete gorgets (both 3733.1/29) from Sidner Mound I were associated with Burial 10, Feature 2. The planview outline shape of one of the gorgets is rectangular with slightly concave sides and slightly convex ends. The corners are right-angled to slightly obtusely angled and are rounded. Both faces taper towards the edges and corners with the sides and ends being flat-sided to slightly rounded. The tapering is more pronounced towards the right end were the thickness of the piece reduces from a maximum of 8.3 mm near the center to 1.9 mm along the rounded right end at the longitudinal midline. The flat left end is 4.9 mm thick; while the slightly rounded sides along the transverse midline are 7.1 mm thick. The resulting longitudinal cross section outline shape is slightly biconvex. The width varies indistinguishably 58.3 mm (left end) to
58.6 mm (right end), which represents the maximum. The minimum width along the transverse midline is 54.0 mm. The maximum length is 80.5 mm and corresponds to the longitudinal midline. The top side is slightly shorter at 79.8 mm and, consequently the corners are right-angled. The bottom side is 73.7 mm long and the corners are obtusely angled.

The holes are drilled from both sides, placed approximately along the longitudinal midline, and are asymmetrical in plan outline shape. The holes are spaced 24.3 mm apart measured from their respective edges, with the left hole spaced 22.6 mm and the right at 19.1 mm from their respective ends. Consequently, the holes divide the piece into thirds. On the obverse face, the right drill hole has a longitudinal diameter of 7.1 mm and a transverse diameter of 6.8 mm. On the reverse face, the same hole has a longitudinal diameter of 9.9 mm and a transverse diameter of 10.1 mm. The left drill hole has a longitudinal diameter of 7.4 mm and a transverse diameter of 7.2 mm; while on the reverse face the longitudinal diameter is 9.9 mm and the transverse diameter is 10.0 mm. The edges of the holes are not distinct and moderately rounded. The piece weighs 98.9 gm and is fashioned from a light to medium gray slate with no bands and a dull, fine grained surface appearance.

The other complete gorget from Burial 10, Feature 2, Sidner Mound I appears to be reworked from an originally longer object. In plan outline shape, the gorget is rectangular to trapezoidal. The bottom side is straight; while the top side appears to have been originally slightly convex. The left end is straight and the right end is slightly convex. The upper left corner tip has been snapped off with the broken surface reworked to produce a straight, flat-sided corner 8.0 mm long. The remaining corners are rounded with flat sides. The sides and ends are also flat-sided. Both faces taper indistinguishably from a maximum thickness of 5.9 mm to 5.0 mm at the distinct but slightly rounded edges.
The drill holes are roughly placed along the longitudinal midline and are widely spaced from each other at 35.8 mm from their respective edges. However, they are closely but not equidistantly spaced from their respective ends with the left drill hole being 18.2 mm from the end and the right drill hole being 8.1 mm from its end. Both holes are drilled from one side and are quite small and taper slightly. Both holes are 4.6 mm in diameter on the obverse face and taper to 3.1 mm (right) and 3.4 mm (left) on the reverse face. The drill hole edges are distinct and well rounded. The gorget weighs 63.6 gm and appears to have been fashioned from a dark gray slate with no bands and a dull and grainy surface appearance. However, the exterior surface is partially exfoliated and the piece has been soaked in a preservative which may have affected its appearance. There is a likelihood the dark coloration and the exfoliating surface reflect the possibility the piece was burnt.

Six quadraconcave gorgets were recovered from Sidner Mound II; two from Burial 9, Feature 1, one from Burial 13, Feature 1, one from Burial 26, Feature 1, one from Burial 3, Feature 2, and one Feature 1 fill. The two gorgets (both 3733.2/13) from Burial 9 represent one complete and one two-thirds complete pieces, both of which have been fashioned from dark gray to black banded slate with a dull and grainy surface appearance. However, the reverse face of the incomplete gorget has been polished to a semiglossy luster. In planview, both pieces have slightly concave sides and ends with rounded corners which have flattened or straight edges. These short straight segments range in length from 3.0 to 4.8 mm. On the complete piece the sides and ends are flat-sided; while only the left end is flat-sided on the incomplete piece. On this piece, the sides and right end taper to rounded edges and sides. Both pieces are relatively thin and biplano in longitudinal and transverse cross section outline shapes. The complete piece is uniformly 5.5 mm thick tapering to 4.4 mm along the edges. The incomplete piece has a maximum thickness of 5.6 mm which tapers to 3.6 mm along the top side edge, 2.7 mm along the
bottom side edge, and 4.3 mm at the corners. The complete has a maximum length of 109.4 mm and a minimum length along the longitudinal midline of 103.7 mm. The length of the incomplete piece is 74.7 mm along the top side. Assuming symmetry the maximum and minimum lengths of the incomplete piece would be similar to the complete one. The maximum width of the complete piece is 71.1 mm and the minimum width along the transverse midline is 64.0 mm. For the incomplete piece the width along the left end is 73.0 mm and the minimum width along the transverse midline is 64.1 mm.

Holes were drilled from one side on the incomplete piece and primarily from one side on the complete piece with the drilling on the reverse face extending only 1.0 mm into the body of the piece. For the right drill hole of the incomplete piece the transverse diameter is 7.7 mm with breakage preventing an accurate measurement of the longitudinal diameter; although it would appear the length would have been slightly greater than the transverse diameter. The left drill hole has a longitudinal diameter of 8.1 mm and a transverse diameter of 8.8 mm. Both drill holes taper to an approximate diameter of 2.0 mm on the reverse face. The edges of both drill holes on the reverse face are indistinct and well worn. The drill hole edges on the obverse face are distinct but moderately rounded. For the complete piece, the right drill hole is symmetrical with a diameter of 4.4 mm on the obverse; while the left drill hole has a 4.6 mm longitudinal diameter and a 5.1 mm transverse diameter. On the reverse face, the right drill hole has a diameter of 2.5 mm and the left a 3.1 mm diameter. All drill hole edges are distinct and slightly rounded. On both pieces the drill holes are centered along the longitudinal midline and are spaced equidistant from their respective ends and from each other, which basically divides each piece into equally sized thirds. On the incomplete piece spacing is 27.0 mm from the left end to the edge of the left drill hole, and 25.0 , between the edges of the drill holes. On the complete piece, spacing is 31.1 mm from the left end to the edge of the left drill hole,
29.4 mm between drill hole edges, and 34.2 mm from right drill hole edge to right end. The complete piece weighs 124.3 gm; while the incomplete piece weighs 74.3 gm.

The complete gorget (3733.2/21) from Burial 13 is rectangular to trapezoidal in plan outline shape with straight sides and ends. Inclusion of this piece within the quadraconcave gorget type is somewhat problematical based on its general rectangular outline shape and the presence of two drill holes. It appears to have a higher width to length ratio than objects attributed to the rectangular two-holed gorget type (Converse 1978:32). In addition, it shares morphological to the rectangular pendant from Burial 3, Feature 2, Sidner Mound II, and is distinguished from that piece by the presence of two drill holes instead of one.

The piece is fashioned from a medium to dark gray, black banded slate, which has a fine grained, semiglossy surface appearance produced by polishing of both faces. The junctures of the straight sides and ends form squared or right-angled corners with distinct edges. The sides and ends are flat-sided and both faces taper towards all edges and corners. The maximum thickness is 7.6 mm which tapers to 4.7 mm along the side edges and 2.5 mm along the end edges, resulting in biconvex longitudinal and transverse cross section outline shapes. The maximum length of 78.6 mm occurs along the longitudinal midline; while the maximum width of 51.6 mm occurs along the right end edge with the left end edge measuring 46.3 mm.

The right hole is drilled from one face, while the left hole is drilled from both faces. The right drill hole has a diameter of 7.0 mm tapering to a 5.2 mm diameter on the reverse face. The left drill hole is asymmetrical having an 8.6 mm longitudinal diameter and a 9.1 mm transverse diameter, with identical measurements for both faces. All drill hole edges are distinct and moderately rounded. The drill holes are placed approximately along the longitudinal midline and are equidistant from their respective ends and from each other. The spacing is 21.0 mm from left end to left drill hole edge, 21.7 mm between
the drill hole edges, and 20.4 mm from right drill hole edge to right end. The piece weighs 88.7 gm.

The quadraconcave gorget (3733.2/47) from Burial 26 is three-quarters complete missing the upper right portion. The lower right quarter has been crossmended with the left half. The exterior surface is exfoliating and the piece has been soaked in a preservative giving it a glossy appearance. Viewing recently exfoliating fragments, it would seem the surface had an original dull and grainy appearance. The raw material appears to be a reddish-brown shale or slate with no distinct banding. Faint black mottling is present but discontinuous. All sides and ends are slightly concave in plan outline with flat surfaces and minimal tapering of the edges on both faces. The three corners show various degrees of damage but appear to be rounded with flat surfaces and no distinct edges. The maximum thickness is uniformly 10.0 mm which tapers to 5.0 mm along all of the edges resulting in biplano longitudinal and transverse cross section outline shapes. The maximum length of the lower side is estimated as 101.0 mm and the maximum width along the left end at 75.4 mm, based on the hypothetical reconstruction of the damaged corners. The minimum length of 93.9 mm occurs along the longitudinal midline and the minimum width of 69.4 mm occurs along the transverse midline.

The holes are drilled from one side and the right drill hole is sufficiently intact for measuring, although the breakage line passes transversely through the middle of it. The right drill hole diameter tapers from 5.1 mm on the obverse face to 3.8 mm on the reverse. The left drill hole has a longitudinal diameter of 4.9 mm and a transverse diameter of 5.2 mm on the obverse face which tapers to 4.0 mm and 3.6 mm, respectively. The drill holes are asymmetrically placed with the right drill hole situated at the approximate centerpoint of the longitudinal and transverse midlines. The left drill hole is placed slightly below the longitudinal midline near the left end. The spacing is 14.0 mm from left end to left drill
hole edge, 29.3 mm between drill hole edges, and 40.6 mm from right end to right drill hole edge. The incomplete piece weighs 94.8 gm.

Slightly more than half of a quadraconcave gorget (3733.2/68) occurred with Burial 3, Feature 2. The piece is fashioned from a mottled dark grayish and black slate, where the black does not form distinctive bands. Both faces have been polished to a semiglossy luster. The piece deviates from the type description in having a slightly convex left end producing slightly obtusely angled, rounded corners with fairly distinct edges. Both sides and the left end have flat surfaces and both faces taper slightly toward the edges. The maximum thickness of 7.2 mm tapers to 3.7 mm along the sides and 3.0 mm along the left end. This results in biplano to slightly biconvex longitudinal and transverse cross section outline shapes. The greatest length of the incomplete piece is 82.1 mm along the longitudinal midline. Assuming bilateral symmetry, the complete object would have been 125.0 to 135.0 mm in maximum length. The maximum width of 76.5 mm occurs along the left end with the minimum length of 67.8 mm occurring along the supposed transverse midline.

The left drill hole is placed along the longitudinal midline at a distance of 35.3 mm from the left end and 40.1 mm from the transverse break of the right end. A right drill hole is assumed to have been present in close proximity to the break, although no remnant is present. Two small aborted drill holes, 1.5 to 1.5 mm in diameter and less than 1.0 mm deep, are present on the obverse face adjacent to the break and slightly above the longitudinal midline. The aborted drill holes may represent a failed attempt at repairing the piece, or a production mistake of initially misaligning the right drill hole. The left drill hole tapers from a diameter of 6.7 mm to an asymmetrical hole on the reverse face having a longitudinal diameter of 3.1 mm and a transverse diameter of 2.5 mm. The incomplete piece weighs 99.0 gm.
The quadraconcave gorget (3733.2/59) from Feature 1 fill could be considered unfinished since it does not possess drill holes. The piece is fashioned from a dark gray to black slate with large distinct cream to light gray mottles. The surfaces of both faces have been polished to a semiglossy luster. The sides are slightly concave and the ends are basically straight. The corners are rounded with indistinct edges. Both faces taper in all directions and all edges are rounded. The piece is uniformly 10.5 mm thick to within 10 mm of the edges and corners where the tapering begins. The rounded edges vary between 2.0 and 4.0 mm in thickness. The maximum length of 133.0 mm occurs along both sides, with a minimum length of 132.0 mm occurring along the longitudinal midline. The maximum width of 80.3 mm occurs along the right end with the left end being slightly shorter at 78.1 mm. The minimum width of 75.4 mm occurs along the transverse midline. The piece weighs 293.8 gm.

Three quadraconcave gorgets were recovered from Hambleton Mound; two from the burnt earth deposit adjacent to Feature 1, and one from Burial 2, Feature 2. The pieces from the burnt earth deposit consist of one nearly complete gorget (3742/1) and one partial gorget (3742/2) transversely broken through a drill hole. Assuming symmetry and similar drill hole spacing as the complete gorget, this fragment represents slightly more than one-third of the original piece. The nearly complete piece has a damaged upper left corner, was transversely broken through the right drill hole, and had a diagonal snap fracture of the upper right corner. The fragments have been crossmended and the largest fragment has been soaked in a preservative to protect the damaged left corner. The piece is fashioned from a light grayish-brown, fine grained sandstone and has spots of black organic staining on both faces. The reddened surface occurs only on the shellacked fragment and may not be the result of contact with fire as originally reported (Potter 1967:6). Likewise the damage to the upper left corner and a portion of the reverse face has been attributed to fire induced shattering. The form of damage is indistinguishable
from that occurring on other nearly complete gorgets from the other mounds for which no direct evidence of contact with fire is present. As such, this interpretation must remain suspect.

In planview, all sides of the nearly complete gorget are moderately concave producing acutely angled, rounded corners with indistinct edges. Neither face tapers towards the edges; although both taper slightly towards the corners. The edges are rounded and the sides and ends have flat surfaces. The maximum thickness is 11.4 mm and is fairly uniform across the piece. The tapered corners vary from 6.8 to 8.0 mm in thickness. Thus, the longitudinal and transverse cross section outline shapes are biplano. The maximum length of 98.6 mm occurs along the lower side; while the minimum length of 89.3 mm occurs along the longitudinal midline. The maximum width of 71.7 mm occurs along the right side with 61.5 mm as the minimum width along the transverse midline.

The holes are drilled from one side and centered on the longitudinal midline. They are closely spaced to each other and nearly equidistant from the respective ends. The spacing from the left end to the edge of the left drill hole is 31.3 mm, between the drill hole edges is 15.7 mm, and from the right end to the right drill hole edge is 27.6 mm. The drill holes on the obverse face have indistinct, well worn, asymmetrical edges. For the left drill hole the longitudinal diameter is 7.0 mm and the transverse diameter is 6.9 mm. For the right drill hole the longitudinal diameter is 8.3 mm and the transverse diameter is 7.5 mm. Both holes taper to symmetrical holes with distinct, slightly rounded edges on the reverse face. The right drill hole diameter is 3.6 mm and the left is 3.4 mm. The piece weighs 97.6 gm.

The incomplete gorget exhibits numerous, small areas of edge damage and does appear to be thermally altered. The primary surface color is very light gray with patches of white and various shades of brown. The surface has a dull, almost chalky, appearance with few observable minute mineral grains. Along the transverse break, the core has an
appearance of laminated clay and the breakage pattern shows platy cleavage. The raw material was originally reported as limestone, but it would appear more likely to be slate.

In planview, the sides and left end are slightly concave producing a rounded upper left corner with a distinct but rounded edge. Both faces taper slightly to the edges, and the sides and left end have flat surfaces. The maximum thickness is 11.4 mm and tapers to a range between 7.0 and 7.4 mm along the various edges and 4.7 mm at the upper left corner. Maximum width along the left end, based on projected reconstruction of the lower left corner, is estimated at 85.0 mm. The width along the transverse break is 73.4 mm, but this does not represent the minimum width since both sides appear to be continuing to constrict.

The left drill hole is drilled from one side and is partially intact. The transverse diameter is 10.1 mm and tapers to 5.0 mm on the reverse face. The drill hole edge is indistinct and well worn and maybe the reason why these measurements differ significantly from the originally reported drill hole diameter (Potter 1967:6). The incomplete piece weighs 50.4 gm.

The complete quadraconcave gorget (3742/16) from Burial 2, Feature 2 lacks a lower left corner. The corner does not appear damaged, since it has straight edges and a flat surface. This segment is 18.4 mm long and may represent a reworked damaged corner, or more likely, a natural fracture plane of the original raw material piece. The raw material is a light to medium grayish-brown, fine grained sandstone with numerous, small, circular, dark brown stains which presumably are organic. Amorphous, powdery, white stains are also present and may represent adhering bone dust. Bright red ochre stains are present at the lower right corner on the obverse face, continue over the edge, and are more extensive on the reverse face.

In planview, the sides and ends are slightly concave producing acutely angled, rounded corners with distinct edges. The sides and ends have flat surfaces and the edges
are distinct and right-angled. Neither face tapers towards the edges and corners, and the piece has a fairly uniform thickness ranging between 10.3 and 11.8 mm. Disregarding the aberrant lower side, the maximum length along the upper side is 100.0 mm and the minimum length along the longitudinal midline is 96.7 mm. Likewise, disregarding the left end, the maximum width of 68.1 mm occurs along the right end, and the minimum width of 58.0 mm occurs along the transverse midline.

The holes are drilled from one side and have a unique configuration. On the obverse face the holes are quite large and extend straight-sided into the piece approximately 5 mm, and have a flat bottom. At this point smaller, centrally placed drill holes taper to the reverse face. It is not clear if this apparent "shelf" was produced during manufacture or resulted from use. On the obverse face, the maximum longitudinal diameters are 11.3 mm for the left and 11.5 mm for the right; while the maximum transverse diameters are 11.6 mm for the left and 10.6 mm for the right. The minimum longitudinal diameters, corresponding to the recessed drill holes, are 5.8 mm for the left and 5.6 mm for the right; while the minimum transverse diameters are 5.8 mm for the left and 5.7 mm for the right. The drill holes taper to diameters of 3.5 mm on the reverse face. The drill holes on the reverse face are also enlarged, but not to the extent as on the obverse face. The enlarged area extends less than 2.0 mm into the piece with tapering sides and no apparent "shelf". All drill hole edges are distinct and minimally rounded. The drill holes are centered along the longitudinal midline, closely spaced to each other, and nearly equidistant from their respective ends. The spacing distances, measured from the edges of the larger drill holes, are 33.5 mm from left end to left drill hole, 8.9 mm between drill holes, and 30.8 mm from right end to right drill hole. The piece weighs 133.8 gm.

Two quadraconcave gorgets recovered from Galbreath Mound could be considered variants of the biconvex/bowtie gorget type (Converse 1978:46 and Dragoo 1963:182).
However, they differ from this type in having concave ends rather than convex. Consequently, they also resemble the reel-shaped gorget type (Converse 1978:60 and Dragoo 1963:182); but the ends are only slightly concave and the corners do not have the characteristic spoke-like appearance. Since these gorgets share general morphological characteristics between several established gorget types and the meanings of these shape variations is not well understood, they are being considered as a variant of the quadraconcave gorget type. Perhaps the most intriguing aspect of these gorgets is that this type-variety is represented in only one of the five mounds.

Assuming bilateral symmetry, one of the gorgets (II/294) is approximately two-thirds complete and was associated with Burial 38's cranium in the lower level of Feature 108. The other gorget (II/283) is approximately one-third complete and was recovered from the fill of the intrusive pit in the upper level of Feature 108 and was immediately above Burial 38. Both are of similar size and shape having moderately concave sides and slightly concave ends. The faces on both pieces taper slightly to all edges and taper more pronouncedly to the rounded corners. The sides and ends are flat surfaced, while the corners are rounded points. Holes are drilled from one side tapering from a large diameter hole on the obverse face to an extremely small hole on the reverse face. The drill hole edges are distinct and slightly rounded on the obverse face and are well rounded on the reverse face. Both pieces exhibit a similar transverse breakage pattern through one of the drill holes.

Since both pieces are broken, maximum dimension measurements are not possible. The two-thirds complete gorget is at least 70.2 mm in length along the lower side, with a width of 59.2 mm along the left end. The minimum width along the apparent transverse midline is 40.2 mm. A maximum thickness of 12.6 mm occurs near the apparent centerpoint of the piece and reduces towards the edges to a range between 9.0 and 10.7 mm, and between 4.3 and 5.9 mm at the corners. The drill holes are widely spaced from
each other at 29.7 mm between their respective edges. The left drill hole edge is 19.5 mm from the left end along the longitudinal midline. Both drill holes are situated along the longitudinal midline and are basically symmetrical in plan outline shape. The left drill hole has a diameter of 12.9 mm which tapers to a diameter of 3.1 mm on the reverse face. The partial right drill hole has an estimated diameter of 10.7 mm which tapers to a diameter of 2.9 mm on the reverse face. The piece is fashioned from a medium grayish-brown slate with dark gray bands and weighs 89.9 gm.

The one-third complete piece is at least 34.3 mm in length along the lower side with a length of 24.2 mm between the drill hole edge and the left end along the longitudinal midline. The width measured along the left end is 65.1 mm which reduces to 38.2 mm along the transverse break through the drill hole. This suggests the lateral sides of this piece are more pronouncedly concave in planview than the sides of the two-thirds complete piece. The maximum thickness of 11.1 mm occurs along the longitudinal midline adjacent to the drill hole edge. The piece tapers to a range between 8.8 and 9.3 mm at the end and side edges, and between 6.6 and 6.9 mm at the corners. The drill hole has an estimated diameter of 11.0 mm tapering to a diameter of 2.7 mm on the reverse face. The piece is fashioned from a medium gray slate with black bands and weighs 39.9 gm.

Two pieces recovered from Hambleton Mound represent the semi-keeled gorget type (Converse 1978:34 and Dragoo 1963:182). One piece (3742/9) is considered to be unfinished because one of the holes is partially drilled. This piece was recovered from the fill of Feature 2, near to but not directly associated with Burial 4 (Potter 1967:7 and Figure 7). The other piece was found in the mound fill, presumably the primary core, from the grid east half of the mound. Although not in direct association with any known burial, this piece has fragmentary remnants of a long bone shaft adhering to one of the beveled sides (Potter 1967:Figure 10).
The crude appearance of the unfinished semi-keeled gorget seems related to the nature of the raw material, which is a fossiliferous limestone. The asymmetrical plan outline shape, the aborted drill hole, and the pitted and weathered exterior surface suggest the piece was fashioned from a cobble of poor quality. The reverse face is relatively flat and the sides of the obverse face taper to rounded edges and lateral sides. The obverse face tapers slightly to the ends, which have rounded edges and basically flat surfaces. The maximum length of 53.9 mm occurs along the longitudinal midline, with the lengths of the upper and lower sides being 51.2 and 51.7 mm, respectively. The maximum width 39.3 mm occurs adjacent to the left end along a transverse line crossing through the center of the aborted drill hole. Along the transverse midline the width is 29.5 mm; while the left end width is 37.6 mm and the right end width is 24.0 mm. The maximum thickness of 20.7 mm occurs near the centerpoint of the piece at the intersection of the longitudinal and transverse midlines. The thickness reduces to 16.0 mm at the left end and 11.9 mm at the right end.

The right drill hole is placed along the longitudinal midline with the drill hole edge being 13.3 mm from the right end. The aborted left drill hole is offset from the longitudinal midline with the drill hole edge being only 4.0 mm from the left end. The right hole is drilled from both sides with the longitudinal diameter being 8.7 mm and the transverse diameter being 7.6 mm on the obverse face. The minimum interior hole diameter is 5.0 mm. Although the hole is basically straight-sided, it is slightly inclined towards the right end on both faces.

The aborted left drill hole is inclined towards the center of the piece from the left end on the obverse face. The longitudinal diameter is 12.3 mm; while the transverse diameter is 7.9 mm. The drill hole edges are indistinct with rough surfaces suggesting abortion of the hole is related to production failure. There is no evidence of an attempt to drill this hole on the reverse face.
The finished semi-keeled gorget was originally reported to be fashioned from red sandstone with the color intensified by red ochre stains (Potter 1967:6). However, the piece is dense and weighs 190.8 gm. It has no grainy appearance and cracking on the exterior surface indicates it has platy cleavage lines. In addition, the faces and sides exhibit abundant, narrow but deep striations. These characteristics suggest the piece is fashioned from hematite rather than sandstone.

The maximum length of 102.9 mm occurs along the longitudinal midline with the lengths of the upper and lower sides being 91.3 and 91.6 mm, respectively. The maximum width of 55.9 mm occurs along the transverse midline with the widths along the left and right ends being 54.7 and 50.2 mm, respectively. The maximum thickness of 19.6 mm occurs near the centerpoint of the piece at the intersection of the longitudinal and transverse midlines. The sides are beveled on the obverse face to rounded side edges and surfaces. The obverse face tapers gradually to the ends, which have distinct edges and flat surfaces measuring between 2.1 and 2.4 mm in thickness. The reverse face is flat.

The drill holes are situated along the longitudinal midline and are closely spaced to each other with a distance of 14.0 mm between their edges. The drill holes are spaced equidistant from their respective ends with a distance of 38.5 mm between the left end and the left drill hole edge and 39.5 mm between the right end and right drill hole edge. Both holes are drilled from both faces with the holes on the obverse face inclined slightly towards their respective ends and nearly perpendicular on the reverse face. The holes are fairly symmetrical in plan outline shape with the right drill hole diameter being 6.0 mm and the left being 4.9 mm on the obverse face. The holes are larger on the reverse face, both having a diameter of 10.2 mm. The minimum interior hole diameters could not be accurately measured.

As with the reel/bowtie variety of the quadraconcave gorget type, the occurrence of semi-keeled gorgets is site specific occurring in only one of the five mounds.
Considering in addition the similarities of certain morphological attributes of the quadraconcave gorgets within a site and their variability between sites, it would seem gorget types and/or varieties have consistent site specific patterns of occurrences. Whether these patterns of occurrences have meaning as temporal indicators, social group symbols, the products of individual craftsmen, or some combination of these interpretations has yet to be demonstrated.

Untypeable gorget fragments were recovered from Hambleton and Sidner II Mounds. Several burnt gorget fragments (3742/3) were recovered from the burnt earth deposit at Hambleton Mound. These pieces range from white to dark gray, are light weight and porous with a general resemblance to fired clay with no tempering. The larger pieces exhibit two flat faces with one piece also having a flat side which appears to be a portion of a concave lateral side in planview. Two fragments exhibit remnants of drill holes, one representing approximately one-third of a hole and the other slightly less than one-quarter. The fragments could not be crossmended with each other, nor with the incomplete quadraconcave gorget from this deposit. Additionally, the fragments are slightly thinner than the incomplete gorget; although this may be a result of their thermal alteration. Consequently, they must be viewed as representing a separate object.

