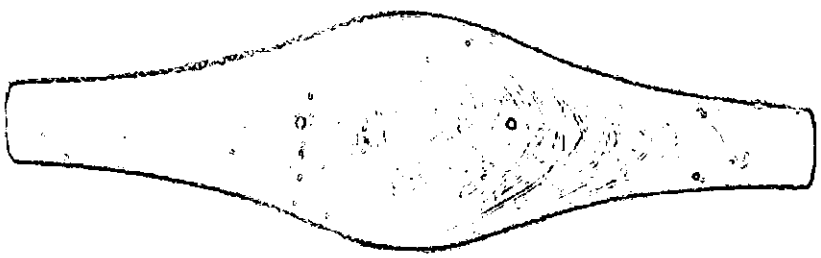
A Survey of Collections: An Archaeological Evaluation of Eight Earthworks in Eastern Indiana

by

Beth K. McCord
Donald R. Cochran



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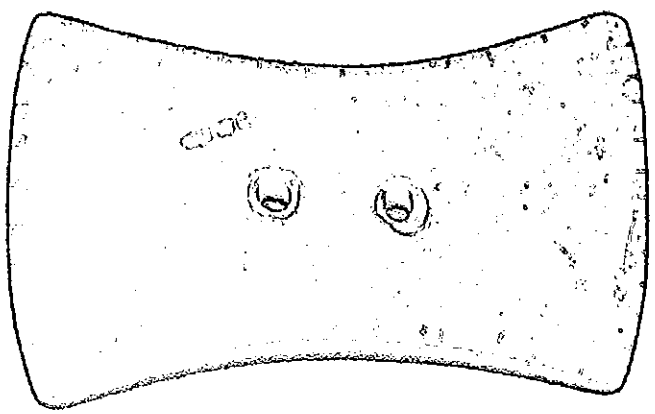

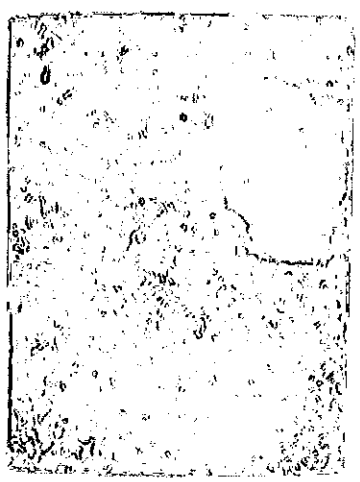

Archaeological Resources Management Service
Ball State University
Muncie, IN 47306

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ABSTRACT

The Archaeological Resources Management Service (ARMS) at Ball State University conducted a FY99 Historic Preservation Fund Grant to evaluate the collections from eight mound and earthworks sites in eastern Indiana. The project reviewed excavation documents and photographs and reanalyzed the artifacts. The original site interpretations were scrutinized and tested. The project also obtained new radiocarbon dates for five of the sites. The site information for the Parkinson Mound, Mound Camp, Fudge, Law Mound, Hayes Arboretum Mound, Waterworks Mound, Bertsch and Wolford Mound was integrated and presented in a cohesive format. Limited test excavations were recommended for seven of the sites to further determine integrity and document constructional information. The Law Mound, Fudge and Bertsch sites appeared to still contain integrity and important information on the ceremonial lifeways of the Early and Middle Woodland period. They were recommended for nomination to the State and National Registers of Historic Places. The information gathered by this project was significant for the advancement of Adena and Hopewell studies in eastern Indiana and the Ohio Valley.

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INTRODUCTION

Over the past 15 years, the Archaeological Resources Management Service (ARMS) at Ball State University has been involved in researching the earthworks in east central Indiana. This research has provided a synthesis of individual sites (Cochran 1988, Kolbe 1992a, McCord 1994, McCord 1998, McCord 1999) and evaluations of the potential of existing earthwork sites in the region (McCord and Cochran 1996). The research has also taken a broader approach by exploring the relationships between the eastern Indiana earthworks and the Adena and Hopewell Complexes (Cochran 1992, 1996). During the course of these investigations, it has been recognized that reanalyses of collections from previously excavated earthworks has proved fruitful in documenting the artifacts and reinterpreting the sites structure and possible use (eg. Kolbe 1990, McCord 1999). The Anderson complex (12M2), the New Castle site (12Hn2) and Windsor Mound (12R1) have all been subject to some degree of consolidation (Cochran 1988, Kolbe 1990, Cochran 1992, Kolbe 1992a, McCord 1994, McCord 1998, McCord 1999).

Several other mound and enclosure sites were in need of similar integration. This project was designed to record additional data from the Parkinson Stone Mound (12Dl12), Mound Camp (12Fr134), the Fudge Mound (12R10), the Law Mound (12R31), the Hayes Arboretum Mound (12Wy1), the Waterworks Mound (12Wy12), and the Bertsch Site (12Wy45/46). The curated collection from the Bertsch site also included artifacts and notes from the excavation of a nearby mound. This mound was identified as the Wolford Mound (12Wy44) and was included for evaluation. Each of these sites was previously excavated and documented, but the available information on the sites was incomplete and with little substantive information that was applicable to modern interpretations and research designs. All of these sites were recognized as potentially eligible for listing on the National Register but lacked the cohesive information to do so. Each of these sites was believed to contain unique information on Indiana prehistory and data for increasing our understanding of Early and Middle Woodland lifeways.

This report documents the compilation of data for the eight mound or earthwork sites concerning the excavations, artifacts, site structure and chronology. These collections had not been critically reviewed since the work was originally conducted. Therefore, the information was 20 to 60 years old. A thorough background search of each site was provided utilizing materials curated at the Indiana State Archives, newspaper articles, oral histories, excavation notes and photographs. The artifact collections were described in detail including the identification of lithic raw materials. Samples submitted for radiocarbon dating were also reported. This information could now be more easily and reliably integrated into regional research on Adena and Hopewell studies. The cohesive structure could also facilitate the nomination of some of these sites to the State and National Registers of Historic Places.

METHODS

The project was completed through an extensive literature and site file review, and artifact reanalysis. Background research on each of the sites and the artifacts was compiled from published site reports, field notes, catalogue records, photographs and newspaper articles from sources located at the Archaeological Resources Management Service (ARMS) and Bracken Library at Ball State University, the Indiana State Archives, the Glenn A. Black Laboratory at Indiana University, the Joseph Moore Museum at Earlham College and the Boonshaft Museum of Discovery in Dayton, Ohio. Field notebooks and several color slides were loaned to ARMS by the Joseph Moore Museum and Mr. James Heilman of the Boonshaft Museum of Discovery.

All artifacts were classified by industry as either lithic, ceramic or other. All artifacts were described in a consistent format utilizing standardized forms (Appendix A). Chipped stone tools were identified using the definitions contained in Appendix B. Point types were identified using Justice (1987) as the primary reference. Lithic raw materials were identified using the chert collection maintained at ARMS. Metric information was recorded as necessary. Most artifacts were examined microscopically. All artifacts except for lithic debitage were photographed using color slide film and a digital camera. Several databases were created to manage information.

The artifacts examined during this project were curated at several institutions. Reanalysis of these materials were, therefore, conducted at various locations and through the assistance of several individuals. The use of standardized forms kept the information and documentation uniform. The Parkinson Mound collection and BSU excavations at the Bertsch site were housed at ARMS and were documented by the authors. The Law Mound materials were donated to ARMS during this project and was documented by the authors. The Fudge and Mound Camp collections were curated at the Glenn A. Black Laboratory at Indiana University and were documented by Tim Wright. The Hayes Arboretum, Waterworks, Bertsch and Wolford collections were split between the Joseph Moore Museum at Earlham College, Hayes Arboretum in Richmond and the Boonshaft Museum of Discovery in Dayton, Ohio. The collections on display at the facilities in Richmond and collection at the Boonshaft Museum were documented by Tim Wright. The collection at the Boonshaft Museum were reviewed by the authors. A portion of the Earlham collection was loaned to ARMS and documented by the authors. The accuracy of the information contained in this report was the responsibility of the authors.

The evaluation of the sites encountered two types of obstacles that hindered the reanalysis. The first difficulty dealt with the evolution of archaeological methods. The excavation and recording procedures used during the original work on these sites were normal given the era when they were excavated. However, in reviewing the collections for this project, the lack of detailed excavation records, feature records, profiles and photographs presented severe problems for answering contemporary problems.

The second difficulty encountered dealt with the data. A couple of the sites had more extensive artifact collections than were reported and in a few cases, some of the material was

missing from the collection. The background research sometimes encountered conflicting information that made the original site interpretations difficult to confirm and support. We approached each site with the viewpoint that the original interpretations represented hypotheses to be tested.

NATURAL SETTING

All of the earthwork sites investigated by this project are located in east central and southeastern Indiana. The natural setting for this region has previously been reviewed by McCord and Cochran (1996). This information will be reiterated with editorial changes pertinent to this project.

Location

The eight mound and earthwork sites included in this project are in east central and south eastern Indiana. The sites are located in Delaware, Randolph, Wayne, and Franklin counties (Figure 1). Numerous mounds and earthworks are documented in this region of Indiana (McCord and Cochran 1996). The eight sites are located in a region that contain the highest concentration of mound and earthwork sites in Indiana (McCord and Cochran 1996).

Geology

The sites are within the geologic structural feature known as the Cincinnati Arch (Gutschick 1966:17). This feature is described as a large, broad and platform-like anticline with its axis to the northwest (DeWitt 1989:19, Schmidt 1990:17). Westward and southwestward from the axis of the arch the, rocks dip into the Illinois Basin and northeast and northward on the axis the rocks dip into the Michigan Basin (Gutschick 1966:17). On the Cincinnati Arch the Paleozoic strata have been stripped away exposing Ordovician rocks south of Richmond, Wayne County, and Silurian rocks on the crest of the Arch along its axis (Gutschick 1966:10). The exposed Ordovician rocks consist of shale, limestone and dolomite and the Silurian rocks consist of dolomite, limestone, chert, siltstone and shale (Gutschick 1966:3). The sites are contained within portions of the Bluffton Plain and Dearborn Upland bedrock physiographic units (Schneider 1966:54).

Chert resources within the area are found in both primary and secondary sources. Outcrops of Laurel chert have been noted in Franklin, Union and Fayette counties (Cantin 1994:22-23, Angst 1994:45, Kolbe 1992b:47). Laurel outcrops are also noted in the surrounding counties of Decatur, Jennings, Bartholomew, Clark, Jefferson, Ripley and Shelby in southeastern Indiana (Cantin 1994:22-23). Outcrops of Jeffersonville chert are noted to the southwest in Jennings and Jefferson counties (Cantin 1994:20-21). An outcrop of Liston Creek chert is identified to the west in Hamilton County (Cree 1991:44) although Liston Creek is more noted from outcrops to the north in Huntington and Wabash counties (Cantin 1994:25).

Secondary sources of chert resources are found in the glacial till. Fall Creek chert has not been identified in a bedrock source but is localized in southeastern Hamilton and southwestern Madison counties (Cantin 1994:13). "Gravel cherts account for a significant portion of cherts used in archaeological assemblages" (Cantin 1994:14). Some till cherts are identifiable to known primary types and others are unknown (Cree 1991:44). The majority of chert resources are

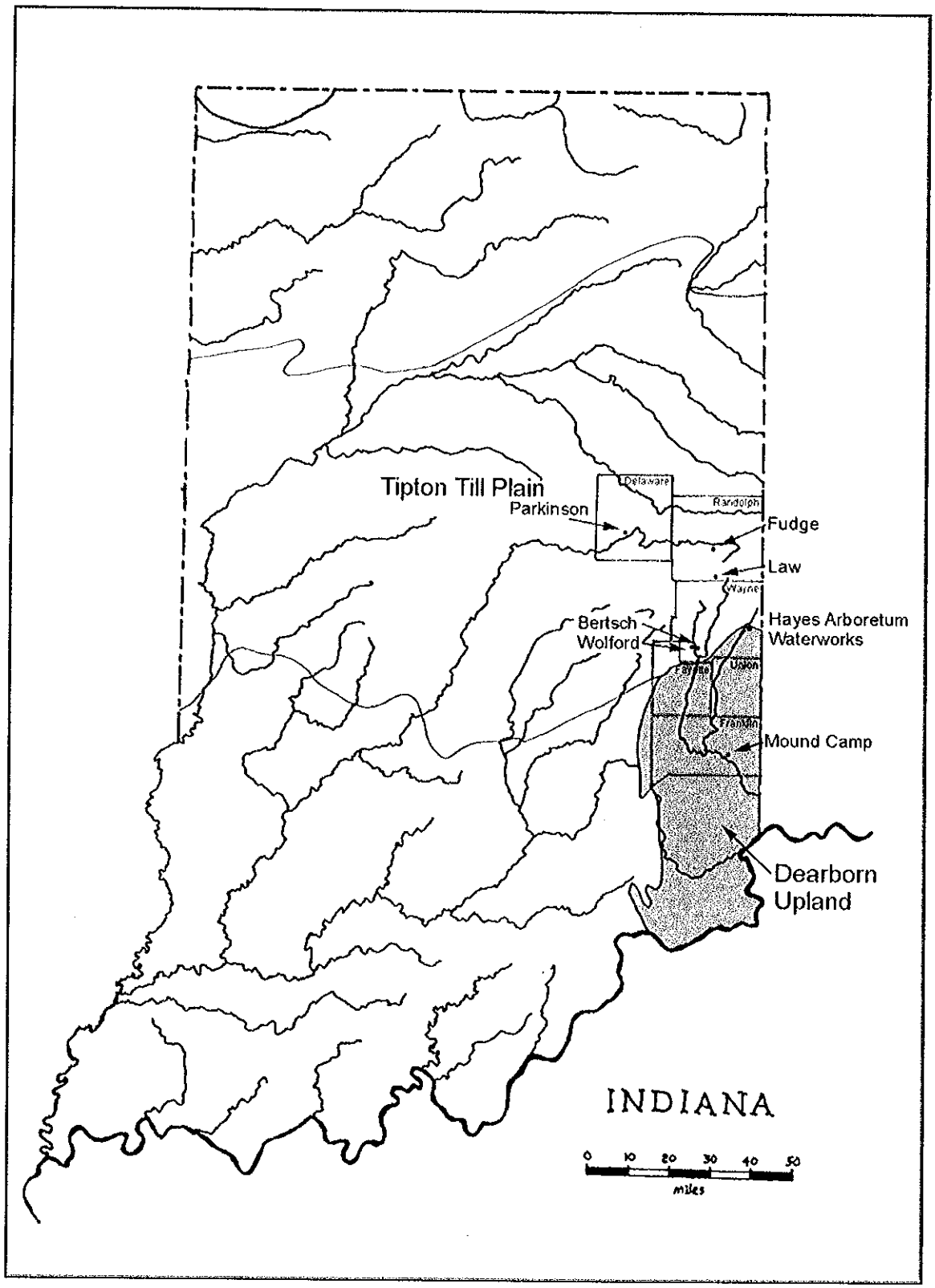

Figure 1. The location of the eight sites in Indiana.

expected to be from secondary sources since few outcrops occur in the area. In Gooding's (1973: 20) study of Wisconsin tills in eastern Indiana, the tills had decreasing amounts of chert and increasing amounts of shale from south to north. The relatively high chert content in the southern tills resulted from the large amount of chert residual weathering from the Laurel Member of the Salamonie Dolomite that outcrops around the Whitewater Basin (Gooding 1973:20).

Glacial History

The Pleistocene Epoch is characterized by great climatic changes and large scale expansions and contractions of glaciers. Portions of Indiana have been covered by glacial ice three times (Wayne 1966). The Kansan ice entered Indiana approximately 400,000 years ago and covered the region filling the valleys with till. Deposits of Kansan till are known as are part of the Jessup Formation (Wayne 1966). The Kansan ice retreated approximately 200,000 years ago and the Yarmouth interglacial period began. During this period intense erosion eroded away nearly all of the Kansan deposits in the study area (DeWitt 1989). The Illinoian ice advanced approximately 125,000 years ago and again covered the region. The materials deposited by the Illinoian ice form the upper section of the Jessup Formation (Wayne 1966). The Illinoian ice retreat approximately 100,000 years ago and the state entered another interglacial period known as the Sangamon which weathered the Illinoian till. The Wisconsin glaciation began approximately 65,000 years ago. The Wisconsin ice covered most of region containing the sites, but not the western or central portions of Franklin County. The Wisconsin sediments are known as the Trafalgar Formation and the Atherton Formation (Wayne 1966). As the Wisconsin ice retreated another recent interglacial period began.

The ice laid sediments are more definitively delineated by Wayne (1963, 1966). The Butlerville Till Member of the Jessup Formation is Illinoian in age. Wisconsin sediments consist of the Cartersburg and Center Grove Till Members of the Trafalgar Formation and the outwash and dune facies, and lacustrine facies of the Atherton Formation. The Atherton Formation consists of materials created by the retreat of the Wisconsin ice. The glacial drift in the region ranges from a few feet up to 450' (Schmidt 1990:33). Nonglacial sediments of the Martinsville Formation of Recent age are also found in the area (Wayne 1966). The alluvial facies consists of silt, sand and gravel and is found mainly in floodplains while the paludal facies are deposited in areas of quiet water and consist of the high organic peat, muck and marl (Schmidt 1990).

Physiography and Topography

Parkinson Mound, Fudge, Law Mound, Bertsch and Wolford Mound are located in the general physiographic unit known as the Tipton Till Plain. The Tipton Till Plain is characteristically a nearly flat ground moraine plain (Malott 1922:105, Schneider 1966:49). The topography is virtually featureless except for the end moraines. Glacial features which provide relief are knolls, basins and ridges of terminal moraines, eskers, kames and fluvio-glacial features (Malott 1922:106). The Tipton Till Plain is a constructional feature of the glaciers, a plain without valleys until the ice began melting and cut broad sluiceways leading southward and

southwestward across the plain (Malott 1922:109).

Mound Camp is located in the Dearborn Upland. The Dearborn Upland is a dissected plateau (Schneider 1966:42). Streams have trenched this upland from 200 to 500 feet below the general upland surface, but much of the upland surface still exists (Malott 1922:84). The area is marked by considerable relief diversity (Malott 1922:84). Hayes Arboretum Mound and Waterworks Mound are located on the boundary between the Tipton Till Plain and the Dearbon Upland.

Drainage

The Parkinson Mound and Fudge sites are located in the Upper White, west fork drainage basin (Kingsbury 1970:18). The rest of the sites, Law, Hayes Arboretum, Waterworks, Bertsch and Wolford, are in the Whitewater drainage basin (Kingsbury 1970:18). The main drainages within the region are the White River, the Whitewater River (east and west forks), and Greens Fork. Parkinson is located on the north side of the White River and Fudge lies on the south side of the White River. Mound Camp is on the east side of the Whitewater River. Hayes Arboretum and Waterworks are both to the south of the East Fork of the Whitewater River. Bertsch lies on the east side and Wolford on the west side of the West Fork of the Whitewater River.

The river and stream valleys in the region are largely formed by glacial meltwaters. The rivers present in the Tipton Till Plain are on a low gradient and form a well developed sub-parallel drainage pattern (Chen 1992:15, Schmidt 1990:7). Most of the stream valleys have been unmodified since the glaciers retreated from the Tipton Till Plain (Malott 1922:109). Many streams do not have much valley development but the tributaries do become entrenched upon their approach to the main valleys (Malott 1922:110).

In the Dearborn Upland the drainage pattern is dendritic in areas of Wisconsin till, and in areas of Illionian till highly dissected drainages have dendritic or sub-parallel patterns (DeWitt 1989: 10-11). Since most of the streams are short and the fall from upland headwaters is relatively great, the upland plain is deeply trenched (Malott 1922:85). Valley lands are frequently well developed but not very wide, but the Whitewater Valley averages more than a mile in width (Malott 1922:86, DeWitt 1989:11). Terraces of glacial outwash are found along the valley walls of the Whitewater River (Malott 1922:86).

Climate

Indiana is characterized as having a humid, continental climate. The southern half of the state is termed mesothermal meaning a warm temperature climate. The northern half is microthermal meaning a cool temperature climate. The statewide climate is an example of a macro-scale climate. But meso-scale climates also exist within the state in the major river valleys, the shore area around large lakes, and exceedingly high plateau areas. The dominate controlling feature of meso-scale climates is the wind (Newman 1966). The growing season for the region is

between 150 and 170 days (Newman 1966:172). Individual county records were examined in reference to temperature and precipitation. The average temperature for the region in the winter ranges from 27 to 30 degrees Fahrenheit and the average daily minimum temperature ranges from 19 to 20 degrees. The average temperature in the summer ranges from 71 to 72 degrees and the average daily maximum temperature ranges from 82 to 84 degrees. The total annual precipitation for the region ranges from 37 to 40 inches (Shively 1989; Alfred, Ulrich & Zachary 1960; Blank 1987; Neely 1987; Huffman 1972).

Flora

The natural vegetation of the region ca. 1816 includes 3 types: beech-maple forest, oak-hickory forest and western mesophytic. The dominant vegetation is beech-maple forest developed from the mesophytic forest as northward postglacial migration occurred. In a beech-maple association beech is usually the dominant canopy tree with sugar maple co-dominate in the canopy and dominating the understory. Other species occurring in beech maple forests include; black walnut, white oak, burr oak, red oak, tulip poplar, white ash, american elm, slippery elm, cork elm, basswood, black gum, hickory, sassafras, and black cherry. Small tree understory is generally redbud-dogwood-blue beech or dogwood-hop hornbeam. Shrub layers can include pawpaw, spicebush, greenbriar, elderberry, leatherwood, wahoo and maple-leaf viburnum. The most prominent herbaceous representations occur in the spring with rue anemone, jack-in-the-pulpit, spring beauty, cutleaf toothwort, pretty bedstraw, mayapple, false Solomon's seal and wild ginger (Petty and Jackson 1966).

The oak-hickory association is found in balance with both beech-maple and western mesophytic types. The oak-hickory forests are usually found on south-facing and west-facing slopes while beech-maple forests usually occupy north-facing and east-facing slopes. The moisture content of oak-hickory forests is consistently lower than in beech-maple forests. It appears that the oak-hickory forests at the time of European settlement were undergoing a gradual replacement by more mesic species. The principal species of the oak-hickory association are white oak, black oak, red oak, pignut hickory, shagbark hickory, sugar maple, american beech, white ash, swamp white oak, chinquapin oak, bur oak, mockernut hickory, american elm, slippery elm and black gum. The understory frequently are less well-developed than the beech-maple and western mesophytic associations with one or two species such as hop hornbeam, blue beech, service berry or dogwood dominating the layer. The most common herbs present in the oak-hickory associations are pussy-toes, common cinquefoil, wild licorice, tickclover, blue phlox, waterleaf, bloodroot, Joe-pye-weed, woodland asters and goldenrods, wild geranium and bellwort occur in late summer and autumn (Petty and Jackson 1966).