Fragments of another burnt gorget were recovered from Burial 9, Feature 1, Sidner Mound II. Originally accessioned and described in the fieldnotes as burnt clay (3733.2/16), these fragments are morphologically similar to the burnt gorget fragments from Hambleton Mound. Although no drill hole remnants were present, the few larger pieces have flat faces and one has a flat side with distinct right-angled edges. The fragments range from buff through various shades to dark gray. They are not as light weight and do not exhibit a porous appearance like the Hambleton Mound fragments. However, they do have an appearance of temper free, laminated clays in cross section.
A fragment of worked greenish-gray slate with dark gray bands was recovered from mound fill, presumably the primary core, near the mound floor adjacent to Feature 1 at Hambleton Mound. The piece appears to be a diagonally snapped portion of a corner; although the tip of the corner has also been snapped off. The piece is relatively thin, approximately 6.0 to 7.0 mm thick and tapering to edges 2.5 mm thick. The intact portions of two sides, or one side and one end, have flat surfaces with distinct slightly rounded edges. In planview, the sides appear to be straight to slightly convex. The raw material, the thinness of the piece, and the slightly convex sides are distinctly different attributes from those of the known gorgets at this site and bring into question the interpretation of this piece as a gorget fragment.

A problematical piece of greenish-gray slate with black bands was recovered from the plowzone horizon of Sidner Mound II. The piece is clearly unfinished exhibiting flake scars on both faces and discontinuously ground edges. However, it is not evident if the piece was being fashioned into a gorget or celt. The raw material type and the attempt to produce biplano transverse and longitudinal cross section outline shapes suggest the piece was intended to be a gorget. Conversely, the long and narrow, rectangular planview outline shape does not conform to the most frequently occurring gorget type occurring in these mounds. It does bear a general morphological resemblance to the rectangular variant of the quadraconcave type, and the trapezoidal pendant type; both of which were represented by items recovered from Sidner Mound II, but in burial association. Consequently, this unfinished piece has closer morphological affinities to gorgets than celts and is so classified.

In planview, the ends and upper side are slightly convex with an irregularly shaped lower side. The faces are uneven exhibiting numerous large and overlapping flake scars with grinding restricted to areas on both faces adjacent to the side and end edges, where slight tapering of the faces results. Nearly half of the reverse face exhibits a
protuberance resulting from hinged flake scars and indicating an inability to adequately thin the piece to an uniform thickness. The left end and upper side represent the most extensive area of surface grinding, which has resulted in the production of a slightly obtusely angled corner with a straight edge. The remaining corners are well rounded and show little evidence of surface grinding.

The maximum length of 98.2 mm occurs along the longitudinal midline, with the upper side measuring 89.7 mm and the lower side 92.1 mm. The maximum width of 49.0 mm occurs adjacent to the left end, which only measures 38.3 mm along the relatively straight partially ground edge segment. The width at the right end is 41.2 mm; while along the transverse midline the width is 43.5 mm. The maximum thickness of 14.8 mm occurs along the longitudinal midline near the left third of the piece, where the protuberance was present on the reverse face. The apparent desired thickness of the piece was 10.0 mm. There were no indications of attempted drill holes and the piece weighs 122.1 gm.

Pendant

One complete trapezoidal pendant (3733.2/67) was found in association with Burial 3, Feature 2, Sidner Mound II (Converse 1978:82 and Dragoo 1963:183). This piece was fashioned from a dark gray, black banded, slate with a dull and grainy surface appearance and no evidence of polishing. The lower side and the right end are straight, while the left end and upper side are slightly convex. The right side corners are right-angled with distinct edges. The left side corners are rounded but also have distinct edges. The sides and ends have flat surfaces. Both faces taper pronouncedly to all edges and corners giving the piece a beveled edge appearance. From a maximum thickness of 12.6 mm, both faces taper to sides ranging from 7.2 to 7.7 mm thick and ends ranging from 3.3 mm to 4.3 mm thick. The resulting longitudinal and transverse cross section outline shapes are slightly biconvex. The maximum length of 69.0 mm occurs along the longitudinal midline; while the maximum width of 42.8 mm occurs along the transverse
midline. The width along the right end is 41.8 mm and 35.5 mm along the left end. The upper side length is 67.7 mm, while the lower side length is 66.3 mm.

The hole has been drilled from both faces being centrally placed along the longitudinal and transverse midlines on the obverse face and slightly right of the transverse midline on the reverse face. The hole was drilled on a diagonal, inclined towards the right end on both faces. On the obverse face, the longitudinal diameter of the hole is 9.7 mm and the transverse diameter is 9.3 mm. On the reverse face, the hole is symmetrical having a 9.4 mm diameter. The drill hole edges are distinct and moderately rounded. The piece weighs 72.6 gm.

The pendant shares morphological affinities to the gorget (3733.2/21) from Burial 13 of the same mound. The gorget has been included as a variant of the quadraconcave gorget type, but is similar in general size and shape to the pendant. Likewise, the tapered edges and the distinct corner edges appear to be similarly produced. The primary distinctions between the two pieces rest on the number and placement of drill holes and the differences in maximum thickness.

Tablet/Abrading Stone

Six tablets or abrading stones have been reported or accessioned from three mounds; including one from Galbreath, one from Hambleton, and four from McMurray I. Only one of these items can be considered to be a formal grooved tablet. None of the remaining five pieces exhibit macroscopic evidence for abraded grooves on any face, although the from Hambleton Mound was reported to have three small grooves on one face (Potter 1967:8). Two of the pieces are subrectangular in plan outline shape and biplano in longitudinal cross section outline shape, but show no apparent modification of the sides or ends. The three remaining pieces are irregularly shaped cobbles with at least one flat face. All five pieces with no grooves are of a yellowish-brown, fine grained sandstone. The exterior surfaces are grainy and crumbly and have a weathered
appearance. This condition may explain the lack of observable grooves, is such were present and small and shallow in nature.

The formal tablet (3748/44G) was recovered from Burial 22, Feature 3, McMurray Mound I and was associated with two irregular sandstone tablets (also 3748/44G). One of the irregular tablets has two roughly flat sides and a basically rectangular plan outline shape, but not an uniform thickness. The other irregular tablet is a cobble with one flat face. These two items appear to be unmodified, small cobbles and were not measured. The formal tablet is fashioned from a medium to dark gray, fine to medium grained limestone. The plan outline shape is oval, measuring 61.8 mm longitudinally and 49.4 mm transversely. The longitudinal cross section outline shape is biplano with an uniform thickness of 9.6 mm. The edges and circumferential surface are rounded and slightly thinner ranging between 7.4 and 8.3 mm in thickness.

On the obverse face, four moderately deep grooves are aligned parallel to each other and to the transverse midline. These grooves range between 31.0 and 36.8 mm in length and between 9.1 and 13.2 mm in width. Five shorter but equally as deep grooves are present on the reverse face and are closely spaced. Three grooves are parallel to each other and to the transverse midline. They begin along the lower edge and extend to the longitudinal midline. A fourth groove is roughly oriented with the long axis and confined to the central portion of the piece and nearly intersects perpendicularly the top edges of the three parallel grooves. The fifth groove is situated adjacent to the right end and is partially overridden by the longitudinally oriented groove. These grooves range between 21.4 and 30.8 mm in length and between 9.0 and 11.7 mm in width.

A subrectangular sandstone bar (3748/15E) was recovered from Burial 2, Feature 1, McMurray Mound I. In planview, the sides are slightly convex and the ends are rounded or convex. The maximum length of 119.0 mm occurs along the longitudinal midline and the maximum width of 44.5 mm occurs along the transverse midline. The
piece is biplano in longitudinal and transverse cross section outline shapes, but does not have an uniform thickness. The left half of the piece is 16.5 mm thick; while the right half is 13.0 mm thick. Both faces taper slightly towards the rounded end edges with the end surfaces also being rounded. The faces do not taper towards the side edges, which are well rounded; but the side surfaces are flat and irregular. The piece weighs 113.0 gm.

A subrectangular sandstone bar was recovered the fill of Feature 108, immediately above the disturbed Burials 36-39, at Galbreath Mound. In planview the sides are straight and the ends are convex. The maximum length of 84.7 mm occurs midway between the longitudinal midline and the edge of the lower side. The maximum width of 31.3 mm occurs approximately along the transverse midline. The piece is biplano in longitudinal and transverse cross section outline shapes, with a maximum thickness of 9.9 mm. All edges are moderately rounded and the side and end surfaces are flat. All exterior surfaces are irregular and show no evidence of modification or weathering. The piece weighs 48.1 gm.

One irregular sandstone tablet (3742/19) was recovered from Burial 4, Feature 2, Hambleton Mound. This piece, referred to by the synonymous label of whetstone, appears to have been broken into thirds in situ (Potter 1967:Figure 7). Although the piece was originally reported to have abraded edges and three small grooves on one face, there are no macroscopically visible grooves nor striations (Potter 1967:8). All surfaces are irregular and appear to be natural. All sides are flat and the edges are slightly rounded. Using the straight edged side as the proximal end, the maximum length is 61.3 mm with a maximum width of 52.2 mm. The longitudinal cross section is irregularly shaped approaching either biplano or plano-convex, with a maximum width of 8.3 mm. The piece weighs 34.0 gm.

The irregular sandstone tablets pose an interpretative problem because they all appear to be unmodified or natural cobbles. Contextually, they appear to purposefully
placed with burials and, at least, must be considered as manuports. The lack of grooves questions their classification as abrading stones. The subrectangular sandstone bars could have been meant to be fashioned into gorgets. Although sandstone was used to fashion some of the quadraconcave gorgets from Hambleton and McMurray I Mounds; the long and narrow plan outline shape is not represented. Consequently, the term tablet, referring to an object with two flat opposing faces, seems appropriate with the understanding that no functional meaning is implied.

Sandstone Disc

Two sandstone discs were recovered from the McMurray Mound Group through collector/amateur excavations and presumably are still in the Frank Shipley collection. Since there is no mention of the Shipley's excavating mounds II and III, it is further presumed the discs were removed from McMurray Mound I. Only outline tracings of the discs are available from the Big Darby Creek survey fieldnotes and no contextual information is recorded.

Both of the discs are labeled as being fashioned from sandstone and are illustrated as having two flat faces with a single centrally placed drill hole. One piece is wide, 57.0 mm in maximum diameter, and thin, 13.0 mm in maximum thickness. The thickest portion of the piece occurs near the center and both faces taper slightly towards the circumferential edge, where the thickness reduces to 6.0 mm. The drill hole diameter is 8.0 mm, and it is unknown if the piece is drilled from one or both sides.

The other piece has a maximum diameter of 38.0 mm on the reverse face and a diameter of 22.0 mm on the obverse face. Consequently, the sides are tapered and the piece has an uniform thickness of 19.0 mm. The drill hole diameter is 4.0 mm and it is unknown if the piece is drilled from one or both sides. A marginal note indicates the wider and thinner piece has red ochre staining but does not mention the extent of the staining.
Celt

One complete celt (3748/44A) was recovered from Burial 22, Feature 3, McMurray Mound I. Two celt bit fragments (I/82 and II/240) were recovered from mound fill at Galbreath Mound. The bit fragments are too small for detailed descriptions, other than to note both faces on each piece are polished and taper symmetrically to the bit edge.

The complete celt is fashioned from a grayish-black, fine grained igneous rock with black being the primary matrix color. In planview, the piece has a rectangular shape, with slightly convex sides and ends. The maximum length of 89.0 mm occurs along the longitudinal midline with the maximum width of 47.0 mm along the transverse midline. Both faces taper symmetrically in all directions producing narrowly rounded sides and a round pointed poll end. The width along the poll end is 33.0 mm and width along the bit end is 38.0 mm. The piece is biconvex in longitudinal and transverse cross section outline shapes with the maximum thickness of 20.5 mm occurring near the centerpoint of the longitudinal and transverse midlines. The thickness at the poll ends reduces to 8.5 mm and 2.5 mm at the bit end. The bit edge is straight and slightly rounded. The bit end is highly polished on both faces with the polish extending distally approximately one-quarter of the length. This area corresponds to the tapering portion of the bit end where both faces are flat rather than convex. All of the surfaces of the remaining portion of the piece are pecked and ground but not polished. The piece weighs 152.7 gm.

Stone Pipe

A mouthpiece remnant of what appears to be a straight-barreled tubular pipe with a blocked end (3733.2/15) occurred in association with Burial 9, Feature 1, Sidner Mound II. The mouthpiece has a flat end with a small centrally placed hole and sides of the pipe constrict slightly towards the transverse break of the body of the tube, giving the mouthpiece a slightly flared appearance. A plug or hard burnt sphere of organic residue
is lodged within the smoking chamber. The external diameter of the mouthpiece end varies between 26.1 and 26.6 mm. The external diameter of the centrally placed hole is 8.0 mm. The raw material is either burnt slate or a fine clay lacking temper. It resembles the burnt gorget fragments in its lightness of weight and exhibits a porous, dull surface appearance, but has a darker gray coloration. Along the transverse break the raw material has a platy or thinly laminated structural appearance. The mouthpiece remnant is similar in size and shape to the mouthpiece end of the limestone tubular pipe from Burial 8 at the Orleton Farm Glacial Kame burial site (Converse 1980:112). This site is located approximately 12 miles upstream from Sidner Mound II along a headwater tributary of Little Darby Creek.

**Stone Paint Cup**

A stone paint cup (3733.2/60) was recovered from the fill of Feature 1 at Sidner Mound II. This object is roughly circular in planview with maximum dimensions of 44.0 mm by 39.2 mm. In cross section profile, the lateral sides are pronouncedly convex; while the base is slightly convex. The top is relatively flat and the maximum height of the piece is 21.5 mm. The cavity conforms to the general exterior shape, with the interior hole diameter at the top being 26.6 mm by 24.9 mm. The cavity expands to 32.0 mm by 31.5 mm near the center, and then forms a rounded bottom.

The raw material is a bright reddish-yellow, fine grained sandstone and the exterior surface shows no evidence of grinding nor polishing except along the rim edge. The surface of the cavity contains a thin compressed layer of a very fine, powdery, yellow, clayey substance which is considered to be residue from the grinding of yellow hematite. It is not clear if the cavity was culturally produced or represents a natural void in this spherical object which was subsequently used. Although no precipitated iron oxide deposit lines the cavity, the spherical nature of the piece and its unworked exterior surface suggests it is a concretion with some other type of cementing material.
Stone Bead

One stone bead (3733.2/43) was recovered from Burial 24, Feature 1, Sidner Mound II. Three probable beads fashioned from fossil crinoid stem segments were recovered from Galbreath Mound, including two disc shaped (II/347) from Bone Cluster 13, Feature 107, and one problematical barrel-shaped (II/23) from Bone Cluster 20, Feature 106.

The stone bead from Sidner Mound II is fashioned from a jet black, glossy stone, probably cannel coal, and in the form of a large disc bead. The bead is symmetrically circular in plan outline shape with a maximum diameter of 9.2 mm. The maximum thickness is 3.8 mm, and the drill hole diameter is 3.9 mm. The bead was found along with 18 rolled, barrel-shaped, copper beads and at least 42 disc shell beads of various sizes. The combined weight of all of the beads is 43.8 gm, the majority of the weight is attributed to the large, thick, disc shell beads. Although all of the beads are curated together, it is not likely they formed a necklace since the copper beads were reported from the pelvic area of the burial while the shell beads were from the neck region. The fieldnotes do not indicate where the stone bead was recovered.

The probable fossil crinoid stem beads from Galbreath Mound were not found in direct burial association, and it is possible they represent natural soil inclusions inadvertently mixed with the human bone fragments of the feature fill. The two disc shaped beads (II/347) from Feature 107 are identical in maximum diameter, 6.9 mm, maximum thickness, 1.4 mm, and hole diameter, 2.7 mm, suggesting they are natural crinoid stem segments. However, the hole and circumferential edges of both items are well rounded, suggesting they have been worn. In contrast, the crinoid stem segment (II/23) from Feature 106 is rather large with a maximum diameter of 8.7 mm and a maximum thickness of 11.6 mm. The hole diameter is 2.7 mm and the edges are distinct and sharp. The circumferential edges are slightly rounded and the exterior surface shows
no evidence of modification. Because of these attributes and the fact the object was recovered from backfill of a pothunter's pit (Feature 106), the interpretation of this object as a bead must remain problematical.

**Points**

Whole or broken points were recovered from all mounds, with varieties of stemmed bases being the most predominate point form (Figure 12). The majority of the points occurred in burial or feature contexts, except at Hambleton Mound and Sidner Mound I. A blade midsection (3742/8) was recovered from mound fill at Hambleton Mound and represents the only formed chipped stone item from that mound. One complete stemmed base point (3733.1/6) was recovered in association with a redeposited cremation in the mound fill. One stemmed point base haft element fragment (3733.1/3), along with a blade midsection (3733.1/1) were recovered from the plowzone horizon at Sidner Mound I. Five stemmed base points were recovered from Sidner Mound II including two (3733.2/32 and 34) from Burial 22, Feature 1; two (3733.2/69) from Burial 3, Feature 2; and one from the previous Shipley's excavation. Eleven points were recovered from McMurray Mound I including two stemmed base points (3748/15J and K) from Burial 2, Feature 1; four stemmed base and one fractured base points (3748/44F) from Burial 22, Feature 3; and three stemmed base points (3748/2, 10 and 21) and one blade midsection (3748/9) from mound fill. Nine points were recovered from Galbreath Mound including four stemmed base points (I/55, 70 and II/222 and 257) from Feature 110. two stemmed base points (II/255, 301 and 305) from Feature 108; two stemmed base points (II/259 and 268) from Feature 107; and one corner notched base point (II/271) from Feature 105.

The metric attributes of these points are summarized in Table 13, and the following discussion will concentrate on describing the qualitative attributes. All of the
Figure 12. Projectile points from feature and burial contexts.
Figure 12 (Continued).
Table 13. Metric Attributes For Projectile Points.

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Table 13. (Continued).

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complete points exhibit biconvex longitudinal and transverse cross section outline shapes but vary in thickness and these descriptive attributes will not be reiterated for each piece. Identification of point style types follows primarily Dragoo's (1963:109-114) descriptions of stemmed points and Justice's (1987) recent synthesis of point types.

The complete point (3733.1/6) associated with the redeposited cremation from the mound fill at Sidner Mound I appears to be a Robbins Stemmed point with a reworked blade. The haft element is straight sided with a rounded base. The base appears to be broad and long in comparison to the asymmetrical triangular shaped blade. In addition, the base appears to be more finely crafted than the blade. The shoulders are distinct, obtusely angled points projecting perpendicularly from the longitudinal axis. The pointed shoulders result from a slight incurvature of the basically straight lateral blade sides at the blade base. All edges are moderately to well rounded. The piece appears to be fashioned from a fine grained, semiglossy variety of Delaware chert with a light gray coloration and light yellow opaque mottles.

The stemmed base point haft element fragment (3733.1/3) is of similar shape to the haft element of the complete point being straight sided with a rounded base. However, it differs in size being slightly shorter and broader. It is fashioned from a dull and grainy, light to medium gray chert with large red mottles and blue veins. The raw material is considered to be a variety of Vanport flint and possibly heat treated.

The blade fragment (3733.1/1) from the plowzone of Sidner Mound I is broad with rounded shoulders. Remnants of two broad notches are present but are too incomplete to determine if the point was corner notched or stemmed. Although partially damaged, the blade sides appear to be excurvate and the distal end appears to be a reworked edge of a transverse break of the tip. Accurate point style type identification is not possible, although it is tempting to consider it a broken Robbins Stemmed point. The piece is fashioned from a very fine grained, glossy and semitranslucent chert, probably a variety of
Vanport flint. Primary coloration is a medium to dark gray with white, light gray, and powdery blue mottles, and light gray, red, and blue bands along the left lateral side.

Only an outline tracing of the stemmed base point recovered by the Shipley's from Sidner Mound II is available from the fieldnotes. It appears to have an haft element with straight sides and a rounded base. The shoulders are weak and rounded and the blade is slender and elongated with symmetrically excurvate sides. The distal tip is rounded and presumably represents a snap fracture. It is tempting to consider this piece as representing an Adena Stemmed point style, but the available information is insufficient for an accurate identification. The raw material is noted as being a black flint, presumably a variety of Upper Mercer flint.

From Burial 22, Feature 1 at Sidner Mound II a complete point (3733.2/32) and a haft element and partial blade fragment (3733.2/34), along with a tip fragment (3733.2/33) were recovered. The broken pieces are from different raw material types and obviously could not be crossmended. The complete point has an haft element with slightly tapering sides, rounded basal corners, and a flat base. The blade is narrow, elongated, and thick with straight to slightly excurvate sides. The left lateral edge appears to be reworked producing a small, obtusely angled, rounded point shoulder and giving the piece a slightly asymmetrical appearance. In basic size and shape the piece conforms to the Adena Stemmed point type. It is fashioned from a medium to dark gray mottled, dull and grainy variety of Upper Mercer flint with minute white fossil inclusions and narrow bright powdery blue veins.

The stemmed base point haft element and partial blade fragment conforms to no previously described point style type. The haft element is distinguished from the blade by the presence of two broad, extremely shallow side notches. The resulting shoulders are weak to indistinct and the sides of the haft element are excurvate with an ovate or
narrowly rounded base. The raw material is a black, dull, and fine grained variety of Upper Mercer flint with no mottles nor inclusions.

The two complete stemmed base points (3733.2/69) from Burial 3, Feature 2 conform to the Adena Stemmed point description but are morphologically distinct from each other. Both appear to have reworked blade edges. One of the points has a short blade with excursive sides which approach being pentagonal in blade outline shape. The blade is thick with a distinct midline ridge or protuberance. The shoulders are small but distinct rounded points. The haft element has straight sides, although the left has a broad shallow side notch near the neck which resembles the notching on the haft element fragment from Burial 22. The base is ovate or a narrowly rounded point. The piece is fashioned from a semiglossy, fine grained variety of Delaware chert mottled medium and dark gray with a yellowish-brown surface tint.

The other complete point has an asymmetrical blade, which appears to have been originally symmetrically excursive. The distal two-thirds of the left lateral side has been reworked into a straight edge. The shoulders are distinct and rounded. The haft element is narrow and thick with tapering sides and an ovate base. The piece is fashioned from a black, glossy, very fine grained variety of Upper Mercer flint.

The complete stemmed base points from the mound fill at McMurray Mound I are short and narrow with straight bases. Their blades are distinctly different from the blade midsection (3748/9) recovered from the mound floor, which appears to be broader with straight sides. The blade midsection is fashioned from a light to dark gray, dull, and fine grained variety of Delaware chert with small cream colored mottles.

One of the complete points (3748/21) has a symmetrically excursive blade with asymmetrical shoulders. The left shoulder has a distinct, right-angled point; while the right shoulder is an obtusely-angled, rounded corner rather than a point. The haft element sides are basically straight and the basal corners are rounded. The piece is
fashioned from a light to medium gray, dull, and fine grained variety of Delaware chert with yellowish mottles and a few minute fossil casts and white inclusions.

The second complete point (3748/2) from the mound fill has an asymmetrical triangular blade and shoulders with straight sides. The left shoulder is a small but distinct, obtusely-angled point; while the right shoulder is more pronounced and acutely-angled. The haft element is symmetrically straight sided with rounded basal corners and appears relatively long and broad in comparison to the blade. The piece is fashioned from a black, glossy, very fine grained variety of Upper Mercer flint with few small white and red inclusions or linear mottles.

The third complete point (3748/10) is actually broken with three pieces refitted, and the hinged impact fractured tip is missing. The blade is slender and elongated with slightly excurvate sides. The shoulders are weakly developed and basically are rounded corners. The haft element is relatively short in comparison to the blade with straight to slightly expanding sides and rounded, right-angled basal corners. Consequently, the haft element appears to be a squared stem. The piece is fashioned from a light gray to buff, dull, and grainy variety of Delaware chert with no mottles nor inclusions.

The two complete stemmed base points associated with Burial 2 at McMurray Mound I are distinctly different from each other in size. The larger point (3748/15K) has a relatively broad blade and is morphologically more similar to the Robbins than the Adena Stemmed point type. The lateral blade sides are slightly excurvate and the shoulders are asymmetrical; although both are rounded, obtusely-angled points. The haft element has straight to slightly tapering sides and rounded basal corners. The base exhibits a snap fracture, which appears to be purposeful rather than use damage. The fracture results in a straight base with a flat surface. The piece is fashioned from a light to dark gray, dull, and fine grained variety of Delaware chert with white and cream colored mottles.
The other complete point (3748/15J) from Burial 2 resembles the asymmetrically triangular blade point with the broad haft element (3748/2) from the mound fill. The point from Burial 2 also has one relatively straight blade edge correlated with a small but distinct, obtusely-angled rounded point shoulder. The other blade edge is slightly excursive and correlated with a more pronounced, acutely-angled, rounded point shoulder. The haft element appears relatively broad in comparison to the blade with straight to slightly tapering sides and rounded basal corners. However, the base is slightly convex rather than straight. The piece is fashioned from a buff to light gray, dull, and grainy variety of Delaware chert with no mottles nor inclusions.

The five points (all 3748/44F) associated with Burial 22, Feature 3 at McMurray Mound I exhibit several different point styles. One complete point resembles the Late Archaic, Lamoka point style and is distinctly different from all of the other stemmed base points. It has what appears to be a fracture base, but could also be a remnant of the original striking platform. The piece is short and narrow with a relatively long, symmetrical blade. The blade sides are slightly excursive and the shoulders are small, distinct, obtusely-angled, and rounded. The haft element is asymmetrical with the right being straight and the left being excursive. The piece is fashioned from a light to dark gray, semiglossy, and fine grained variety of Delaware chert.

One haft element and partial blade fragment is clearly a broken Robbins Stemmed point. A transverse break removed the distal half of the blade and a longitudinal break removed the right shoulder. The remaining portion of the blade indicates it was broad with a pronouncedly excursive left blade side. The shoulder is pronounced extending perpendicularly from the longitudinal axis with a rounded, right to slightly obtusely-angled corner. The haft element is relatively narrow in comparison to the blade and is symmetrically shaped. The haft element sides are straight to slightly tapering with a rounded base. The piece is fashioned from a light gray, dull, and fine grained variety of
Delaware chert with small mottles of yellow, white, and dark gray and minute white fossil inclusions.

Two of the points are morphologically similar in shape but not in size. They appear to be intermediary forms for the Robbins and Adena Stemmed point styles, as far as, blade length and width are concerned. The blade sides are excursive and the shoulders are distinct and right to slightly obtusely-angled, rounded corners. The blade and haft elements of both pieces are symmetrical. The haft element of the larger piece has slightly tapering sides, rounded basal corners, and a slightly convex base. The smaller piece has straight, parallel sides and a hinged fracture base. The hinged fracture does not appear to be the result of use wear, but the result of the initial flake removal process. The smaller piece is fashioned from a light gray, dull, and grainy variety of Delaware chert. The larger piece is fashioned from a black, glossy, and very fine grained variety of Upper Mercer flint. Neither piece exhibits mottling nor inclusions.

The last point from Burial 22 has a fractured base, for which it is not clear if the fracture is the result of use damage or represents a complete haft element. If it is a complete haft element, then it is extremely short with almost indistinguishable sides. The shoulders are indistinct and weakly rounded corners, represented by changes in the trajectories of the lateral edges. The blade sides are excursive and the has an overall, elongated oval outline shape. The piece is fashioned from a mottled light gray and yellow, semiglossy, fine grained variety of Vanport flint with smaller white mottles and narrow veins and a few small quartz inclusions.

The nine points recovered from Galbreath Mound exhibit a variety of shapes; however, the majority have short, broad blades suggesting the lateral edges have been reworked from originally larger blades. Consequently, it is not possible to accurately identify the point styles; although the broader blade points appear to be reworked Robbins Stemmed points. One large, complete Robbins Stemmed point (II/222) associated with
the unnumbered burial, Feature 110 is missing and presumed stolen from the Galbreath artifact collection. From photographs it appears to be exceptionally large and broad with the characteristic straight sided and rounded base haft element. It also appears to be fashioned from a light colored, fine quality chert, presumably Vanport flint.

Three other complete stemmed base points were recovered from Feature 110. One (I/55) was found in the vicinity of Burial 15 lying at the same level and to the east of the individual. It has a broad, triangular shaped blade with snap fractures of the shoulders, which were apparently barbed. The haft element is straight sided, with rounded basal corners, and a straight base. The haft element appears relatively long in comparison to the blade length. The piece is fashioned from a white and light gray mottled, semiglossy, very fine grained variety of Vanport flint with a few small quartz inclusions.

A second complete point (I/70) was found lying on the floor of Feature 110 along the western perimeter and in the vicinity of the cranium from Burial 10. The triangular shaped blade is short and broad with slightly excurvate sides. The shoulders are distinct, but obtusely-angled rounded corners rather than points. The haft element is relatively broad in relationship to the blade with straight, parallel sides, rounded basal corners and a slightly convex base. The piece is fashioned from a mottled light to dark gray, semitranslucent, very fine grained variety of Vanport flint with an occasional yellowish amorphous mottle and a few small quartz inclusions.

The third complete point (II/257) from Feature 110 was found lying on the right wrist of Burial 21. The triangular shaped blade is short and relatively narrow with straight sides. The shoulders are asymmetrical with the right being an indistinct, obtusely-angled point of intersection between the haft and blade elements. The right shoulder is distinct but small with a right to obtusely-angled, rounded corner. The haft element has straight parallel sides with rounded basal corners, and a straight base. The piece is fashioned
from a black, glossy, very fine grained variety of Upper Mercer flint with an occasional minute white fossil inclusion.

Two complete points were recovered from the extension of Feature 107 around the southern perimeter of Feature 108 and overlying the northern perimeter of Feature 110. One of these points (II/259) has a short, broad, triangular shaped blade with pronounced, acutely-angled, pointed shoulders extending perpendicularly from the longitudinal axis. The blade edges are slightly excurvate. The haft element sides taper slightly to a slightly convex or rounded base. The basal corners are distinct and right-angled. The piece is fashioned from a mottled white, yellow, light gray and dark gray, glossy, translucent, and very fine grained variety of Vanport flint with a few small quartz inclusions encircled by small white opaque mottles.

The other complete piece (II/268) from Feature 107 has an asymmetrical blade shape which approaches being pentagonal. The left shoulder is pronounced having an acutely-angled, rounded point extending perpendicularly from the longitudinal axis. The right shoulder is distinct, but has a rounded, right-angled corner rather than a point. The haft element is symmetrical with straight parallel sides and a rounded base. The raw material for this piece is similar, if not identical, to the raw material for the other complete point (II/259) from this feature. These two points were not directly associated with each other being vertically separated by approximately 30 cm.

From Feature 105, which is contemporaneous with Feature 107, came a complete corner notched point (II/271), which conforms to the Late Archaic, Vosburg point type description. The blade is an elongated triangular shape with straight sides. The shoulders are distinct, acutely-angled, rounded points. The notches are narrow and relatively deep, producing short expanding sides on the haft element. The haft element is exceptionally short with a slightly convex base. The piece is fashioned from a mottled light to medium gray, dull, and grainy variety of Delaware chert with a few minute white fossil inclusions.
One complete point (II/305) was recovered from the perimeter between the disturbed fill of the upper portion of Feature 108 and Feature 107, and was between Burials 35 and 40. The blade is symmetrically triangular in shape with slightly excurvate sides; but the shoulders are asymmetrical. The right shoulder is a pronounced, acutely-angled point; while the left shoulder is a distinct, obtusely-angled rounded corner rather than a point. The right shoulder is associated with a broad, shallow notch at the neck of the haft element. Except for the slight notch, the sides of the haft element are straight and parallel with rounded basal corners, and a relatively straight base. The piece is fashioned from a mottled light to medium gray, semiglossy, semitranslucent, very fine grained variety of Vanport flint with a few bands of brownish-yellow mottles and a few small quartz inclusions.

A burnt and fragmentary point (II/299 and 301), consisting of a tip and lateral blade edge, was recovered from the disturbed fill of Feature 108 immediately above Burials 36-39. These pieces crossmend with each other and with an haft element fragment (II/255) recovered from the western periphery of Feature 103. The haft element is also burnt, exhibiting several small potlids. The refitted pieces form a nearly complete point with a broad triangular blade having excurvate sides. The left shoulder is intact and has a pronounced, acutely-angled pointed tip oriented proximally. The shoulder configuration is produced by a broad, moderately deep corner notch. The sides of the haft element are slightly expanding with rounded, right-angled basal corners, and a convex or rounded base. The point appears to be an intermediary form between the Early Woodland, Robbins Stemmed point and the Middle Woodland, Snyders point type, and is distinctly different from the other points in this mound. Although burnt, the piece appears to be fashioned from a variety of Vanport flint, as evidenced by a few large quartz inclusions. In coloration the piece ranges from medium to dark gray and exhibits cracking and potlidding.
The most intriguing aspects of the points are their shapes and raw material types, which show recurrent patterns. Within a mound, the points tend to be morphologically similar, but not identical, in size and shape. But between mounds they are distinctly different. In many cases, the points do not conform to the described and named stemmed point types and fall within the unnamed flat base variety. Additionally, there are a couple examples where Adena and Robbins Stemmed points co-occur. Likewise, there are a couple occurrences of Late Archaic point types and a potential Middle Woodland point type. Since these occurrences are few, they might represent curation or reuse of found items for the Late Archaic points. The possible Snyders point is a different situation. It is not a "classic" Snyders point, lacking barbed basal corners; nor is it a "classic" Robbins Stemmed point, having an expanding stem base. The simplest interpretation is to label it a transitional form which would fit for the radiocarbon date of Feature 103.

**Cache Blades**

Two varieties of this artifact type, Adena leaf-shaped blade and Robbins leaf-shaped blade, are generally recognized and considered to be sequential in time (Dragoo 1963:180 and 205-207). An Adena leaf-shaped blade is morphologically characterized by a slender leaf shape in planview with the maximum width near the transverse midline, a rounded or convex base in planview, and a lenticular or biconvex transverse cross section outline shape. In contrast, a Robbins leaf-shaped blade is substantially wider in planview with the maximum width occurring near the rounded base. In addition, the biconvex transverse cross section is thinner.

A total of twelve, whole or broken, cache blades were recovered from three mounds including one from Burial 9, Feature 1 and one from the Shipley's excavation at Sidner Mound II; four from the artifact cache associated with Burial 22, Feature 3 at McMurray Mound I; and six from various contexts at Galbreath Mound. Not all of these items conform to the type-variety descriptions. The slender, or Adena leaf-shaped blades
have their maximum widths consistently occurring near the base or along the proximal one-quarter transverse line. Additionally, they are no thicker than the Robbins leaf-shaped blades and exhibit plano-convex, as well as, biconvex transverse cross section shapes, which also occurs amongst the Robbins leaf-shaped blades. At McMurray Mound I, non leaf-shaped blades occur which are best described as rounded bipointed, elongated ovals in planview outline shape. The maximum widths of these items do occur along the transverse midline.

From the fieldnotes for Sidner Mound II, a planview outline tracing of a leaf-shaped blade recovered by the Shipley's is recorded and labeled as being fashioned from Vanport flint. No longitudinal nor transverse cross section outlines is included. From the planview outline, the item appears to be a wide Adena leaf-shaped blade. The maximum length is approximately 115.0 mm and the maximum width approximately 55.0 mm, with the maximum width occurring along the transverse midline. The width-length ratio is .48 and intermediate between the ratios for the Adena (.36-.44) and Robbins (.57-.62) leaf-shaped blades from the other mounds. Although the piece is large, it appears to morphologically resemble Adena leaf-shaped blades more so than the Robbins.

A broken cache blade (3733.2/14) associated with Burial 9, Feature 1 at Sidner Mound II, also does not conform closely to the type-variety descriptions, but morphologically is more similar to the Robbins leaf-shaped blade. There is a transverse break of the distal one-quarter of the piece, preventing an accurate measurement of the maximum length. Hypothetical reconstruction of the tip suggests the piece could not have exceeded 55 mm in length. The maximum width of 35.6 mm occurs at the corners formed by the lateral sides and base. The sides are excruciate, the base convex, and the corners rounded; so the piece retains a leaf-shaped plan outline shape rather than a triangular one. The transverse cross section shape is biconvex with a maximum thickness of 8.1 mm. All edges are slightly sinuous and sharp. The piece is fashioned from a medium gray, dull
and grainy variety of Upper Mercer flint with an abundance of minute white fossiliferous inclusions.

Only one of the four cache blades (all 3748/44E) from Burial 22, Feature 3 at McMurray Mound I conforms to the Robbins leaf-shaped blade description. The other three are rounded bipointed, elongated ovals, two of which appear to be diminutive Adena leaf-shaped blades. The third is clearly oval with indistinct rounded tip ends. All four are fashioned from very fine grained, semiglossy varieties of Vanport flint, which varies in coloration.

The Robbins leaf-shaped blade was broken into several pieces, with the breakage lines radiating from a point along the longitudinal midline near the distal one-quarter transverse line. The tip was missing and the estimated length of the piece is approximately 85.0 mm and clearly not exceeding 90.0 mm. The maximum width of 56.0 mm occurs along the proximal one-quarter transverse line, giving the piece an estimated width-length ratio between .62 and .65. The transverse cross section shape is biplano with a maximum thickness of 10.3 mm. All of the edges are slightly sinuous and moderately rounded, with discontinuous minimal crushing.

The oval cache blade has a maximum length of 59.1 mm and a maximum width of 37.3 mm, giving a width-length ratio of .63 which is similar to those for the Robbins leaf-shaped blades. However, the maximum width occurs along the transverse midline rather than near the base. The transverse cross section shape is asymmetrically biconvex with a maximum thickness of 7.7 mm. The edges are slight to moderately sinuous and slightly rounded.

The two diminutive Adena leaf-shaped blades are of similar size and shape. One exhibits a transverse break along the transverse midline. The unbroken cache blade has a maximum length of 65.4 mm and a maximum width of 30.0 mm; while the broken one has a maximum length of 64.8 mm and a maximum width of 29.2 mm. The maximum width
occurs along the transverse midline of both pieces and the width-length ratio of .46 is the same for both. Both are biconvex in transverse cross section with a maximum thickness of 7.1 mm for the unbroken piece and 9.5 mm for the broken one. The distal tip is more acutely angled and distinct than the proximal tip which appears to be a narrowly rounded point on both pieces. The edges are slightly sinuous and slightly rounded.

One, apparently large Robbins leaf-shaped blade (1/26), is missing and presumed stolen from the Galbreath Mound collection. Type-variety identification was made from a planview photograph. This piece occurred isolated in the mound fill from the southeast perimeter of the mound. Two other Robbins leaf-shaped blades were recovered from this mound. One (II/310) came from the upper surface of the ashy lens deposit at the bottom of Feature 108 on which disturbed Burials 36-39 were resting. The other blade (II/265) was resting in a freshwater clam shell on the left shoulder of Burial 24, Feature 110.

The cache blade from the ashy lens deposit has a maximum length of 36.1 mm and a maximum width of 50.5 mm occurring along the proximal one-quarter transverse line and resulting in a width-length ratio of .59. The transverse cross section is concave-convex with a maximum thickness of 8.6 mm. The edges are straight and slightly rounded.

The cache blade from Burial 24 has a maximum length of 73.7 mm and a maximum width of 42.0 mm occurring along the proximal one-quarter transverse line with a resulting width-length ratio of .57. The transverse cross section is basically biplano with a maximum thickness of 8.2 mm. The edges are straight, slightly rounded and exhibit discontinuous minimal crushing. Both of the Robbins leaf-shaped blades are fashioned from varieties of Vanport flint; although the piece from Burial 22 has been burnt exhibiting a chalky white to gray exterior surface with several small potlids.

The remaining three cache blades from Galbreath Mound are morphologically similar to each other in size and shape being slender, elongated and leaf-shaped. They resemble Adena leaf-shaped blades, except that the maximum widths consistently occur at
the proximal one-quarter transverse line rather than the midline. One of these blades (II/203) occurred at the bottom of the western end of Feature 110 adjacent to Burial 10's cranium. The cranium represents the nearly completely disturbed remains of an extended burial on the feature floor, which was intruded by the pothunter's pit (Feature 106). The associated cache blade has a maximum length of 108.8 mm and a maximum width of 39.6 mm with a resulting width-length ratio of .36. The transverse cross section is plano-convex with a maximum thickness of 7.4 mm. The edges are straight and sharp, except the lateral edges along the distal third of piece which are slightly rounded. This piece is one of the two cache blades from the mound fashioned from a variety of Upper Mercer flint.

The other cache blade fashioned from Upper Mercer flint is also an Adena leaf-shaped blade (II/208) and occurred within Feature 103 associated with calcined human bone fragments and charcoal radiocarbon dated to 65 BC ± 100 years. The cache blade is not burnt. The maximum length is 99.2 mm and the maximum width is 39.8 mm resulting in a width-length ratio of .40. The transverse cross section is biconvex with a maximum thickness of 9.6 mm. The edges are relatively straight and sharp except for the distal third of the lateral edges which are slightly rounded. The morphological resemblances in size, shape and edge characteristics between the two cache blades fashioned from the same variety of Upper Mercer flint is uncanny.

The third Adena leaf-shaped blade (II/312) came from within the ashy lens deposit of Feature 108. It is fashioned from a variety of Vanport flint, which macroscopically is indistinguishable from the flint used to fashion the Robbins leaf-shaped blade (II/310) also occurring in this deposit. The Adena leaf-shaped blade exhibits a diagonal break beginning at the transverse midline on one side and extending proximally to the other side. This break may be recent because both faces of the piece are encrusted with ashy soil but none is adhering to the broken surfaces. The maximum length is 83.3 mm and the maximum width is 36.8 mm resulting in a width-length ratio of .44. The
transverse cross section is plano-convex with a maximum thickness of 6.8 mm. All edges are slightly sinuous and slightly rounded.

Drill

One complete drill (I/42) was recovered from Galbreath Mound. However, its exact provenience is not known, because it was recovered from the backdirt of an excavation unit. It occurred either along the eastern perimeter of Feature 110 or in the adjacent mound fill. It was discovered prior to the uncovering of Burials 8-14 and had to be at or above the level of the burials. Regardless of its exact location, the drill was clearly not in direct association with any burial or bone cluster.

The drill is fashioned from a buff to light gray, fine grained, semiglossy chert with small, circular white mottles and one fossil inclusion. The raw material is considered to be a variety of Vanport flint. The drill is straight with a stemmed haft element and has a maximum length of 69.4 mm. The maximum width of 18.2 mm and the maximum thickness of 10.1 mm occur at the juncture of the haft element and the drill shaft. The longitudinal cross section shape is plano-convex with the transverse cross section shape being asymmetrically biconvex rather than bitriangular. The drill shaft is 32.6 mm long and tapers to 4.9 mm in width and 3.2 mm in thickness at the snap fractured tip. The lateral edges of the shaft are relatively sinuous and sharp with no macroscopically observable use wear damage.

Hafted Endscraper

One stemmed hafted endscraper (3733.1/34) was recovered from the plowzone horizon on the periphery of Sidner Mound I. Consequently, it was not in direct association with any burial and its association with the construction and use period of the mound is problematical. The hafted endscraper appears to be a reworked broken stemmed point, with a straight sided, ovate base haft element.
The piece is fashioned from a mottled light and dark gray, semiglossy, and semitranslucent chert with white or cream colored, opaque mottles and a few small quartz inclusions. The raw material is considered to be a variety of Vanport flint. The piece exhibits a reworked edge along a transverse break of the blade, producing a symmetrically arcing convex shape in planview. The reworked edge exhibits crushing and moderate rounding, with slight rounding extending onto both lateral edges.

The maximum length of 59.3 mm occurs along the longitudinal midline with the maximum width of 34.0 mm located at the blade base. The maximum thickness of 11.7 mm occurs near the longitudinal center of the blade immediately adjacent to the blade base. The width of the reworked end is 27.0 mm and the thickness is 6.9 mm. The haft element is 23.9 mm long with a neck width of 19.1 mm and a base width of 16.5 mm. The piece weighs 24.5 gm.

**Unifacial Endscraper**

One unifacial endscraper (3733.1/2) was recovered from Sidner Mound I, either from the plowzone horizon or the mound fill; the fieldnotes are not clear on the exact provenience. Nevertheless, it was not in direct burial association. Six unifacial endscrapers were recovered from Galbreath Mound, only two of which can be attributed to feature fill context. One endscraper (II/290) was recovered from the disturbed fill at the level immediately above the disturbed Burials 36-39 in Feature 108. The other endscraper (II/242) occurred in the fill of Feature 107 along its eastern perimeter, where it overlaid Feature 110. A third endscraper (II/9) was recovered from the humus layer on the northeastern mound periphery and its association with the mound is problematical. The three remaining endscrapers (I/50-52) were recovered from backdirt related to the initial opening of excavation units on the southern side of the mound. It is not known if they occurred in the humus or mound fill, but were apparently not associated with any burial or bone cluster.
All of the unifacial endscrapers are fashioned from fine quality cherts including varieties of Vanport (I/51, II/9 and II/290), Upper Mercer (3733.1/2 and II/242), and Delaware (I/50 and I/52). The fine quality of the cherts was characterized by their fine grained and semiglossy appearances. All the endscrapers were fashioned from large, broad and thick flakes, presumably secondary decortication or primary thinning flakes. The dorsal surfaces exhibit broad, shallow to moderately deep flake scars with no cortex remnants. All of the endscrapers exhibit minimal macroscopically observable edge wear characterized by minimal, discontinuous crushing and slight, continuous rounding of the edge.

**Debitage**

Flakes, shatter, cores, and biface edge fragments were recovered from mound and feature fill contexts at all mounds except Sidner I. For all of the mounds except Galbreath, mound and feature fill was not screened and the recovery of debitage was a chance occurrence. Consequently, it is not surprising that a dozen or less pieces of debitage were recovered from any one mound. At Galbreath Mound, at least 54 pieces of debitage were recovered from feature fill context, with items occurring in all features. The number approximately doubles when surface and mound fill debitage is included. For all of the mounds, the debitage appears to be randomly dispersed. Only the debitage occurring in burial context will be considered in the following discussion. This excludes debitage intermingled with calcined human bone fragments, burnt earth and other artifacts from Features 103, 105, 107 and 109 and the ashy lens deposit of Feature 108 at Galbreath Mound.

At Sidner Mound II, eighteen thinning flakes (3733.2/35) were associated with the artifact cache from Burial 22, Feature 1. The flakes are generally large and heterogeneous for raw material; although varieties of Vanport flint predominate. One
unmodified tabular chunk (3733.2/70) of Delaware chert was included with the artifact cache from Burial 3, Feature 2 at Sidner Mound II.

At McMurray Mound I, two decortication flakes (3748/15C and G) of Delaware chert were part of the artifact cache associated with Burial 2, Feature 1. At Galbreath Mound, an unmodified blocky chunk (II/260) of Delaware chert was lying underneath the right tibia and fibula of Burial 21, Feature 110. Nine thinning flakes (I/57, 58, 62-64, 71, 72, and II/68 and 69) were scattered over the lower extremities of Burial 8, Feature 110. They were small thinning flakes and homogeneous for raw material type, Delaware chert. This was the only instance in which feature fill debitage clustered in such a manner and may indicate a burial associated cache of flakes.

**Chipped Slate Subrectangles**

Three subrectangular chipped slate items (II/57, 58 and 67) were recovered from Burial 22, Feature 110, Galbreath Mound. All of these items exhibit medium to large flake scars around their entire circumferences on both faces. These flake scars are relatively shallow to moderately deep and have predominately hinged terminations. Smaller flake scars tend to be restricted to the ends and corners, suggesting more attention was being focused on shaping these portions of the pieces. All three pieces are fashioned from fine grained, medium to dark gray slate with faint dark gray to black bands. Only one of the pieces (II/58) exhibits discontinuous grinding and polishing of the edges and portions of the side and end surfaces.

The largest piece (II/57) has the most irregular plan outline shape with slightly convex sides, straight right end, and a convex left end which could be considered a rounded point. Consequently, the right corners are well defined and basically right-angled; while the left corners are ill defined, situated where the sides begin to taper towards the left end. The maximum length of 157.0 mm occurs along the longitudinal midline with the lengths of the sides being 118.0 mm. The maximum width of 63.8 mm
occurs along the transverse line formed by the left corners, with the transverse midline width being 61.1 mm and the width along the right end being 26.4 mm. The longitudinal cross section outline shape is basically biplano with a longitudinal midline protuberance on the right half of the obverse face and on the left half of the reverse face. The maximum thickness is 13.2 mm and the piece weighs 161.0 gm.

The second largest piece (II/67) has a more uniform plan outline shape with straight sides and moderately convex ends. Except for the lower left, the corners are well defined and rounded. The maximum length of 119.7 mm occurs along the longitudinal midline with the maximum width of 57.8 mm occurring along the transverse midline. The longitudinal cross section outline shape is basically biplano with a maximum thickness of 10.1 mm. The piece weighs 109.9 gm.

The smallest piece (II/58) has the most uniform plan outline shape with straight to slightly concave sides and straight to slightly convex ends. The longitudinal cross section outline shape is not symmetrical because of a longitudinal midline protuberance resulting in a convex-plano shape rather than biplano. The maximum length of 97.2 mm occurs along the longitudinal midline with the maximum width of 56.7 mm occurring along both ends. The width along the transverse midline is 54.4 mm; while the maximum thickness is 14.6 mm. The piece weighs 123.8 gm. The lower side and left end have flat surfaces produced by grinding and polishing.

These items represent an unique artifact type not reported from other mounds in the region. They appear to be unfinished items and it is tempting to interpret them as representing an intermediary gorget production stage. However, they could be functionally interpreted as hoes or celts. Support for the unfinished gorget interpretation rests on their relative uniform thinness and attempted biplano longitudinal cross section shape. Additionally, the polished and grounded flat surface end and side of the smallest piece tend to such an interpretation.
The purposeful placement of these apparently unfinished items with a single interment presents a second interpretative problem. Do these items represent objects unfinished by the interred individual or are they hastily and incompletely produced objects by others to be included with the interment and thus signify the untimely death of the individual? If these items truly represent gorgets, then their unfinished nature and their identical raw material type suggests they were produced by others for inclusion with the interment. It would seem reasonable that if these items were the possession of the interred individual, then one object would have been completed prior to initiating the production of second object, much less a third. However, all three objects appear to be roughly shaped to the same degree.

If this interpretation is valid, then the context of these items provides some insight on the social meaning behind gorgets. Multiple occurrences of finished gorgets with select individuals have been documented at Sidner Mounds I and II, and possibly at Hambleton Mound if the burnt earth deposit represents a cremation. Finished gorgets appear to be personal possessions of the interred individuals based on their morphological similarities within a mound, their variability between mounds, and their contextual associations with the interred individuals suggesting they were objects of personal adornment. Clearly, these items could have served as signifiers of additional social meanings, such as group identity symbols. It is the unfinished nature of the items with Burial 22 at Galbreath Mound and their alignment along side of the body, which suggest certain individuals required the inclusion of such objects at their interment. Thus, certain individuals appear to have a social status distinct from the majority and the question becomes one of determining if individual or group status is being symbolized. The distribution of gorgets suggests they are group symbols, but the type of social group represented and the role of the individual are not clear.
Bone Awl

The complete or fragmentary remains of at least eleven bone awls were recovered from McMurray Mound I, four at Sidner Mound II, and six at Galbreath Mound. The primary raw material source for fashioning bone awls appears to be the distal end of a deer cannon bone. However, an awl fashioned from a rib and another fashioned from a scapula, both presumably deer, were recovered from Galbreath Mound.

The bone awls appear to be fashioned by the longitudinally cutting of the shaft leaving about half of the shaft circumference intact. The lateral edges are then cut or whittled to produce sides tapering to a tip. The sides then appear to be ground, as evidenced by partially obliterated cut marks, to either flat surfaces or rounded edges with the tip area ground to a subrectangular, oval, or circular transverse cross section shape. All unburnt shafts and tips exhibit a polished exterior surface, which may represent either the final production stage or use wear.

There appears to be two length varieties of distal deer cannon bone awls represented by the complete pieces. A long, slender and narrow variety has a maximum length consistently in the range between 145.0 and 160.0 mm. A short, broad and thick variety has a maximum length ranging between 105.0 and 130.0 mm. A primary difference between the two varieties is the angle at which the lateral sides taper, and it could be the shorter pieces are reworked longer ones. Both distal deer cannon bone awls varieties occur together in single burial context in Burial 2, Feature 1, and Burial 22, Feature 3 from McMurray Mound I.

The rib bone awl (II/332 and 338) and the scapula bone awl (II/314) from Galbreath Mound appear to be portions of larger objects, since their proximal ends are broken. The sides of the shafts and the tips of both items appear to be fashioned in a similar manner to the distal deer cannon bone awls. Both of these items were recovered from the ashy lens deposit at the bottom of Feature 108, on which disturbed Burials 36-39.
were resting. The rib bone awl rested on the ashy lens adjacent to Burial 37; while the scapula bone awl came from within the lens near the bottom of the deposit. Neither object was burnt but showed a slightly weathered surface encrusted with ashy soil.