A small area of western mesophytic association is found in Franklin County. This is a rich, mixed forest in which a great number of species share dominance. In the region, the mixed forests have beech as the dominant species along with sugar maple, tulip poplar, white ash, basswood, walnut, white oak, red oak, red elm and black gum. The understory frequently consists of flowering dogwood, redbud and blue beech. Pawpaw, spicebush, greenbriar and leatherwood are

common shrubs. The herb layer is prominent, especially in the spring. Typical plants are wake robin, slender toothwort, rock larkspur and twinleaf (Petty and Jackson 1966).

Indiana flora has undergone many changes since the retreat of the glaciers. Table 1 shows a model for the vegetation sequence of east central Indiana. The deciduous forests discussed above are representative of the vegetation during the Woodland period.

Table 1
Vegetation Sequence of East Central Indiana
(Cochran and Buehrig 1985:9, after Shane 1976)

<table>
<tr><td>AD 2000</td><td rowspan="2">Historic</td><td rowspan="6">Deciduous Forest</td></tr>
<tr><td>AD 1000</td></tr>
<tr><td>0</td><td>Late Woodland
Middle Woodland</td></tr>
<tr><td>1000 BC</td><td>Early Woodland</td></tr>
<tr><td>2000 BC
3000 BC</td><td rowspan="2">Late Archaic</td></tr>
<tr><td>4000 BC</td><td rowspan="3">Middle Archaic</td></tr>
<tr><td>5000 BC</td><td rowspan="2">Prairies and Open Vegetation</td></tr>
<tr><td>6000 BC</td></tr>
<tr><td>7000 BC</td><td rowspan="2">Early Archaic/ Late Paleo Indian</td><td rowspan="2">Deciduous Forest</td></tr>
<tr><td>8000 BC</td></tr>
<tr><td>9000 BC</td><td rowspan="8">Early Paleo Indian</td><td>Pine Maximum</td></tr>
<tr><td>1000 BC
11000 BC</td><td rowspan="2">Conifer-Deciduous Woodland</td></tr>
<tr><td>12000 BC</td><td>Boreal Forest</td></tr>
<tr><td>13000 BC</td><td>Park Tundra
Tundra or Open Areas</td></tr>
<tr><td>14000 BC</td><td>Periglacial Zone</td></tr>
<tr><td>15000 BC</td><td>Wisconsin Ice</td></tr>
</table>

Fauna

Several species of Pleistocene megafauna have been recorded in Indiana. The Pleistocene mammals reported include giant sloth, giant beaver, musk-ox, mastodon, mammoth, horse, dire wolf, bison, tapir, Virginia deer, peccary, elk and probably moose, caribou and some form of bear (Moodie 1929:77-96). Richards (1984) has additionally documented moose, caribou, 2 forms of bear, white-tailed deer, Canadian goose, armadillo, jaguar, sabertooth tiger and camel. Several Pleistocene species have been documented in the region although most refer to mastodons (Quick 1888, Warder 1872, Haymond 1869, Phinney 1882, Helm 1881, Greene 1969).

Man has altered the Indiana environment toward a single type habitat. In the process, many species have moved into new territories or have become restricted or extinct. It has been estimated that approximately 66 species of mammals were present in Indiana in 1816. The following species have since been exterminated: porcupine, gray (timber) wolf, red wolf, black bear, fisher, wolverine, eastern spotted skunk, river otter, mountain lion, lynx, elk, bison, and possibly bobcat. Some of the mammals found in all or most Indiana counties include: opossum, short-tailed shrew, least shrew, eastern mole, little brown bat, red bat, hoary bat, evening bat, eastern cottontail, eastern chipmunk, woodchuck, gray squirrel, fox squirrel, southern flying squirrel, beaver, deer mouse, white-footed mouse, meadow vile, pine vole, muskrat, southern bog lemming, Norway rat, house mouse, meadow jumping mouse, coyote, red fox, gray fox, raccoon, long-tailed weasel, mink, striped skunk, and white-tailed deer. Beaver and white-tailed deer were once extirpated and reintroduced (Mumford 1966:475-476).

The fish fauna has also changed over the last several thousand years. During the Wisconsin glaciation, coldwater species such as trout, grayling, whitefish and cisco probably inhabited the southern part of the state. As the glaciers retreated, the coldwater fish migrated north and warm water fish migrated into the state from the south. A total of 177 species of fish have been described in Indiana waters. Ten of the species have not been seen since 1900 and may be extinct and 20 species are rare. Several species have been introduced by man or man's intervention including carp, goldfish, brook trout, rainbow trout, brown trout, smelt, sea lamprey, alewife, and threadfin shad (Gammon and Gerking 1966:402-404).

Approximately 200 species of mollusks and 400 species of crustaceans occurred in Indiana waters (Young 1966:321-335). Call (1900:342) identified 131 species of mollusks in 1900 and reported the mollusks from southern Indiana were larger than those found in northern Indiana. Between 1947 and 1957, 82 species of amphibians and reptiles were recorded for the state. The composition and distribution of the herpetofauna was influenced by environmental changes since the retreat of the Wisconsin glaciers. With the shifting environmental patterns, immigrations of new species occurred becoming dominant but the prior residents were not completely replaced. Man has introduced no new species, but has altered the distribution of most species and a species of semiaquatic snake is no longer found in the state (Minton 1966:426).

Approximately 366 species of birds have been reported in Indiana since 1816. This number includes transients and migratory species. The Passenger Pigeon and Carolina Parakeet, two

common species of the nineteenth century, are now extinct. Nine species found in Indiana in the nineteenth century no longer occur in the state; the Wood Ibis, Trumpeter Swan, Prairie Chicken, Whooping Crane, Eskimo Curlew, Mississippi Kite, Swallow-tailed Kite, Ivory-billed Woodpecker and Raven (Webster 1966:455).

Soils

The formation of soils is influenced by several factors; parent material, climate, flora and fauna, topography and time. Most of these factors have been discussed in the preceding section. The parent materials found in the study area are composed of glacial till, alluvium, loess, outwash, lacustrine sediments, bedrock residuum and organic material (Blank 1987, Neely 1987, Shively 1989, Huffman 1972). The soil association and specific soil for each site is discussed below.

The Parkinson Mound is located in the Miami-Fox-Martinsville soil association that consists of well drained, nearly level to strongly sloping, moderately fine textured to moderately coarse textured soils that formed in glacial till and outwash on uplands and terraces. The specific soil mapped where the mound is located is the deep, nearly level and gently sloping, well drained Ockley silt loam, 0 to 2% slopes (OcA). Included in this mapping unit are small areas of soils that have a surface layer of loam (Huffman 1972:6, 20, map sheet 30).

Mound Camp is in the Ockley-Eldean-Alvin soil association that consists of nearly level and gently sloping, well drained, loamy soils that are deep and moderately deep to sand and gravel and that formed in outwash on river terraces. The soil mapped for Mound Camp is most likely the Eldean loam, 0 to 2% slopes (ElA), but the exact location of the mound is uncertain. This soil is characterized as nearly level and well drained and located along river terraces (Shively 1989:5-6, 25-26, map sheet 44).

Fudge is in the Celina-Patton-Losantville soil association that contains nearly level to moderately steep, deep, moderately well drained, poorly drained and well drained, medium textured and moderately fined textured soils that formed in loess, underlying glacial till and in lacustrine sediments. It is located on uplands and lake plains. The soil mapped at Fudge is mainly the nearly level, deep, well drained Miami silt loam, gravelly substratum, 0 to 2% slopes (MoA). There is also some of the gently sloping, deep, well drained Miami silt loam, gravelly substratum, 2 to 6% slopes, eroded (MoB2) (Neeley 1987:6-7, 29-30, map sheet 30).

The Law Mound is in the Losantville, stony-subsoil Patton-Crosby, stony subsoil soil association that consists of nearly level to strongly sloping, deep, well drained, poorly drained and somewhat poorly drained, medium textured and moderately fine textured soils formed in glacial till and lacustrian sediments that are located on uplands and lake plains.. The soil maybe either the Miami silt loam, gravelly substratum, 2 to 6% slopes, eroded (MoB2) or the Losantville clay loam, stony subsoil, 6 to 12% slopes, severely eroded (LtC3), since the exact location of the mound is unknown. Both soil series are deep and well drained (Neeley 1987:9, 26-27, 30, map sheet 61).

The Hayes Arboretum Mound is in the Miami-Crosby-Strawn soil association that contains deep, nearly level to very steep, well drained and somewhat poorly drained soils formed dominantly in glacial located on uplands. The specific soil is the gently sloping, deep, well drained Miami silt loam, 2 to 6% slopes, eroded (MnB2) (Blank 1987:7-8, 28-29, map sheet 37).

The Waterworks Mound, Bertsch site and Wolford Mound are located in the Eldean-Ockley soil association that contains soils that are nearly level to strongly sloping, well drained soils that are moderately deep and deep to sand and gravel and formed in outwash and in loess and outwash that are located on uplands. Each of these sites is in the area mapped as the gently sloping, well drained Eldean loam, 2 to 6% slopes, eroded (EoA). Some enclosures at the Bertsch site may be in the Eldean clay loam, 2 to 6% slopes, severely eroded (ExB3)(Blank 1987:5-6, 16-17, 19-20, map sheet 32 & 37).

The soil association and specific soil series nomenclature varies by county, but soil classification is more standardized at the level of family, suborder and order. When looking at the soil series or soil mapping unit, the 8 sites are somewhat differentially classified. At the higher taxonomic level they are much more similar. All of the sites were classified as either fine or fine-loamy, mixed, mesic, Typic Hapludalfs (Blank 1987:149, Neely 1987:129, Shively 1989:164, Huffman 1972:62).

Summary

The eight sites included in this project had similar aspects in the natural setting. On a general level the glacial history, climate, flora, fauna and soils in the region were very comparable. However, differences also occurred. Physiographically the sites were located in either the flat, moraine covered Tipton Till Plain or the rolling and dissected Dearborn Upland. Parkinson Mound, Mound Camp, Bertsch and Wolford occupy terrace settings, while Fudge and Law are located on moraines, and Hayes and Waterworks are in the till plain (Gray et al. 1970, Burger et al. 1971). The sites were all located near a substantial drainage system.

In comparison to each other, the natural setting of the eight sites were similar to each other at a broad level. This could be true of any prehistoric site in east central or southeastern Indiana. A review of the natural setting found that there was no consistent natural elements that occurred for all of the sites. This lack of a definable pattern within the natural setting Early and Middle Woodland mound and earthwork sites in the region has been previously documented (Cochran 1999:A-11).

EVALUATION OF SITES

Parkinson Mound

Background

The Parkinson Mound (12Dl12) was located in the [redacted] (Figure 2). The first published reference to the mound was likely by Phinney (1883:148) who vaguely refers to a mound located near Yorktown that had stones which showed the action of fire. Setzler (1930c:2) described the mound as 48' in diameter and 3 ½' high. The mound had been potted by 2 local collectors, Thad Wilson and Dr. Bunch, but they found only fire-cracked rock (Setzler 1930c:2). Rodeffer (1967:12) stated that the mound had been severely potted. The eastern portion had been cut away by a bulldozer. In the remaining western portion there were pot holes about 3' in diameter. In the backdirt from the cut, several limestone slabs and other rocks were observed which led Rodeffer (1967:12) to believe that the mound was partially constructed from stone.

In 1980, a Ball State University field school excavated a portion of the mound (Kirchner et al. 1980)(Figure 3). The site datum for the excavation was a benchmark on the Nebo Road bridge to the west of the site. The exact dimensions of the mound in 1980 could not be ascertained due to the disturbance. The project excavated 21 - 5'x5' units in the mound and 2 - 5'x5' units to the southeast off the mound surface. The excavation of the units was by 6" levels. Screening was utilized during almost all of the excavation. The project recovered fragments of human remains, animal bone, approximately 1500 lithic artifacts, a probable milling stone and a piece of shell. Eight different strata, 2 of which were disturbed backfill, were recorded by the excavation. There was no notation concerning the construction of the mound; ie. no mention of a primary mound or capping episodes. The mound was concluded to be an artificial construction, but more likely represented a memorial rather than a ceremonial mound (Kirchner et al. 1980).

The cultural affiliation of the mound was unclear. Artifacts dating from the Archaic through Late Woodland were recovered (Leffler 1980:12). All diagnostic artifacts were reported from the mound fill (Kirchner et al. 1980). No radiocarbon dates were obtained from the mound (Kirchner et al. 1980). Since stone was noted as a constructional element, the mound has been suggested to be Newtown (Cochran et al. 1988:16). However, the mound was currently outside of the defined distribution of Newtown. The mound was also considered to be Adena (McCord and Cochran 1996:33).

Evaluation

The main difficulty encountered with this site was dealing with the artifact assemblage. Lithics were the most prevalent artifacts recovered with approximately 1500 reported from the excavation. Apparently, the analysis of chipped stone materials did not incorporate any flakes that

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Figure 2. A portion of the USGS 7.5' Muncie West, Indiana Quadrangle showing the location of the Parkinson Mound.

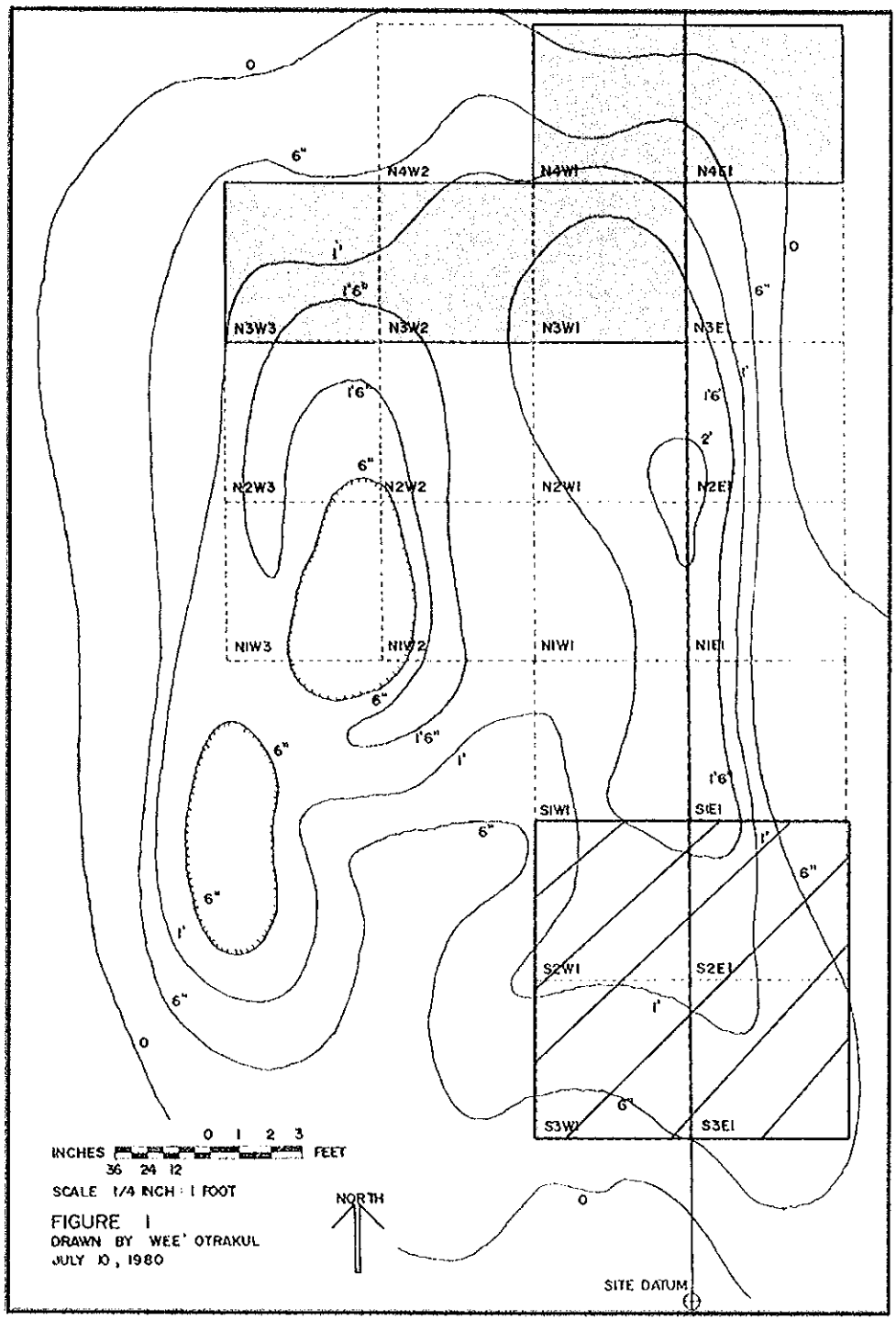

Figure 3. Plan of 1980 excavation (after Kirchner et al. 1980). West side was potholed and east side was bulldozed. Shaded units were reported to be undisturbed. Hatchered units were reported to be backfill.

did not have a bulb of percussion (Kirchner et al. 1980:5), but it did include glacial materials that were recognized as unworked and unutilized (Leffler 1980:12). The reasoning behind this methodology was not clearly documented, but appears to have completely misrepresented the lithic assemblage from the Parkinson Mound. In addition, several artifacts listed on the catalogue were not in the artifact collection (see Appendix C). Also, all the bone materials were documented as missing in 1980 (Putz 1980:16).

Along with the artifacts, all field notes, level records and feature records for the Parkinson Mound were curated at Ball State University under accession #121F. This project could locate only 4 photographs of the excavation of the mound. They documented some of the excavation and previous disturbance to the mound. The notes and photographs were of little utility in providing the details necessary for reconstructing the context of the artifacts and the mound structure.

Artifacts

Chipped Stone

A total of 1491 chipped stone artifacts were found in the Parkinson Mound collection from the 1980 BSU archaeological field school (Appendix C). Several hundred unmodified glacial rocks were not included. From the excavation units placed in the mound, 1338 prehistoric lithic artifacts were recovered. Table 2 displays a breakdown of artifacts from the mound by type. Table 3 displays the raw materials utilized from artifacts recovered in the mound. Tables 4 and 5 provide information on the artifacts and raw materials recovered from the surface around the mound and the two excavation units (E24S5 and E24S6) placed away from the mound.

Table 2
Type of Artifacts from Parkinson Mound

Type	No.	Type	No.
Points	8	Core	17
Point fragments	11	Bipolar	10
Bifaces	10	Unmodified flake	1184
Endscraper	14	Modified flake	61
Perforator	1	Block	15
Graver	1	Other Chipped Stone	6

Table 3 Raw Materials Utilized from Parkinson Mound			
Type	No.	Type	No.
Fall Creek	515	HT Flint Ridge	1
HT Fall Creek	400	Flint Ridge	9
HD Fall Creek	26	Delaware	1
Laurel	147	HD Delaware	1
HT Laurel	74	Allens Creek	6
HD Laurel	11	HT Allens Creek	5
Attica	24	Liston Creek	4
Wyandotte	23	Kenneth	1
HD Wyandotte	3	Glacial	1
HT Burlington	2	Unknown	52
Cedarville Guelph	1	HT Unknown	1
Upper Mercer	25		
HT= heat treated HD= heat damaged			

Table 4 Type of Artifacts from off Parkinson Mound			
Type	No.	Type	No.
Points	2	Core	2
Point fragments	1	Bipolar	2
Bifaces	1	Unmodified flake	133
Endscraper	1	Modified flake	6
Blade	1	Block	1

Table 5 Raw Materials from off Parkinson Mound			
Type	No.	Type	No.
Fall Creek	98	Flint Ridge	1
HT Fall Creek	16	HT Flint Ridge	1
HD Fall Creek	2	Wyandotte	1
Laurel	7	Cedarville Guelph	1
HT Laurel	5	Upper Mercer	1
Attica	8	Unknown	8
HD Attica	1		
HT= heat treated HD= heat damaged			

Points

There were eight points originally identified from the mound collection. The points were classified by shape (small points, side notched points and expanding stem points) and dimensional ranges were provided. Formal type names were not assigned and no temporal ranges were given (Beard 1980:9-11).

The reanalysis found 10 points and 12 point fragments in the mound collection. Eight of the points were found in the mound, but apparently just in the mound fill (Figure 4). The other 2 points were found on the surface away from the mound (Figure 5). The point metrics were presented in Appendix D.

Kirk Corner Notched

One Kirk Corner Notched point (121F-285) (Justice 1987:71-72) was recovered from unit N3W1 between 30 and 36" below the mound surface (Figure 4a). The point was made from Laurel chert. One corner of the base had been broken. The remaining section of the base was ground. Kirk Corner Notched points were diagnostic of the Early Archaic period between 7500 and 6900 BC (Justice 1987:71).

Matanzas

Four Matanzas side notched points (Justice 1987:119-121) were found in the mound (Figure 4b-e). One complete point (121F-283) was of Laurel chert and in unit N3W1 between 24-30" below the mound surface. The base had been ground. Another Matanzas point (121F-

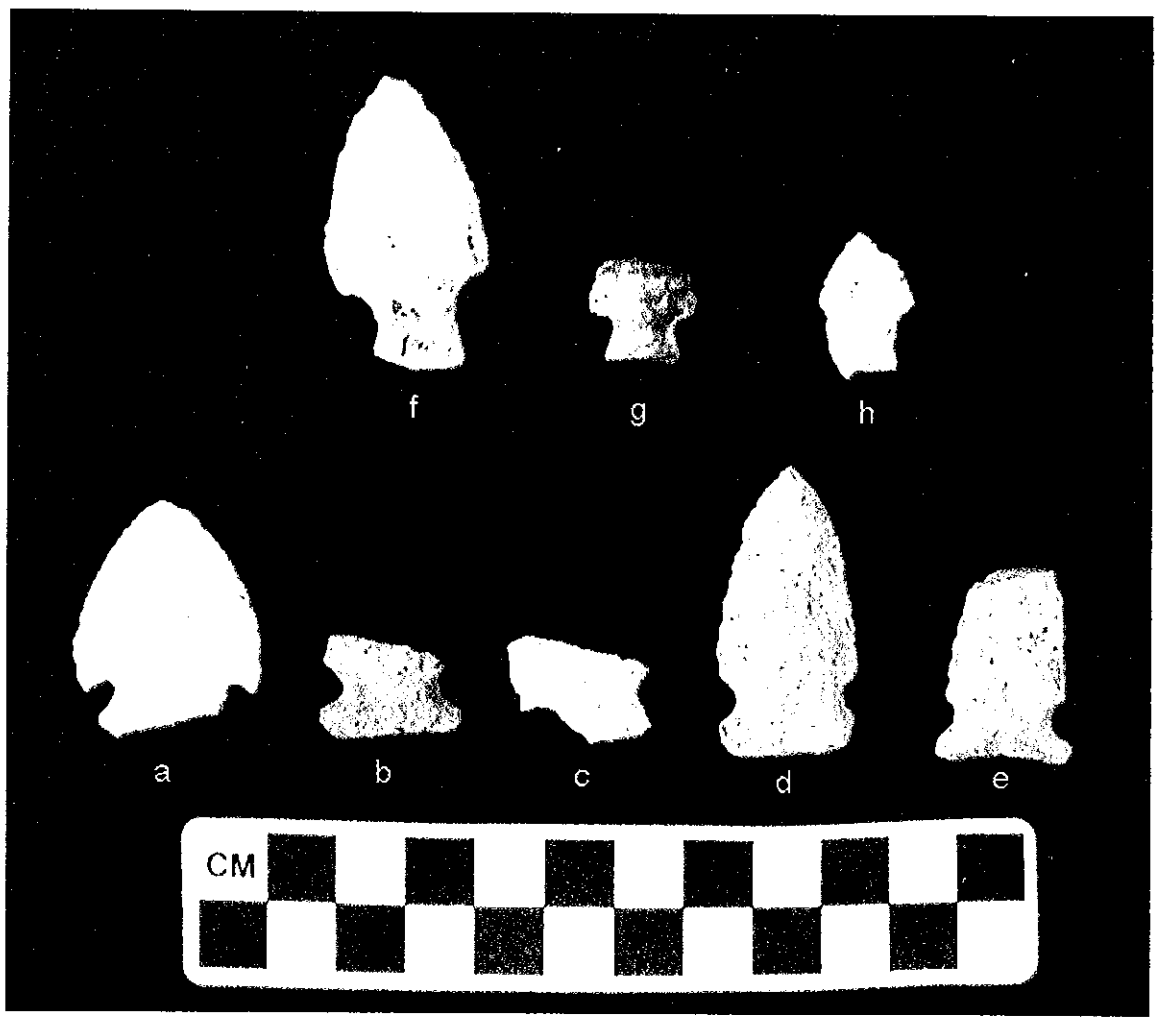

Figure 4. Points recovered in the mound fill: a) Kirk Corner Notched (121F-285), b) Matanzas (121F-28), c) Matanzas (121F-283), d) Matanzas (121F-367), e) Matanzas (121F-176), f) Table Rock (121F-354), g) Riverton (121F-288), and h) Riverton (121F-57).

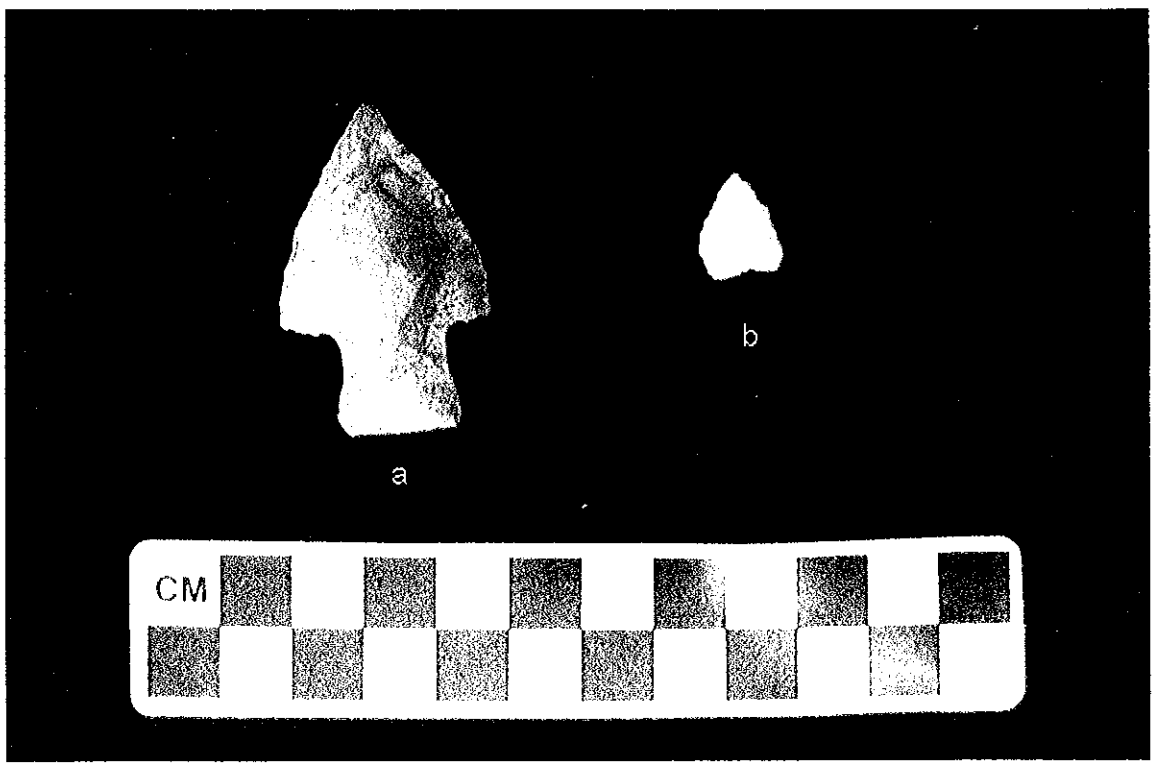

Figure 5. Points found off the mound: a) Robbins (121F-235), b) Unclassified (121F-382).

176) was also of Laurel chert and from unit N1W1 between 18-24" below the surface. The distal end was broken and the base had been ground. One Matanzas point (121F-367) was of Fall Creek chert and from unit N1E3 between 24 and 30" below the ground surface. Most of the blade and one corner of the base were broken. The last Matanzas (121F-28) was of Wyandotte chert. It was found in unit N1E1 between 24-30" below the ground surface. Most of the blade was missing and the base had been ground. Matanzas points were indicative of the Late Archaic period with dates between 3700 and 2000 BC (Justice 1987:119-120).

Table Rock

One Table Rock point (121F-354) (Justice 1987:124) of Laurel chert was recovered from unit N2W2 (Figure 4f). It was between 6 and 12" below the mound surface. The point was complete. Table Rock points were diagnostic of the Late Archaic period and date between 3000 and 1000 BC (Justice 1987:124).

Riverton

Two Riverton (Justice 1987:130) points were found in the mound (Figure 4g & h). One complete Riverton (121F-57) was of Laurel chert. It was recovered in unit S1E1 between 12-18" below the surface. The other Riverton (121F-288) of heat treated Fall Creek chert was broken across the middle of the blade and a portion of the base. It was found in unit N3W1 between 30 and 36" below the ground surface. Riverton points were Late Archaic and date between 1600 and 1000 BC (Justice 1987:130).

Robbins

One Robbins point (121F-235)(Justice 1987:187-188) was found on the surface of a trail near the mound (Figure 5a). The point was complete and of heat treated Laurel chert. Robbins points were diagnostic of the Early Woodland period dating between 500 BC and AD 200 (Justice 1987:188). This was the only diagnostic artifact that may be from the same time period as the Parkinson Mound. However, its provenience from the surface was of no use in determining the temporal and cultural affiliation of the mound.

Unclassified

One point (121F-382) was unclassified (Figure 5b). The point was complete and of Fall Creek chert. It was a small stemmed point with a heavily resharpened blade. The point was recovered from the surface on a trail east of the mound.

Point fragments

There were 12 point fragments in the Parkinson Mound collection. Eleven of the point fragments were found during excavations in the mound. One point fragment was found on the

surface near the mound. Only two point fragments were from exotic materials; one was of heat treated Allens Creek (121F-15) and one was of Attica (121F-379). These points were too fragmentary to assign by type.

Bifaces

Only 4 bifaces were identified in the field school report (Kirchner et al. 1980, Burkett 1980:9). The reanalysis identified 10 bifaces from the mound and one from the surface. Only one of the bifaces (121F-303) was complete and represented a Stage 2 biface of Liston Creek chert. Only one biface (121F-141) was from an exotic source, Wyandotte chert.

Endscraper

Nine endscrapers were identified in the mound report (Kirchner et al. 1980). Fifteen endscrapers were identified by the reanalysis (Figure 6). One was found on the surface and the other 14 were recovered during the excavation of the mound. Only two of the endscrapers (121F-59 and 121F-319) were of exotic material and both were made from Flint Ridge chert.

Perforator

Only one perforator (121F-120) was identified by the reanalysis (Figure 7). Only the tip of the perforator was present. It was made from Laurel chert. The perforator was recovered in unit S3W1 between 6-12" below the mound surface.

Graver

One graver (121F-343) of Fall Creek chert was identified by the reanalysis (Figure 7). The graver was found in unit N1W2 between 24-30" below the surface.

Bladelet

One bladelet fragment (121F-53) was recovered in unit E24S6 off the mound (Figure 8). The raw material was unknown. Bladelets were diagnostic of the Middle Woodland period (Genheimer 1996:94).

Debitage

The majority (88.4%) of the lithic assemblage recovered from the mound was composed of unmodified flakes (Table 2). Similarly, the majority (88.7%) of the lithics recovered off the mound were unmodified flakes (Table 4). The raw materials utilized were primarily from locally available sources, eg. Fall Creek and Laurel (Tables 3 and 5). Fall Creek chert alone comprised 70.4% of the material recovered from the mound and 77.3% of the material off the mound.

The amount of lithic debris recovered from the excavation of the Parkinson Mound was

Figure 6. Endscrapers recovered from the mound. Bottom: 121F-40, 121F-46, 121F-49, 121F-130, 121F-207, 121F-242, Top: 121F-270, 121F-300, 121F-305, 121F-319, 121F-326, 121F-327. (121F-59 is not pictured).

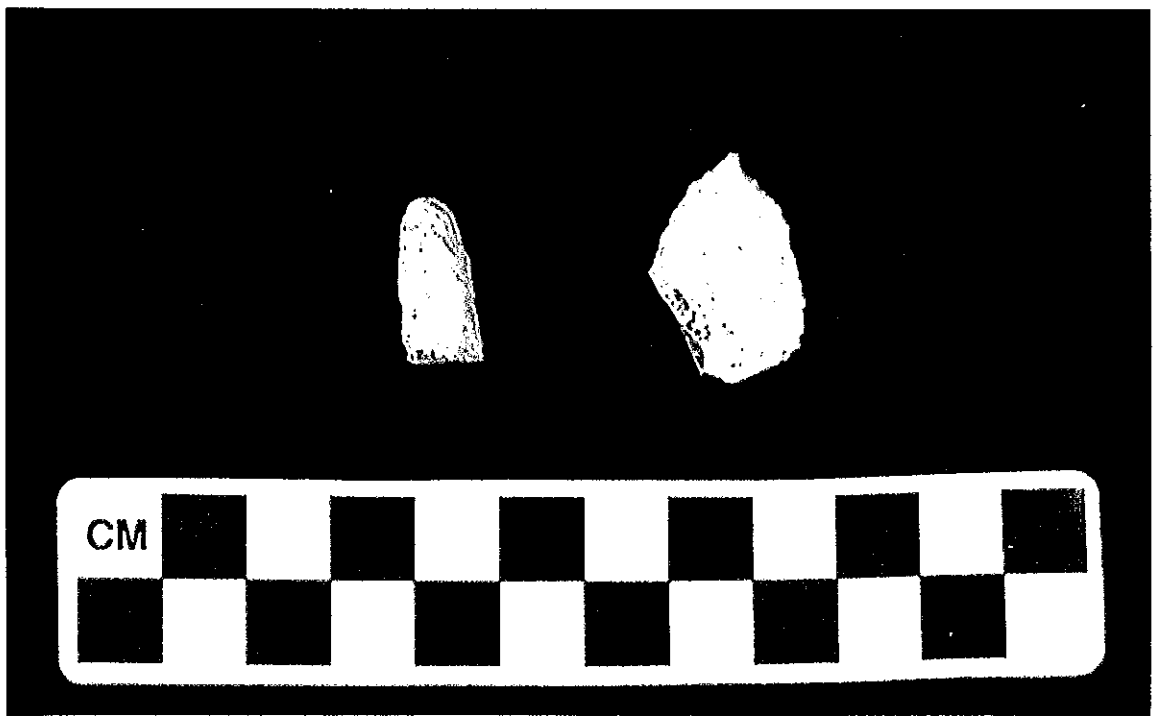

Figure 7. Perforator (121F-120) and graver (121F-343) recovered from the mound.

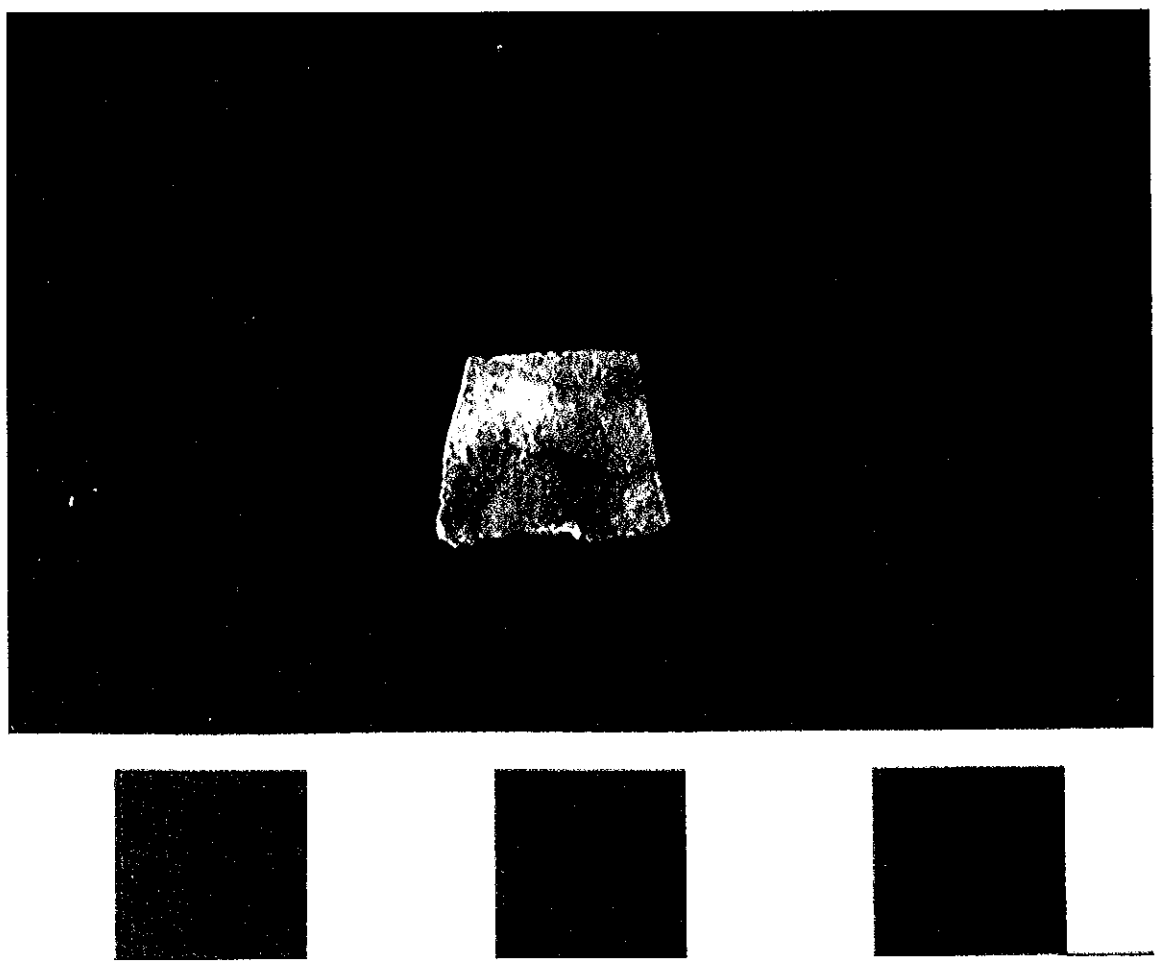

Figure 8. Bladelet fragment of unknown chert from unit E24S6.

substantially larger than any of the other mounds reanalyzed by this project. This was probably due to the practice of screening almost all of the excavated soil. The dirt used to construct the mound may also have contained a larger amount of lithic material.

Other Chipped Stone

The Parkinson Mound collection contained 6 fragments of other chipped stone. The fragments were flakes of slate.

Fire-cracked Rock

Twenty-two fire-cracked rocks were found by the reanalysis of the collection. Only one was recorded as actually from the mound. Fire-cracked rock may not have occurred in the mound fill or it may not have been curated. There were 21 fire-cracked rocks from a "feature" in unit E24S6 located off the mound. The feature was apparently a concentration of fire-cracked rocks.

Several pieces of burned sandstone were found by the reanalysis. It most of the cases, the sandstone had been identified as red ocher on the catalogue.

Bone

The 1980 field school report stated that all the bone material was missing and was possibly stolen (Swartz 1980:16). These artifacts were still missing and could not be reanalyzed. The bone assemblage was reported to contain 9 human fragments, 3 deciduous human teeth and 4 animal bones (Putz 1980:15-16).

The human material contained both adult and juvenile remains. They were noted as fragmentary and in poor condition. Most of the human bones were reported from areas of previous disturbance (Putz 1980:15-16). More specifically, the human remains were recovered from the southeastern corner of the excavation grid from units S1W1, S1E1, S2W1, S3E1 (Figure 3).

Of the 4 animal bones recovered, 2 were identified as squirrel (Putz 1980:16). These were both recovered in unit N1W1. There was no notation of context. The other 2 animal bones were identified as mammal. One was from unit N2W2 and the other was from unit S5E24, a test unit located off the mound.

Shell

One piece of shell was recovered. It was unmodified and recovered from unit N1W1, 30-36" below the surface. The shell was from a bivalve.

Historics

Given the disturbance to the mound, it was not surprising that some historic artifacts were recovered. This project was designed to document prehistoric collections, so the historic materials were not reanalyzed. However, the location of historic materials did serve to further document the disturbance of the mound. Two bags of green, clear, and amber container glass were noted from unit N1W1 in levels from 6-18" below the surface and one watermelon seed was recovered from unit N1E1 between 24 and 30" below the surface. A .22 caliber bullet was recovered from unit N3W3 between 6-12" below the surface.

Structure

The report stated that the area of excavation was fairly well disturbed except for the northern area in units N3W1, N3W2, N3W3, N4W1 and N4E1. Six strata including the topsoil and two backfill deposits were documented. The profiles of the mound show no difference between the disturbed area and the undisturbed area (Figure 9). There was no interpretation of the strata of what may represent mound construction, capping episodes or disturbance by bulldozer or pot hunting. The profiles portrayed relatively level soil layers with no notation of disturbance. Soils analysis determined that strata were loam or silt loam in texture and the soil used in the mound construction had likely come from a floodplain source by the White River (Burkett 1980:17-19).

While there was little doubt that the Parkinson Mound was of artificial construction, the report and the profiles of excavation did not define any submound structures, burial features or building phases such as a primary mound. The reanalysis found the profiles to provide no insightful information on the mound construction. While no "features" were discussed in the report, a concentration of rocks and limestone slabs in the undisturbed section of the excavation was documented (Kirchner et al. 1980:6)(Figure 10). Two of the curated "limestone slabs" were actually pieces of sandstone.

Since no features were recorded during the excavation, all of the materials from the Parkinson Mound were likely incidental to the mound fill. The artifacts were probably just scraped up with the soil used in the mound construction. This being the case, none of the artifacts can be tied with activities in the mound. Since there was no carbon from a reliable and undisturbed location in the mound, a radiocarbon sample was not submitted. Without diagnostic artifacts or radiocarbon dates, the temporal and cultural affiliation of the Parkinson Mound cannot be verified.

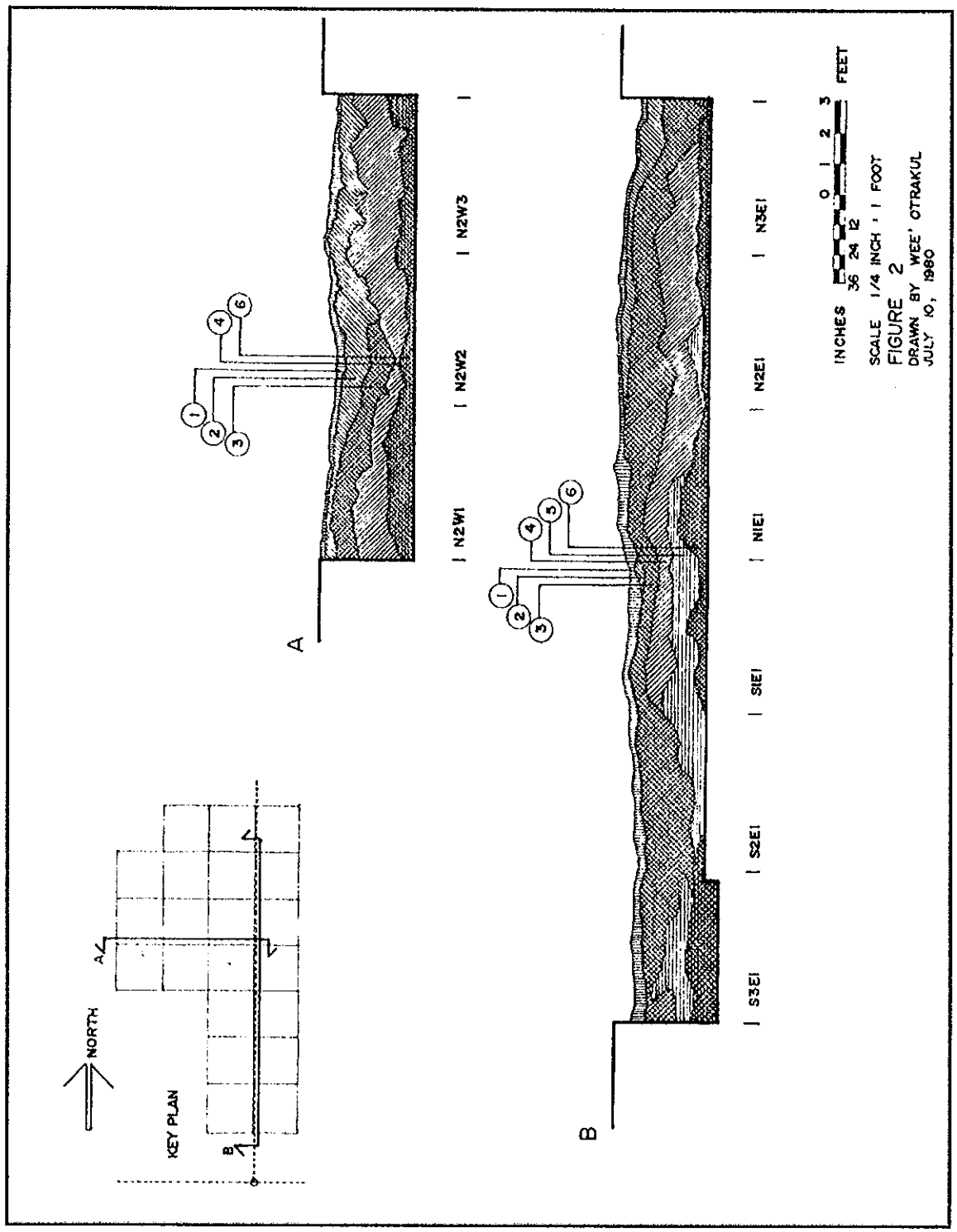

Figure 9. Profiles of the mound excavation (Kirchner et al. 1980).