The four remaining bone awls from Galbreath Mound are represented by fragments, which appear to be portions of deer cannon bones. One awl tip (II/246) came from the pothunter's pit (Feature 106) and may represent the remnant of an object removed from the site. A charred midsection fragment (II/267) was recovered from the disturbed fill of the upper portion of Feature 108 at or slightly below the level of Burial 35. Another charred midsection (II/344) came from the upper level of Feature 107 in association with calcined human bone from either Bone Cluster 10 or 11. Fragments of an immature distal deer cannon bone awl (II/351) were recovered from the vicinity of disturbed Burial 18.

At McMurray Mound I, two complete bone awls, one long (3748/15D) and one short (3748/15B) varieties, were recovered from Burial 2, Feature 1. Three complete awls, two short and one long varieties, along with two tips (all 3748/44I) were recovered from Burial 22, Feature 3. In both cases, the awls were part of burial artifact caches, considered to represent chipped stone toolkits. One awl tip (3748/45) was associated with Burial 7, Feature 2, and one tip with several uncrossmendable shaft fragments (3748/46) were associated with Burial 16, Feature 6. Two undescibed bone awls were noted to have been recovered during Shipley's previous excavation.

At Sidner Mound II, one nearly complete, short variety awl (3733.2/36) was part of a burial artifact cache associated with Burial 22, Feature 1. One complete, long variety awl (3733.2/71) was part of a burial artifact cache associated with Burial 3, Feature 2. One complete, short variety awl (3733.2/22) was associated with the skull of disturbed Burial 13, Feature 1. One complete awl (3733.2/53) associated with Burial 29, Feature 1 was on museum display and unavailable for observation.
Bone Pin

Complete or fragmentary remains of three bone pins were recovered from burial or mound fill contexts at McMurray Mound I. The occurrence of this artifact type in mound association is unique for the region and appears to be for mounds in general, since it is not included in the trait list for Adena mounds (Webb and Snow 1974 and Webb and Baby 1957), and is noted for three mounds by Greenman (1932) only if the term bone needle is considered synonymous with bone pin. Such a consideration seems plausible for only one of the three bone pins from McMurray Mound I.

A nearly complete bone pin (3748/42A and B) was recovered from Burial 24, Feature 7. A second complete bone pin (3748/151) was included with a cache of artifacts, considered to represent a chipped stone toolkit, associated with Burial 2, Feature 1. Both of these objects were originally interpreted as a bone awl and a "chipping tool", respectively (Baby and Zierhut 1966:5 and 10). A proximal fragment of a drilled and incised bone pin (3748/56) was recovered from the mound fill in Square 25R1, but was not described in the preliminary report. Consequently, through misidentification and lack of reporting, the conclusion of the absence of bone pins in mound burial context was perpetuated.

The primary criterion used to distinguish bone pins from bone awls is the long, narrow shaft, which tends to be circular or triangular in transverse cross section outline shape. Bone pins tend to be fashioned from the more slender animal long bones, for which little modification of the shaft is needed, other than cutting and polishing the distal tip. Exposure of the marrow cavity or cancellous bone of epiphyses does not occur, as in bone awls, since the shaft is not cut longitudinally.

The only exception to these general characterizations is the drilled and incised proximal end fragment (3748/56), which is fashioned from a flat bone, presumably a rib. In this case, only a small portion of the shaft remains intact and appears to have two flat
opposing faces with flat and narrow sides, producing a rectangular transverse cross section outline shape. The size of the piece indicates the shaft was already slender and narrow at its proximal beginning.

The function of the bone pins is an unresolved issue. The proximal ends of the drilled and incised fragment and the larger of the two complete items (3748/151) are substantially wider than the shaft indicating they would not serve efficiently as needles. The smaller of the two complete items (3748/42A and B) has a circumferential notch separating the proximal end from the shaft with the proximal end being slightly narrower and thinner than the shaft. Consequently, this item could have served as a needle. Both of the complete items were placed adjacent to the cranium of their respective burials (Baby and Zierhut 1966:5 and 10). Although the portion of the skull (ie. front, side or back) next to which they were placed is not specified, it is possible these items served as hairpieces. The diagonally cut and polished distal end of the largest piece was clearly not fashioned as a piercing or penetrating tip. On the other hand, the cut and polished tip of the smaller complete piece could easily have functioned as a needle.

The largest complete piece, associated with Burial 2, Feature 1, was fashioned from the proximal half of a dog/wolf fibula. The piece is 128.0 mm long with the shaft tapering from an oval (7.8 mm by 10.2 mm) cross section shape to a circular (5.7 mm diameter) shape at the diagonally cut distal tip. The piece weighs 6.7 gm.

The smaller complete piece, associated with Burial 24, Feature 7, consists of two crossmended pieces. The surfaces of the transverse shaft break are sharp edged indicating recent breakage; whereas, a snap fracture of the distal tip appears to be an old break. The piece is 78.4 mm long with a triangular transverse cross section outline shape. The maximum width of 7.2 mm and the maximum thickness of 6.2 mm occur at the shaft break. The shaft is circular in cross section shape at the snap fracture of the distal tip with a 2.1 mm diameter. A circumferential notch of the shaft is located 7.7 mm from the proximal
end. The shaft diameter at the notch is reduced to 4.1 mm, while the proximal end has a 5.4 mm width and a 4.2 mm thickness. The piece weighs 3.0 gm.

The drilled and incised proximal fragment recovered from the mound fill is fashioned from a flat bone. The broken piece is 27.0 mm long and retains a small portion of the shaft. The maximum width of the proximal end is 14.8 mm which reduces to 9.0 mm where the shaft begins. There are two flat faces with thin flat sides. The piece has an uniform thickness of 2.3 mm. A centrally placed hole on the proximal end is drilled from both faces. Exterior hole diameter is 3.5 mm tapering to a 2.5 mm interior hole diameter. Incising takes the form of V-shaped cut marks along the narrow sides. Beginning at the proximal end, the cut marks occur singly and widely spaced. Where the shaft begins there are three closely spaced cut marks. There appears to be an attempt at bilateral symmetry in the number and placement of the cut marks. The cut marks are narrow and extend only 1 mm into the piece.

Longitudinally Cut/Split Animal Long Bone Pieces

This artifact type is somewhat synonymous with the recognized artifact types termed, flat bone section spatula and metapodial bone of elk spatula (Webb and Snow 1974:97). In considering the first term, longitudinally split and cut sections of the larger long bone shafts of large mammals, presumably deer, were recovered from McMurray Mound I, Sidner Mound II, and Galbreath Mound. However, not all have been "worked down" to a flat, blunt blade. The only common morphological attribute shared by these items is their elongated rectangular plan outline shape. For the second term, longitudinally split metapodial bones from McMurray Mound I and Sidner Mound II are fashioned from deer rather than elk bones and are indistinguishable from the split long bone shaft pieces, except for the retention of the proximal epiphysis on one end. In addition, at Sidner Mound II, there is one fragmentary split long bone piece fashioned from the distal end of a deer radius.
Seven longitudinally cut/split long bone pieces were recovered from McMurray Mound I including three (3748/15F, H and L) from the artifact cache associated with Burial 2, Feature 1; one (3748/44H) from the artifact cache associated with Burial 22, Feature 3; two (3748/50 and 55) from unprovenienced mound fill, one of which is a proximal deer cannon bone piece; and one from the previous Shipley's excavation. Two of the split long bones (3748/25H and L) from Burial 2 were originally reported as worked antler pieces (Baby and Zierhut 1966:16 and Figure 51).

The three pieces from Burial 2 range in maximum length from 45.0 to 74.7 mm, from 15.4 to 16.1 mm in maximum width, and 4.8 to 6.3 mm in maximum thickness. In planview, the sides are straight and the ends are convex. The sides and ends are flat with smooth surfaces on the ends and series of closely spaced, transversely oriented cut marks along the entire lengths of the sides. Only the longest piece exhibits polished surfaces on the sides and ends. All edges and corners are well rounded.

The piece from Burial 22 has a maximum length of 52.4 mm, a maximum width of 16.3 mm, and a maximum thickness of 5.2 mm. The sides are flat and exhibit cut marks; while the ends have smooth, rounded or convex surfaces. The edges and corners are well rounded but none of the surfaces appear polished.

The proximal deer cannon bone piece from the mound fill is longitudinally split in half producing a semicircular transverse cross section outline shape. The maximum length is 71.5 mm and the maximum width, excluding the unmodified proximal end, is 16.6 mm. The maximum thickness is 7.1 mm, which refers to the bone thickness on one side rather than the height of the piece at the cut distal end. The sides and distal end are straight in planview, having flat and smooth surfaces which exhibit cut marks. Edges and corners are distinct and moderately rounded. There is no indication of any polished surfaces.

The split long bone piece from the mound fill was not measured but is relatively of the same size and shape as the other long bone shaft pieces. The piece appears to be
unmodified, since the sides and ends have irregular surfaces and the edges and corners are distinct and fairly sharp. In planview, the sides are relatively straight and the ends are asymmetrically convex.

At Sidner Mound II, a distal deer radius fragment and at least 9 shaft fragments (3733.2/39) were recovered from the cache of artifacts associated with Burial 22, Feature 1. None of the fragments could be crossmended. The identification of this item as a longitudinally cut/split long bone rather than a bone awl rests on the presence of transversely oriented cut marks on lateral side fragments, since most of the bone awls were observed to have diagonally oriented cut marks. In addition, the larger shaft fragments with lateral sides appeared to have straight rather than tapering sides. Finally, no tip was associated with the fragments.

A longitudinally split proximal cannon bone of an immature deer, along with the unfused epiphysis (3748/78) were recovered from Feature 1 fill at Sidner Mound II. The piece is unmodified exhibiting no cut marks and irregular surfaces on the sides and distal end. It conforms to the relative size and shape of the split and cut proximal deer cannon bone from the mound fill at McMurray Mound I.

The two longitudinally split long bone shaft pieces from Galbreath Mound are smaller and fashioned differently from those at McMurray Mound I. One piece (II/72) occurred in Feature 107 on its southeastern periphery where it overlaid Feature 110. It was unburnt but occurred intermixed with calcined human bone fragments and burnt earth nodules. The piece exhibited no cut marks, but the surfaces of the sides and ends were flat, smooth and appeared to be polished.

The other piece (II/330) occurred in Feature 110 amongst the bones of the disturbed portion of Burial 30. It has a maximum length of 29.4 mm, a maximum width of 12.8 mm, and a maximum thickness of 3.7 mm. Only one end has been modified; the other end and sides being relatively straight with irregular surfaces and distinct relatively
sharp edges. The modified end exhibits cut marks and a polished surface resulting in a flat beveled end. Beveling is from the marrow cavity edge outwardly towards the exterior surface edge. In planview, the modified end is slightly convex.

**Bone Comb**

Fragments of at least one bone comb, consisting of four broken teeth (II/302 and 308) were recovered from Feature 108 at Galbreath Mound. Three of the teeth (II/308) were lying clustered adjacent to the crania of subadult Burial 37A and adult Burial 36 in the ashy lens deposit on which the burials were resting. The fourth tooth (II/302) was found within the ashy lens deposit and not directly associated with burials and may represent the partial remains of a second bone comb. Morphologically, the isolated bone comb tooth is distinct from the three adjacent to Burials 36 and 37A. Additionally, it has a charred and polished exterior surface; whereas, the other three are unburnt, exhibit no evidence of surface polish, but are encrusted with the ashy soil in which they rest.

All four of the bone comb teeth are differentiated from bone awl or pin tips by a set of recurring morphological attributes. They have two relatively flat opposing faces with rounded lateral sides. The tips are narrowly rounded points, and the narrow, thin shafts taper uniformly from the broken proximal ends towards the tips. For the three clustered comb teeth, their broken proximal ends retain small portions of the comb base, which also appears to have flat faces and thin sides oriented along the same plane as the flat faces of the teeth.

In the case of the three associated bone comb teeth, the fragments are of relatively uniform length, ranging from 40.3 to 45.3 mm. The widths are also uniform ranging from 6.1 to 7.6 mm at the broken proximal end, tapering to a range of 5.1 to 5.6 mm at the midshaft, and from 1.1 to 2.1 mm at the tip. Thicknesses are uniform ranging from 3.4 to 4.8 mm at the proximal end, from 2.0 to 3.4 mm at the midshafts, and from 0.7 to 1.7 mm
at the tips. Consequently, they tend to weigh approximately the same amount, between 0.6 and 0.8 gm.

The isolated bone comb tooth exhibits fractures of both the proximal and distal ends making shorter than the other three. However, projecting the trajectory of tapering sides to hypothetically reconstruct the tip, it would be only slightly shorter than the other three. The width at broken proximal end is 8.2 mm, at the midshaft 5.3 mm, and at the tip 2.4 mm. The thickness reduces from 3.0 mm at the proximal end to 2.2 mm at the midshaft and 1.6 mm at the tip. In width and thickness, it is comparable to the other three teeth. The primary difference between the isolated bone comb tooth and the other three lies in the transverse cross section outline shape. All four have a biplano longitudinal cross section shape, but only the isolated tooth has a biplano transverse cross section shape. The other three have a concave-convex transverse cross section shape.

The identification of teeth from one or two bone combs represents an uniquely occurring artifact type for the region at Galbreath Mound. It is tempting to interpret these items, especially the three associated with the crania of Burials 36 and 37A, as remnants of an hairpiece or an object of personal adornment. This can not be conclusively demonstrated because of the prehistoric disturbance of the burials in the lower level of Feature 108 and the prehistoric mortuary practice of placing inhumations on deposits of cremated human bone, which contain both burnt and unburnt artifacts. The isolated bone comb tooth is clearly incorporated in such a deposit and the other three are in a problematical context.

**Bone Pendant**

Two modified, irregular animal bone items (both 3733.2/63), interpreted as bone pendants, were recovered from Burial 1, Feature 2, Sidner Mound II. Both items were fashioned from the glenoid cavity portion of deer scapulae. The articular surfaces (superior face) are intact, although the margins have been cut away. The glenoid cavities
have been cut away from the remainders of the scapulae exposing the cancellous bone on the inferior face and discontinuously on the circumference. The resulting profile cross section outline shape is concave-convex, with the plan outline shape being irregular but basically circular. Around the circumference, the edges are rounded and polished. Both pieces have a single, relatively large, centrally placed drill hole.

The larger of the two items has a longitudinal diameter of 53.1 mm and a transverse diameter of 45.3 mm. The maximum thickness is 16.3 mm and the piece weighs 15.1 gm. In contrast, the smaller piece is more circular in planview with a longitudinal diameter of 35.8 mm and a 32.4 mm transverse diameter. The maximum thickness is 7.9 mm and the piece weighs 4.9 gm. The drill hole of the larger piece is 10.3 mm longitudinally by 9.6 mm transversely; while the smaller piece has a symmetrical drill hole with a maximum diameter of 9.6 mm.

These items represent a unique artifact type not reported from the other mounds in the region. Their co-occurrence with a particular individual suggests idiosyncratic use of a particular raw material for the manufacture of a pendant. However, in general size and shape they resemble the unprovenienced sandstone discs from McMurray Mound I. Likewise, they exhibit a basic morphological resemblance to circular shell gorgets, except for the lack of smaller, marginally placed drill holes, recovered from a number of Glacial Kame burial sites in the central Ohio region (Converse 1980:52). Obviously, morphological similarity does not necessarily imply functional similarity, and the lack of detailed contextual information prevents total acceptance of the interpretation of these items as pendants. Their occurrence with a burial in which the only other artifacts are shell beads, suggests they are bone pendants and the single large barrel-shaped shell bead may have served as a spacer between them.
**Unmodified Animal Bone**

Included in this artifact type are animal bones from burial context which exhibit no modification and do not have apparent tool functions. Such objects are generally referred to as ceremonial, implying they serve as symbols in some social, political, or religious sense. Since the occurrences of these unmodified animal bones are unique, they could be personal possessions having meaning only to the individual, such as a fetish or talisman. Excluded from this artifact type are the complete or partial remains of burrowing animals; which could, and probably do, represent post depositional site disturbances. Also excluded from this artifact type are five charred animal long bone fragment (11/53, 225, 325, 334, and 353) which appear to be bird bones but could not be accurately identified and 19 charred cranial and long bone fragments, originally assigned object inventory numbers but are burnt human bone fragments. All of these charred bone fragments occurred either in the disturbed fill portion of Feature 108 or in Feature 103 at Galbreath Mound.

From McMurray Mound I, a nearly complete deer vertebra (3748/44B) was recovered from the artifact cache associated with Burial 22, Feature 3. Portions of the processes have been broken off, but the damage appears to be recent. The preliminary report suggests this object was possibly a totem symbol (Baby and Zierhut 1966:17). It is just as possible, the vertebra was meant to be fashioned into a bone pendant, similar to those from Burial 1, Feature 2 at Sidner Mound II, which were fashioned from the glenoid cavities of deer scapula.

From Galbreath Mound, a proximal humerus fragment of a large bird (11/320), such as a swan or goose, was included with the remains of Burial 22, Feature 110 in the human skeleton collection and assigned human bone inventory number 11/657. The remaining portions of the bone have yet to be located in the collection. It is tempting to interpret this fragment as representing a feathered wing used as a fan or drapery over the
interred individual. Circumstantial evidence supporting this contention is the cache of artifacts accompanying this individual, which suggests some form of status differentiation. However, the physical evidence, the remaining bones of the wing, is lacking and the contention can not be conclusively affirmed.

From Hambleton Mound, an innominate fragment from an immature, medium sized mammal (no accession number) was observed in the human skeleton collection from Burial 1, Feature 2. This object was not identified in the field nor in the published report (Potter 1967), and its provenience in relationship to the body is not known. This fragment consists of a portion of a pubis and ischium, which are fused, but the pubic symphysis is not. The broken ends do not appear to be recent and the remaining portion of the innominate was not present in the collection. Consequently, an accurate identification of what animal is represented has not been attempted. It is tempting to interpret the piece as an object worn in much the same manner as a gorget or pendant; but there is no direct nor contextual evidence to support this contention.

The unique occurrence of a single unmodified animal bone in association with a particular burial from each of three mounds presents an interpretative problem. The fact that the bones are from different animals and different portions of the skeletons complicates the interpretation, as well as, the lack of contextual information. These objects could represent social group symbols, since they are mound and gender specific in occurrence; or they could represent idiosyncratic behavior. Likewise, the lack of reported occurrences of similar objects from other mounds of neighboring regions provides no additional insight into their meaning.

Animal Maxilla

Three carnivore maxillae were recovered in burial associations from Sidner Mound II. A worked wolf/dog maxilla (3733.2/52) was recovered from Burial 29, Feature 1, a cremation deposit lying on the thoracic cage of Burial 31. The object was on museum
display and unavailable for analysis, although it was noted to be unburnt. A skunk maxilla (3733.2/72) consisting of a complete palate and dentition was associated with Burial 3, Feature 2, along with a partial wolf/dog maxilla (3733.2/73). The maxilla fragment contained the canine and incisors and appeared to be cut and polished along the midline. No drill holes were observed on either maxilla.

Longitudinally Split Rodent Incisors

Longitudinally split rodent incisors, presumably beaver, were recovered only from McMurray Mound I and Galbreath Mound. One split incisor (3748/44D) was part of the artifact cache associated with Burial 22, Feature 3 at McMurray Mound I. Six split incisors were recovered from Galbreath Mound. Two incisors (II/71 and 254) were recovered from the pothunter's pit (Feature 106) and presumably were originally from the disturbed portion of Feature 110. One incisor (II/233) occurred under the left tibia and fibula of Burial 22, Feature 110; while another (II/285) occurred beneath the left femur of Burial 24, Feature 110. A third incisor (II/206) from Feature 110 was in the vicinity of Burial 20; but its exact position relationship is not recorded, although it appears to be at a level immediately above the upper portion of the skeleton. The last incisor recovered from Galbreath Mound occurred in the disturbed fill portion of Feature 108 immediately above Burial 37A.

Animal Claw

An animal claw (3748/44D) occurred in association with Burial 22, Feature 3, McMurray Mound I. Originally, the claw was postulated to be a potential remnant of a medicine bag (Baby and Zierhut 1966:10). The claw is from a snapping turtle and exhibits longitudinal grooves on both lateral sides and a smooth concave articular on the proximal end. The maximum length is 14.2 mm, the maximum width of the proximal end is 4.7 mm, and the maximum height of the proximal end is 5.1 mm. The claw may be associated with
one of the fragmentary turtle carapaces also found with Burial 22. As such, they could represent the remains of a rattle rather than a medicine bag or some form of container.

Turtle Carapace And Long Bones

The fragmentary remains of turtle carapaces and long bones were recovered from McMurray Mound I, Sidner Mound I, and Galbreath Mound. At McMurray Mound I, one fragmentary snapping turtle carapace and two fragmentary painted turtle carapaces (3748/44K) were associated with the cache of artifacts associated with Burial 22, Feature 3. A snapping turtle claw but no long bones was also part of the cache. One carapace fragment and two long bone fragments were observed in the human skeleton collection for the miscellaneous bones from Feature 2 fill at Sidner Mound I. The miscellaneous bones represent the disturbed remains from subadult Burials 2 and 5/6 and the turtle remains were apparently misidentified as human infant bones. A similar situation is evident for Bone Cluster 14, Feature 103 at Galbreath Mound, where several carapace and long bone fragments were misidentified as human infant remains. However, infant human bones did occur in this bone cluster, just as with the miscellaneous bones from Sidner I.

None of the turtle remains from any of the mounds exhibit cut marks, drill holes, or edge grinding. Turtle carapaces have been interpreted as spoons (Webb and Snow 1974:98) or as containers (Dragoo 1963:174). In the descriptions there is no mention of whether or not the edges are modified nor if they are accompanied by long bones or claws. There is an indication that they occur infrequently and only with caches of burial associated artifacts. Therefore, only the carapaces from McMurray Mound I can be considered as representative of this artifact type. Still, the snapping turtle carapace presents an interpretative problem, since a claw was also present. It seems reasonable the snapping turtle carapace could have represented a closed container, such as a rattle. No definitive conclusion can be drawn for the incomplete turtle remains from disturbed
contexts at Sidner I and Galbreath Mounds. However, an interesting aspect is their association with subadult remains at both mounds.

**Antler Tine Points**

Two objects interpreted as antler tine points (II/226 and 227) were resting in the pelvic basin on the right innominate and sacrum of Burial 20, Feature 110, Galbreath Mound. Since Burial 22’s feet were also resting on Burial 20’s pelvic basin, the antler points were adjacent to Burial 22’s left foot and may be part of the artifact cache aligned along the left leg. These objects resemble the antler tine flakers from the chipped stone toolkits associated with Burial 22, McMurray Mound I and Burial 22, Sidner Mound II. The principal distinctions between the points and flakers are the socketed proximal ends and the impact fractures of the distal tips evident of the points.

The only apparent modifications of the antler tines are the cut and socketed proximal ends. Both pieces have a slight natural longitudinal curvature. The larger piece (II/226) has a minimum length of 89.1 mm, with a maximum width of 22.8 mm and maximum height of 13.4 mm at the proximal end. The shaft tapers naturally to a width of 8.3 mm and a height of 8.1 mm at the distal break. The hole tapers to rounded narrow end extending 26.0 mm into the piece and having external dimensions of 9.5 mm in width and 5.5 mm height. The piece weighs 12.5 gm. The smaller piece (II/227) has a minimum length of 79.5 mm. It has a more uniform circular transverse cross section outline shape with a 15.6 mm diameter proximal end and a 4.4 mm diameter at the distal break. The hole is not circular having an 8.0 mm width and a 6.6 mm height. The sides of the hole are straighter, tapering slightly to a rounded end, with the hole extending 19.0 mm into the piece. The piece weighs 9.4 gm.

**Antler Tine Flakers**

Subsumed under this artifact type are antler tine tips, antler tine midsections, and extensively modified antler tines, which for a lack of better words resemble a bar or rod.
Antler tine tips occur in various lengths but consistently exhibit blunt, rounded tips and broken proximal ends. Some of the longer pieces have lengths similar to the antler tine points and may be considered to be complete pieces. However, their proximal ends are transversely broken rather than cut. Antler tine midsections are simply pieces where the proximal and distal ends have been broken and the function of the piece can not be determined since the exterior surface is unmodified. Antler tine bars or rods have blunt ends which are faceted rather than rounded. In one case of a complete piece, both the proximal and distal ends were blunted. Modification of the shaft also occurs producing straight sides in planview and uniform thicknesses along their entire lengths. Antler tine bars/rods and midsections occurred only at Galbreath Mound; while tips were recovered from McMurray Mound I, Sidner Mound II, and Galbreath Mound.

Five antler tine tips (all 3748/44J) were part of the chipped stone toolkit associated with Burial 22, Feature 3, McMurray Mound I. Two of the pieces are short antler segments restricted to the blunt tip and presumably are broken items. The other three approach the length of the antler tine points from Galbreath Mound and are morphologically indistinguishable from them, except for their unworked proximal ends. One antler tine midsection (3748/51) was recovered from an unspecified location in the mound fill at McMurray Mound I. The proximal end is broken rather than cut and the distal tip has been snapped off. It is of similar length as the complete tines from Burial 22. A marginal fieldnote indicates a worked antler piece was recovered during the Shipley's previous excavation of this mound. Presumably the item was an antler tine and came from the pit burial.

One antler tine tip (3733.2/37 and 38) was part of the chipped stone toolkit associated with Burial 22, Feature 1, Sidner Mound II. Originally, this item was accessioned as two separate items, a bone awl tip and a chipping tool. However, the
pieces crossmend and are definitely antler. What is not clear is if the crossmended pieces
represent a complete piece since the proximal end is broken.

One antler tine tip (II/352) and two midsections (II/272 and 313) were recovered
from Feature 108, Galbreath Mound. All three are burnt exhibiting partially calcined
exterior surfaces and completely charred cores. The tip came from the ashy lens at the
bottom of the feature upon which the disturbed Burials 36-39 were resting. It does not
appear the tip was directly associated with any of the burials. The two antler midsections
were in the disturbed fill of the feature immediately above the burials and were associated
with Bone Clusters 5 or 6. The antler tip could not be crossmended with either
midsection fragment.

Two antler bars/rods (II/256 and 318) were recovered from the southern portion
(Feature 105) of the large feature containing artifacts, calcined human bone fragments,
and burnt earth at Galbreath Mound. The nearly complete item (II/256) has a cylindrical
shaft with blunt, faceted ends and resembles a rod. The shaft has an oval transverse cross
section outline shape with an uniform width of 10.4 mm and an uniform height of 8.5 mm
along its entire length. The maximum length is 81.6 mm and the piece weighs 8.4 gm. One
end has two facets producing a midline ridge or edge, which is distinct but well rounded.
The opposite end is partially damaged but appears to be also double faceted. The piece is
unburnt but appears to have a weathered exterior surface and is encrusted with a white to
gray powdery substance, presumably calcined bone ash.