Figure 10. Photograph of rock slabs in the northern portion of the 1980 excavation.

Conclusions and Recommendations

The evaluation of the Parkinson Mound failed to provide any clues to the temporal or cultural affiliation of the site. The artifacts recovered by the excavation were either in disturbed portions of the mound or in the mound fill. The Late Archaic points in the mound fill suggested that the mound was at least constructed either during or after the Late Archaic period. No Early or Middle Woodland artifacts were recovered from the mound, but the Robbins point and the bladelet fragment found off the mound indicated that these populations were utilizing the area. In comparison to the other sites reviewed by this project, it was surprising that no ceramics were recovered. The screening methodology recovered a large quantity of lithic materials, so poor recovery methods were probably not the reason for this deficiency. Because of the heavy disturbance and the context of the diagnostic artifacts, it was uncertain if the Parkinson Mound was built and utilized by Early and Middle Woodland populations. While the Adena and Hopewell complexes were the most likely architects, the mound may have been constructed by another group.

A remnant of the Parkinson Mound is still visible from River Road (McCord and Cochran 1996:33). The remaining portion of the mound needs to be preserved. The landowner should be contacted to aid in its protection. The mound should be visited to map the remaining portion. In addition, limited test excavations at the site may provide important information on the construction on the mound. The nature and extent of the remaining portion of the mound should be determined. Carbon suitable for dating may also be recovered by such a project. Until new information is obtained from the mound, the cultural and temporal affiliation cannot be ascertained.

Mound Camp

Background

Mound Camp (12-Fr-134) was one of the many mounds that were recorded along the Whitewater River Valley in Franklin County, Indiana (Setzler 1930a, McCord & Cochran 1996)). When Frank Setzler first visited Mound Camp during his survey of the Whitewater River Valley, it measured 20' wide, 63' long and 3' high. The mound was originally reported as 83' in diameter and 12' high. As the remainder of the mound was about to be destroyed by construction of SR 1 (SR 52 in 1930), Setzler decided to excavate it. The work was carried out in 1928 (Setzler 1930a).

The mound no longer exists due to railroad and highway construction, erosion, and excavations by Butler (n.d.) and Setzler (1930a). The site is located in the [redacted] (Figure 11). The site is on the eastern edge of the Whitewater Valley with a commanding view to the west and northwest. The location provides a favorable viewpoint for a dramatic view up the river valley at the summer solstice (Cochran 1999:A8, A10).

Setzler (1930a) used trenches to excavate Mound Camp. A trench 20' wide was laid out to encompass the remaining portion of the mound. Perpendicular sections 5' wide were then removed from this trench (Figure 12). The mound fill in each section was removed to a base of undisturbed gravel. Vertical profiles were troweled and measured to document stratigraphy.

Setzler's (1930a) excavation revealed that the base of the mound was constructed on a natural gravel strata. The irregularities in the gravel were filled-in and leveled with a deposit made up of village debris and averaging 9" thick. A smooth, hard burnt clay floor was then constructed. The floor was over 4" thick and burned brick red in some places. Several post holes were recorded in the burnt clay floor. Artifacts, burials, features and log molds were found *in situ* on the floor (Figure 12). All of the material was covered with a layer of ash variously characterized as "quicklime", "lime", or "silicious material" (Setzler 1930a). The area was then capped with a uniform layer of clay. Butler (n.d.) reported that the mound was originally partly covered with a layer of stone but Setzler (1930a) found no evidence of a stone or gravel capping. However, the mound was so drastically reduced through erosion, construction and uncontrolled digging that "one would hardly recognize it as having been a large mound" (Setzler 1930a:467).

On the burnt clay floor within the mound, Setzler (1930a) recovered 2 disarticulated secondary human burials. In a small pit below the burials, human teeth and phalanges were found in association with a cut and polished deer bone, marginella shell beads and bone beads. A single human vertebra was found in a nearby pit, but no artifacts were associated with it. Artifacts associated with the burials and recovered from the mound fill included 5 bone awls, 2 bone paddles, 1 deer bone scraper, 3 expanded center bar gorgets, 2 rectangular gorgets, 5 points, 120 Marginella shell beads, 14 bone beads and several fragments of pottery with an incised nested

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Figure 11. A portion of the USGS 7.5' Whitcomb, Indiana Quadrangle showing the location of Mound Camp.

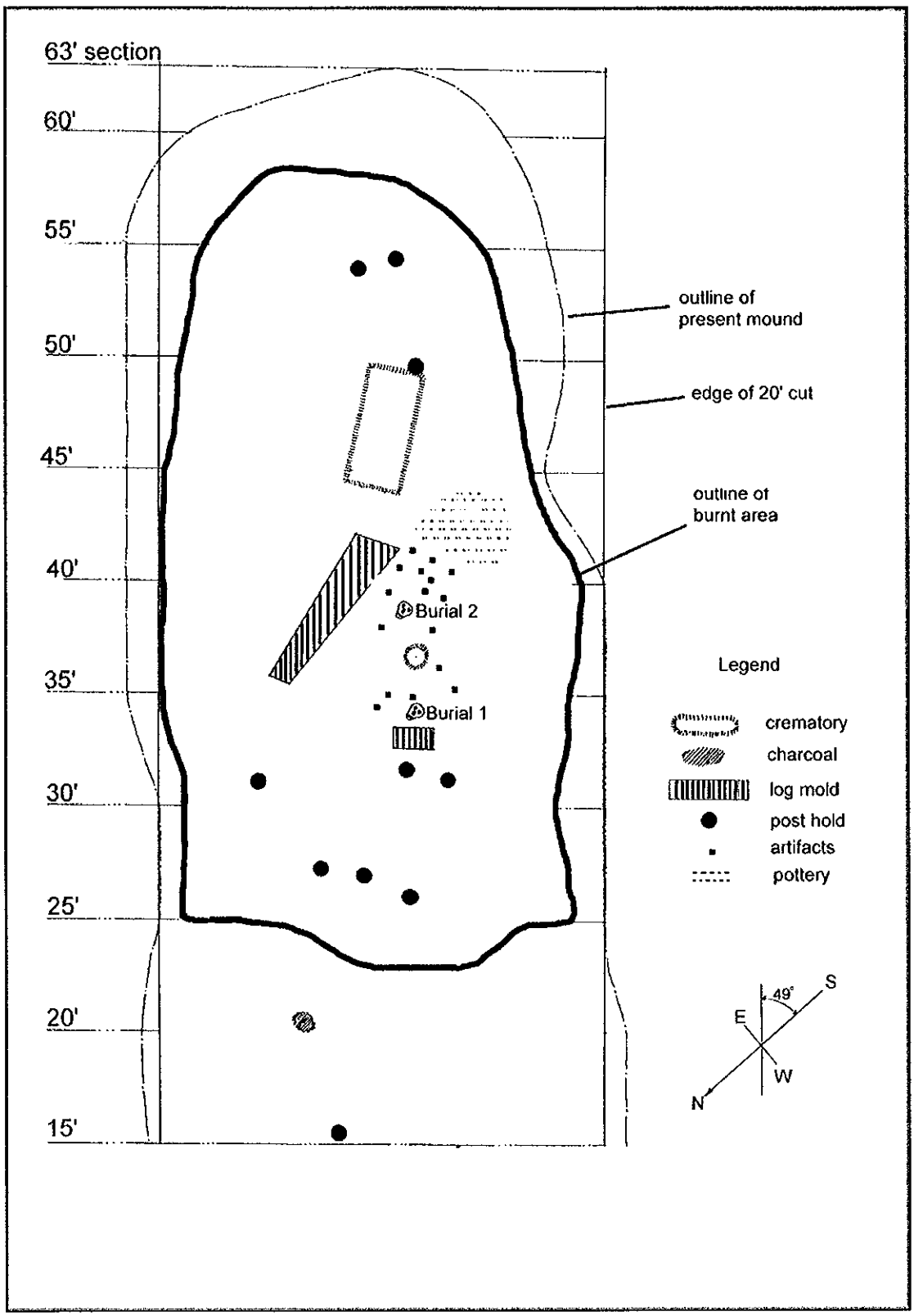

Figure 12. Plan view of Mound Camp (after Setzler 1930a).

diamond design. Fire-cracked rocks and chipped stone flakes were found in several localities. A copper bracelet was reported associated with a human burial eroding from the mound prior to Setzler's (1930a) excavation and additional pottery was recovered through previous digging. Based on the artifacts, the mound was associated with the Hopewell "culture" of Ohio (Setzler 1930a:409,467-481), although the site has been typically classified as an Adena mound (Kellar and Swartz 1971).

Evaluation

Photographs and the artifacts from the excavation of Mound Camp were curated at the Glenn A. Black Laboratory of Archaeology at Indiana University under accession number 40. Tim Wright reviewed the curated collections and documented the artifacts. The human remains from the site were not reviewed for this project.

In general, Setzler's excavations were well done for the time. From the perspective of 70 years later, however, there are details that would have proved helpful in relating this site to others. While Setzler (1930a:469) published a series of profiles from the section cuts, and there was an overall map of the excavation (Setzler 1930a:472), a detailed map of the relationship between the human remains and the artifacts would have been helpful. Unfortunately, no flakes, fire-cracked rocks or samples of the ash were curated.

However, in spite of the lack of these materials, we were able to reevaluate the artifacts from the site, acquire some missing data and document metrical attributes for the artifacts (Appendix D). In the following section, artifacts from Mound Camp are described in classes.

Artifacts

Chipped Stone

Seven chipped stone artifacts were in the curated collection from Mound Camp. These consisted of 5 points and point fragments, 1 point/biface fragment unifacially resharpened with a steep edge and 1 flake that fits the Matanzas point. The points represented an age range from the late Middle Archaic through the Early Woodland. Although Setzler (1930a:470, 471) noted the presence of "unworked flakes" and "simple flint flakings," these items were apparently not retained for curation. In addition, 5 of the 6 chipped stone artifacts were recorded as "mound find" on the catalog records and have no specific provenience.

Points

Robbins Points

Two Robbins points (Justice 1987:184-188) were in the Mound Camp materials. One was associated with a burial (40/4) and the other (40/21/C) was recovered from mound fill.

The point catalogued as 40/4 (Figure 13) was manufactured from Flint Ridge chert. It has a straight stem that was heavily ground on the lateral edges. The blade was heavily resharpened. The point was found in the 35-40' section and was between a mandible and skull 1. Setzler (1930a:475) identified the point as a "perfect arrowhead, made from a brown cherty flint". Comparable points also manufactured from Flint Ridge chert were found at the Nowlin Mound in Dearborn County (Black 1936, Justice 1987:184-188).

The point catalogued as 40/21/C (Figure 14) was made from an unidentified chert, primarily because of heat damage. The point was missing the distal end and the surviving section was two parts that were glued together. Potlids and heat cracks cover both surfaces of the point and a portion of one shoulder and a portion of the base were lost to heat damage. The point was a mound find and lacked specific provenience.

Brewerton (?) Point

The base of a corner notched point made from Laurel chert was found in the mound fill (Figure 15a). The basal edge was ground. The configuration of the notches and morphology of the point suggest that it was a Late Archaic Brewerton point (Justice 1987:115, 117).

Matanzas Point

The base and part of the blade of a Matanzas point (Justice 1987:119-121) (Figure 15b) was recovered from the mound. A heat damaged flake catalogued as 40/21/F fits this point (Figure 15c). Both artifacts were made from heat damaged Laurel chert. The Matanzas point dates to the Late Middle Archaic, ca. 3,000 B.C.

Point Fragments

A heat damaged point fragment (Figure 15d) made from what appears to be Flint Ridge chert was recovered from the mound. A portion of one notch remains, but sufficient technological or morphological attributes were not remaining to identify the point type.

A point/biface fragment (Figure 15e) of Laurel chert exhibits steep unifacial retouch along one edge and polished use wear along another.

Ground Stone

Eight ground stone artifacts were recovered from Mound Camp. The artifacts represent four types: pendants, expanded center bar gorgets, a tubular pipe and a fragment of a celt. Each type is discussed below. Measurements for ground stone artifacts were provided in Appendix D.

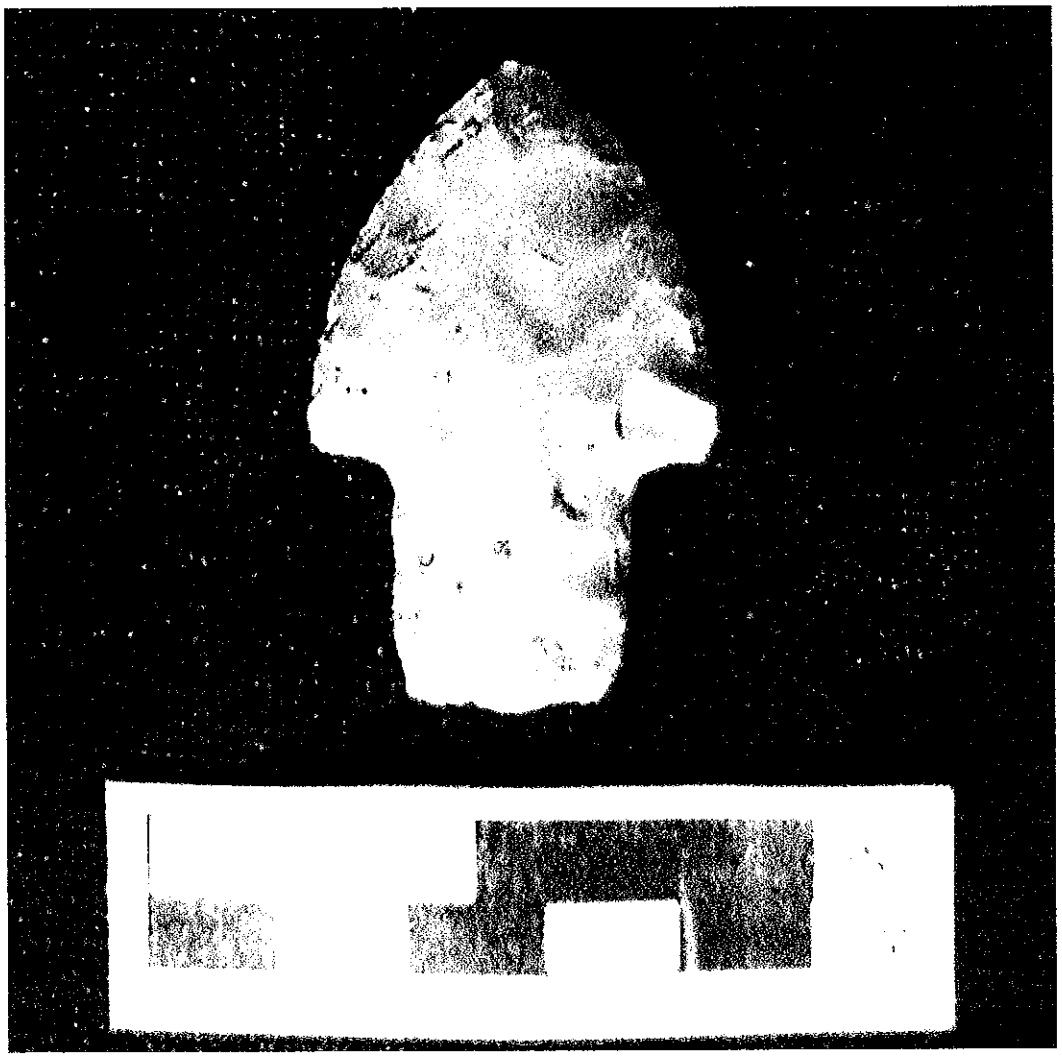

Figure 13. Robbins point (40/4).

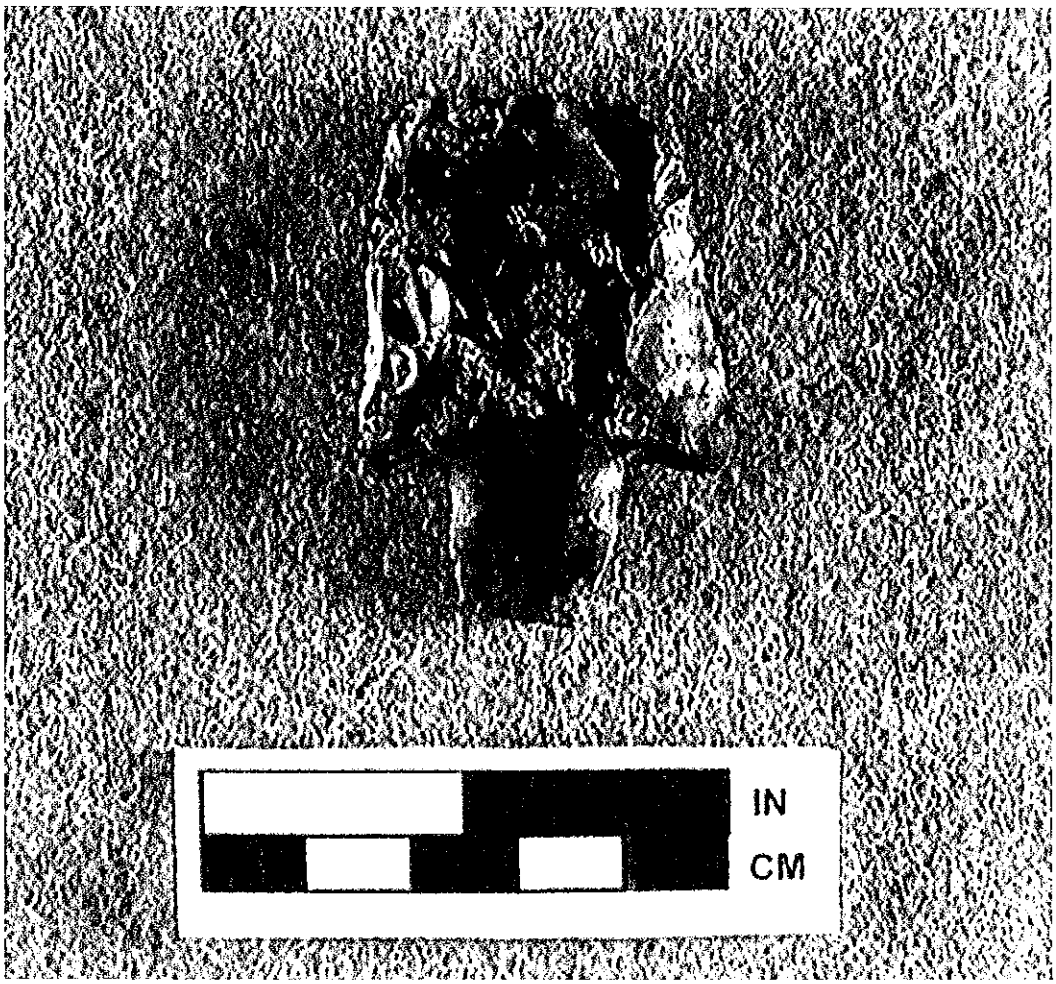

Figure 14. Robbins point (40/21).

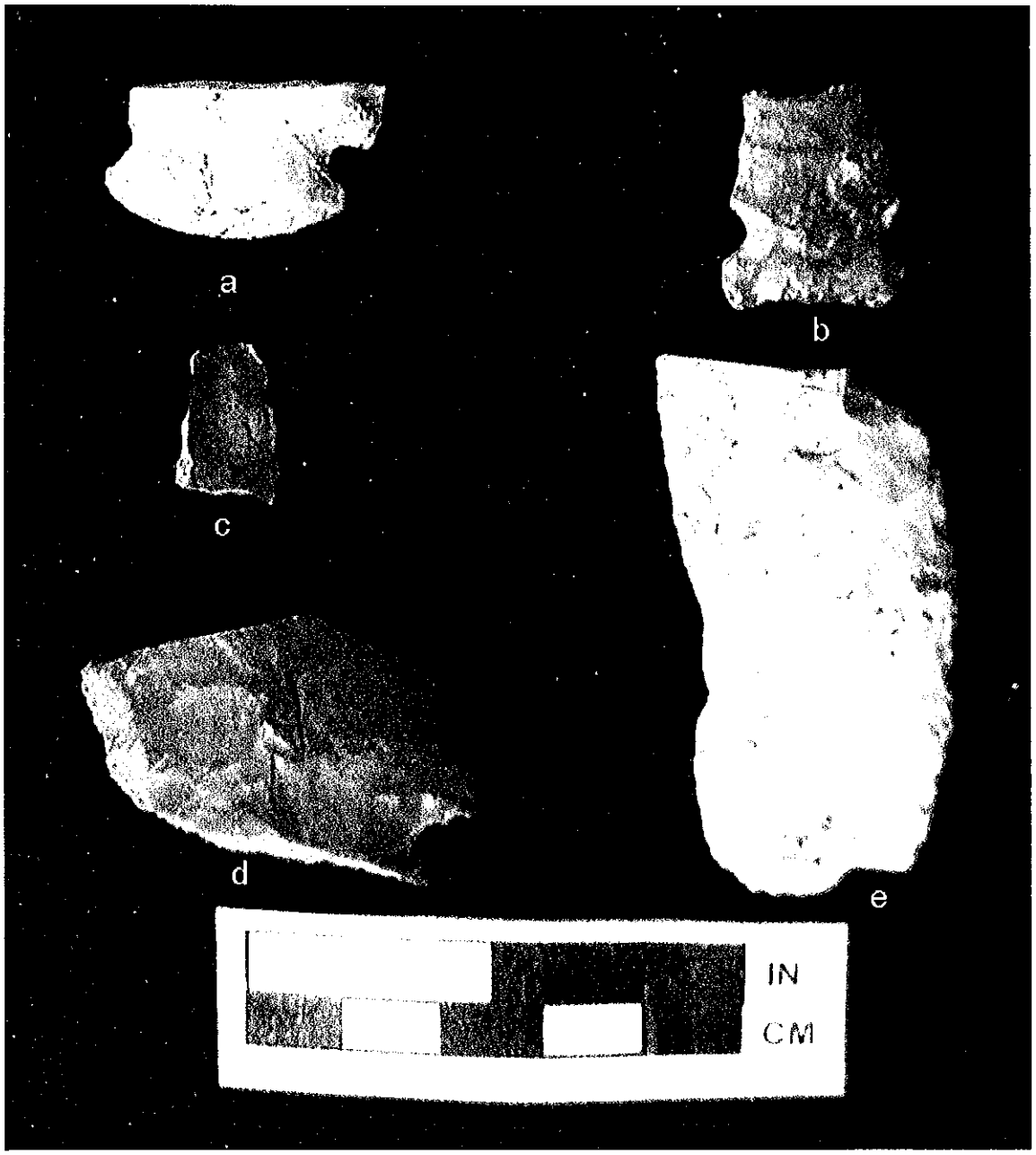

Figure 15. Points from Mound Camp: a) Brewerton, b) Matanzas, c) flake from the Matanzas point, d) point fragment, e) point/biface fragment.

Pendant

Two pendants (Figure 16a & c) were found in the mound. Setzler (1930a:479) classified these artifacts as "rectangular slate gorgets.". Both had a single hole drilled from each side. Both pendants show spalls from each face. The spalled surfaces were smoothed. One pendant (40/14) was found as two broken pieces, one piece near the burials in the 40-45' section and the other piece about 4' away on the river side of the mound. The other pendant (40/19) was found near the expanded center gorgets in the 45-50' section. The broken pendant shows differential colors between the two pieces apparently as a result of heat. Pendants like these were generally classified as Adena (Dragoo 1963:183).

Expanded Center Bar Gorgets

Three banded slate expanded center bar gorgets (Figure 17) were recovered from the mound (Setzler 1930a:473-478). Two were drilled from the flat side (40/3, 40/15) (Figure 17a & b) while the remaining gorget (40/7) was not completely drilled through but it was started on the flat side (Figure 17c). The drilled gorgets were both broken and found near the human burials. The two pieces of the gorget illustrated in Figure 18 were approximately 4' apart. This particular gorget had a shallow, longitudinal groove on the flat surface reminiscent of the grooved surface of a boatstone (Figure 18). The undrilled gorget was with scattered skeletal material in the 40-45' section. Expanded center bar gorgets were generally associated with the Adena Complex (Dragoo 1963:182) and were the only artifacts defined as distinctive of the Adena Complex during the 1970 Adena Conference (Kellar and Swartz 1971:128).

Gorget Preform

One small, rectangular, banded slate, gorget preform (40/18) was found near the broken gorgets in the 45-50' section (Setzler 1930a:480)(Figure 16b). The piece of slate was chipped and pecked to shape and partially smoothed. There was no heat damage to the artifact.

Pipe

One tubular pipe (40/1) made from limestone was recovered between the skull and femur of burial 1 (Figure 19). Although the catalog card for accession # 40/1 also identified the pipe as limestone, Setzler (1930a:473) recorded this artifact as a "clay" pipe. The mouthpiece of the pipe was flattened and the hole was unblocked (Setzler 1930a:474). The surface of the pipe was checked, apparently from contact with fire. Tubular pipes were generally associated with the Adena Complex (Webb and Snow 1945, Dragoo 1963:183-184).

Celt fragment

A bit fragment of a greenstone celt (40/17) was recovered near the broken gorgets in the

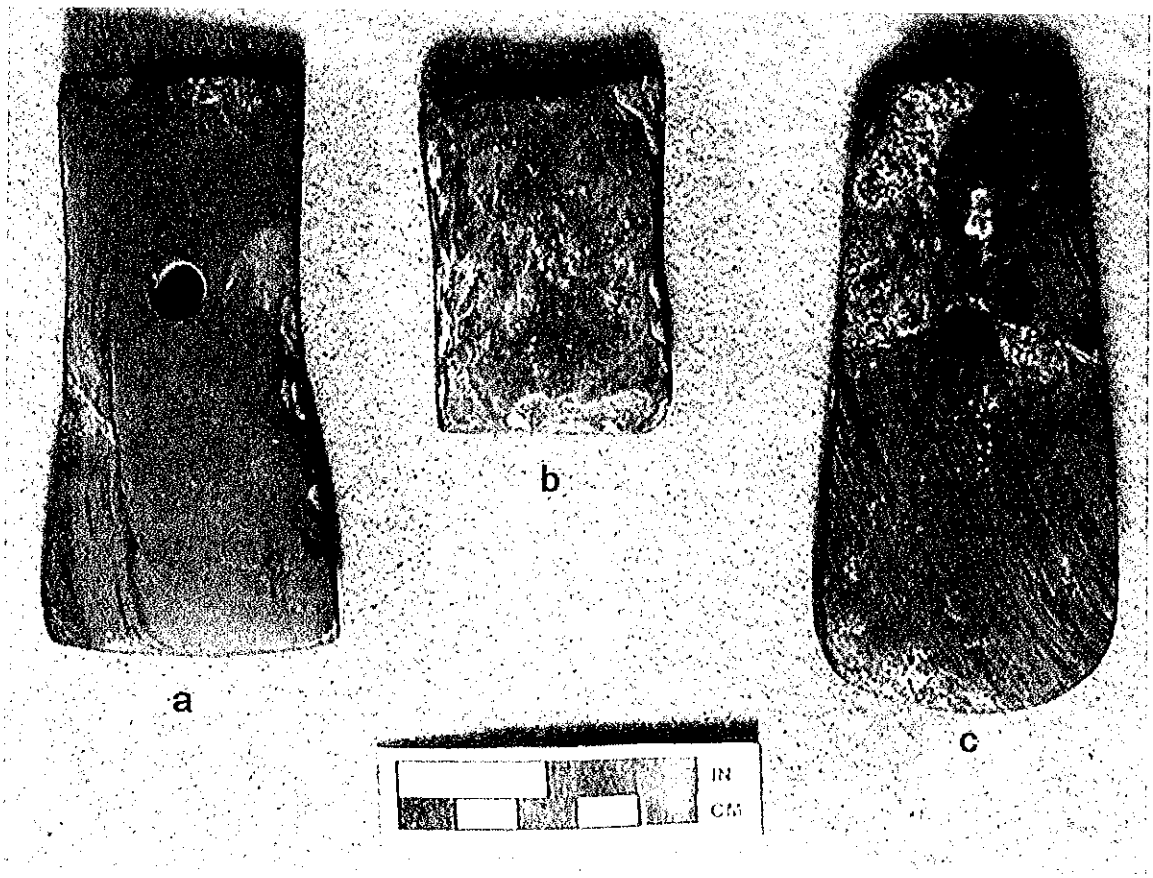

Figure 16. Ground stone: a) pendant (40/19), b) unfinished gorget (40/18), and c) pendant (40/14).

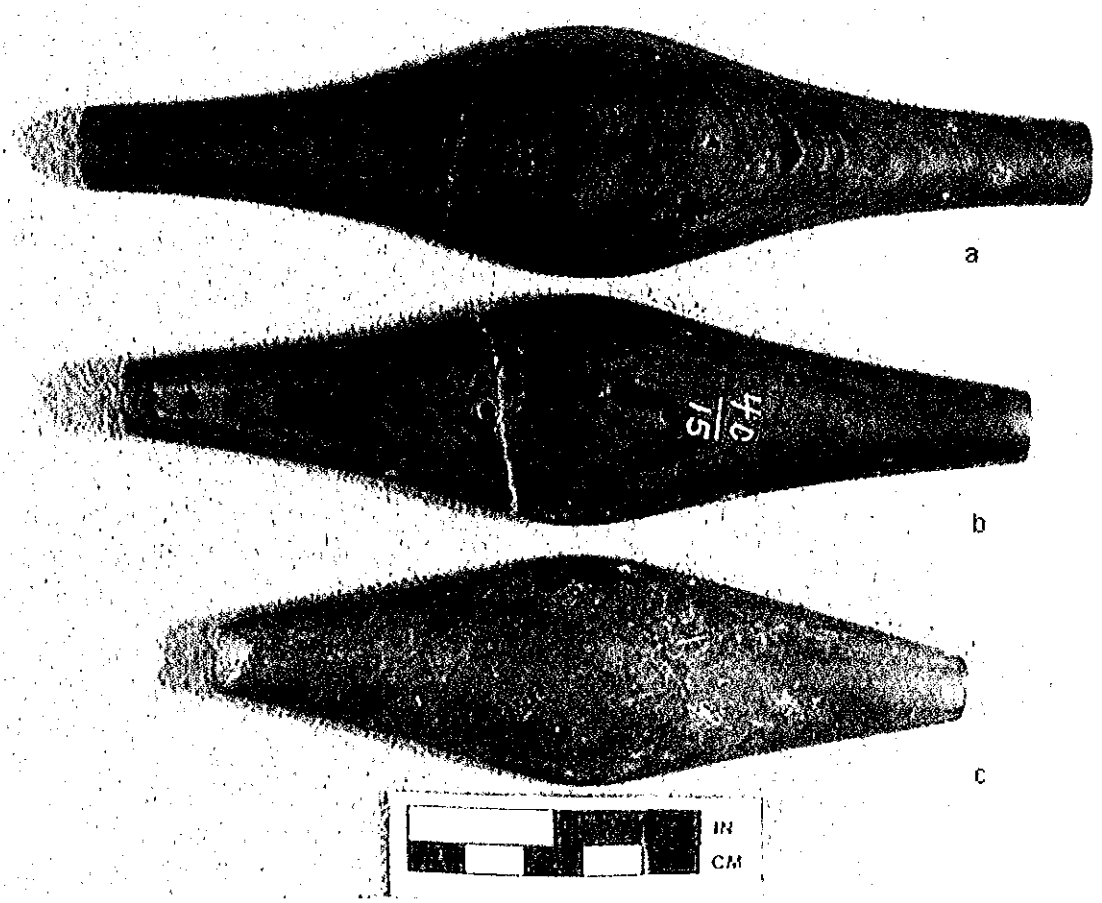

Figure 17. Expanded center bar gorgets: a) 40/3, b) 40/15, and c) 40/7.

Figure 18. Longitudanal groove on flat surfact of gorget 40/15.

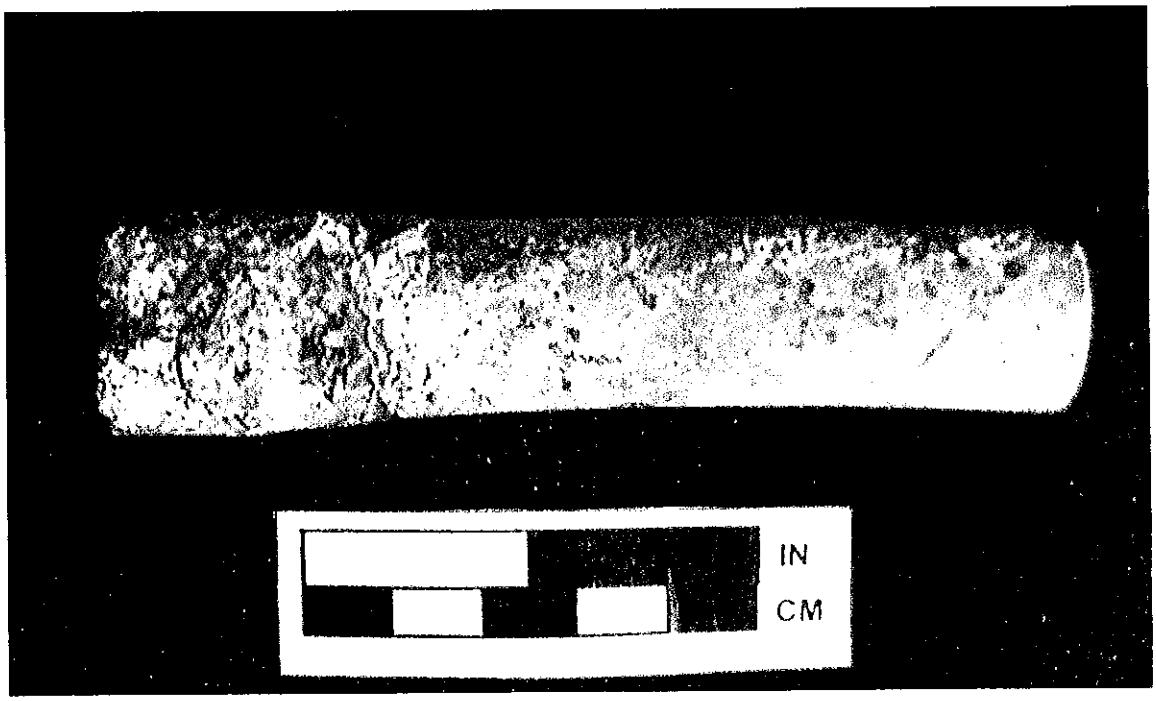

Figure 19. Limestone tubular pipe.

45-50' section (Setzler 1930a: 480). This small fragment showed little use polish but striations on the polished surface were oblique to the edge.

Graphite

Also found near the broken gorgets and the celt fragment were 3 graphite chunks (40/16) (Setzler 1930a:480). They were small and only weighed 4.6 g. Some areas of polish, apparently from use, occurred on the chunks. Graphite chunks have been found at Adena and Hopewell sites (Dragoo 1963:131-132).

Red Ocher

The Mound Camp collection included a soil sample (40/13) containing red ocher, 1 small flake and a small amount of charcoal. This sample was collected in the center of a group of sherds in the 40-45' section (Setzler 1930a:477). No other red ocher was mentioned.

Fire-Cracked Rock

Although fire-cracked rock was noted at several locations in the mound, none was retained for curation.

Bone/Antler/Shell

Pointed Bone/Antler

Five pointed bone and antler artifacts were recovered from the mound (Setzler 1930a:473, 477) (Table 6). The four pointed artifacts made from bone (40/20A, 40/6, 40/5, 40/2) could be classified as awls (Figure 20). All four of the awls were made from flat sections of bone, at least two of which were made from a deer tibia. The pointed ends were polished; in most cases the polish extended well up the shaft of the awl. One awl was found in mound fill, two were found with scattered skeletal material in the 40-45' section (Setzler 1930a:477), and one was found near the massive mandible in the 35-40' section (Setzler 1930a:473). The one pointed artifact of antler (40/20B) was manufactured from an antler tine (Figure 21c). The distal end of the tine was ground to a slightly rounded point. The proximal end was ground flat on one side and broken on the opposite side. According to the catalog records (40/20B), the artifact was found in mound fill.

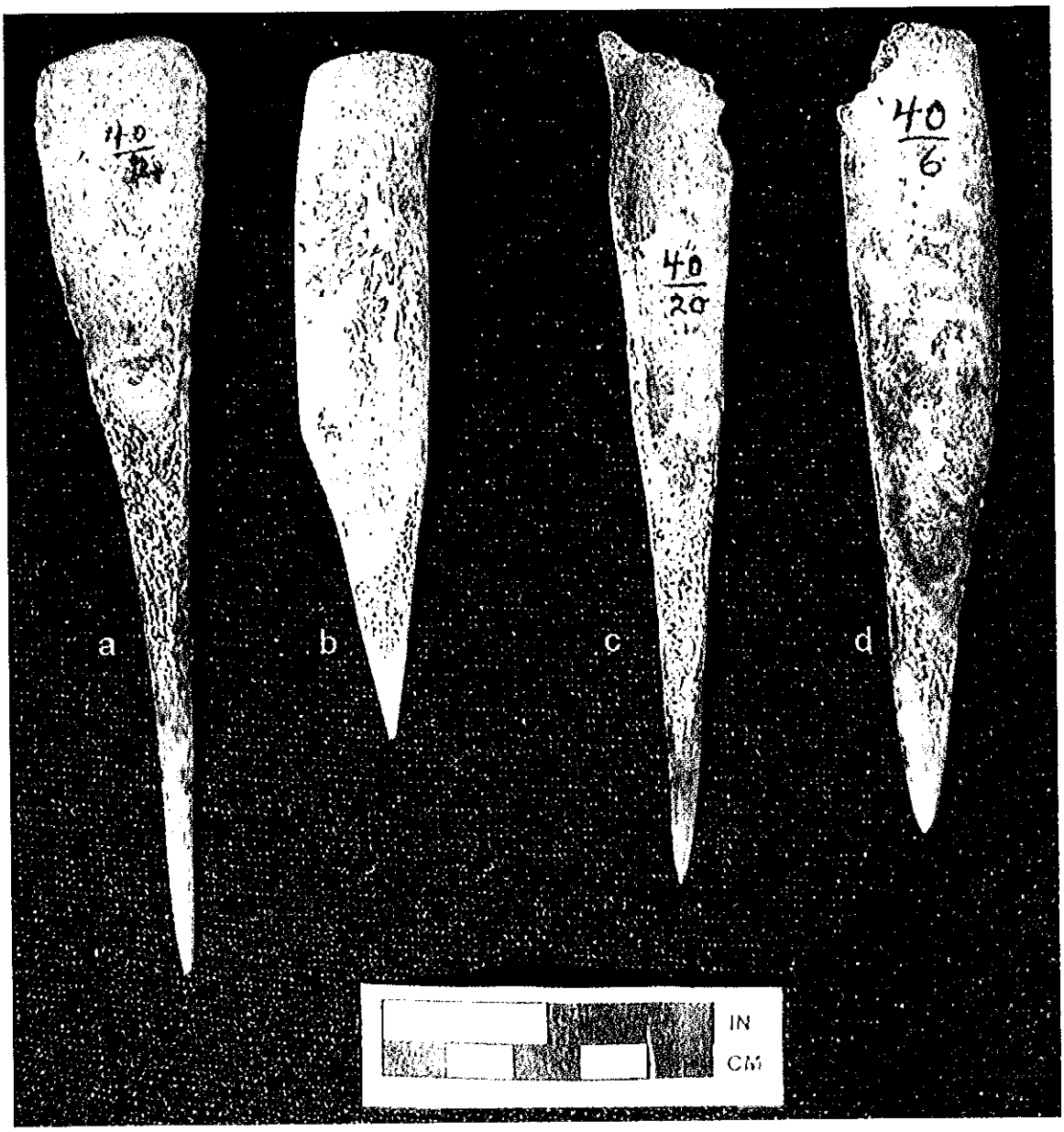

Figure 20. Bone awls: a) 40/2, b) 40/5, c) 40/20, and d) 40/6.

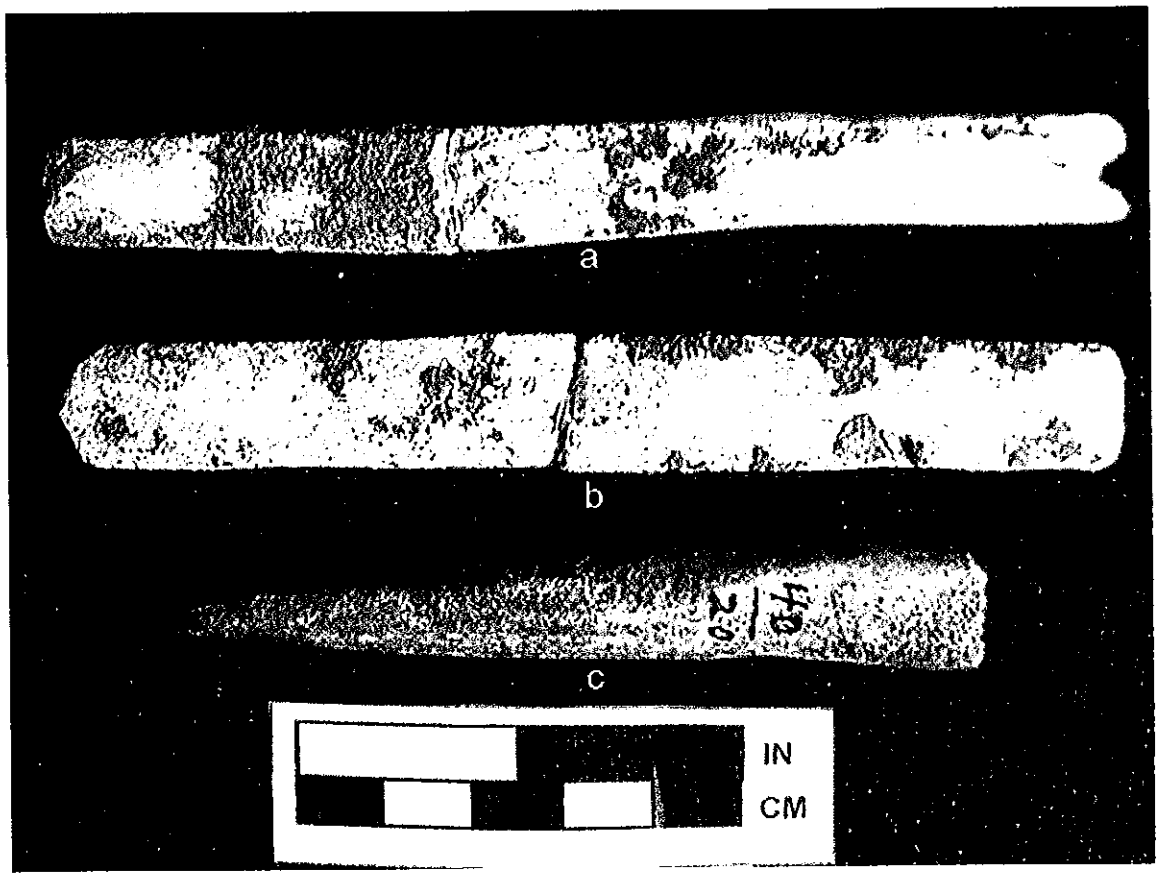

Figure 21. Worked antler: a) 40/9, b) 40/8 and c) 40/20.

Table 6
Bone and Antler Artifacts

Cat. #	ID	Length (mm)	Width (mm)	Thick (mm)	Comments
40/20B	antler	88.58	13.35	12.02	Shaped antler tine
40/2	awl	142.62	27.39	--	made from splinter
40/5	awl	102.50	22.40	--	made from splinter
40/6	awl	119.82	22.41	--	made from deer tibia splinter
40/20A	awl	86.79	19.35	--	made from right tibia
40/8	drift	116.11	14.78	6.64	Made from cut antler
40/9	drift	120.00	14.5	6.0	Made from cut antler
40/10	flattened bone	129.08	33.27	18.72	Cut & polished left deer metacarpal

Flattened Bone/antler

Three artifacts were recovered that were either flattened in cross section or had flattened working edges (Figure 21a & b). Two of these artifacts were classified as antler drifts (Table 6), although they were longer (over 10 cm) then most artifacts of this kind. Both were made from cut sections of antler and both were broken near the center. They both exhibited wear on the end similar to drifts used as pressure flaking tools (Cochran 1988:51-58). Both of the drifts were found with scattered skeletal material and other artifacts in the 40-45' section. Setzler (1930a:477) referred to these two artifacts as "narrow bone paddles". The remaining artifact in this category were made from a deer left metacarpal (Figure 22). The distal end has been ground flat and tapered and the shaft of the artifact exhibits ground and polished margins. The edges of the broken surface near the articular end of the tool were also ground, indicating that the break was original to the artifact. This artifact was found in the small circular pit below the mound floor in the 40-45' section (Setzler 1930a:477).