The incomplete piece (II/318) consists of an end fragment with 28.1 mm of the
shaft intact and exhibiting a diagonal transverse break. The shaft is flat-sided producing a
rectangular transverse cross section outline shape with a width of 9.6 mm and a thickness
of 6.3 mm. The flat faces do not taper towards the side edges and only slightly towards
the end. The flat surfaces of the sides taper towards the end and the end is slightly convex
in planview, with its surface appearing as a faint but perceptible double facet. The end is 8.4 mm in width and 6.3 mm in thickness. The piece is charred but not calcined.

The antler bars/rods conform to the general description of an antler flaking tool, except they do not have a heavy spatulate form (Webb and Snow 1974:97). The antler tine tips and midsections are basically similar morphologically to antler drifts (Webb and Snow 1974:97). However, they do not exhibit the use-wear damage on their ends used to infer their function as indirect percussion flaking tools. Since they occur in burial associated artifact caches consisting of chipped stone tools, they are interpreted as antler flakers implying a pressure flaking function.

**Antler Handle**

A socketed handle (3733.2/48) fashioned from the base of a deer antler was associated with either Burial 26 or 27, Feature 1, Sidner Mound II. All sides are flat with relatively straight, rounded edges producing a general rectangular outline shape in both longitudinal and transverse cross section views. The cut distal end is also flat, ground and slightly polished. The edge formed by the junction of the distal end and the top side is slightly beveled. The maximum length of 58.5 mm occurs along the longitudinal midline, with the maximum width, measured at the distal end, being 25.6 mm and the maximum thickness or height being 23.0 mm. The socket hole is centered on the distal end and has a maximum diameter of 11.5 mm. The hole extends into the piece for approximately two-thirds of its length with the sides tapering gradually to narrow rounded end. The piece weighs 34.1 gm.

**Freshwater Clam Shells**

Freshwater clam shells were recovered from burial associations in all mounds except Hambleton. This artifact type has been functionally interpreted as representing spoons when the edges have been cut and ground to produce a rectangular shaped item in planview outline and when edge use wear is apparent (Webb and Snow 1974:98). Most of
the clam shells recovered from the Darby Creeks mounds are fragmentary and poorly preserved. In the few cases of complete shells accompanying burials, they appear to have served as containers, since artifacts were placed in them and the edges were unmodified. For the fragmentary remains, modified and unmodified edge pieces were observed. However, no modified edges could be conclusively attributed to use wear damage. The edges appear to be rounded by grinding rather than crushing and are interpreted as resulting from the production process. No drill holes nor remnants of drill holes were observed on any piece.

At McMurray Mound I, fragments of at least one freshwater clam shell were found with each of three burials. Fragments (3748/47) were found in front of the skull of Burial 16, Feature 6 but were not associated with any other artifacts. Fragments (3748/36) were under the right humerus midshaft of Burial 20, Feature 8 and were the only associated artifact. Included with the cache of assorted artifacts accompanying Burial 22, Feature 3 was a nearly complete shell (3748/44C). There is no detailed description of the proveniences of the artifacts and it is not clear if any of them were resting in or on the shell. The occurrence of three partially complete turtle carapaces with this artifact and their interpretation as spoons rather than containers suggests the other artifacts were not placed in them nor in the shell. Although the shell accompanying Burial 22 has been reported as being worked (Baby and Zierhut 1966:Figure 54), none of the edge fragments from any of the shells in this mound exhibits modification. However, the hinge element is no represented amongst the fragments from any shell and may have been removed.

One freshwater clam shell was recovered in association with Burial 3, Feature 2, Sidner Mound I. This was the only object accompanying the burial and had modified edges. The edges were cut and squared with the hinge element clearly removed producing a rectangular plan outline shaped item. Accessioned as a shell spoon, none of the edges exhibited use wear damage, only cut marks which have been partially obliterated by
grinding. There were no organic nor mineral stains on the concave surface indicating a use as a container for perishable items. However, the piece appeared to have been cleaned and the exterior surface layer may have been removed.

From Sidner Mound II, the fragments of at least two freshwater clam shells (3733.2/40) were recovered from Burial 22, Feature 1, with fragments of at least two more shells (3733.2/61) in the fill of Feature 1. It is not clear if the shell fragments from the fill occurred in the southern or northern half of the feature, nor is it clear if the fragments occurred in a cluster or were dispersed. The shell fragments from Burial 22 were associated with an assortment of artifacts, interpreted as a flint chipping toolkit, and were placed beneath the midshafts of the lower legs of the individual. However, it is not known if the artifacts were resting on the shell fragments. All edge fragments exhibit cut margins and no hinge elements were present.

Numerous freshwater clam shell fragments were recovered from Features 103, 108, 109, and 110 at Galbreath Mound. However, the exact number of complete shells and their burial associations can not be determined due to the prehistoric disturbances of the site. At least five shells are represented with one associated with Burial 24, Feature 110, one apparently associated with Burial 22, one from the bottom of the eastern portion of Feature 110, and two from Feature 108. One complete unmodified shell was stored unaccessioned with shell disc beads (II/296) recovered from the vicinity between Burials 14 and 22. Another complete unmodified shell (II/266) was situated on the left shoulder of Burial 24 and contained an ovate cache blade (II/265).

Within Feature 110, shell fragments were recovered in two separate clusters from the disturbed bones below Burials 8-14 at the bottom of the eastern end of the feature. Two fragments (II/219 and 249), one of which is a cut edge piece, came from below the southern portion of the burials; while a cluster of fragments (II/263, 270 and 276), which appear to represent an nearly complete shell, came from below the northern portion of
the burials. The edges represented amongst the clustered fragments appear to be recently damaged. One shell fragment (II/298) came from the vicinity of the prehistorically disturbed Burial 14. Since all of these fragments are from disturbed contexts, no duplicate elements were present, and none could be crossmended, at least one shell is represented from this portion of the feature.

One small shell edge fragment (II/317) was recovered from the perimeter of Feature 106. Since this feature represents a pothunter's pit intruding the western end of Feature 110, this fragment may represent an artifact removed from the site. The edge appears to be unmodified.

One complete shell (II/291) with cut edges and a rectangular plan outline shape came from the lower level of Feature 108 and probably was associated with one of the prehistorically disturbed Burials 36-39. Several small burnt fragments (II/273, 278 and 286) with semiglossy, uniformly medium gray surfaces were recovered from the upper level fill of Feature 108, which represents a prehistorically intrusive pit through Feature 103 and into Feature 108. Several small unburnt fragments (II/269) also came from the disturbed upper portion of Feature 108 between Burials 35 and 40.

The remaining shell fragments occurred in Features 103 and 109 and were dispersed amongst other artifacts, calcined human bone and burnt earth nodules. Several small unburnt and unmodified shell fragments (II/210) were situated on the western periphery of Feature 103. Two unburnt and unmodified fragments (II/279 and 280) were within the center of Feature 109 and probably represent the partial remains of one shell. However, the fragments could not be crossmended nor could they be refitted with the fragments from Feature 103 and the upper level fragments from Feature 108.

Although some of the freshwater clam shells are poorly provenienced or occur in disturbed context, it would appear they occur in two forms of burial context. They can be the only artifact accompanying a burial or they can be part of an artifact cache related to
chipped stone tool production. They are placed at various positions around the postcranial skeleton, except for disturbed burials where they tend to be associated with the cranium. Edge modification, when it occurs, appears to be production related rather than use wear suggesting freshwater clam shells served as containers. Only one burial associated shell confirms this functional interpretation. None of the shells nor remnants exhibited organic or mineral staining suggesting that if they served as containers then perishable items were not placed in them.

Shell Beads

Shell disc beads were recovered from McMurray Mound I, Sidner Mound II and Galbreath Mound. Macroscopically the surfaces of these beads are morphologically indistinguishable from the freshwater bivalve shells also recovered from the mounds; and, therefore, are considered to be fashioned from this raw material. Beads fashioned from marine shell are represented by two barrel-shaped item cut from the columella of a whelk at Sidner Mound II and by approximately 50 marginella shells from Galbreath Mound.

The exact number and provenience of the shell disc beads recovered from McMurray Mound I are unknown. An unspecified number of beads was recovered by the Shipley's previous excavation. Presumably they were associated with the pit burial containing six subadults near the top center of the mound. Five complete and two broken beads (3748/6) were recovered from the mound fill in Trench 35. Since the extent of the collector/amateur excavation is unknown, it is not clear if the beads from Trench 35 are from a disturbed portion of the mound fill representing an overlooked portion of the previously recovered beads. The seven beads are uniform in size and shape being 7.2 mm in diameter, 2.1 mm thick, with a 3.2 mm diameter drill hole, and a combined weight of 0.5 gm.

At Sidner Mound II, forty-two complete shell disc beads and several fragments (3733.2/40) were associated with Burial 24, Feature 1, along with one cannel coal and 18
copper beads. Although accessioned to Burial 24, the fieldnotes indicate all of the beads were from Burial 23. Copper staining on several bones from Burial 24 suggest the fieldnotes are in error, unless the skeletal remains were mislabeled. The shell disc beads vary in size with diameters ranging from 7.4 to 22.3 mm and thicknesses ranging from 1.6 to 7.6 mm. The drill hole diameters range from 3.4 to 5.2 mm and the combined weight, including the cannel coal bead, is 39.8 gm.

Twenty-one complete shell disc beads and one barrel-shaped shell bead (3733.2/64) were recovered from Burial 1, Feature 2, Sidner Mound II. The barrel-shaped bead appears to be a cut and polished section of a whelk or conch column. It is 8.3 mm in diameter, 11.3 mm thick, with a drill hole diameter of 5.1 mm. Twenty of the disc beads are relatively large and thick, ranging between 10.9 and 18.2 mm in diameter and 4.7 to 5.0 mm in thickness. The drill holes are relatively uniform in diameter averaging 3.6 mm. One disc bead is distinctly smaller being 8.2 mm in diameter and 1.9 mm in thickness with a drill hole diameter of 2.4 mm. The combined weight of the beads including the barrel-shaped one is 30.0 gm.

Twenty-seven complete shell disc beads and one large barrel-shaped bead (3733.2/62) were recovered from the fill of Feature 1, Sidner Mound II. In addition, one shell disc bead was observed in the human skeletal collection mixed with the cranial remains from Misc. Subadult A, Feature 1. The fieldnotes do not indicate if any of these beads were directly associated with the disturbed burials from the lowest level of the northern half of the feature. However, it seems reasonable to conclude that they were not associated with Burial 24. The barrel-shaped bead appears to have been fashioned from a whelk or conch column. It is 8.8 mm in diameter with a thickness of 26.7 mm and a hole diameter of 4.0 mm. The disc shell beads vary considerable in size, although drill hole diameters are consistently around 6.0 mm. Bead diameter ranges from 6.6 to 18.2 mm; while thickness varies between 0.5 and 6.0 mm. Unlike the burial associated clusters of
beads, some of the thinnest beads from the feature fill have the largest diameters. The combined weight of all of the beads is 18.4 gm.

From Galbreath Mound, at least 58 shell disc beads (II/296, 297, 303 and 326) were recovered in the vicinity between the neck region of Burial 22 and the scattered remains of disturbed Burial 14, Feature 110. Three shell disc beads (II/235) were recovered from Feature 108 and appear to be associated with either Bone Cluster 3 or 7, which underlie Burial 2 and are at the same level of Burials 35 and 40. Regardless of their exact provenience, they are from the disturbed fill of the intrusive pit in the upper level of Feature 108.

Thirty-three whole and 21 fragmentary marginella beads were recovered from the lower level of Feature 108. They were from feature fill surrounding Burial 37A and belong to either Bone Cluster 35 or 36. Fieldnotes indicate shell beads were associated with cranial fragments in the east balk of the excavation unit in which Feature 108 was located. It is not clear from the notes which burial in the lowest level of Feature 108 is related to the cranial fragments, except that it can not be Burial 37A. Likewise, it is not clear if the shell beads refer to the marginella beads or disc shell beads. There are no shell disc beads in the collection from Feature 108, except for the three from the upper level disturbed fill. Four additional marginella beads (II/329) were recovered in proximity to the skull of Burial 33. Fieldnotes indicate they overlie the cranium and are associated with Bone Cluster 16, Feature 103. If so, they represent displaced items from Feature 108 and may have been originally part of the marginella bead cluster in and around Burial 37A.

The shell disc beads associated with Burial 22, Feature 110 were fragmentary with the fragments representing a least one-half of a complete bead. They ranged from 5.5 to 9.3 mm in diameter and from 1.1 to 4.5 mm in thickness. Drill hole diameter varied from 2.8 to 5.9 mm and their combined weight was 7.2 gm. The shell disc beads from the upper
level of Feature 108 varied from 8.9 to 9.9 mm in diameter and from 4.6 to 5.6 mm in thickness. Drill hole diameter ranged from 3.6 to 4.6 mm and the combined weight was 1.6 gm. The combined weight of the marginella beads from the lower level of Feature 108 was 8.0 gm; while the weight of the four marginella beads from the vicinity of Burial 33 was 0.5 gm. Although most of the marginella beads were partially damaged to various extent, it appeared a few of them had not been drilled. Thus, it is possible the marginella beads do not represent a necklace but rather a cache of items. Only the shell disc beads around the neck of Burial 22 can be interpreted as a necklace associated with a particular individual from Galbreath Mound.

Copper Beads

The only recovered objects produced from copper were beads. The presence of copper objects was also indicated by various shades of green staining and adhering powdery substance on some of the human bones. Copper objects were present in burial or feature context from all of the mounds except McMurray Mound I. Beads or copper stained bones were associated with inhumations at Sidner Mounds I and II; while at Galbreath and Hambleton Mounds such evidence was restricted to calcined human bone from feature fill or distinct cremation deposits.

No copper artifacts were reported from Hambleton Mound. However, one calcined short bone fragment from Burial 6, Feature 2 exhibits several small, circular, bluish-green stains or spots on the exterior surface. The bone fragment is 32 mm long, completely calcined, and warped; but appears to be a shaft portion of a clavicle.

One rolled copper bead (II/295) was recovered from the fill of Feature 110 at Galbreath Mound. The bead has a maximum diameter of 5.1 mm, a maximum thickness of 4.4 mm, a hole diameter of 3.0 mm, and weighs 0.2 gm. The bead was not in direct association with any burial nor bone cluster containing a copper stained bone. However, a
copper stained, calcined long bone fragment occurred at a lower level in the Feature 106, the pothunter's pit.

At least seven calcined bone fragments exhibiting small, circular, bright bluish-green stains on their exterior surfaces were recovered from Features 103, 107 and 109 in Bone Clusters 11, 14 and 15. These features, along with Feature 105, represent concentrations within one large feature consisting of burnt earth, charcoal, calcined human bones, and burnt and unburnt artifacts. Crossmending of calcined fragments between the numbered features indicated their contemporaneity. Of the seven copper stained, calcined bone fragments, one is a cranial piece, two are cancellous bone fragments from an undetermined joint, one is large and thick representing either a humerus or femur shaft fragment, and three are unidentified long bone shaft fragments.

Two copper stained, calcined long bone fragments representing either a femur or humerus shaft were also recovered from the upper level of Feature 108 in Bone Clusters 4 and 7, and associated with the fill around Burials 1 and 40. This portion of Feature 108 represents an intrusive burial pit through the burnt earth and calcined bone deposit represented by Features 103, 105, 107, and 109. Consequently, the calcined fragments from the fill around Burials 1 and 40 are considered to represent the disturbed remains from this larger feature. Crossmending of calcined fragments, but not the copper stained ones, confirm this interpretation.

One copper stained, calcined humerus shaft fragment was recovered from Bone Cluster 16 situated over and around the extended inhumations of Burials 33 and 34. These burials were located immediately adjacent and slightly below the southwest perimeter of Feature 109. Although none of the calcined bone fragments from Bone Cluster 16 could be crossmended with those from Features 103, 105, 107, and 109, they are interpreted as representing the furthest western extent of the large feature containing burnt earth and calcined human bones. The humerus shaft fragment from Bone Cluster
16 was one of the largest calcined fragments and indicated the small, circular, bluish-green stains occurred as a series of spots.

Based on the presence of the single bead and the few copper stained, calcined bone fragments and their contexts; it would appear at least two individuals were associated with copper objects, presumably beads. One of which appears to be one of the disturbed burials from the western end of Feature 110 and the other from the undetermined number of cremations in Features 103, 105, 107, and 109.

Copper beads were reported in association with Burials 8 and 9, Feature 2 from Sidner Mound I. However, the distribution of copper staining on the bones suggests additional individuals may have been associated with the beads. The preliminary report and fieldnotes indicate four large rolled copper beads (3733.1/26) were associated with the neck region of Burial 8, forty-three thin rolled copper beads (3733.1/28) were associated with the pelvic girdle of Burial 9, and eight thin rolled copper beads (3733.1/27) were associated with the neck and thoracic cage of Burial 9.

The four copper beads with Burial 8 ranged from 7.6 to 8.7 mm in diameter with hole diameters between 4.1 and 4.5 mm, and thicknesses between 4.6 and 7.4 mm. Their combined weight was 6.4 gm. Copper staining was restricted to the right side of the cranial vault of Burial 8, extending over portions of the frontal, sphenoid, and temporal bones. A dark to bright green stain extended posteriorly and inferiorly from the area of the postorbital constriction around the eye orbit. No stains were present in the eye orbit nor on the malar, maxillary, mandible and occipital. A faint light green stain was observed on the superior surface of the left clavicle from the midshaft to the shoulder end. In addition, a heavy concentration of light to dark green stain occurred on a portion of Burial 8's left hand, including all surfaces of the hamate and capitate, and the dorsal surfaces of the second and third metacarpals.
The forty-three beads from the pelvic girdle of Burial 9 ranged from 2.0 to 5.5 mm in diameter and 1.4 to 2.2 mm in thickness with a combined weight of 17.6 gm. Because of their fragile nature, no attempt was made to measure hole diameters. The eight copper beads from the neck region of Burial 9 were of similar size and state of preservation to the 43 from the pelvic region. Their combined weight was 2.9 gm. The only indication of a necklace for Burial 9 comes from a faint light green stain on the superior surface of the sternal end of the right clavicle. There were no stains on the cranium, mandible, vertebrae, and ribs. In contrast, the bones forming the pelvic basin exhibit a heavy concentration of bright to dark green stain with a similarly colored adhering powdery substance. On the sacrum the staining extended from the superior surface of the left ala over the superior surface of the first sacral segment to the superior surface of the right ala. The staining continued onto the right innominate between the auricular surface and the anterior iliac spine and superiorly on the ilium blade to the iliac crest. No staining was noted on the lateral surfaces of either ilium blades.

In addition, two oval copper stains were noted on the right femur and one on the anterior surface of the left tibia. On the femur, one faint dark green spot (12 mm by 8 mm) occurred on the anterior surface of the shaft at the approximate level of the lesser trochanter. The other spot (15 mm diameter) occurred on the posterior surface immediately superior to the condyles, and was light to dark green with a small powdery concentration near the center. The spot on the left tibia was also dark green and powdery and occurred immediately inferior to the intercondylar eminence on the anterior surface. A distal radius fragment has a light green tint on the articular surface.

The distribution of copper staining suggests copper beads were primarily piled in the lower abdominal region of Burial 9, with a small portion of them also in the knee region. Complicating this interpretation are copper stains on portions of Burials 9B and 11. Burial 9B represents the incomplete remains of a newborn (6 months + 3 months),
which were intermingled with the miscellaneous bones from Burial 8, 9 and 11. This burial was not originally recognized during excavation nor in the preliminary report. Two infant cranial fragments exhibited dark green stains on their exterior surfaces. These stains could be and probably are incidental resulting from association with Burial 9.

Burial 11 was originally reported as an isolated skull resting on the pelvic region of Burial 9. However, vertebrae were present in the human skeletal collection including C2 through T1, all of which were copper stained. On the cervicals, staining was restricted to the spinous processes, beginning at the posterior halves of the transverse foramen and extending posteriorly onto the superior and inferior articular processes and neural archs. On the thoracic vertebra the staining was the heaviest on the anterior margin of the body and the right superior body surface with a fainter stain on the superior surface of the spinous process. There were no stains on the cranium and fragmentary mandible. It is not known if the vertebrae were articulated in situ. However, the distribution of copper staining suggests Burial 11 had a necklace and some, if not all, of the beads from the pelvic basin of Burial 9 were associated with Burial 11.

Rolled copper beads were recovered from Burial 24, Feature 1; Burial 3, Feature 2; and Feature 1 fill at Sidner Mound II. It is not clear from the fieldnotes if the beads from Feature 1 fill were from the southern or northern half of the feature. Copper stains were observed on portions of the remains from Burials 3B and 4 from the southern half of the Feature 1, and on bones from Burials 24, 28, and Misc. Subadult F from the northern half of the feature. From Feature 2, stains were observed on remains from subadult Burial 3C but not on adult Burial 3A.

Eighteen rolled, somewhat barrel-shaped beads (3733.2/44) were associated with Burial 24, Feature 1 along with 42 shell disc and 1 cannel coal beads, according to the accession list. However, the fieldnotes indicate all of the beads were associated with Burial 23, Feature 1 and specify their context. Since copper stains were observed on the
bones from Burial 24 and not on those from Burial 23, it is presumed the associated artifacts were entered on the wrong burial form. Otherwise the accession list and the labeled burial remains are in error.

The 18 copper beads ranged from 3.5 to 7.0 mm in diameter with hole diameters ranging from 2.0 to 4.9 mm. Bead thickness varied between 2.0 and 4.8 mm and the combined weight of the beads was 4.0 gm. Copper stains occurred on the right clavicle, rib body fragments, lower vertebrae, and right femur. The inferior surface of the right clavicle had a dark greenish tint at the sternal end. A similar tint was noted on several rib body fragments. However, most of the rib fragments were not stained nor were any of the vertebral and sternal extremities of the ribs. The heaviest concentration consisting of a light to dark green, powdery stain occurred on the proximal end of the right femur. It began on the anterior surface of the femoral head extending onto the neck, then to shaft immediately inferior to the greater trochanter. The stained vertebrae included T12 through L2 and all exhibited a dark green tint. The stains were most noticeable on the neural arches and articular processes of T12. On L1 stains occurred on the neural arch and all processes with the darkest stains on the transverse and spinous processes. The stain on L2 was lighter and mixed with a grayish powdery substance, presumably ash, and was restricted to the spinous process.

The rolled copper beads (3733.2/74) associated with Burial 3, Feature 2 were all flattened and fragmentary, but appear to be large and thin. Consequently, the exact number of beads can not be determined; however, their combined weight is 60.0 gm suggesting a substantial number are represented. Copper stains were not observed on the remains from the adult, Burial 3A, but were present on the incomplete subadult remains, Burial 3C. The subadult remains were from a 2.5 to 3.5 year old individual, with the ilium blade fragments completely copper stained, as well as, the posterior surface of the radius shaft. This individual was not originally observed nor reported in the fieldnotes.
One large rolled copper bead (3733.2/62) was recovered from Feature 1 fill along with 27 shell disc beads and 1 barrel-shaped columella bead. The copper bead was 6.6 mm in diameter with a hole diameter of 4.0 mm, a thickness of 14.4 mm, and weighed 0.9 gm. The large sizes of all of these beads are similar to those from Burial 24 and suggests the possibility they belong with that individual. Since Burial 24 was reportedly disturbed, the possibility is further strengthened. However, copper stained bones from other burials occurred in both the southern and northern halves of Feature 1.

From the southern half of the feature, Burial 3B, an incomplete subadult/young adult, had heavy dark green stains on the medial surface of a fragmentary ilium blade. Burial 4, a cremation, had a calcined right ilium fragment with two small bluish-green spots and two calcined long bone fragments, probably humerus shaft, with series of small bluish-green spots on the exterior and interior surfaces. In the northern half of the feature, Burial 28, a subadult between 3.5 and 4.5 years old, was reported to have copper stains on the clavicle and mandible. A light to dark green stain was present on the sternal half of the left clavicle shaft with the darkest concentration on the superior surface. A greenish tint was noted on the unfused vertebrae bodies and neural archs from C3 to C7. No stain was observed on the fragmentary mandible. Whitish-gray, powdery concentrations, presumably ash, were associated with and partially covered the green tinted bones. In fact, all of the postcranial bones from this burial had whitish-gray, powdery concentrations adhering to portions of them. However, this burial was not reported in direct association with any cremation nor any burial with copper artifacts or stained bones. Misc. Subadult F, representing the incomplete remains of an individual between 15 and 18 years old, occurred in the lowest level of the northern half of Feature 1. A dark green band covered the entire circumference of the distal shaft of the right humerus between the nutrient foramen and the olecranon fossa.
Copper beads and their associated stains on bones repeatedly occur in similar burial contexts, including the neck region, the pelvic basin, the elbow and knee joint regions, and the wrist/hand region. At Galbreath and Hambleton Mounds, copper stains occur only on long and short bone shafts from cremated adult individuals. However, calcined vertebrae and pelvic fragments are almost non-existent amongst the cremated remains and may represent a preservation bias. Still it is important to note the lack of copper beads or stains with inhumations at these two mounds.

In contrast, all but one of the burials containing copper beads or stained bones from Sidner Mounds I and II were inhumations. Many, if not most, of these individuals were subadults and late adolescents rather than older adults. Of particular interest is the frequent occurrence of heavy copper stains and adhering powdery substance in the pelvic girdle of individuals. This suggests the beads were placed on the lower abdominal area rather than being worn as necklaces or fringe decorations on clothing. The rare occurrence of stains on the wrist/hand region may be related to the close positioning of the upper extremities to the pelvic region during inhumation. Likewise, the staining of the knee and elbow joint regions of the inhumations appears to be related to the placement of copper objects at these points rather than as decorative fringe of wearing apparel. The stains are small, circular and localized. There is no bilateral symmetry in the occurrences of stains indicating copper objects were restricted to one side of the body, which would not be expected if the beads were decorative fringe. In cases involving paired long bones of the extremities, only one of the bones exhibits staining. Consequently, it is not possible to determine if the copper beads represent personal possessions of the interred individual or grave goods placed with the burial by others.

Copper beads and stains associated with the neck region appear to represent necklaces worn by the individuals. It would also appear that copper beads are not worn in conjunction with shell beads. In the few cases where copper and shell beads were
associated with an individual, none of the shell beads were copper stained. In addition, the fieldnotes indicate the copper beads were recovered from portions of the body other than the neck region.

**Red Ochre Stains**

Red ochre was observed on artifacts and portions of some of the inhumations at Sidner Mounds I and II and Hambleton Mound. Fieldnotes indicate red ochre was associated with feature fill and feature perimeters from those features containing inhumations with red ochre. Red ochre did not occur with cremations. Red ochre occurred only on artifacts associated with inhumations which had red ochre stained bones. Distinct deposits of red ochre were not reported and it appears that red ochre was sprinkled over or placed on specific portions of the remains of certain individuals. Staining of artifacts appears coincidental with their proximity to the individual rather than purposeful placement of red ochre on the objects.