Shell Beads

Two types of shell beads were recovered from Mound Camp: disc beads (40/12) and marginella shells that were modified for stringing. The 20 disc beads were found in the small circular pit below the mound floor in the 40-45' section (Setzler 1930a:477) . These beads were drilled from both sides and exhibited wear-polish adjacent to the drilled holes (Figure 23). "A few" marginella beads were found in the same pit as the disc beads (Setzler 1930a:477). Also, 45 marginella beads were found with the scattered skeletal material and other artifacts in the 40-45' section (Setzler 1930a:477). Additional marginella beads were found "in and about the mound"

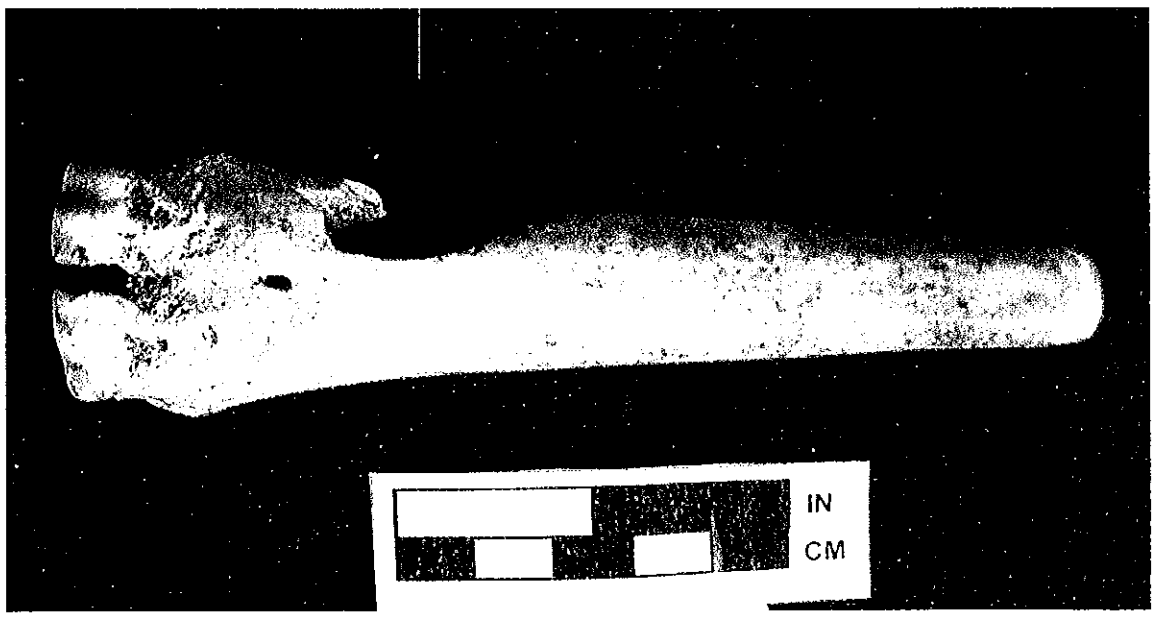

Figure 22. Modified bone.

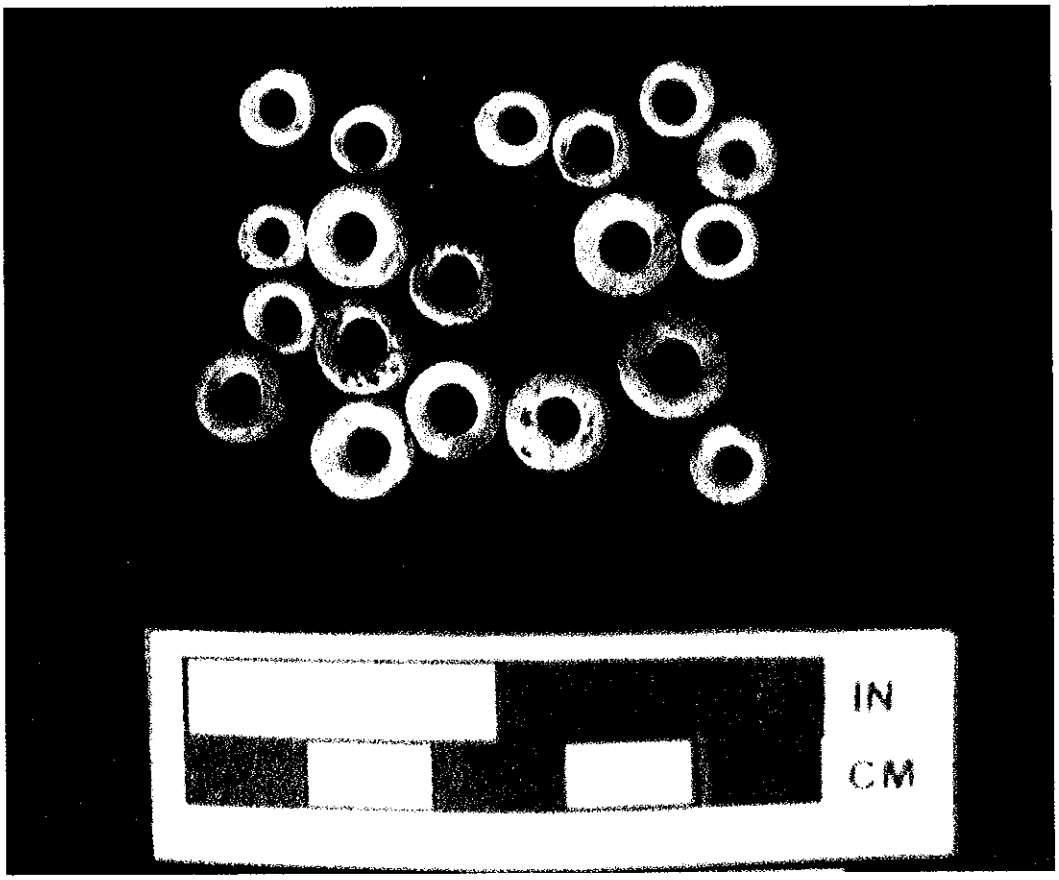

Figure 23. Disc shell beads.

according to the catalog cards for Accession # 40/11. The disc beads were reviewed for this project, but the marginella beads were not found. The disc beads averaged 6.87 mm long, 3.42 mm wide and 2.26 mm thick.

Ceramics

In the 40-45' section of the mound, "a large number of broken potsherds were found strewn over an area 5 feet square extending into the next square" (Setzler 1930a:477). The collections at the Glenn Black Laboratory currently contain 126 of these sherds. The catalog card for Accession # 40/22 indicates that 161 sherds were assigned that catalog number. These sherds were grit tempered, with finely crushed limestone predominating, although quartz crystal, chert and an occasional sandstone pebble were identified as well. Temper size ranged from 0.5 to 2.7 mm in size. The paste was sandy and compact. The exterior of the sherds were burnished and/or incised. Some of the incised decorations consisted of a 5-line nested diamond with a monticule in the center. The incised lines were spaced between 4 and 7 mm apart.

As only one vessel was represented and a portion of one side was reconstructible (Figure 24), the form of the vessel was identified. The shape consisted of a globular body on podal supports with a constricted neck and slightly everted rim. The rim, 11.56 mm thick, was rolled and smoothed on the interior. The top of the rim and the exterior around the rim was burnished. The rim diameter was 14-15 cm. The center of the vessel body was decorated with a zoned 5-lined nested diamond design (Figure 25). The rounded base and podal support (Figure 26) were also burnished.

Although this vessel has been cited as an example of the New Castle Incised type (Swartz 1976:43), several significant differences occur. This vessel has no angular shoulder, which is typical for the New Castle Incised type (Swartz 1976:43). The incised decoration on the Mound Camp vessel is not limited to the shoulders and rims, again, typical for the New Castle Incised type (Swartz 1976: 43). New Castle Incised ceramics also have more granitic temper than limestone in the paste, the incising is also more finely executed and straighter, and the lip forms are flatter as a result of scraping and bevelling.

Structure

The reanalysis of the Mound Camp materials found no data to disagree with Setzler's (1930a:481) interpretation of the structure of the Mound Camp mound. The surviving portion of the mound did indeed appear to consist of a prepared floor over which a burned clay platform was constructed. On this burned clay platform, secondary burials were interred and other features constructed that were related to the rituals associated with the site. Virtually all of the data recovered by Setzler were related to horizontal rather than vertical activities. However, all the posts recorded in the mound may not have been related to the same activity. For instance, Setzler (1930a:470) noted a post hole that was found between stakes 22 and 23 on the 16-foot line . The top of the post was two feet above the assumed base of the mound and it was 1' 8" deep. The

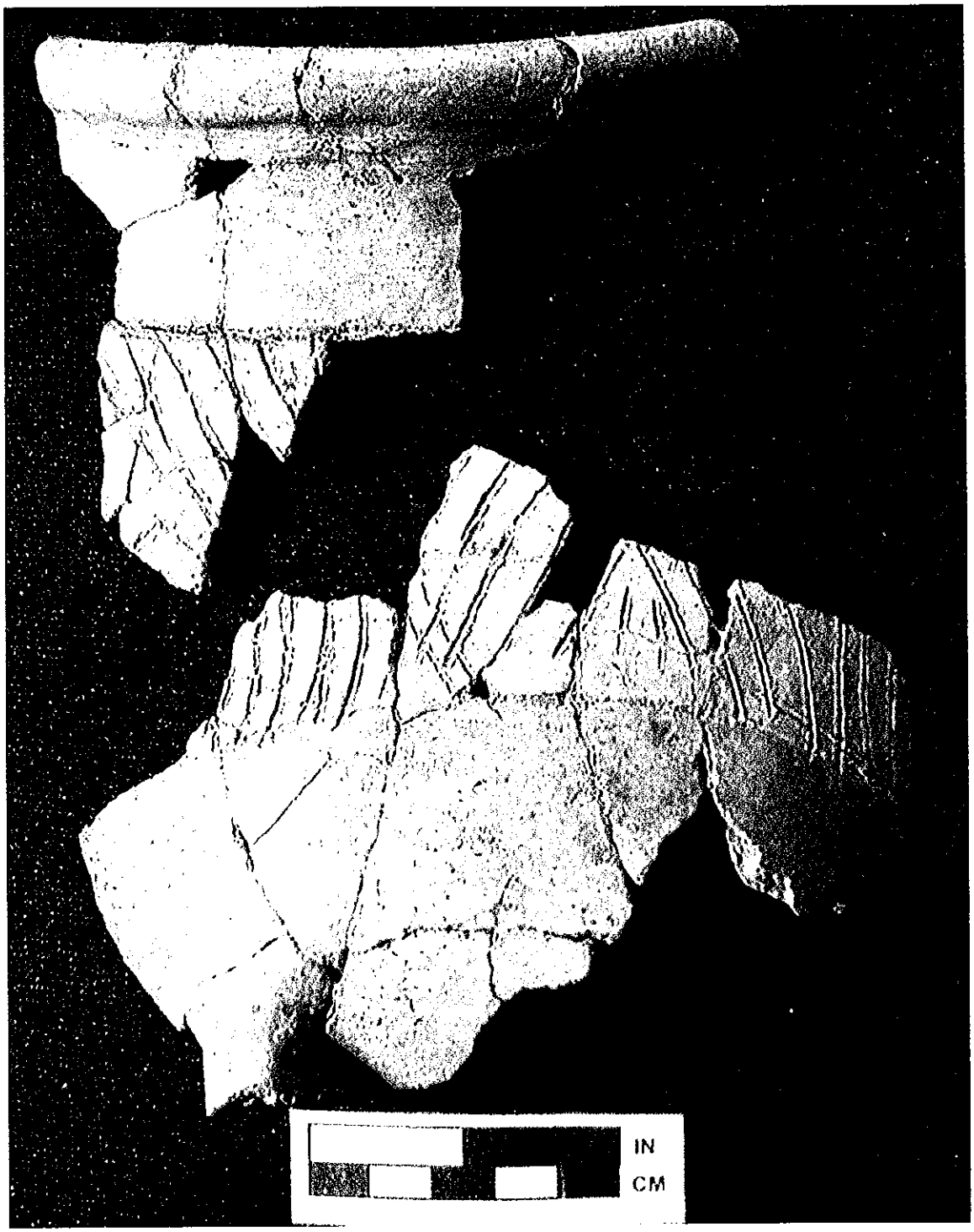

Figure 24. Ceramic vessel.

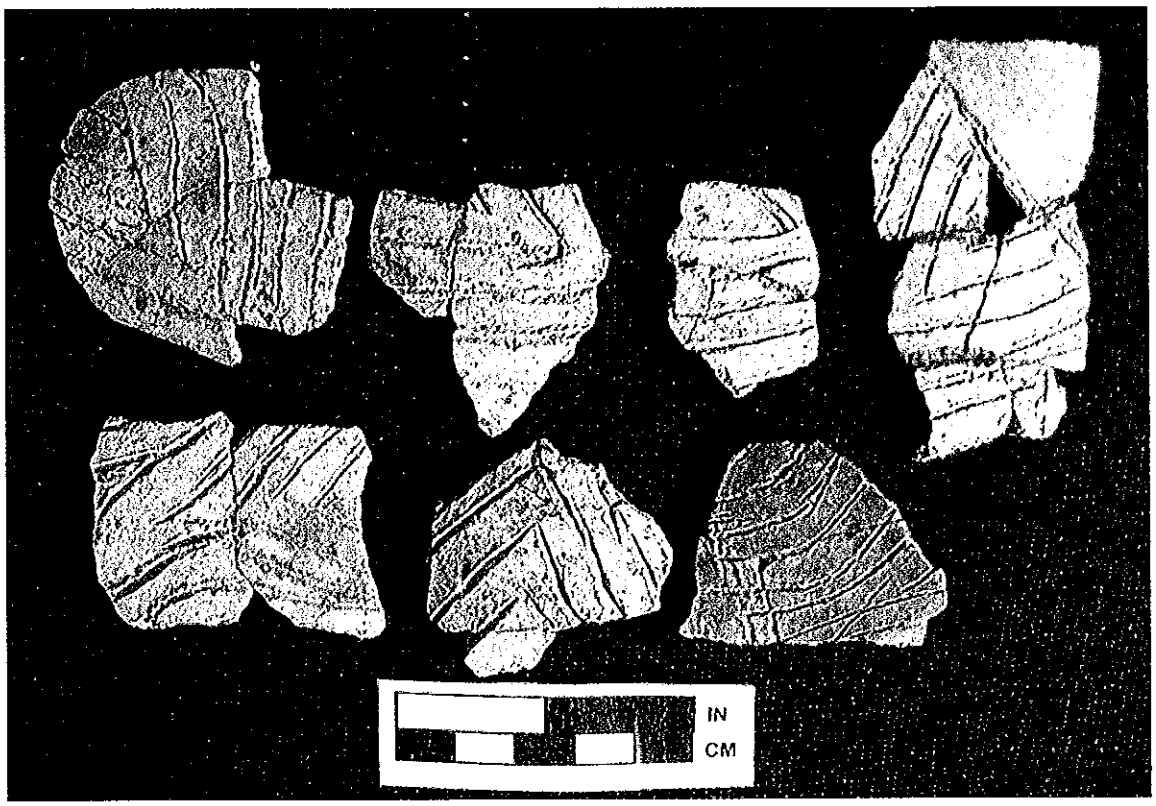

Figure 25. Incised pottery sherds.

Figure 26. Podal support.

majority of the other posts appear to have been found at the burned clay floor and extended below that. Thus, the posts were at different elevations within the mound. The difference in elevations suggests vertically organized activities as well as the horizontal activities. The stratigraphically higher post may have related to other activity areas that were above those associated with the burned clay platform, but in a portion of the mound that was previously destroyed.

Conclusions and Recommendations

The reanalysis of the materials confirmed that the artifacts associated with the portion of the mound excavated by Setzler (1930a) are directly related to the Adena Complex. The point found in association with the burials is a Robbins, diagnostic of Late Adena (Dragoo 1963). The gorgets, pendants and the pipe are also typical of the Adena Complex (Dragoo 1963). The ceramics from Mound Camp are decorated with the nested diamond design and comparable to the Montgomery Incised (Webb and Snow 1945:102) and New Castle Incised (Swartz 1976) types. The Mound Camp ceramics are, however, significantly different from the New Castle Incised type and represent another regional variation of incised ceramics.

Features in the site include post holes, a burned clay floor, a small submound pit and log molds; these are comparable to other mounds in east central Indiana. The burned clay platform seems most similar to the burned clay platforms associated with the central platform of the Great Mound at Anderson Mounds. The secondary burials are typical of the interment of human remains in regional mounds (McCord 1999:75). No radiocarbon dates were obtained by this project, but a small amount of carbon was documented in a soil sample. An AMS date should be obtained for the site.

Setzler (1930a) apparently excavated the remaining portion of the Mound Camp mound. That excavation in combination with road and railroad construction and erosion appears to have destroyed the site. Thus, it would appear that no further work is warranted. However, there is a possibility that small remnants of the mound remain at the margins of Setzler's excavation and/or that undiscovered submound features may yet provide additional information on this important site. We recommend that exploratory excavations be undertaken at the site to determine whether any intact portions remain and to determine their nature and extent.

Fudge

Background

The Fudge site was the largest enclosure recorded in Indiana (Lilly 1937). The site was in Randolph County near [redacted] (Figure 27). The site originally consisted of a large rectangular earth enclosure surrounding 31 to 43 acres, depending on the reporting source. The enclosure was described as an embankment of rectangular shape 1080' wide and 1320' long (Squier and Davis 1848:93, Phinney 1882:192-193) or as an exact square (Tucker 1882:14). The embankment was reported as 6' to 9' high and did not have an associated ditch. Gateways were present in the middle of the eastern and western walls. The eastern gateway was just an opening in the embankment wall, but the western gateway was enclosed by a projecting wall and an associated ditch. An elliptical mound 100 feet in diameter and 8' to 15' high was in the center of the enclosure (Squier and Davis 1848:93, Cox 1879:135, Tucker 1882:14, Setzler 1931, Lilly 1937). The orientation of the earthwork was reported as 10 degrees east of north (Cox 1879:137) or 13 degrees east of north (Setzler 1931:32). Fudge is the only Indiana site to be featured in *Ancient Monuments of the Mississippi Valley* (Squier and Davis 1848) (Figure 28).

As of 1877, the earthwork was being destroyed. The Randolph County fairgrounds were on a portion of the site and the mound was used as a spectator platform for watching races. Public roads were cut through portions of the embankment, and the remainder of the embankment was in cultivation (Cox 1879:134). A large portion of the eastern bank was excavated for brick-making (Tucker 1882:14). Phinney (1882:193) reported that the addition to the gateway on the west side was no longer present. Currently, the eastern embankment has been destroyed by a gravel pit, the central mound was destroyed by Setzler's (1931) excavation, and the remaining parts of the embankment were under annual cultivation or within small residential landholdings (McCord and Cochran 1996).

In 1929, Setzler (1931) excavated the mound and tested a portion of the embankment. Setzler's (1931) excavation occurred just before the landowner had planned to remove the mound with a steam shovel to level the ground for farming. As with his other excavations, Setzler (1931) used 10' trenches to excavate the mound. The trenching started on the south end of the mound and proceeded until the central tomb area was reached. The central tomb was isolated by continuing the trench cuts around both sides while the central tomb was excavated.

The mound contained a submound burial pit 3' deep containing the skeleton of an adult male (Figure 29). The skeleton was disarticulated, apparently due to settling of the mound after burial. On the abdomen of the burial was a human skull of an adult. No artifacts were found within the burial pit. The sides of the pit were lined with vertical post holes 6" in diameter. Around the burial pit on the north, west and east sides were found 2 distinct lines of vertical posts on the original ground surface. Unfortunately the post hole pattern was not noticed within the pit

Site Locations Confidential
Not For Public Disclosure

Figure 27. A portion of the USGS 7.5' Winchester, Indiana Quadrangle showing the location of the Fudge Mound and enclosure.

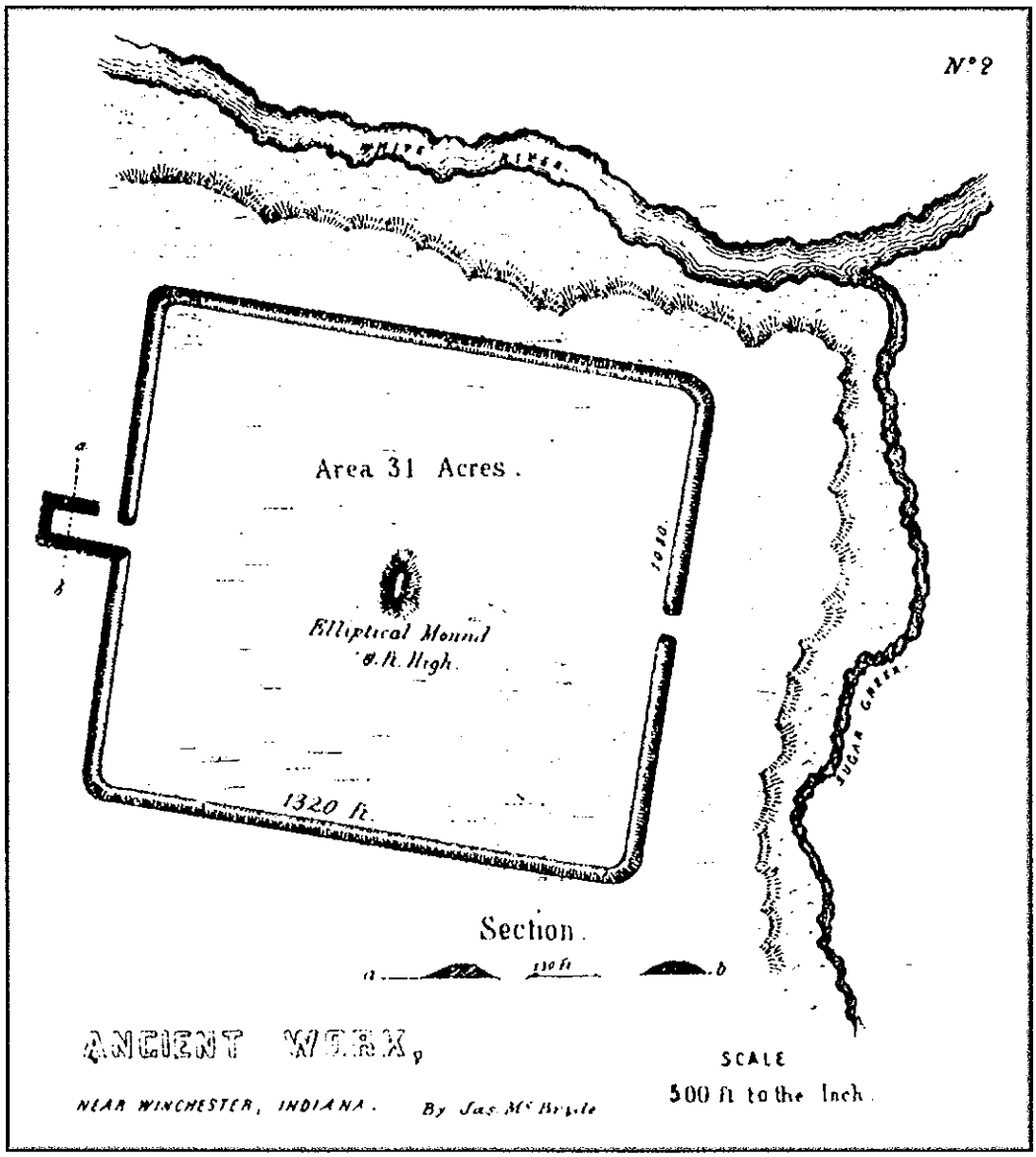

Figure 28. The Fudge Site (Squier and Davis 1848:93).