The occurrence of red ochre is similar to the copper staining. The darker red stains occur on the bone surface and appear to permeate it. Brighter red ochre occurs as a powdery substance adhering to the bone. In some cases, the bright red powder forms the core of a larger, darker stain. There are also instances where red ochre overlies a copper stain. In such cases, there is no mixing of the colors, whether it be a stain or a powdery substance. Staining of the bone is considered to be the result of placing red ochre on the individual prior to decomposition of soft tissue. None of the stains exhibit brush strokes suggesting the bones were not painted. The powdery occurrence of red ochre with no associated bone stain is considered to be the result of placing it on a defleshed individual, this was especially true in cases where it occurred on the articular surfaces of bones. There is one indisputable case, Burial 2, Feature 2, Sidner Mound I, where select bones of an extended individual were purposefully marked.
Five burials at Sidner Mound I exhibited red ochre staining. Miscellaneous bones from the disturbed portion of Feature 2 fill, which showed red ochre stains could be attributed to the five burials. Burial 2, a subadult between 5.5 and 6.5 years old, had red ochre stains over most of the postcranial skeleton, with none observed on the cranium and mandible. On the vertebral column, all unfused bodies and neural arches except for C1 and C2 had faint red tints. The medial surface of the left ilium blade and the greater sciatic notch were stained, while the lateral surface of the right ilium blade was stained. The articular surface of the proximal epiphysis of the left humerus had a faint stain which continued onto the anterior surface of the shaft. The right humerus had a heavy, powdery, bright red concentration on the anterior surface of the shaft between the nutrient foramen and the distal metaphysis with the thickest deposits on the medial olecranon. A second fainter concentration covered the intertubercular groove. A faint stain occurred on the anterior and medial surface of the distal one-third of the right ulna shaft. On the lower extremities, a bright red powdery concentration occurred on the posterior surface of the distal third of the right femur shaft. On the left femur a faint stain beginning on the anterior lateral surface of the distal third of the shaft extended discontinuously and proximally along the lateral side to the nutrient foramen. A smaller stain was confined to the posterior surface of the femoral neck. Both tibiae exhibited discontinuous bright red spots along the anterior medial surfaces of the shafts. The proximal epiphyses of the tibiae had spots on the articular surfaces, with the heaviest concentrations on the unfused surfaces.

Burial 5/6, a subadult between 3.5 and 5.5 years old, had red ochre stains restricted to the shoulder girdle, thoracic cage, and sacrum. Both scapulae have faint to bright red spots along the spine of the acromion process. All of the thoracic vertebrae bodies have a red tint on all surfaces; however, the neural arches are not stained. The vertebral extremities of the ribs have a red tint also, with occasional small bright red
powdery spots. The first sacral segment has a dark red tint on all surfaces, but the second sacral segment is not stained. The left coastal element of the sacrum has a heavy concentration of powdery red ochre on the anterior surface of the articular process and on the surface of the articulation for the innominate. The superior surface of the right coastal element has a dark red tint.

Burial 8, a subadult between 17.5 and 18.5 years old, has red ochre stains on the cranium, upper extremities, and portions of the vertebral column, in addition to and overlapping the copper staining of the neck/head region. A heavy bright red powdery concentration overlies the copper staining of the right side of the cranial vault in the area immediately posterior to the supraorbital margin with smaller powdery spots occurring discontinuously and posteriorly on the temporal and sphenoid. A dark red stain occurs beyond the margin of the copper staining and extends from the external auditory meatus to the nasal region including the zygomatic arch. No staining occurs on the maxillary, mandible, nor occipital. On one of the cervical vertebra bright red spots occur on the superior surface of the vertebra body and on the neural arches adjacent to the inferior articular processes. Bright red powdery spots occur on the superior and inferior body surfaces of two middle thoracic vertebrae with heavy staining on the right lateral body surfaces and extending onto the transverse processes. A few faint spots occur on the articular surface of the right humerus head, as well as, the unfused surface of the metaphysis. On the left humerus, a few bright red spots occur on the anterior portion of the distal articular surface. Heavy bright red powdery concentrations overlies the copper stains on all surfaces of the left hamate and capitate, with a faint stain on the dorsal surface at the distal end of a first row hand phalange.

Burial 9 has red ochre stains over a majority of the postcranial skeleton but none on the cranium, mandible, nor the thoracic cage. Staining occurs primarily in the pelvic girdle region and on the extremities. A faint stain is present on the superior surface of
the right clavicle shaft at the sternal end. The right scapula has a faint stain extending along the spine and all surfaces of the acromion process, with a few small bright red spots on the articular surface of the glenoid cavity. A bright red, powdery, circular spot occurs along the medial crest of the left humerus immediately proximal to the medial olecranon. Small bright red spots continue onto the proximal end of the left ulna on the posterior and lateral surfaces of the olecranon and along the medial edge of the articular surface, with the heaviest concentration occurring on the surface of the radial notch. The right ulna has a bright red concentration on the superior surface of the olecranon. A distal radius fragment, probably the left, exhibits a dark red tint on the posterior and anterior surfaces with bright red spots, but no tinting, on the articular surface. Within the pelvic girdle, bright red spots occur on the medial surface of the right ilium between the greater sciatic notch and the anterior iliac spine. On the sacrum bright red powdery spots adhere to the copper stained portions and also adhere to the powdery green spots. The red ochre spots also occur on the posterior surface of the sacral segments and the inferior surface of the left articular process, where no copper stains occur. Red ochre on the left innominate is restricted to a small, powdery, circular concentration on the inferior portion of the acetabulum. The right femur has several dark red stains occurring on the anterior surface of the femoral neck, along the linea aspera from the third trochanter to the distal end, and on the posterior surface of the lateral condyle. The left femur has several bright red powdery spots occurring on the anterior surface of the distal half of the shaft. Bright red spots overlie copper stains on the left tibia extending distally from the proximal end along anterior crest and the anterior lateral surface. A few faint red spots occur also on the distal third of the shaft along the anterior crest and the posterior surface. Two bright red, heavy, powdery, circular concentrations occur on the distal third of the left fibula shaft, with one on the anterior and the other on the posterior surfaces.
Burial 11, the incomplete adult resting on the pelvic region of Burial 9, had red ochre stains in association with the copper staining. There were no red ochre stains on the cranium. Red ochre stains were confined to the C7 and T1 vertebrae. For C7, a bright red stain occurred on the posterior half of the right lateral vertebra body and superior surface, with a dark red stain on the posterior surface of the body extending onto the anterior surface of the neural arch and right superior articular process. For T1, the bright red stain covered the left lateral surface of the body, extending onto the left half of the superior surface and posteriorly to the left superior articular process.

At Sidner Mound II, five burials had red ochre staining including Burials 19, 23, 31, and 32 from Feature 1, and Burial 2, Feature 2. Burial 19, an infant subadult aged 6 months + 3 months, had red ochre stains on its lower left extremity. The stains occurred on the lateral surface of the distal end of the femur shaft, on the anterior and lateral surfaces of the distal end of the tibia shaft, on all surfaces of both tarsals, and on the proximal halves of the left metatarsals. Burial 23, an adolescent approximately 18 years old, had a single bright red stain on the anterior surface of the right pubic symphysis. Burial 31, an adult, had a single, small, bright red spot on the anterior surface of the medial epicondyle of the left humerus.

Burial 32, an adult, had dark red stains confined to portions of its upper and lower extremities, with the single exception of a small, bright red, powdery spot on the anterior surface of the T8 vertebral body. Staining occurred on the anterior lateral surface of the distal half of the right humerus shaft and extended onto the anterior lateral surface of the head of the right radius. For the left hand, stains were restricted to the dorsal surfaces of the metacarpals and phalanges. Circular to oval stains of various sizes occurred discontinuously on the right femur shaft, but were most noticeable on the anterior surface of the distal end. Both tibiae had faint stains on the medial surface of the proximal half
of the shaft, with distinct, somewhat brighter stains covering the medial malleolus. A dark stain was present on the distal tip of the right fibula.

Burial 2, Feature 2, an extended and articulated young adult, exhibits red ochre staining at the left shoulder, and beginning at the pelvic girdle extending continuously over the lower extremities. In addition, there are distinct markings on some of the long bones of the legs indicating some of the red ochre was applied to the individual after the soft tissue decomposed. A few small, faint, bright red, powdery spots occur on the dorsal surface of the left scapula body between the spine and axillary border. The left humerus has a faint reddish-brown tint on the articular surface of the head, and a circular stain of similar color on the posterior surface at the distal metaphysis. All surfaces of the T11 and T12 vertebrae, sacrum, and both innominares are stained a dark reddish brown. The staining continues onto the proximal ends of both femora, occurring on femoral heads extending on the posterior and superior surfaces of the femoral necks and distally on the posterior surfaces to the lesser trochanters. On the lateral side of the distal metaphysis of the right femur, two short parallel lines of thick bright red ochre with a greasy luster occur and are oriented perpendicular to the long axis of the bone. A similar line was observed on the medial surface at the distal metaphysis of the left femur. These lines resemble marks which could be analogously made by a grease pencil or crayon. In addition to the line on the left femur, a small, bright red, powdery concentration was present on the posterior and medial surfaces of the medial epicondyle. The thick, greasy, bright red lines continue as a series of short parallel lines on the posterior surface of the left tibia shaft but not on the right. There are at least 32 lines spaced at roughly 3.5 mm intervals and oriented perpendicular to the long axis of the bone. On the distal half of the tibia shaft the lines are slightly longer extending onto the medial surface. The lines continue onto the anterior surfaces of both fibulae; however, they are fainter and not distinct in the midshaft area. Consequently, no accurate count is possible. The right tibia
has a heavy dark red stain on the posterior surface beginning at the edge of the proximal articular surface and extending distally along the medial surface to the midshaft.

Additionally, thick, bright spots occur along the anterior crest from the proximal end to the midshaft with similar spots occur on posterior lateral surface at the distal end. These spots maybe the extension of the red lines on the right fibulae, but the faintness of the lines prevents accurate alignment of the spots to the lines. The dark red stain on the posterior surface of the right tibia is duplicated on the left tibia and continues onto the entire posterior surfaces of both fibulae and all surfaces of the bones of both feet.

Burials 2, 3, and 5 from Feature 2 at Hambleton Mound exhibit red ochre staining to various degrees. Most of the postcranial skeleton from Burial 5 is stained, and it is tempting to conclude that the few stained bones from the other two burials resulted from their proximity to Burial 5. For Burial 2, a single, small, bright red, powdery spot occurs on the lateral condyle of the right tibia. For Burial 3, a few, small, bright red, powdery spots occur on various bones; including the right navicular of the hand, the ischial tuberosity of the right innominate, the medial surface of the left femur midshaft, and the superior surfaces of 3 first row, 1 second row, and 1 third row foot phalanges.

For Burial 5, red ochre stains occur in the right shoulder area, the right elbow area, the upper thoracic cage, and from the pelvic area through the lower extremities. For the shoulder area, small bright red spots occur on the superior surface of the right clavicle shaft near both ends but in the midshaft area. Similar spots occur on the ventral surface and axillary border of the right scapula. In the right elbow area, several dark red spots occur on the anterior and posterior surfaces of the distal third of the shaft and on the lateral epicondyle of the humerus. Several granular sized powdery concentrations were adhering to the stained posterior surface of the distal end of the humerus. Several small dark red extended parallel to the interosseous crest of the ulna on the posterior medial surface of the proximal third of the shaft. For the upper thoracic cage, a bright red
granular spot was adhering to the right inferior articular process of C6, with a similar spot on the right superior articular process of C7 and a third spot on the inferior surface of the C7 vertebral body. A dark red spot occurred on the anterior surface of an upper thoracic vertebral body and extended onto the anterior margin. Several rib body and vertebral extremity fragments had dark red stains, but none were observed on the sternal extremity fragments. In addition to the thoracic cage, the inferior surface of the hyoid had a dark red stain. In the pelvic area, the lower face of the auricular surface of the right ilium had a dark red stain, with a fainter stain covering most of the medial surface of the blade. Several small, bright red, heavy, granular concentrations occurred on the lateral surface of the left ilium including the proximal lateral ischial tuberosity, the blade adjacent to the acetabulum, and several along the border between the blade and iliac crest. A dark red stain covered the posterior surface of the femoral head from the fossa onto the neck, over the neck to the transverse break of the midshaft. A similar stain covered the lateral and posterior surfaces of the left femur from the lesser trochanter to the distal end of the shaft. Brighter red spots occurred adjacent to the lesser trochanter, around the nutrient foramen, and at the distal end of the shaft. A small, bright red granular, spot occurred on the border between the femoral head and neck on the anterior surface. A dark red stain occurred at the nutrient foramen of the right tibia. A heavy dark red stain occurred on the anterior crest at the midshaft of the left tibia, which extended proximally along the medial surface to the nutrient foramen, then on the posterior surface to the proximal end of the shaft. A small, bright red, granular spot was on the articular surface of the lateral condyle. Both fibulae had dark brown stained shafts with small, faint, granular spots on the right proximal articular surface and on the anterior surface of the left distal shaft end. A faint stain was on the lateral facet of the left patella, as well as, a similar stain on the articular surface for the navicular of the right talus.
Ceramic Sherds

Thirty-one ceramic sherds were recovered from various feature fill contexts including Features 103, 105, 107, 110, and the disturbed fill portion of 108 at Galbreath Mound. No ceramic sherds were recovered from the other mounds. None of the sherds were in direct burial associations, except for chance occurrences of body sherds with the left tibia of Burial 12 (I/79), the palate of Burial 13 (I/75), the left mandible of Burial 18 (II/204), and the left femur of Burial 24 (II/275), all of which are associated with prehistoric or historic disturbances.

All of the sherds have the same surface treatment, plain exteriors and interiors. Likewise, the tempering agent is uniform for all sherds consisting predominately of black, angular sandstone with occasional subangular limestone or angular chert fragments. There appears to be two tempering sizes, fine grained and medium to coarse grained. Temper size appears to correlate with sherd thickness and exterior surface coloration. Fine grain tempered sherds range in thickness from 5.1 to 6.3 mm with surface colors of buff to light brown and orangish-brown. The medium to coarse grain tempered sherds range from 8.5 to 9.6 mm in thickness with surface colors generally from medium to dark brown; although an occasional buff to light brown occurs. Only one rimsherd was recovered. It had a fine grained temper and was buff to light brown, exteriorly and interiorly, with plain surfaces. However, it was uniformly 7.1 mm thick. The sides were straight and the lip was flat.

The coarser tempered and thicker pieces occur predominately in the fill of Feature 110. The finer tempered, thinner sherds tend to be intermingled with the calcined human bone fragments, burnt clay nodules, and artifacts from Features 103, 105, 107, and 109. Since these four features are contemporaneous, it is plausible that only two vessels are represented by the sherds, even though no sherds have been crossmended.
Summary

Variability in artifact types occurs at all levels of analysis from the mound to the artifact type. The foregoing discussion focused primarily on describing variability in morphological attributes of the items within the artifact types. Contextual information was provided for the items but needs to be summarized across the different levels of analysis. Relatively few consistent patterns of artifact associations can be documented, which are suggestive of formalized mortuary behavior associated with the mounds of this region. Instead there are trends or tendencies for artifact types to occur in recurrent spatial associations.

Two factors complicate the interpretations of some artifact contexts. First, the close spacing of individuals in multiple interment groups, in some cases, prohibits accurate determination of what items are associated with which individuals. Consequently, determination of artifact associations rests on interpretations of positioning of artifacts in relationship to more than one individual. Therefore, interpretations on recurrent artifact association patterns sometimes include prior interpretations of spatial associations between particular artifacts and individuals, which may reflect a perceived reality by the researcher. In order to overcome this dilemma, such interpretations were made only when a similar unambiguous pattern was represented by another individual with similar associated artifacts. Fortunately, such occurrences were rare and involved either artifact caches amongst several individuals, or particular items separated from any individuals by a horizontal distance of 100 cm or greater. In the former instance, positioning of the artifacts in relationship to the portions of the bodies of the individuals provided the means for determining association with a particular individual. In the latter instance, the item was noted to occur in feature fill and to the closest individual, and was not considered in the search for recurrent patterns.
The second complicating factor was the disturbance of the mounds, both prehistorically and recently, which removed artifacts from their original contexts. Consequently, many of the artifacts from the different mounds can not be attributed to specific individuals. In some cases, the prehistoric disturbance process of displacing and reinterring portions of previous extended inhumations appears to have involved associated artifacts, since some of the bone piles contained artifacts placed in particular positions, either at the ends of the pile or in association with a cranium. If the human remains could be assigned to a particular partially disturbed extended inhumation, the artifacts were considered to be associated with that individual. Otherwise, they were noted to occur with a particular bone pile and considered to be from the feature. Although many of the artifacts removed by pothunting have been documented, it is not possible to assign them to particular individuals. In some cases they can not be assigned to a particular feature and are only useful at the mound level of analysis.

In considering the items at the level of artifact types, there does exist a limited range of variability in the morphological attributes of items from each type. However, when considering the diagnostic Adena artifact types, gorget, point, and cache blade it is evident Early and Late Adena type varieties are present in the different mounds. Consequently, the preliminary interpretation that these mounds represent the retention of Early Adena traits into the Late Adena/Hopewell period does not appear to be on the artifact types.

When the contexts of the diagnostic items are considered, it is clear Early and Late Adena artifacts co-occur in some situations (ie. projectile points and cache blades from artifact caches at McMurray Mound I, projectile points from caches at Sidner Mound II and gorgets from Hambleton Mound), and stratigraphic reversals occur (ie. cache blades from Features 103, 108 and 110 at Galbreath Mound. If the other temporally diagnostic artifact types, gorget, tablet, and pipe, which occur in some of the artifact
caches, are considered along with the nondiagnostic utilitarian objects, which are considered to occur more frequently at Early Adena sites, then the co-occurrence of Early and Late Adena artifacts is more pronounced.

In order to preserve the chronological ordering of artifact types and the developmental scheme of the Adena mortuary concept the mounds would have to be considered temporally transitional or an argument would have to be made for curation of items. The apparent long term, periodic use of McMurray Mound I, Sidner Mound II and Galbreath Mound based on the internal structure of the burial features, the stratigraphic relationships of features within the mounds, and the radiocarbon dates from Galbreath Mound tend to argue against a transitional period. The question of curation of items remains an open issue. If the chronology based on diagnostic artifacts is to be maintained, then the mounds should be considered of the Late Adena Period. Such an interpretation would bring into question the presence of multiple interment burial facilities and the lack of log tombs and premound structures, which do not conform to Late Adena burial and feature traits and were apparently the reasons for the preliminary interpretation that the mounds represent a retention of Early Adena traits.

In order to move beyond the Adena mortuary concept, an understanding of the structure and organization of mortuary remains can be partially obtained by examining the occurrence of artifact types at the various levels of analysis. Forgets, one of the artifacts common to all of the mounds, occur with at least one of the individuals from each of the principal burial facilities at each mound. In addition, the variability of the morphological attributes for the quadraconcave gorgets tend to be site specific. These attributes include color and type of raw material, degree of concavity of the sides and ends, and the placement and method of drilling the holes. Likewise, the projectile points are consistently fashioned from a particular raw material type regardless of their context within a particular mound. Although projectile points vary in form, they tend to be more
similar in overall appearance within mounds than between mounds. Consequently, the variable forms of items of these two artifact types are not randomly distributed, but appear to represent or symbolize individuals or groups at each mound rather than overall homogeneous artifact types representative of culture for the region.

The only other artifact types which appear to be mound specific are the unmodified animal bones and the cut animal maxilla. Cut animal maxilla occur only at Sidner Mound II and are associated with two individuals each from a different burial feature. A deer vertebra from the artifact cache with Burial 22, Feature 3, McMurray Mound I, a swan/goose humerus from the cache with Burial 22, Feature 110, Galbreath Mound, and a portion of small to medium sized mammal pelvis with Burial 1, Feature 2, Hambleton Mound represent non-utilitarian objects, for which the functional or symbolic meaning is not clear. They could reflect idiosyncratic behavior on the part of the individuals or they could represent group or individual status symbols. These items occur with adults of either age or sex.

In considering the associations between artifacts and burials, no consistent patterns are evident but trends or tendencies are suggested. Subadults are not associated with any items, although some of individuals have been stained with red ochre. Very few adults are associated with artifacts and there are no clear age and sex patterns for the red ochre staining of adults. Artifact caches are rare and vary in the amount of items and artifact types included in them. One or two caches occur at McMurray Mound I, Sidner Mound II, and Galbreath Mound. None occur at Sidner Mound I and Hambleton Mound. There is a tendency for artifact caches to be associated with young males, but young females are associated with them at Sidner Mound II and Galbreath Mound. Likewise, copper and shell beads and gorgets are associated with both males and females at the various mounds, with gorgets occurring more frequently with males and beads equal distributed between males and females.
The only artifact types consistently associated with a particular sex are bone awls and shell containers occurring around the crania of some of the adult females of all ages. The few occurrence of bone pins and combs may represent functionally related artifact types to the bone awls, which appear to have functioned as hairpieces for the females. Bone awls occur in the few artifact caches associated with males and appear to be related to chipped stone tool production.

A number of whole and broken artifacts are associated with the redeposited cremation piles and burnt earth deposits on the mound floors. Some of these items are burnt while others are not. Such objects have been previously interpreted as incidental artifact inclusions resulting from the use of habitation debris as mound fill. The actual number and types of objects in these deposits are relatively few and do not differ from those in burial and feature context. In addition, the deposits contain only wood charcoal and no other charred botanical remains and the animal bone remains are only whole or fragmentary artifacts. Consequently, it seems unlikely these deposits represent redeposited habitation debris.

The analysis of the artifacts presents a more complicated picture of artifact types than previously considered. There appears to be a inconsistent trends towards symbolizing males and females. Likewise, there appears to be the possibility of local group symbols, represented by the morphological variability of certain diagnostic artifacts types and non-utilitarian bone items which have mound specific occurrences, present in the mounds and may serve to subdivide a broader social. Even the artifact caches may serve as group rather than individual symbols, because they tend to be equally distributed amongst the features at Sidner Mound II and Galbreath Mound and are associated with the non-utilitarian bone items and gorgets except at Hambleton Mound. At present the information is insufficient to draw definitive conclusions but is suggestive.
CHAPTER VII
SITE FORMATION

The information provided in the feature, burial and artifact descriptions can be used to reconstruct the burial episodes and provide relative temporal control within each mound (Figure 13). At the same time, the information provides an understanding of the organization of mortuary space within and between the burial facilities. This information can be used to compare and contrast the mound layouts to examine if recurrent mortuary patterns occur between which may be them suggestive of mortuary ritual behavior. In this way, the mortuary variability and/or continuity of the region can be established.

McMurray Mound I

McMurray Mound I is the smallest of the excavated mounds and the most different in terms of burial facility type and the organization of mortuary space. Because individuals were interred in overlapping, elongated, narrow, subrectangular pits, it is possible to reconstruct most of the sequence of burial episodes. The preliminary excavation report provided a sequence for burial facility construction based on the positioning of the extended individuals in the overlapping pits, which is basically correct except for the timing of Feature 7 (Baby and Zierhut 1966:4). In their sequence Features 1, 3 and 5 were the initial interments followed by Features 2 and 8 intruding Feature 3, and ending with Feature 7 intruding Feature 8. The recognition of the bundle burials as the reinterred parts of previous inhumations during the reanalysis allowed for a minor revision to the sequence of burial episodes but a distinctly different view of the mortuary behavior associated with the use of the burial facilities.

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**Mound Chronologies For Radiocarbon Dated Sites**

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**Relative Mound Chronologies Based On Stratigraphic Information**

- **McMurray I**
- **Sidner I**
  - BED RCP & MFB in md fill in fill
  - F.1{BED} | ? | F.2{CSD} |
- **Sidner II**
  - BED & RCP in md fill
  - F.1{CSD} | ? | F.2{CSD} |
  - F.1{CSP} | ? | F.2{CSD} |

*uncorrected dates - 5568 year half life.

Figure 13. Schematic Diagrams of Internal Mound Chronologies.
Features 3 and 5 represent clearly the initial mortuary use of the site. Feature 1 can not be directly linked to the sequence based on the vertical stratigraphy, because of the its spacing away from the cluster of overlapping features. However, it appears to be an initial burial based on the feature orientation and the placement of the interment or on its spatial relationship with Features 3 and 5 in the horizontal layout of the burial features. Features 1, 3 and 5 are oriented southwest-northeast and roughly parallel, but unevenly spaced. Feature 1, at the northern end of the mound, is approximately 3.0 m (10 ft) from Feature 5, which in turn is about 1.5 m (5 ft) from Feature 3, the southernmost. Each feature contains a male in an extended prone position. However, Features 1 and 3 are similar in containing a young adult, headed northeast and associated with a large cache (Burials 2 and 22). The caches are similar containing primarily implements for stone tool production and the finished products. Feature 5 contains a late adult, headed to the southwest and unaccompanied by objects. The isolation of Feature 1 from the other two burial facilities may have to do with the fact that Burial 2 has a severe case of bone lesions suggestive of periosteal reaction/osteomyelitis. These three features exhibit the only distinct pattern related to planning and use of the mortuary space in this mound. The remaining features cluster around Features 3 and 5, giving Feature 1 an even more isolated appearance. This isolation can only be partially explained by the disease exhibited on Burial 2, because some individuals in the other features encircling Features 3 and 5 also exhibit the same disease.

Feature 3 was clearly reused for at least one and probably two burial episodes. A young adult male (Burial 22) was sealed in the bottom of the pit with a thin bark lens covering. On top of the bark were the scattered but complete remains of a late adolescent female (Burial 15). There was no intrusion of the bark lens. Consequently, Burial 15 had to have been placed on the bark within a short time after the interment of Burial 22, or the bark was laid down for her. It is not clear if Burial 15's remains were
articulated or disarticulated at the time of interment. The presence of an entire skeleton suggests an articulated individual. In addition, the scattering of the remains is distinctly different form from known bundle burials and all of the other disarticulated bone piles encountered at this site, which are related to reinterment of disturbed extended inhumations. It would appear the scattered nature of Burial 15’s remains is related to the subsequent interments of Burials 11, 12 and 13.

Burials 11, 12 and 13 represent a multiple interment group consisting of an early adult male, a subadult/juvenile, and an old adult female, respectively. The old adult female was extended prone headed east with the young male extended supine on her back and headed the same direction. The juvenile was lying extended supine adjacent to the right side of the male’s lower extremities. Consequently, the positioning of the individuals puts them in opposition to each other. Both adults exhibited bone pathologies suggestive of infectious disease. The burial facility did not exhibit any evidence of being modified in size or shape to accommodate these individuals. Thus there is a sense of anticipation and grave marking indicated by the use of this facility.