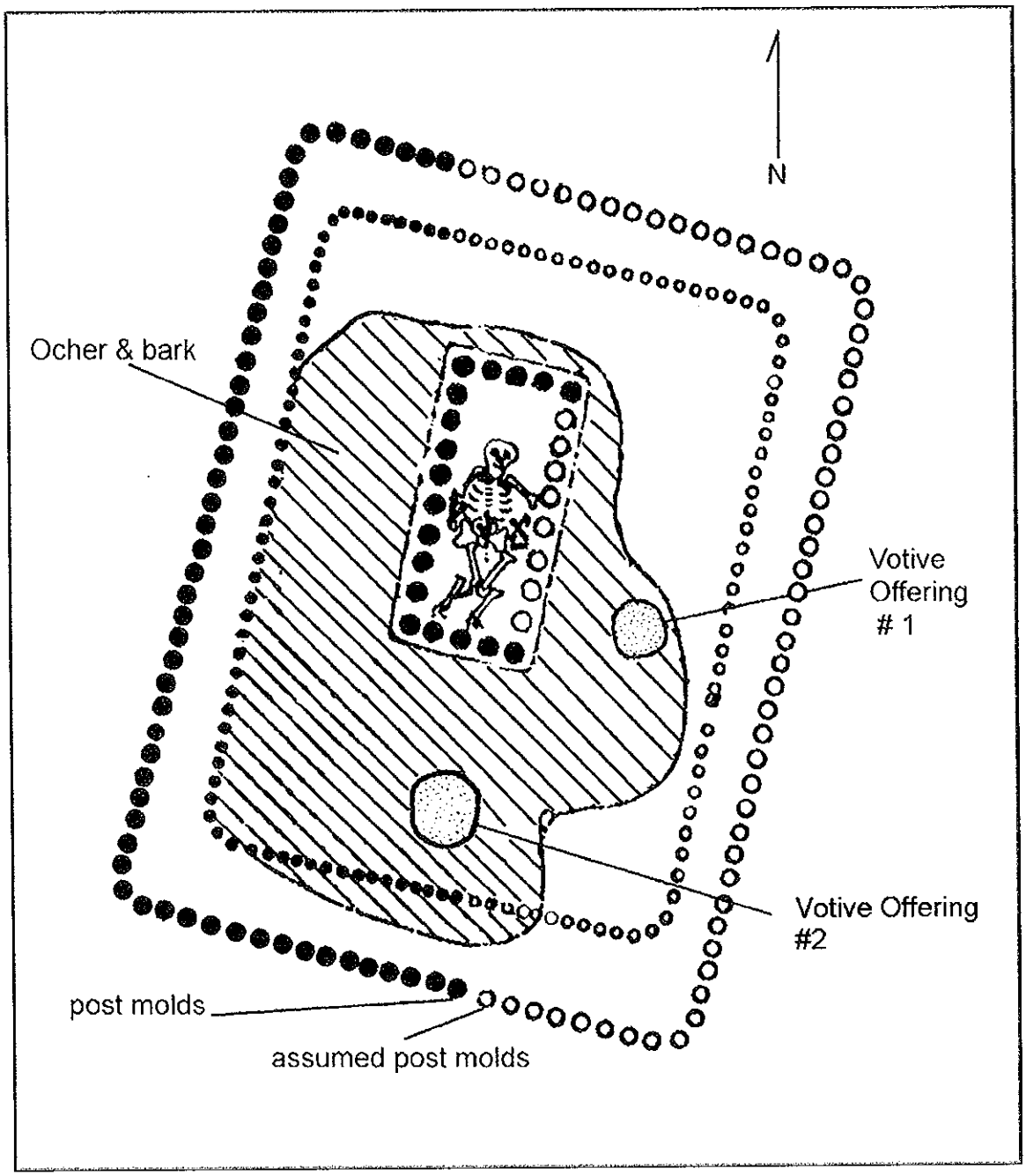

Figure 29. Plan view of Fudge Mound (after Setzler 1931).

or around it on the south side until that area had been excavated, but it was assumed that the post hole pattern encompassed the burial pit. A layer of red ocher and bark covered an area of 20 by 20 feet above the burial pit. Elsewhere, Setzler (1930b:220) said that the ocher covered an area of 40 square feet. However, the floor plan of the mound and the profiles indicate the larger area (Setzler 1931).

Although not mentioned in the written reports of the excavation, several photographs in the Indiana State Archives show the excavation of a large burned log. The caption on the back of photo 562 says that the log is "burned on the outside before placed in mound. This is over burial pit." Thus it seems that a large burned log was above the central burial pit, but there is no stratigraphic record of the position of the log in the site documentation.

Two caches of artifacts, called Votive Offering # 1 and # 2, were recovered from the mound. Votive Offering # 1 contained cremated animal and bird bones, two large points, a sandstone tablet, and a concave-sided gorget. The artifacts were placed over the cremated bone. The cache was "covered with a heavy layer of bark and ocher" (Setzler 1930b:220). Votive Offering # 2 was deposited on the original sod line and was surrounded by ocher, bark and cremated animal bone. It contained 2 badly decomposed leather pouches containing 8 copper bracelets in each. The pouches were lined with several layers of twined cloth. The bracelets encircled strips of bark and a substance that looked like human arm bones. An undrilled expanded center gorget was found beneath one of the pouches (Setzler 1931). In addition to the two caches, 5 broken chipped flint objects were recovered from the mound fill (Setzler 1931:27-35, plate 21). One piece of pottery was found in the mound fill (Setzler 1930).

The test excavation in the south wall of the embankment revealed the same kind of soil found in the mound. Small fragments of charcoal, burnt clay and ashes were above the original sod line and a heavy concentration of charcoal was found near the center of the embankment. No evidence of posts was found (Setzler 1931:35) although Phinney (1882:193) had reported post holes below the embankment and ashes and charcoal just inside the embankment.

Setzler (1931:35-37) related the mound to the Ohio Adena culture based on its construction and artifacts. More recently, the site was included with Adena sites in the region (Kellar & Swartz 1971). Griffin (1971:136), however, noted that the enclosure was not characteristic of Adena. Although the Fudge site had only one enclosure, it has been included with other earthwork complexes in east central Indiana due to its size (Cochran 1992, McCord & Cochran 1996, Cochran 1996).

Evaluation

Artifacts recovered from the Fudge Mound were curated at the Glenn A. Black Laboratory of Archaeology at Indiana University under accession #43. Tim Wright documented the collections. Photographs of the excavations, artifacts and the original plates published in Setzler (1931) were curated at the Indiana State Archives. While we were thankful for Setzler's

(1931) publication of the excavation of the Fudge Mound, there were ambiguities and inconsistencies in the data. Some of these were enumerated below.

1. There are uncertainties in the excavation details. For instance, there is no plan view of the layout of either votive offering. Photographs at the Indiana State Archives are also not completely helpful in documenting the excavation details. Profiles were only shovel cut and not troweled smooth. There are photographs of both votive offerings, but they are not clear enough to show the precise associations between the artifacts.

2. There are several discrepancies between the 1930 and 1931 publications on the excavation.

A. In the 1930 publication (Setzler 1930b:220), the bark and red ocher stratum was identified as "a heavy stratum of red ocher, which was covered by a thin layer of bark". Setzler's 1931 publication identifies the layer as "bark covered with red ocher" (Setzler 1931:30). Plate 14 of the same document (Setzler 1931:45) was entitled "Red ocher covering strips of bark." It was assumed that the 1931 data was correct.

B. Setzler (1930b:220) noted that Votive Offering # 1 was covered with a heavy layer of bark and ocher. The 1931 publication did not specify what was above the feature (Setzler 1931:30), although the plan view of the excavation shows Votive Offering #1 in the area covered by the bark and red ocher.

C. Setzler (1930b:221) noted that Votive offering # 2 was "eight feet west of the [burial] pit", but Setzler (1931:32) recorded the feature as "Six feet four inches west of the pit."

D. Votive offering #2 was "covered with a heavy layer of bark and red ocher," in Setzler (1930b:221), while Setzler (1931:32) noted that the cache was, "lying on the sod, and surrounded with ocher, bark and cremated animal bones." The profile of the 50' section shown in Setzler (1931:29), clearly placed votive offering # 2 above the bark and ocher layer. Elsewhere (Setzler 1931:30), the bark covered with red ocher stratum was above the sod line.

E. Setzler's (1930b:221) interpretation of the stratigraphy of the central submound pit included placing the body on a layer of bark within a wooden structure. The body was covered with earth and the structure was later burned. This interpretation was not reiterated in the 1931 report. In both reports (Setzler 1930b:221, 1931:31) the decomposition of the bark under the body was viewed as the cause of the shifting of the skeletal remains. The troubling part of this interpretation was that there was no other evidence presented for burning within the pit: no notations of burning of the walls of the pit nor layers of charcoal above the burial, etc. The only evidence cited for burning was the finding of charcoal in some of the post holes around the pit. Thus, we are left with a less than clear image of the activities associated with the burial pit.

F. Setzler (1931:35) stated, "No pottery appeared either in the mound or in the

area within the earthworks." However, a sherd was shown in Plate 21 of the 1931 report (Setzler 1931:48) and the 1930 report (Setzler 1930b:221) stated that one small potsherd was found. A photograph at the Indiana State Archives showed the artifacts collected from the mound fill and included one rim sherd. The curated collection from Fudge Mound included one rim sherd that matched the one in the photograph.

G. Finally, while photographs of the excavation of the central burial pit show sloping pit walls and other deposits (eg. Setzler 1931:46), the profile drawings (Setzler 1931:29) show the pit walls as straight and without other deposits. Given the excavation methods and the fact that profiles were shovel cut and not scraped, it seems likely that the mound construction was somewhat more complex than presented in the written reports.

It is difficult to evaluate the reasons behind these discrepancies. Both reports were written shortly after the excavations were completed, and it would seem that both were based upon the same field data. At best we can simply note the discrepancies and take a conservative interpretation of the site. However, in spite of the problems noted above, reexamination of the artifacts from the mound revealed new and important information.

Artifacts

Artifacts from Fudge Mound were recovered in two primary locations. Setzler (1931) called these Votive Offering # 1 and Votive Offering # 2. In addition, artifacts were found in the mound fill. The artifacts are described below. Metrical data is presented in Appendix D.

Chipped Stone

Points

Two chipped stone points were found in Votive Offering # 1 and 6 other points and point fragments were recovered from mound fill. The distal end of a point shown in Plate 21 (Setzler 1931:48), was apparently not in the curated collection.

Snyders Points

Two large points with rounded corner notches (43/1 and 43/4) were found in Votive Offering # 1 (Setzler 1931) (Figures 30 & 31). Both points were broken and were heat-damaged. During the reanalysis, the points were identified as Snyders points (Justice 1987:201-204). Both points were manufactured from Burlington chert. Snyders points were diagnostic of the Middle Woodland period and were associated with the Hopewell Complex (Justice 1987:201-204). The points were associated with a concave-sided slate gorget and a sandstone tablet. Votive Offering # 1 was located in the bark and ocher-covered area near the burial pit. The offering was below the layer of ocher and bark (Setzler 1930b:220).

Figure 30. Snyders point (43/1).

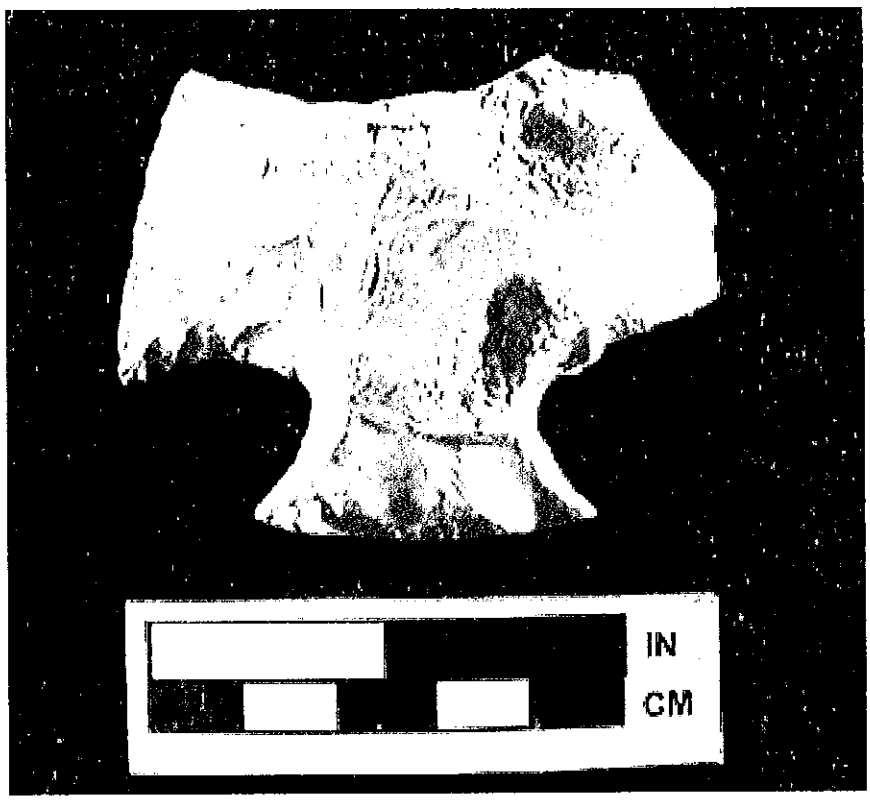

Figure 31. Snyders point (43/4).

Cresap Point

A lanceolate point (43/14) made from Liston Creek chert was found in the mound fill (Figure 32). This may be the point labeled as "spear point" marked on the manuscript site map about 10' south of the southern edge of the posts around the burial pit. The point was damaged at the distal end and the broken fragment was reglued. The damage appeared recent, possibly from excavation. The base and margins of the stem were ground. The point had similarities to both Agate Basin (Justice 1987:33-34) and Cresap (Justice 1987:187) point types. It seemed more similar to Cresap and was comparable to the Cresap points identified by Dragoo (1963:109-110) in the Cresap mound. Cresap points were diagnostic types of early Adena (Dragoo 1963:118, 180).

McWhinney Point

A McWhinney point (Justice 1987:138-139) (43/16) made from Laurel chert was recovered in the mound (Figure 33b). McWhinney points were diagnostic of the Late Archaic period (Justice 1987:138-139).

Unclassified Bifurcate

A point made from Attica chert and found in the mound (43/18) appeared to be an Early Archaic bifurcate, possibly a Kanawha (Justice 1987:95-96, Broyles 1971:59). The base of the point was broken on one side but the slightly expanding stem and incurved basal edge appeared similar to bifurcate morphology (Figure 33a). The blade exhibits the serrated edges and diagonal pressure flaking typical of Bifurcate points and Early Archaic points in general.

Unclassified Early Archaic

The blade element of an Early Archaic point (43/15) was recovered from the mound (Figure 33d). The blade edges were serrated and finely pressure retouched. The remnant of one notch remained. Given the width of the blade, the blade technology and the depth of the notch, the fragment seemed most similar to a Lost Lake point (Justice 1987:58-59). It was made from Laurel chert.

Unclassified Side Notched

A heavily resharpened side notched point (43/17) was recovered from the mound (Figure 33c). The point was made from Laurel chert. One side of the base was broken and there was no grinding, either on the base or in the notch. The point has similarities to Affinis Snyders points (Justice 1987:204), but also has similarities to other side notched types (Godar, Big Sandy, etc.). Its chronological placement, therefore, was ambiguous.

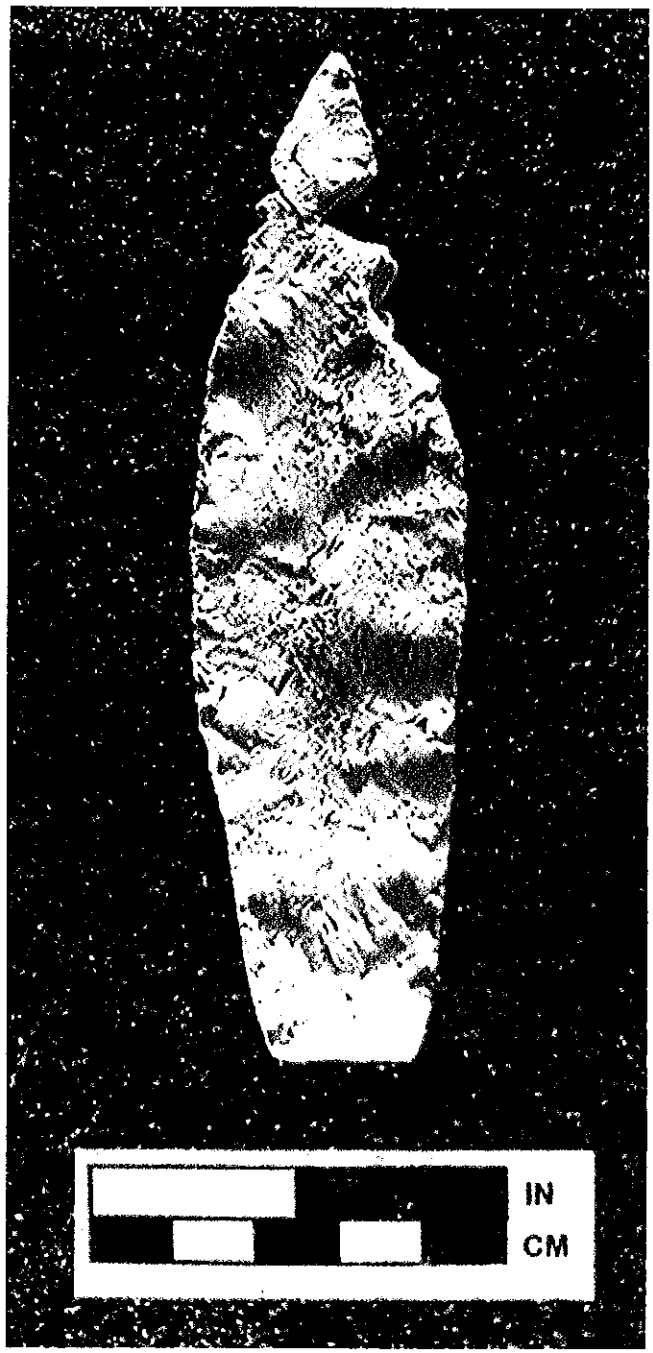

Figure 32. Cresap point (43/14).

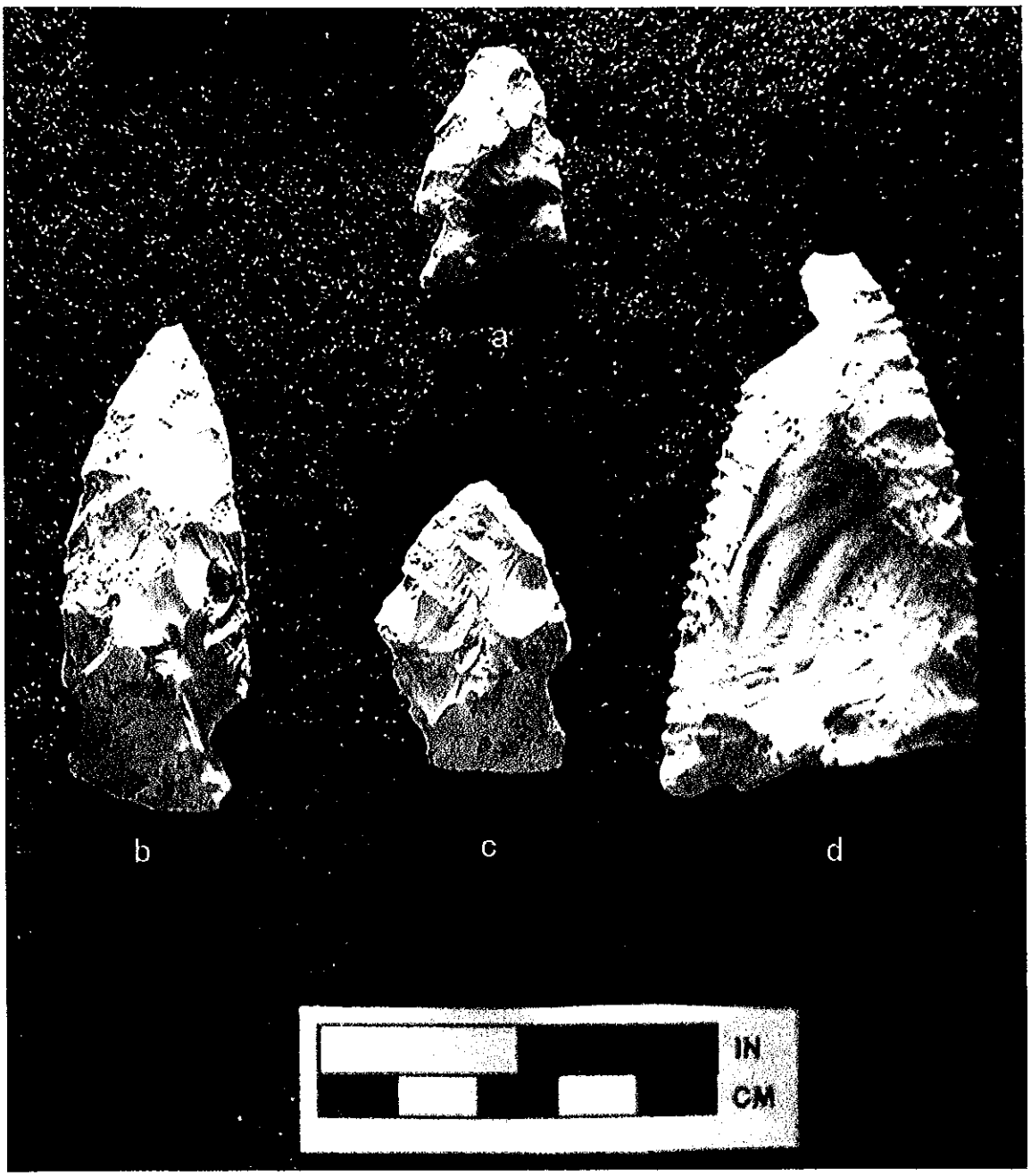

Figure 33. Points: a) Unclassified Bifurcate (43/18), b) McWhinney (43/16), c) Unclassified side notched (43/17), and d) Unclassified Early Archaic (43/15).

Ground Stone

Three ground stone artifacts were recovered from the mound. Two were found in Votive Offering # 1 and the other was in Votive Offering # 2 (Setzler 1931:30-32).

Sandstone Tablet

A rectangular sandstone tablet (43/2) was found in Votive Offering # 1 (Figure 34). The tablet was made from fine sandstone and measured 12.47 cm long x 6.13 cm wide and 1.54 cm thick. There were broad, shallow grooves on both faces parallel with the long axis of the tablet. One face was stained black, possibly from smoking, while the other face was stained with red ocher. Sandstone tablets were usually considered distinctive of the Adena Complex (Dragoo 1963:180). However, the tablet was in direct association with two Snyders points which were typically considered Middle Woodland and distinctive of the Hopewell Complex (Justice 1987:201). Sandstone tablets have been recovered at several other regional mounds, eg. Windsor Mound (McCord 1994), and Law (Morris 1970).