Burial facility reuse was also evident in Feature 5. A young adult male (Burial 14) was extended supine and headed east above the old adult male in the bottom of the feature. Adjacent to Burial 14’s right lower extremities was a newborn extended supine and headed west. This pattern duplicates the pattern of opposition between young adult males and subadults in Feature 3. However, there was no bark covering sealing the old adult male in the bottom of the pit from the overlying multiple interment group.

Feature 3 was intruded on the southwest end by Feature 2 and northeast end by Feature 8. Missing portions of Burials 11, 12, 13 and 15 were found in the disarticulated bone piles in Features 2 and 8, indicating Burials 11, 12 and 13 were at one time complete extended inhumations. Burial 11’s lower extremities and Burial 12’s upper extremities were in Feature 2; while Burial 11’s and 13’s upper extremities were in Feature 8.
Feature 2 contained a young adult female (Burial 7) extended prone with a subadult/juvenile cremation (Burial 9) adjacent to her left knee. The placement pattern is reminiscent but not identical in all details to the pattern observed for young adult males and subadults from Features 3 and 5. A bone awl was placed at the back of the female’s cranium.

Feature 8 contained an old adult female (Burial 20) extended supine with a freshwater bivalve shell beneath the upper right arm. Associated with this burial was a disarticulated bone pile containing the partial remains of Burials 23, 24 and 25 from Feature 7, in addition to those from the burials in Feature 3. Feature 8 intruded the southern end of Feature 7. Consequently, Feature 7 had to have been present prior to Feature 8 and possibly makes it coeval with Feature 3.

Feature 7 contained the vertically stacked remains of two young adult females (Burials 24 and 25) and one young adult male (Burial 23). One female (Burial 24) on the bottom was extended supine, headed southwest and accompanied by a bone awl/pin. The other female was extended prone and headed in the opposite direction. The male was extended supine on top of the prone female, but was headed to the northeast. Consequently, the pattern of opposition between males and females is maintained but varied.

Feature 6 intrudes the northern end of Feature 7 and contains two disarticulated bone piles in which are the upper body parts of Burials 23 and 25. A partial cranium in one of the piles, considered to be Burial 25’s, had a freshwater bivalve shell in front of the cranium and a bone awl tip behind the cranium. An old female (Burial 10) extended prone was the primary interment in this feature. The front of her cranium rested on top of Burial 14’s cranium in Feature 5.

Feature 4 intrudes the southwest corner of Feature 5 and extends diagonally to barely intrude the northeast corner of Feature 3. Feature 4 contains the remains of an
extended supine adult, partially disturbed by previous amateur excavation. The individual is considered a female based on the gracile facial features.

The originally proposed burial feature sequence can only be partially documented by the reanalysis. Feature 3 clearly predates Features 2, 4 and 8, while Feature 5 predates Features 4 and 6. Feature 7 must predate Features 6 and 8. When considering the internal characteristics and the spatial arrangement of the features, a more complete scenario can be developed. Features 1, 3 and 5 appear to be the initial burial facilities; all are oriented approximately east-west with a common north-south axis and contain an extended prone male. Young adult males associated with large similar artifact caches occupy the outside features; while an old adult male with no artifacts occupies the middle facility and is headed in the opposite direction, further differentiating him from the young males.

Following this there appears to be a period characterized by multiple interment burial episodes in which two of the original burial facilities (Features 3 and 5) are reused and a new one (Feature 7) is constructed perpendicular and adjacent to the western end of the two reused burial facilities. Several characteristics form a pattern for these multiple interment groups. Young adult males are interred with subadults extended along their right sides but headed in opposite directions. When males accompany females, the female is extended prone with the male on top and extended supine. In two of the three cases the males and females are headed in the same direction. The males are unaccompanied by artifacts, while some of the females have bone awls associated with the back of the cranium.

Following the multiple interment period, there is a return to single interments consisting of adult females. Two of the females in Features 2 and 6 are extended prone with the facilities roughly approximating an east-west orientation, while the other two in Features 4 and 8 are extended supine and the facilities are roughly oriented north-south.
With the extended prone females, the old one is headed west and intrudes the feature containing the old male headed the same direction; while the young female intrudes the feature containing the young male, with both headed the same direction. The prone young adult female is accompanied by a cremated juvenile situated by the knees and reminiscent of the young males associated with subadults in the multiple interment. She also has a bone awl placed in back of the cranium, which appears to be an artifact only accompanying young females.

The amateur excavated circular/broad subrectangular burial depression was placed between the southern edge of Feature 1 and the northern edge of Features 5 and 6. From the limited information, it would appear the individuals were oriented north-south, headed north and presumably extended. Since the known individuals from this feature are distinctly younger than those from the elongated, narrow, rectangular pits, there appears to be a period when a number of subadults died over a short period of time and required a different burial facility type. There is a clear change from vertical stacking of a multiple interment group to the horizontal arrangement of individuals. This feature was not dug as deep as the other features, if it was excavated at all, and did not intrude them. The fieldnotes indicated the articulated feet of two disturbed inhumations in this feature were resting on the mound floor adjacent to and slightly above Features 5 and 6. It is concluded that the burials were placed on the side slope of the slightly raised rims of excavated subsoil around the perimeters of Features 5 and 6 and that the circular burial depression postdates the elongated narrow rectangular pits.

Sidner Mound I

Much of the internal spatial arrangement of the circular/broad subrectangular burial depression at Sidner Mound I has been discussed in the feature descriptions. At this point a brief summary of the arrangement is needed to establish the horizontal planning and organization of the burial facility. Although scant information is available
for the circular/broad subrectangular burial depression at McMurray Mound I, it would appear the reported spoke wheel or fan shaped arrangement of individuals is similar to the pattern for Sidner Mound I. The principal distinction between the two features being the close spacing of the heads with radiating bodies at McMurray Mound I versus the close spacing of the feet and radiating heads at Sidner Mound I.

The fan shaped arrangement shows additional organization with the pairing of adult extended inhumations separated by bundles of subadults. The feet of the fanned individuals are clustered around an adult bundle burial with an adult cremation lying adjacent to one end of the bundle burial and fan shaped arrangement. The overall layout of the interments suggests a single burial episode, but evidence of prehistoric disturbance indicates reuse of the burial facility.

The pairings of extended adult inhumations showed a consist pattern involving individuals of the same age at death. The individuals overlapped at the pelvic girdle and were turned to face each other with one exception. The pairings also appeared to involve a male and a female, but a consistent pattern could not be conclusively demonstrated. Burials 3 and 4 definitely represented a male and female. The sex of Burial 8 can not be determined but the association with copper beads is suggestive of a female. Due to the disturbance processes for the pairing of Burials 9 and 10 associated with Burial 13’s intrusion of them and the incorrect accessioning of the remains, an accurate sex determination for Burial 10 is complicated. If the innominates and femora as they are now assigned, are reversed, as they were originally reported, then the pairings of adult females and males would be substantiated.

The bundle (Burial 12) appears to be the first interment because the feet of the extended inhumations are flexed around it and all are pointed to the northwest. A neonate was associated with this young adult female suggesting a mother and child. The female exhibited bone pathologies suggestive of tuberculosis. Burials 9 and 10 appear to
be the first extended inhumations, since Burial 9's lower extremities were prehistorically
disturbed. An infant (Burial 9B) appears to have been placed in close proximity to Burial
9's pelvis because of the heavy copper staining on both individuals. Both the infant and
Burial 10, regardless of its correct age and sex, exhibit bone lesions suggestive of
periosteal reaction/osteomyelitis.

The prehistoric disturbance of Burial 9 appears, most likely, to be related to the
interments of Burials 7 and 8, since they would have overlain Burial 9's lower extremities.
No remains of Burial 9 were intermingled above or below Burials 7's and 8's lower
extremities. Both of these late adolescents exhibit the series of linear macropores around
their vertebra bodies. The juvenile bundle burials (2 and 5/6) were placed adjacent to
Burial 7. The bundle burials are similar in their layout and both have red ochre stains. In
addition both juveniles have the series of linear macropores around their centrums and the
red ochre associated with Burial 5/6 was applied to the vertebral column. Burials 3 and 4
appear to be the last interred pairing of adults, because their lower extremities were
flexed to avoid Burials 1 and 2. An adult female, Burial 3, was the only extended supine
inhumation of the paired adults and was the only one free of pathologies related to
infectious disease.

The duration of time between the paired interments appears to be relatively short,
since there is little disturbance of the burials and there is a distinct pattern to their
arrangement. A later burial episode, disturbing the pattern is evident by Burials 11 and
13. However, the nature of these interments is not clear due to recent disturbance. It is
not clear if the rotation of Burial 9's pelvis is related to these interments or occurred
during the disturbance related to placements of Burials 1 and 8. In either case, Burial 9's
upturned pelvis was used as a rest for Burial 11's cranium and neck.

The distribution of burial associated objects suggests freshwater bivalve shell and
copper beads are associated with females. However, this can not be conclusively
demonstrated since two of the burials (8 and 11) are provisionally considered female. Likewise, the occurrence of gorgets with males can not be conclusively demonstrate because the only individual associated with them is Burial 10 and there is confusion over the age and sex determinations. Red ochre stains occur with the juveniles and a middle adult female. Infants and late adolescents are not associated with red ochre. The only common link between the three individuals are the series of linear macropores on their vertebra bodies. However, most of the adults also exhibit this pathology.

An empirical link between the mound floor burnt earth deposit, south of the burial depression, and the cremation within the burial depression can not be demonstrated. The cremation involves a young adult female. Why this adult was cremated rather than bundled or extended is also unknown. The extended infant burial occurring in the mound fill, north of the burial depression, is a later addition and does not reflect the common interment practice of bundles for infants and juveniles. Although the redeposited cremation piles included in the mound fill are not well documented, at least one contained a reworked Robbins stemmed point, suggestive of a Late Adena date for the mound closing.

Hambleton Mound

The arrangement of burial features at Hambleton Mound is similar to Sidner Mound I with a mound floor burnt earth deposit situated south of a circular/broad subrectangular burial depression containing extended inhumations associated with a bundle burial and a cremation. However, the comparison is complicated by the presence of another burial facility and the potential for more in the eastern half of the mound, most of which has not been excavated. In addition, the internal patterning of the burial depression is slightly different.

The cremation serves as the focal point for the arrangement of the extended inhumations with the bundle burial at one side of the arrangement, which reverses the
pattern at Sidner Mound I. The cremation consists of an adult of undetermined age and sex. However, copper stains on a few long bone shaft fragments might be considered suggestive of a female, which would duplicate the pattern for the cremation at Sidner Mound I. The bundle burial contains a middle aged adult male, which by the condition of the bones, apparently was exposed for some time prior to interment. The postcranial bones were covered with red ochre, but there were no apparent bone pathologies associated with this individual.

The extended inhumations, with one exception, were lying adjacent and parallel to each other. Two burials lying side by side consisted of a male and a female, both of old age. The male was extended supine; while the female was extended prone. On top and between these two individuals was placed a young adult male in a prone position. Whether or not the prone placement of the young adult male was purposeful or related to the tight spacing of the individuals is not clear. However, the pelvic region was rotated upright, reminiscent of the female (Burial 9) at Sidner Mound I; but, in this case, there was no subsequent interment. The gorget associated with the young adult male was displaced from its original position along with the pelvic region. From the staining on the gorget, it was originally resting on the right hand of the old female. This position would also correspond to the front pelvic region of the overlying young adult male. Such positioning of gorgets in thoracic and pelvic regions appears to be a common practice in the mounds of this region. Consequently, the displaced gorget is considered to be associated with the male.

The other extended inhumation in this burial facility appears to be a later addition, a practice also noted for the burial depression at Sidner Mound I. A young adult male was placed, extended supine, along one side of the feature and headed in the opposite direction, thus disturbing the plan arrangement of the burial facility. In addition, the wall of the burial depression adjacent to this individual is distinctly more convex in
plan outline than the other sides, and the individual is partially flexed to conform to the wall. This would suggest a later extension to the burial facility and would further explain the different gorget form, semi-keeled, associated with this individual.

The mound floor burial feature contains two individuals lying parallel and adjacent to each other. One individual is a middle aged female extended prone. The other individual is an adult of undetermined age and sex extended supine. However, the fragmentary remains of the unsexed individual were determined in the field to represent a male. This would be a similar pattern to the old aged male and female from the burial depression. It would also be reminiscent of the pairings of males and females of the same age at Sidner Mound I and the pattern opposition between paired males and females at McMurray Mound I.

The association of the burnt earth deposit with the cremation from the burial depression is just as tenuous as the relationship at Sidner Mound I, because there are no calcined bone fragments in the burnt earth deposit, which could possibly link the two features. However, there is circumstantial evidence in the form of the burnt gorgets in the burnt earth deposit. They are morphologically similar to the gorget associated with the young adult male. If this is the case, then the possibility of the cremation representing a female based on the presence of copper stains would have to be reassessed, because of the mixing of male and female associated objects. On the other hand, the number of gorgets and the fact that they remained in the burnt earth deposit suggests they were not directly related to the cremated individual. Thus the gorgets could have represented a group identity rather than an individual identity.

The most striking difference between Hambleton Mound and Sidner Mound I is the absence of subadults at Hambleton Mound. This may be related to the fact that few individuals at Hambleton Mound exhibit bone pathologies suggestive of infectious disease.
Whereas, at Sidner Mound I almost all of the individuals had bone pathologies. In addition, the adults were relatively older at the age of death than those at Sidner Mound I.

**Sidner Mound II**

The burial patterns at Sidner Mound II are distinctly different from the previously discussed mounds. Because of the number of individuals, the overlapping of individuals, and the prehistoric reuse and disturbance of the burial facilities, patterns of burial associations are not readily apparent. Two characteristics are quite clear; all of the extended individuals are oriented east-west, but may differ in heading direction, in the three burial facilities, and a large number of subadults are interred as extended inhumations rather than as bundle burials. In considering the overall layout of the site, a circular/subrectangular occurs on either side of a circular/subrectangular burial pit. All three burial facilities have approximately the same north-south axis, on which the pelvic regions of the extended inhumations are aligned. However, this alignment is not maintained in the lower level of interments in the burial pit, although the east-west orientation of individuals is.

Perhaps the most compelling fact is the number of subadults occurring at this site. There are at least eighteen individuals between infancy and late adolescence represented among the three burial facilities with 5 in the southern burial depression, 3 in the northern burial depression and 10 in the burial pit. The subadults in the burial depressions are not as readily apparent as those extended in the lower level of the burial pit because they occur in disarticulated bone piles.

The pattern of pairing of males and females of the same age and the opposition of males and females in positioning can not be well established for the adult inhumations. Only two cases suggest this possibility, Burials 8 and 9 in Feature 1South, and Burials 30 and 31 in the lower level of Feature 1North. Burials 8 and 9 consist of an extended supine female and an extended prone male, both young adults, lying side by side. The male is
facing north and the female is facing south with her forearm draped over the male's back. Burials 30 and 31 consist of a young adult male and female, both of which are extended supine. The male was placed on the lower thoracic cage and pelvis of the female. The female's lower extremities were displaced to her thoracic cage suggesting the two individuals were not interred at the same time.

Returning to the layout of the burial facilities, Feature 1South provides the most complex arrangement of individuals, due primarily to the prehistoric disturbance of the facility. The initial interments appear to be headed to the east and represented by Burials 6, 10 and 14. The subadults were apparently placed between Burials 6 and 10. The subsequent or intruded inhumations are represented by Burials 7, 8, 9 and 17, all of which are headed west.

The intrusion of subsequent burials produced the disarticulated bone piles (1, 11 and 18) at the east, west and north ends of the burial facility. Complimentary body parts of a disarticulated infant with Burial 7 and bone pile (Burial 11), a disarticulated late adolescent (Burial 14) with bone pile (Burial 11), and the crossmending of subadult fragments from bone piles (Burials 1 and 11) on opposite sides of the burial facility attest to the subadults being present with the initial interments. The bone piles (Burials 3 and 5) at the southern end contain the partial and intermingled remains of two individuals which can not be crossmended nor compliment known disturbed inhumations. However, they can not be considered true bundle burials because of their arrangements and the number of individuals represented. In addition, a cremation was placed on top of Burial 5, which is a similar occurrence as found with the disarticulated bone piles (Burials 11 and 18).

The close spacing and western heading is repeated in Feature 2, the northern burial depression. This would suggest possible contemporaneity between Feature 2 and the intruded burials in Feature 1. The few and fragmentary burials from the upper level
of the burial pit, which are clear intrusions, may be temporally related to the burial depressions.

- The burials in the lower level pit overlap each other and form patterns of arrangement not previously encountered. Immediately north of the east-west axis of the pit were Burials 30 and 31 overlapping each other with an associated adult cremation (Burial 29). These were the only undisturbed burials headed west in the lower level interments. Adjacent to them was an extended supine young adult female (Burial 23) just south of the east-west pit axis. A young adult male was extended supine along the southern edge of the facility but had been disturbed. Between these two individuals were two subadult/juveniles extended on their right sides and crossed to form an X-shape. This pattern suggests a planned arrangement and a single burial episode. Above the juveniles were a middle aged female and another juvenile, both extended supine roughly parallel to each other with the subadult partially in an extension to the southwest pit wall. This arrangement suggests another burial episode which appears responsible for the disturbance of Burial 24. Along the north wall of the pit was a middle aged adult male situated to conform with the perimeter, not unlike Burial 24. Between this individual and Burials 30 and 31 were the disturbed remains of a young adult male and a juvenile.

Above the lower level burials was a disturbed area containing the scattered remains of three adults and six subadults, along with the missing portions of the lower level individuals. This would suggest the middle level burials had originally disturbed the lower level burials before being disturbed themselves by the upper level burials. This sequence of events is evident in the profile of the burial pit, where a bark covering over the lower level interments is intruded to the tops of the burials. In this space, the disarticulated remains of the disturbed area burials are found. The burial surface of the upper level burials is inclined towards the disturbed area and begins immediately above it.
The profile also indicates the southern burial depression intrudes and truncates the southern edge of the burial pit. Consequently, a series of events can be postulated concerning the use of the site. The burial pit (Feature 1North) was the initial facility, and it was used until the horizontal space was used and the bottom of the pit was filled and sealed. A hiatus occurred and the pit was reused disturbing the initial interments. The interments of the upper level on its inclined surface terminated the use of the facility. The conjoining southern depression was constructed, reused and filled, followed by the construction of the smaller northern burial depression.

Through the entire sequence the basic orientation and arrangement of burials is maintained with slight variations. The cultural continuity is bolstered by the morphological similarities in plan size and shape between the facilities and their apparent orderly arrangement at the site. This would suggest a rather short extended period of site use. This interpretation is strengthened by the apparent multiple interment burial episodes, evidenced by the variability in the organization of the individuals and the fact all the inhumations are extended, articulated individuals. The cause of these multiple periodic deaths appears to be infectious disease based on the frequent occurrences of related bone pathologies evidenced on these individuals.

The burial associated artifacts are perplexing because, at times, they reverse the apparent male/female associated artifact types. The gorgets are found with three individuals, a young adult male (Burial 9), a middle aged female (Burial 26), and a young adult female (Burial II-3A). In addition, Burial II-3A was associated with a cache of stemmed points and a bone awl. This case can be partially dismissed because the gorget was associated with the cache at the back of the cranium instead of in front by the thoracic or pelvic region. However, it still does not explain why the cache was associated with the female. The other case involving a female can not be explained because the gorget was associated with the front of the body in the pelvic region. In addition, a young
adult male (Burial 24) is associated with copper, shell and stone beads. Although the provenience has been questioned, due to conflicting fieldnotes, the copper stains are on the bones of the male. In contrast, Burial II-3A is associated with the other set of shell beads from the site and is a female. Consequently, is associated with both male and female associated burial artifacts.

Galbreath Mound

Galbreath Mound is reminiscent of Sidner Mound II in having a large number of subadults and multiple interment groups. In addition, it does exhibit an overall arrangement pattern linking the burial facilities. As with Sidner Mound II, the subadults appear to have been extended burials of infants and juveniles. However, most occur in disturbed contexts with only three of ten in their original extended positions. With few exceptions the subadults are confined to the lowest level interments in Features 108, a burial depression and Feature 110, a burial pit. Likewise, the disarticulated bone piles represent prehistoric disturbance of prior interments. Recent pothunter disturbance is differentiated from prehistoric disturbance by backfilling of holes intruding the features with fragmentary remains rather than the stacking of the whole disarticulated bones.

Although the multiple interment groups overlap and appear to be haphazardly arranged, there are recurrent patterns in the alignments of the placements of different groups and in the orientations of the individuals within each multiple interment group. Two of the three multiple interment groups occurring in the lowest level of the western half of Feature 110 contain tightly spaced, parallel, extended supine individuals headed in the same direction and oriented approximately east-west. One group (Burials 19-21 and 23-25) occupies the southern half of the feature, while the other group (Burials 27, 29, 30, 31 and unassigned number) occupies the northern half. The third multiple interment group (Burial 10 and unnumbered subadult) has been extensively disturbed by a pothunter's pit. Burial 10's cranium was in situ along with an associated cache blade. The
positioning of the cranium indicates the individual was headed west at a level below the northern multiple interment group. Whether or not this individual was extended can not be determined.

The upper level or overlying multiple interment group (Burials 22 and 26) in the western half of Feature 110 is oriented northeast-southwest, as are the interments in the upper and lower levels of Feature 108 and the mound floor burial. In the multiple interment groups from Feature 108 and the mound floor burial at least one individual is headed in an opposing direction to the other individuals. Because of recent and prehistoric disturbances of Feature 108 and the incomplete excavation of the mound floor burial, the nature of this arrangement is not clear. More individuals were involved in the arrangement, than were exposed in situ by the excavations. From the limited information the pattern appears to involve the opposition of adult males and females (Burials 35 and 1 upper level Feature 108, and Burials 36 and 38 lower level Feature 108).

The multiple interment groups in the eastern half of Feature 110 are oriented approximately north-south and exhibit one pattern of opposing headings (Burials 15 and 16), and one pattern of parallel, stacked, same heading (Burials 8, 11 and 12). A third multiple interment group (Burials 9, 13 and 14) was prehistorically disturbed by the subsequent interment of Burials 8, 11 and 12 and the pattern of arrangement of individuals is not known, although one partially intact individual (Burial 13) appears to be headed north.

Some of the multiple interment groups have roughly equal numbers of males and females with the females tending to be slightly older than the males. Exceptions to this pattern are the multiple interment groups consisting of Burials 15 and 16, containing adult females, and Burials 22 and 26 containing an adult male and a subadult/juvenile. This pattern can not be determined for the two multiple interment groups in the northern
half of the lower level of Feature 110 which were disturbed by pothunting and for the mound floor burial which was not completely excavated.

The temporal sequence of multiple interment burial episodes can be established by their placement, overlapping and intrusion in the features. The lower level of Feature 108, a circular burial depression, appears to have been constructed first and horizontally filled with extended inhumations and covered. Following this, one or more redeposited cremation piles were placed over Feature 108. The redeposited cremation piles and the burial depression were subsequently intruded during the construction of the burial pit for the upper level inhumations in the feature. The disturbance produced the disarticulated bone piles between the upper and lower level interments by disinterring some of the individuals from the lower level and spread the redeposited cremations over portions of the mound floor burial and Feature 110, as well as incorporating them in the fill of the intrusive burial pit. During the reuse of Feature 108, the unnumbered burial associated with Burials 27, 29, 30 and 31 in Feature 110 was also partially disturbed. The disturbed bones of the individual are partially mixed with the disarticulated bone piles and covered by the spreading of the redeposited cremation piles.

Feature 110, the burial pit was constructed after the lower level of Feature 108, employing the southern slope of the raised rim of excavated subsoil of Feature 108 as its northern perimeter. The lower level multiple interment group from the northern half of Feature 110 contain partially overlapping extended inhumations which conform to the slope. The multiple interment groups consisting of the vertically stacked Burials 19-21 and 23-25 and the overlapping extended adults (Burials 27, 29, 30, 31 and unassigned number) occur at the same level and are roughly contemporaneous. Both predate the multiple interment group (Burials 22 and 26) placed diagonally across them.

The north-south aligned multiple interment groups are considered to represent the last burial episodes and an eastern extension added to Feature 110. The unevenness of
the floor of the burial facility with the burials in the eastern end being at slightly higher elevations, and the apparent settling of Burial 15 into the fill of the western half of the feature attest to the extension of the original burial facility. The north-south aligned burials in Feature 110 could be contemporaneous with the mound floor burial, because it represents also a later addition on the western side slope of Features 108 and 110. However, the mound floor burial is partially covered by the redeposited cremation piles and would predate them. There is somewhat of an hiatus in the distribution of the redeposited cremation piles associated with the northern end of the eastern extension of Feature 110. The calcined bones and burnt earth are present but are intermingled with the soil of the feature fill to a depth at the same level as the burials occur, rather than overlying them. This would suggest the eastern extension of Feature 110 intruded the redeposited cremation piles and postdates them.

The burial associated artifacts tenuously support the sequence of burial episodes. The few projectile points associated with the lower level interments in Feature 110 resemble Adena stemmed points with their straight parallel haft element sides and bases and narrow thick blades. The point occurring above Burial 15 and those from the redeposited cremation piles resemble reworked Robbins stemmed points with slightly constricting haft element sides and rounded bases with broader blades. However, the cache blades do not repeat this pattern. One Adena and one Robbins cache blade occur with individuals from the lower level interment groups in Feature 110, with a similar pattern evident for cache blades underlying the interments of the lower level of Feature 108. In addition, the cache blade associated with the redeposited cremation pile is an Adena cache blade. Although it is in a disturbed context, it had to be associated with the redeposited cremation or the lower level of Feature 108.

The distribution of individuals with bone pathologies suggestive of infectious disease appear to be confined to the multiple interment groups in Feature 110, both the
lower level of the western half and the eastern extension. The occurrence of the series of linear macropores around the vertebra body is rare and occurs in conjunction with superior anterior margin destruction in two individuals (Burial 35 upper level Feature 108 and Burial 9/13/14 eastern extension Feature 110). The subadults do not exhibit the bone pathologies. However, it is possible they contracted the diseases and died prior to bone involvement.

Summary

In searching for patterns in the use of mortuary space, recurrent patterns were observed in both the horizontal and vertical dimensions at the different levels of analysis, which characterize the internal structures of the mounds and establish links between the mounds at some levels and differentiate the mounds at other levels. The major limitation in the analysis has been the inability to establish consistent recurrent patterns in the use of mortuary space along the vertical dimensions within the mounds to establish contemporaneity between them or portions of them.

In considering the mounds from a regional perspective, one recurrent pattern in the use of mortuary space links all of the mounds and is the occurrence of a circular/broad subrectangular burial depression. This is the same trait used in the preliminary interpretation to distinguish this regional group of mounds from other Adena mounds and was expected. However, the pattern is more complex with variable expressions of internal feature structure than the earlier description indicating a common occurrence of a particular burial facility type between the mounds. There is a consistent pattern of organizing the interments on an horizontal plane. The organization appears to have been a planned arrangement or layout, in which the extended inhumations are placed side by side in a parallel row. Although variable expressions in the orientation and heading of particular individuals exist, the side by side alignment along the horizontal plan is a constant.
A second recurrent pattern is the occurrence of multiple interments of extended inhumations suggesting several individuals died at relatively the same time. Variability in the closeness of spacing of individuals and in their orientations indicate groups of individuals were interred at different times and are referred to as multiple group interments, which reflect reuse of the burial facility. Although variable expressions exist in the age and sex compositions of the multiple interment groups, the most common occurrence is the pairing of an adult male and female. Sometimes these pairings are accompanied by one or more subadults. The next most common grouping is represented by a single adult of either sex but of early adulthood accompanied by one or more subadults. Groupings of adults of one sex occur and the individuals tend to be of relatively the same age. Subadults do not accompany this grouping.

The reuse of the circular burial depression is another pattern common to all of the mounds. However, its variable expressions partition the mounds into distinct groups. In most mounds, avoidance of previous interments maintains the horizontal arrangement pattern of individuals and is accomplished by placing subsequent interments in available spaces. In other mounds previous interments are partially or completely disinterred with the displaced remains stacked around the perimeter of the burial facility and the subsequent interments placed in the positions of the disinterred individuals. The intent appears to be the maintenance of a single horizontal plane for interments. One pattern of burial facility reuse is suggestive of mortuary ritual and involves manipulation of the pelvic region of an individual. A second pattern of reuse suggestive of mortuary ritual is the nature and distribution of red ochre stains, which indicates it was applied in a powdery form after the decomposition of the soft tissue of the individuals. Both of these patterns were restricted to mounds along the Little Darby Creek segment of the drainage.

The recurrent patterns of the use of mortuary space at McMurray Mound I are distinctly different from those at the other mounds and reflect a change in organization
from a vertical to an horizontal plane in the use of mortuary space. Two burial feature types, elongated narrow rectangular pits and a circular depression, occur in the mound with the former usually representing the interment of a single adult individual and the latter a multiple interment group comprised primarily of subadults. In the rectangular pits the adult individual is sometimes accompanied by a subadult on the same horizontal plane but headed in the opposition in order to fit within the prescribed width of the burial facility. In the few cases where more than one adult is interred in the rectangular pit, pairing of a male and female is involved with the being vertically stacked, which also preserves the narrow width of the burial facility. The rectangular pits overlap and intrude upon each other indicating a restriction on the use of horizontal space at the mound level. In contrast, the circular depression is similar to those from the other mounds where arrangement of individuals is along an horizontal plane.

Hambleton Mound and Sidner Mound I form a group of mounds with distinct horizontal patterns in the use of mortuary space at the mound and feature levels. At the mound level, both have a burnt earth deposit on the mound floor with a circular burial depression at the same level and spaced some distance apart. Although contemporaneity between the features can not be established, the implication is the burnt earth deposit is the basin in which the cremation occurring in the circular depression was processed. Circumstantial evidence to support this contention includes 1) the burnt earth deposit was cleaned of all residue leaving the burnt earth in situ, 2) the cremation consisted only of human bone fragments, and 3) burnt earth deposits on the mound floor occur only at these two mounds. However, cremations do occur within other mound burial facilities.

Within the circular depression a similar pattern in the arrangement of interments is present in both mounds. One cremation and one bundle burial occur at one end of the burial facility with multiple interment groups of extended inhumations aligned side by side placed around them. Reuse of the facility for subsequent interments tends to avoid
disturbing the arrangement by positioning the subsequent interments near the burial facility perimeter. Manipulation of the pelvis of one of the extended inhumations is pattern that occurs only in these two mounds.

Galbreath Mound and Sidner Mound II form a group of mounds with a similar pattern in their internal mound structure. Both contain one circular burial pit and at least one circular burial depression. The burial facilities are closely spaced and either intrude or abut each other. The circular burial depressions have an horizontal arrangement similar to those from the other mounds, but reuse of the facilities disinters portions of the previous interments with the remains piled around the feature perimeter. The circular pits contain horizontal arrangements of multiple interment groups which are vertically stacked in levels.

In evaluating the recurrent patterns in the use of mortuary space, there is no clear homogeneity in their occurrences between the mounds in the region. Taken out of mound context, all of them are related by the occurrence of a circular burial depression with a horizontal arrangement of multiple interment groups comprised primarily of extended inhumations. Also taken out of mound context, the mounds along the Little Darby Creek are related by the use of red ochre. In considering the internal mound structure, two of the three mounds along Little Darby Creek exhibit a similar patterns in the feature types present and in their plan layout and internal feature composition. The third mound along Little Darby Creek has an internal mound structure similar to the from the mound along Big Darby Creek above the confluence. The vertical stratigraphy of the mounds is not sufficient to determine if these observed patterns are temporally or culturally related or a combination of both. Consequently, an independent means of dating the features is needed to evaluate the observed patterns.
CHAPTER VIII
CONCLUSIONS

A primary objective of this study has been the documentation of the variability in mortuary remains exhibited by the excavated mounds along the middle Big Darby Creek drainage. This has been accomplished through the description of the formal variability in the remains at various levels of analysis; feature, burial, and artifact. Understanding the mortuary variability has taken an historical perspective in which the internal organizations of the mounds are to be understood by the patterns in the use of mortuary space as they reflect the sequences of burial episodes involved in the formations of the mounds. Through the stratigraphic analysis, patterns in the mortuary remains emerge which have variable expressions in the mounds and tend to link them together in a regional cultural unit at one level of analysis and differentiate them at another. Whether the variable expressions are related to time or cultural preference, or a combination of both, requires a regional perspective, which is the focus of the concluding discussion.

The understanding of the regional mortuary variability must go beyond the description of the mortuary remains in order to explain the observed patterns. Consequently, the discussion needs theoretical underpinnings to guide the analysis. Therefore, the discussion relates the mortuary remains to current understanding of mortuary behavior. There are two approaches to the organization of the mortuary data, which at times appear conflicting and at other times complimentary. The basic tenets of the Adena mortuary concept have been the guiding approach to mortuary studies in the central Ohio area. The more recent approach attempting to directly relate mortuary
remains to past social structure and organization has not been attempted for Adena sites but has been for Hopewell, primarily due to the small burial populations in the Adena mounds which are not amenable to statistical analysis. Both approaches are similar in that they search for patterned mortuary behavior. They differ in their explanations of the observed mortuary patterns, with the Adena mortuary concept concerned with the ideational aspect of mortuary behavior and the more recent studies concerned with the functional aspect.

Both approaches have their limitations in the way they organize the mortuary data and the analytical methods employed to explain the data. The Adena concept organizes mortuary data into sets of diagnostic mortuary traits and attempts to reduce variability between sites to a common denominator, the mortuary ritual. When the variability in the diagnostic traits is too great between sites, change is indicated which has been explained as formalization in the mortuary ritual over time. The function of mortuary ritual or the patterned mortuary remains is assumed to be a reflection of the social structure and organization.

The more recent mortuary studies reverse the approach and are concerned with establishing the relationship between patterned mortuary remains and changes in social structure and organization. The major limitation has been the inability to adequately measure quantitatively the variability in mortuary traits reflecting individual social status. Additionally, the studies select sites for analysis based on morphologically similar mortuary traits, which in essence assumes the ideational aspect of mortuary ritual.

The Adena concept has been revived recently in an attempt to understand the organization and use of mortuary space. In this approach, the attempt is to characterize the mortuary ritual. In so doing, the ideational and functional aspects are melded with realization that both can change over time and/or the variability may be reflecting different parts of the social structure and organization. Consequently, this approach has a
dynamic quality requiring an historical perspective in understanding the mortuary remains at a site and how they were formed. It is this approach which guides the discussion of the regional mortuary variability.

Since the Adena mortuary concept was a main theoretical guide for research in central Ohio, it is not surprising that attention was focused on the mounds along the middle Big Darby Creek drainage, because they exhibited a pattern of mortuary remains at variance with the developmental scheme of increasing formalization in mortuary ritual. The continued presence of circular subfloor pits with numerous interments and utilitarian types of associated grave goods, normally associated with Early Adena, at a late date extending well into the Middle Woodland/Hopewell Period jeopardized the Adena concept. These mounds were interpreted as a regional variant representing a group living in isolation from the social changes occurring along the main Scioto River drainage. However, there was no explanation for this group's isolation.

Within the artifacts, some of the artifact classes, especially the points, cache blades and gorgets, contained items reflecting accepted diagnostic Early and Late Adena types. Consequently, the interpretation of retention of Early Adena traits rests on the burial feature types and the interments. The circular subfloor depressions or pits with their multiple interments were at odds with the idea that the shift from Early to Late Adena was related to formalized mortuary ritual in which fewer and presumably more important individuals were interred in centrally placed and more elaborately constructed tombs. Such a pattern was evident at Toefner Mound along the Scioto River, approximately 10-15 km from the Big Darby Creek mounds, where circular subfloor burial depressions were replaced by log tombs in the upper levels. In addition, the frequent occurrence of extended prone burials was a burial type not considered diagnostic of Adena and was considered a local practice further reinforcing the idea of an isolated group.
It would appear an answer to the perceived cultural continuity of the mortuary activities lies in an understanding of the organization of mortuary space. The circular/broad subrectangular burial depression does occur at all of the mounds, but not in the same position in the site plan layout nor without association with another feature type. Prone burials do occur at all mounds but not at the same frequency in each mound and not in the same relationship with other burials, artifacts and features. Out of context, the originally proposed set of mortuary traits distinguishing this region do represent a general but unexplained pattern.

Although the circular/broad subrectangular burial depression occurs at all the mounds, it occurs in different relationships to the other burial features at the mounds. The circular burial depression at McMurray Mound I appears to be a later addition to the more common elongated, narrow, rectangular burial pits and represents a distinct change in the organization of mortuary space from the vertical to the horizontal plane for multiple interments. At Sidner Mound II and Galbreath Mound, the circular burial depression appears to be a later and ancillary burial facility added to the site in close proximity to the initial burial facility, a circular burial pit. Only at Sidner Mound I and Hambleton Mound does the circular burial depression appear to be the principal burial facility at the site. Thus, this feature type represents the termination of the use life of a site, the continuation or extension of the use life at a site, and the principal facility used at a site.

The arrangements of burials within the circular burial depressions show a consistent pattern between Sidner Mound I and Hambleton Mound, and possibly with pothunter disturbed feature at McMurray Mound I. The extended inhumations form parallel or fan shaped arrangements of individuals all headed in the same direction. However, minor variations in the arrangement occur between the mounds. In spite of the variations in the placement of the individuals, there is a pattern suggestive of the pairing
of adult males and females of the same age group. The symmetry of the arrangement is prehistorically disturbed twice at both sites. The first instance of disturbance involves the rotation of the pelvic region 180 degrees for only one of the individuals. The second instance of disturbance involves the interment of another individual at a later date, which is not placed according to the arrangement and upsets the symmetry of the horizontal plan layout. The first disturbance appears to be ritually related; while the second disturbance is not necessarily so.

The northern burial depression at Sidner Mound I and the burial depression in the lower level of Feature 108 at Galbreath Mound appear to be variants of this theme with the arrangement of individuals conforming to the patterns found in adjacent features. However, they do not represent all of the various arrangements in the other features, only the ones represented in the upper levels of the adjacent features. Consequently, they reflect a portion of the sequence of burial episodes at these sites which indicate extended and periodic reuse of the site. Although these two burial depressions do not appear to be the principal burial facility at the sites, they still reflect a short use period of the facility, since there appears to be single horizontal arrangement of interments. A similar argument holds for the burial depression at McMurray Mound I, which is associated with the terminal use of the mound and is distinctly different in form from the underlying elongated, narrow, subrectangular burial pits. The complexity of the arrangement pattern or plan layout is not evident at Sidner Mound II and can not be determined at Galbreath Mound and McMurray Mound I due to the degree of disturbance. However, the pattern in the northern circular burial depression at Sidner Mound II appears to represent a single multiple interment burial episode where limited concern over the arrangement of the interments is suggested.

The southern circular burial depression at Sidner Mound II is distinctly different from the others in having several multiple and perhaps single interment burial episodes
represented. The later burial episodes disturbed previous interments. However, there
appears to be an attempt to maintain an orderly arrangement within the burial facilities.
The later interments are aligned according to the positioning of the prior interments but
headed in a different direction. The remains of the disturbed interments are placed in
piles around the perimeter of the feature approximating the cardinal directions with
cremations placed on three of them. In one case, the artifacts associated with the
disturbed individual appear to be reinterred with the pile of bones. This pattern is similar
to Feature 108 where the lower level interments are disturbed and piled to one side of the
feature and the subsequent interments are aligned in a similar direction. The pattern is
reminiscent of the disturbances of extended inhumations in the elongated, narrow,
subrectangular pits at McMurray Mound I. Consequently, there is a dichotomy in the use
of circular burial depressions. At those sites where the circular burial depression is the
principal burial facility, limited disturbance is noted involving manipulation of select
individuals in the orderly arrangement of interments and a later interment which is placed
at one side of the facility to minimize disturbance of the arrangement. The other burial
depressions, with the exception of the northern one at Sidner Mound II, do not show
avoidance of prior interments but do maintain them within the facility. Both practices
appear to be related to maintaining the continuity and completeness of the burial facility.
Thus, the dichotomy concerns the sanctity of the individual remains. The northern burial
depression at Sidner Mound II appears more closely related to the ones at Sidner Mound I
and Hambleton Mound. However, the complexity of arrangement is absent and the
pairing of adult males and females of the same age can not be established because one of
the skeletons is missing from the collection.

The circular/broad subrectangular burial pits at Sidner Mound II and Galbreath
Mound are similar in having levels of multiple interments. They also exhibit different
orientations or headings of the multiple interment groups between levels. An hiatus in the
use of the burial pits, possibly for an extended period, is evident at both sites. The
difference between the two burial pits is related to the use of mortuary space in the upper
level. The mortuary space used at Sidner Mound I is gradually restricted to the central
area of the pit. In contrast, at Galbreath Mound the available horizontal space is filled at
the subsequent levels with the later multiple interment groups being placed in an eastern
extension of the facility.

The levels of multiple interments oriented or headed in different directions, along
with the apparent hiatus, and the disturbance of lower level interments suggests the
extended or long term use of Sidner Mound II and Galbreath Mound was periodic. This
would suggest either groups moved away and came back to the area, or the occurrences of
the multiple deaths were spaced out. Given the number of small mounds occurring along
the drainage and the lack of any sizeable Adena settlement, it would appear groups moved
periodically up and down the drainage. The close proximity of the mounds to the
confluence and their equidistance from it on the different tributaries suggests these areas
might have been preferred localities subject to frequent reoccupation.

The occurrence of extended prone burials is frequent but differs from mound to
mound. The highest frequencies occur at Sidner Mound I and McMurray Mound I. All
but one of the extended inhumations in the arranged burial pattern at Sidner Mound I are
prone. These individuals represent pairings of late adolescents and adult males and
females. Consequently, prone burials do not appear to be associated with sex at this
mound. At McMurray Mound I the initial interments represent a planned and arranged
set of burial features containing extended prone males. All of the other prone burials
involve adult females, including some associated with extended supine males and others
occurring as single interments. The one or two cases of prone burials in each of the other
mounds also involve the pairings of adult males and females. However, in some cases the
male is prone and in other cases the female is prone. Consequently, prone burials occur
for adult males and females of all ages in which the pattern of opposition between paired
sexes is not consistently maintained.

The opposition of males and females is also not consistently reflected in the
distribution of associated grave goods. Both males and females are equally associated
with copper and shell beads. Gorgets occur with both sexes and are positioned in the
same manner. Even caches of artifacts representing chipped stone tool production occur
with both sexes. However, there is a tendency for gorgets and artifact caches to be more
frequently associated with males. The only artifact which consistently and exclusively
occurs with females is the bone awl/pin situated at the back of the cranium and probably
representing a hairpiece. Consequently, status differentiation based on age and/or sex
does not appear to be reflected in the mortuary remains. The possibility of achieved
status appears to represented by the unequal distribution of grave goods with a few
individuals. Both males and females appear to have the opportunity to achieve status.

In looking beyond the artifact types to their morphological attributes, there are
consistent patterns, which suggest local group use of the mounds. Projectile points were
recovered from different burial associations at McMurray Mound I, Sidner Mound II, and
Galbreath Mound, all of which are extended use sites. The projectile points are
consistently fashioned from a particular raw material source within a mound but from
different sources between mounds. At McMurray Mound I, Delaware/Columbus chert is
used, with Upper Mercer chert at Sidner Mound II, and Vanport chert at Galbreath
Mound. This would suggest group preference or a group symbol is represented by the
chert type exploited. This pattern does not hold for the cache blades.

There are distinct differences in the gorget types represented at Galbreath Mound
(reel or bowtie) and Hambleton Mound (semi-keeled) in comparison to the
quadraconcave gorgets found at all sites except Galbreath Mound. The occurrences of the
different gorget types may be time related, suggesting Galbreath Mound and Hambleton
Mounds are more recent, which is reflected in their associated radiocarbon dates. Within the quadrance concave gorget type, there are patterns of attributes which appear to be mound specific. The attributes involved have to do with the spacing of drill holes along the longitudinal axis, the number of sides from which the hole has been drilled, and the raw material. To a lesser degree the depth of the concave sides appears to be mound specific. In fact, the gorgets from a particular mound are so similar they appear to have been produced by a single individual.

The most intriguing artifacts are the non-utilitarian bone items, which occur primarily in the artifact caches. An unmodified deer vertebrae occurred with one of the young adult males in the initial burials at McMurray Mound I. A proximal humerus of a large bird, such as a swan or goose, was associated with a young adult male at Galbreath Mound. However, it is not clear if it was part of the cache or lying over the individual. A cut wolf/dog maxilla occurred with the cremation in the lower level of the burial pit at Sidner Mound II. In the northern burial depression at Sidner Mound II, another cut dog/wolf maxilla occurred with a skunk maxilla in association with the cache accompanying the young adult female. The occurrence of these objects in different mounds and the multiple occurrence of one kind in a mound suggests these items served as symbol for something. Given the other patterns of mortuary remains, it seems likely they represent group symbols and possibly lineages.

The two common characteristics for all the mounds are multiple interment groups and bone pathologies suggestive of infectious diseases. The multiple interment groups consist primarily of extended inhumations. Cremations and bundle burials occur infrequently and are singularly placed in association with a multiple interment group. Single extended inhumations do occur but are primarily restricted to the elongated, narrow, subrectangular pits at McMurray Mound I. With the exception of Sidner Mound I, subadults are primarily extended inhumations rather than bundles.
The multiple interment groups consist of two to six individuals. They involve a wide range of age and sex combinations, including paired subadults. However, the consistent fact is that they are extended individuals and presumably died at relatively the same time. There is little evidence of violent or accidental death, and old age can not account for the simultaneous death of elderly adults. Therefore, it would seem the bone pathologies suggestive of infectious disease are a conditional factor in the cause of the multiple deaths. The infectious diseases, themselves do not necessarily have to be the cause of death. The infectious disease could have been chronic and endemic and weakened the resistance of the individuals to other life threatening diseases. Consequently, the continued use of the burial depressions and pits may reflect the anticipated need for burial facilities to accommodate multiple interments in the near future.

Circumstantial evidence for the prehistoric concern with disease comes from the red ochre stains. In the majority of the cases, the red ochre in powdery to granular form is adhering to the bone suggesting it was applied after death, which would require at least partial exposure of the corpse. The clearest example of this occurring is the linear markings on the lower extremities of Burial II-2 at Sidner Mound II. Other individuals tend to have the red ochre sprinkled over their extremities and/or vertebral columns, which corresponds to the sites where the bone pathologies occur. However, not all afflicted individuals are covered with red ochre and some individuals not exhibiting bone pathologies do have red ochre stains.

The internal mound structures along with the few radiocarbon dates from two of the mounds can be used to provide a relative regional chronology of mound use (Figure 13). McMurray Mound I appears to be but can not be conclusively demonstrated to be the earliest based on stratigraphic relationship of the elongated, narrow subrectangular pits and the circular burial depression. With the addition of the circular burial depression at
the termination of mound use, the pattern in the use of mortuary space for this mound becomes similar to the other mounds. The circular burial depression may be contemporaneous with similar features at the other mounds but this can only be established by an independent dating means.

Based on the radiocarbon dates Galbreath Mound predates Hambleton Mound and was used for an extended period of time. Based on present evidence Hambleton Mound represents the latest mound. Sidner Mound II and Galbreath can be postulated to be at least partially contemporaneous because of their long use periods and the general similarity in their internal structure. The chronological position of Sidner Mound I can not be accurately determined. It would seem that Sidner Mound I can not be considered contemporaneous with Sidner Mound II, because the reuse of Sidner Mound II would have negated the need for a completely separate burial facility and site. Based on the internal structure, Sidner Mound I is the most closely related to Hambleton Mound. However, it does share one pattern in the use of mortuary space with Sidner Mound II and Galbreath Mound, which is the redeposited cremation piles covering the burial facilities. Whether or not these deposits represent a temporal horizon for the region can not be conclusively demonstrated but is suggested. If it does, then based on the radiocarbon date from Galbreath Mound, such remains would reflect the Middle Woodland Period and represent a change in mortuary behavior. As such this line of inquiry warrants further research.

In considering the incidences of bone pathologies suggestive of infectious disease, there are differences between the skeletal populations which indicate changes in mortuary behavior and parallel the rough regional chronology. As such, the pattern in the incidences of disease is not a confirmation of the chronology but a merely a coincidence and can serve as an hypothesis which can be tested by the independent dating of the burial facilities from the different mounds. However, the incidences of disease do appear to be
partially conditioning the variable expressions of the recurrent patterns in the use of mortuary space in the mounds.

At McMurray Mound I, the occurrence of the multiple interment of subadults of all age groups in the burial depression signals a change in the use of mortuary space which appears to be related to the occurrence of infectious disease. Evidence for such disease does occur with the remains in the elongated, narrow, subrectangular pits. But it does not include multiple interments of subadults. Unfortunately, the subadult remains from the burial depression are too fragmentary and intermingled to determine how many of them might have been afflicted. At least the newborn is known to have bone pathologies. In addition, adults tend to live longer even though some are afflicted. The age distribution of the skeletal population at Sidner Mound I is similar to McMurray Mound I. However, a greater percentage of the skeleton population exhibit bone lesions including almost all of the adults. Afflicted subadults are present and tend to be bundled rather than extended suggesting they were not interred as a distinctly recognized individual and had to be accompanied by an adult. This would suggest deaths were spaced out but were beginning to affect the late adolescents and young adults. The use of red ochre with some of the afflicted individuals would also indicate a growing concern with the occurrence of disease. Red ochre was not present at McMurray Mound I. At Sidner Mound II and Galbreath Mound large numbers of extended subadults occur and exhibit more severe bone pathologies. However, a higher frequency of afflicted individuals, regardless of age, occurs at Sidner Mound II. These mounds exhibit more multiple interment groups, extended periods of use, and reuse involving the disinterring of previous inhumations and the piling of the displaced remains along the burial facility perimeter. Both mounds are the only ones to have circular burial pits, which are horizontally filled at subsequently higher levels suggesting they were initially constructed with anticipation of subsequent need. It is also in these two mounds that the inconsistent occurrences of male and female
associated artifacts occur. The overall appearance of the internal structure of these mounds appears to be an attempt on the part of the local group to deal with frequent but periodic multiple deaths. At Hambleton Mound there are no subadults and relatively more older aged adults. However, bone pathologies still occur at a relatively high frequency and multiple rather than single interments continue to occur.

There are patterns in the variability of mortuary remains from the mounds along the middle Big Darby Creek drainage which are not readily apparent when considering individual mortuary traits. The historical perspective allows for a searching of traits which may have variable expressions over time and space. Understanding the formation of burial sites over a region provides a means for determining which traits are important for explaining mortuary activities and how they relate to the prehistoric society. The mortuary patterns in the mounds along the middle reaches of Big Darby Creek are partially conditioned by the presence of infectious disease. However, there are patterns in the arrangements of burials and the forms of associated artifacts, which reflect social structure and organization. These patterns appear to reflect immediate family or lineage relationships, or more loosely termed local groups. Individual status symbols in the form of special treatment in burial facility construction and differential access to grave goods is not well developed. Artifacts do occur with few individuals suggesting achieved status; however, the types of artifacts crosscut age and sex lines suggesting they are poor indicators of individual status. This may not be the case when the importance of the infectious diseases in conditioning mortuary remains is considered. The mortuary remains indicate a local population under prolonged disease stress, in which multiple deaths occur periodically, but frequently and affect young members of the group. In such a situation, the importance of reaffirming group stability and cohesion is extended to the mortuary activities. The inconsistent occurrences of male and female associated items would represent individuals filling vacant roles in times of need.
The study has achieved its intent to document the range of formal variability in the mortuary remains from the mounds in the middle Big Darby Creek drainage. Through the stratigraphic analysis the contexts of the formal variability in the remains have been established and recurrent patterns in the use of mortuary space have been identified at various levels of analysis, which provide an understanding of the internal mound structures. In so doing, the internal mound structures were demonstrated to be more complex and varied in mortuary space patterns than indicated in the preliminary interpretation of the sites using select traits from the mound level of analysis. It appears the Adena concept with its normative model of mortuary ritual and developmental scheme can not adequately explain the variability in the mortuary remains from this regional group of mounds.

The study can not conclusively explain the differences in the internal structures of the mounds and in the recurrent patterns in the use of mortuary space. This is due to the inability to control the temporal dimension. The complexity and variability in the internal mound structures appear to be related to changes in mortuary behavior over time. Whether or not the variability can be explained by a formal mortuary ritual model must also be a concern of future research. The study has identified patterns in the mortuary remains which link and differentiate the mounds and can serve as lines of further inquiry. Tendencies do exist towards symbolizing individual status along the age and sex dimensions. However, symbols of group identities appear to be symbolized as well. The high incidence of infectious disease was postulated as a factor conditioning the patterning of mortuary remains, which suggests mortuary ritual can be altered by environmental conditions, as well as socioeconomic factors. Clearly the study raises more research questions than it addresses. However, control of the temporal dimension appears to be the key to understanding the dynamics of the mortuary behavior in this region.
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