Biconcave gorget

A biconcave gorget (Converse 1978:46-47) (43/3) made from banded slate (Figure 35) was also recovered from Votive Offering # 1 (Setzler 1931:31). The gorget was flat in cross section and had two holes drilled from one side. The "front" of the gorget had a thin (3 mm) beveled edge around the outside while the "back" was flat. The holes were drilled from the "back" side. The "front" face also had two discolored areas that appeared to be red ocher staining. The gorget measured 10.72 cm long, 4.57 cm wide at the widest part and 0.95 cm thick. As with the sandstone tablet previously described, this gorget form was associated with the Adena Complex (Dragoo 1963:183). Dragoo (1963:183) classified gorgets of this morphology as "bow tie" and stated that the form is not common.

Expanded Center Bar Gorget

One expanded center bar gorget (43/7) (Figure 36) was found beneath leather pouch 1 in Votive Offering # 2 (Setzler 1931:32). Although undrilled, this gorget was well finished. As was typical for these artifacts, one face was flat and the other rounded; drilling was typically from the flat face. Red ocher stains occurred on the flat side. The gorget was 12.60 cm long, 5.09 cm wide at the center, 3.2 cm wide at the ends and 0.97 cm thick. Expanded center bar gorgets were considered the definitive diagnostic artifact of the Adena Complex (Swartz 1971:128, Dragoo 1963:182).

Ceramics

Setzler (1930b:221) mentioned that one piece of pottery was found in Fudge Mound. However, in the 1931 report Setzler (1931:35) states that no pottery was found. In the curated

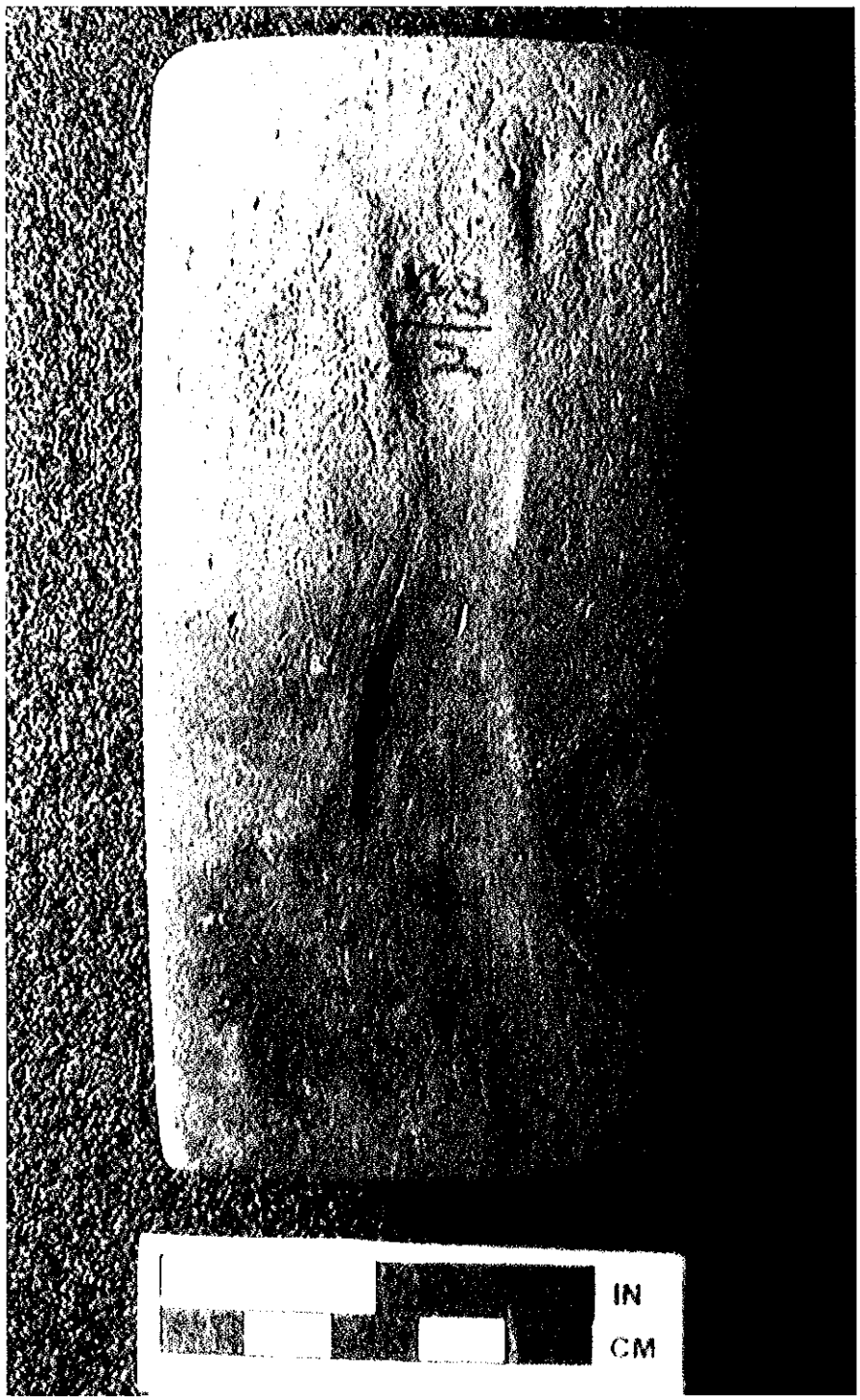

Figure 34. Sandstone tablet.

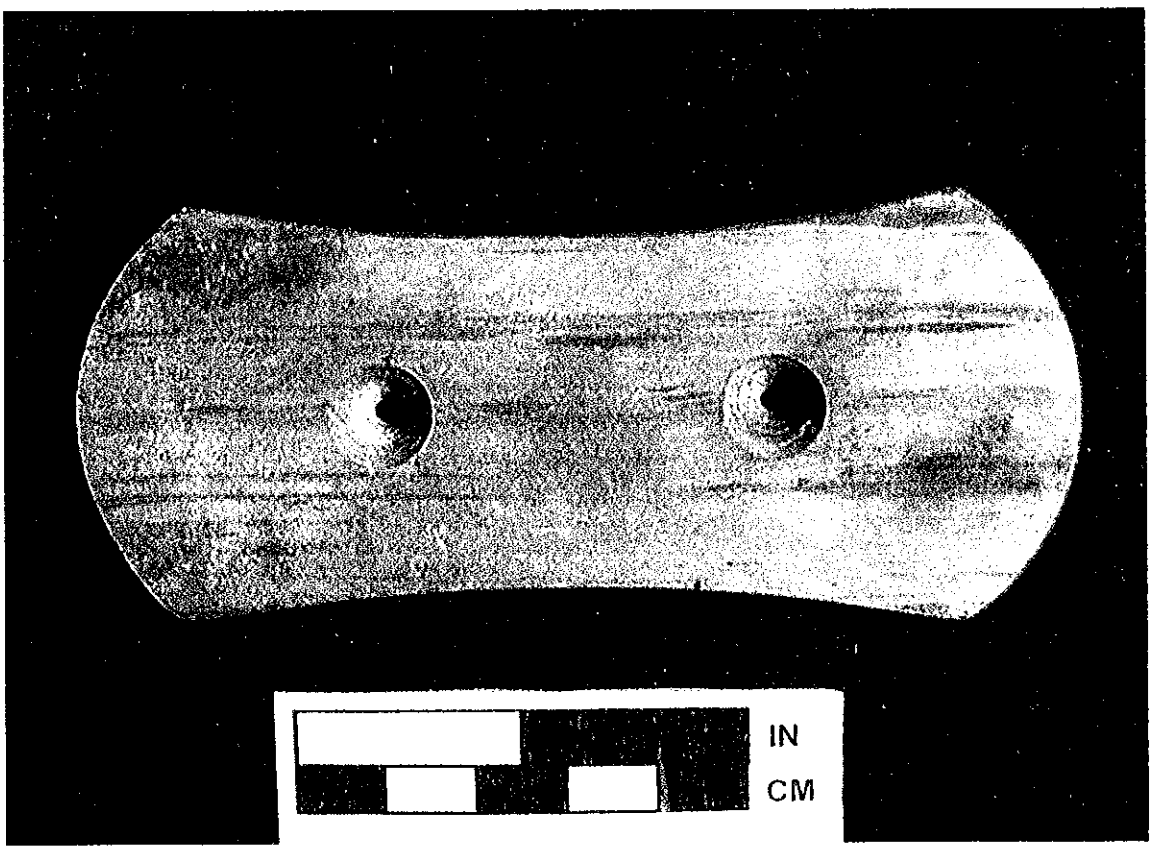

Figure 35. Biconcave gorget.

Figure 36. Expanded center bar gorget.

collection from the site, one piece of pottery was present catalogued as 43/13. The sherd was a rim that was straight and had a flattened lip. Surface treatment was plain. The sherd was grit tempered with crushed granitic rock. Temper size was variable ranging between 0.5 and 4 mm in diameter. The sherd was somewhat thinner away from the rim (5.92 mm) and thickest at the rim (6.31 mm). The sherd was in all ways comparable to the plain ceramics from other mound sites in the region (Vickery 1970, Swartz 1973 and 1976, Heilman 1976, Kolbe 1992a, McCord 1994, Johnson 1995).

Leather Pouches

Two groups of artifacts interpreted as leather pouches were recovered from Votive Offering # 2 (Setzler 1931:32). The pouches contained a fabric lining over copper bracelets. The copper bracelets encircled bark and fragments of bone, identified as human arm bones (Setzler 1931:33). The organic materials were preserved through contact with the copper bracelets. These materials were curated under catalog number 43/5. The leather "pouches" were about 150 cm long and 82 cm wide. Fabric was adhering to the interior of the leather and the imprints of the copper bracelets were readily apparent (Figure 37). The materials were impregnated with preservative and cotton fibers adhered to them. Setzler (1931:33) stated that "water glass" was used to impregnate the organic materials in order to preserve them. The leather has not been identified and the fibers used in the construction of the twined cloth have not been identified beyond Setzler's (1931:33) characterization of them as wood fibers. Some red ocher staining was evident on the curated materials.

Copper Bracelets

Sixteen copper bracelets were recovered from within the two containers of leather and cloth (Setzler 1931:33). Those from Pouch 1 ranged between 40 and 80 g in weight and measured 23 to 26 cm across. The bracelets from Pouch 2 were more fragmentary, weighing between 12 and 31 g. Only four could be measured and they were 22.6 to 24.5 cm across (Figure). All of the bracelets were "C" shaped with the ends butted together; none had overlapping ends. The circumference of the bracelets was comparable between the two groups. The eight bracelets from Pouch 1 were heavier and flattened in cross section (Figure 38) while the 8 from pouch two were thinner, and more rounded in cross section (Figure 39).

Animal Bone

Setzler (1931) mentioned that cremated animal bone was found with both votive offerings. No cremated animal bone was found during the reanalysis of the collection.

Human Remains

Associated with the copper bracelets and leather/cloth materials were fragments of human bone. These materials, catalogued as 43/10, were positively identified by Rex Garniewicz of the

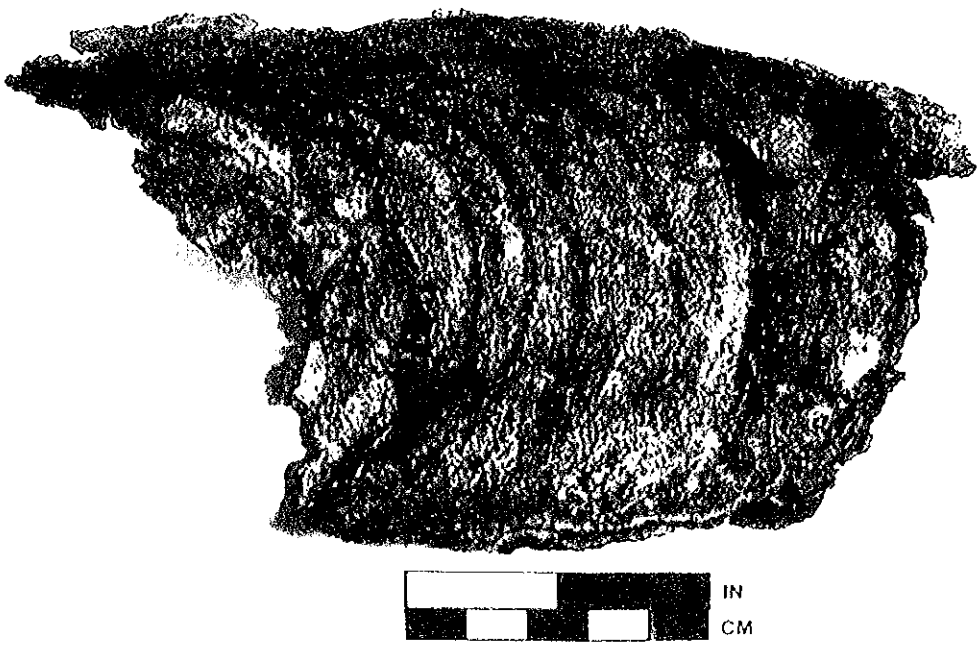

Figure 37. Leather from Votive Offering #2.

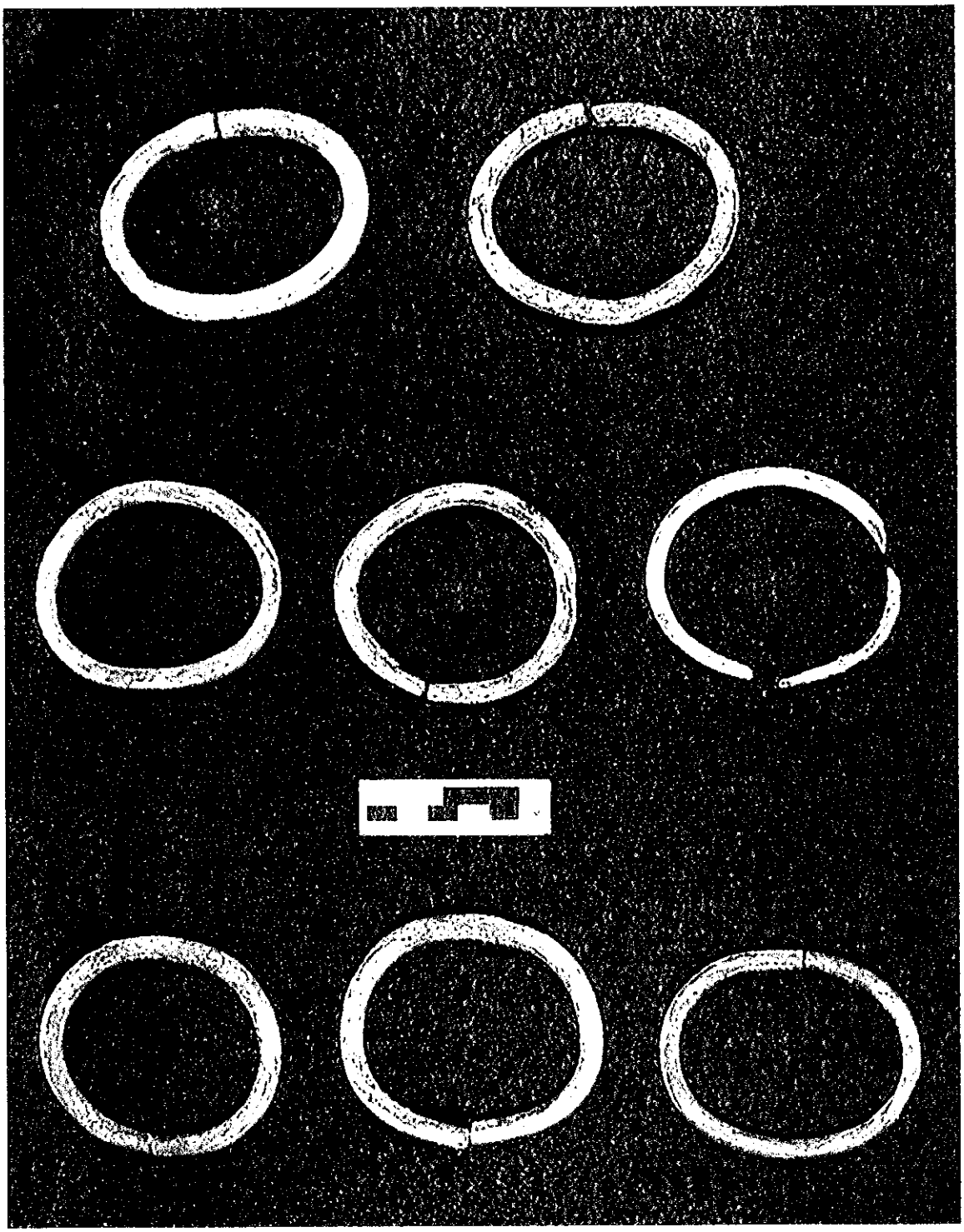

Figure 38. Copper bracelets from pouch 1.

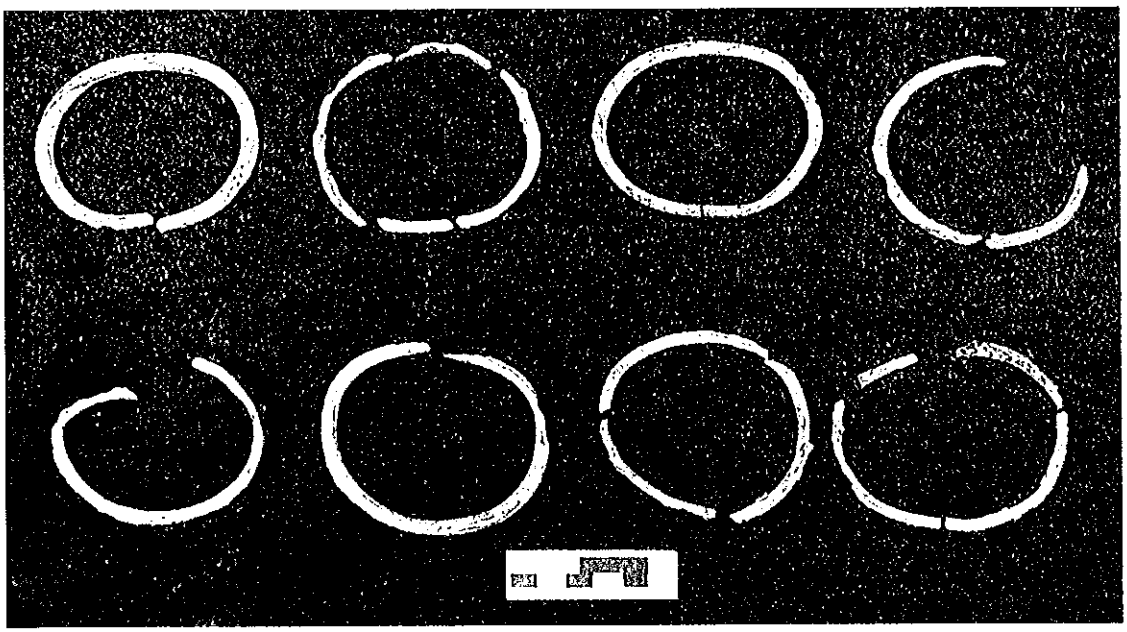

Figure 39. Copper bracelets from pouch 2.

Glenn A. Black Laboratory of Archaeology as human radius and ulna fragments as well as muscle tissue and skin. The bone was too fragmentary to side as right or left. The human remains were preserved through the association with the copper bracelets. The human remains contained in the burial pit were not examined during this project.

Structure

Setzler's (1930, 1931) excavation of Fudge Mound provided some interesting information. First, a rather large mound was erected over a central burial pit containing one human burial and a human cranium. The burial was contained in a pit excavated below the original ground surface and the sides of the pit were lined, on at least three sides, with upright posts. Although Setzler (1931:31) stated that the posts were burned because of the presence of charcoal in the post holes, there was no supporting evidence to confirm this burning. No heat alteration of the sides of the pit was reported, and no layers of charcoal were encountered to indicate that a structure had been burned. Around the burial pit, a double wall of small upright posts were erected. Setzler (1930, 1931) did not mention whether the posts outside of the pit were burned. The alignment of the posts surrounding the burial pit and the burial pit itself were oriented the same deviation from the cardinal directions as the embankment, indicating a direct connection between the various sets of activities (Setzler 1931:32).

East of the burial pit, a cache of artifacts, Votive Offering # 1, was placed on the original ground surface. This cache, including burned animal and bird bone, contained artifacts normally associated with both the Adena Complex and the Hopewell Complex. This deposit and the central burial pit were covered with strips of bark and then red ocher placed over the bark.

South of the burial pit, and resting on the red ocher/bark deposit, Setzler (1931) found another cache, Votive Offering #2. This cache consists of two leather pouches which contain cloth linings and copper bracelets that are strung on human bones, specifically, bones of the forearm. Human skin and tissue preserved by the copper salts of the bracelets are still present in these materials. Thus, it seems clear that the "pouches" contained human forearms that have been partially preserved through association with the copper bracelets. The question that begs to be addressed is whether the forearms were placed in the mound as a separate deposit or whether they were attached to a body at interment. At the Robbins Mound in Kentucky, Webb and Elliott (1942) found similar materials, but with enough supporting evidence to indicate that the leather "pouches" represented the surviving portions of human forearms. Webb and Elliott (1942) interpreted this situation to represent the remains of an extended human burial, the majority of which had previously disintegrated. Given the evidence from the Robbins Mound and the lay-out of the leather objects from Fudge, it seems reasonable to hypothesize that the two leather objects represent surviving vestiges of the lower arms of a human burial. The bone and leather were preserved only through the association of the copper bracelets.

In reviewing the photographs of the Fudge Mound excavations, one was found which revealed the circumstances in which the leather containers were found. They were encountered in

profile while excavating the profile wall adjacent to the central burial pit. When the bracelets were encountered, a small horizontal cut was made to expose them and they were removed. Unfortunately, the horizontal unit did not expose enough area to reveal anything associated with the leather containers. If other portions of the burial survived it is unlikely they would not have been found under those excavation conditions.

Perhaps the most interesting aspect of the stratigraphy of Fudge Mound was the direct association of diagnostic Hopewell artifacts, Snyders points, with distinctively Adena artifacts. These artifacts were contained within a feature that was aligned in the same direction as the surrounding rectangular enclosure. The morphology of the mound was more Adena-like while the shape of the enclosure was more Hopewell-like This situation has tremendous bearing on the chronological and cultural relationships between the Adena Complex and the Hopewell complex. We have previously hypothesized that the two complexes represent different parts of the same ceremonial/mortuary complex, and not two distinctive cultures as they have been characterized in the archaeological literature.

Conclusions and Recommendations

Although the entirety of the Fudge Mound was excavated by Setzler (1931), there is a potential that some submound deposits remain, perhaps around the margin of the excavated area. Certainly the embankment remains visible in several areas although it has been seriously reduced through cultivation (McCord and Cochran 1996:125-127). There can be little doubt that this site contains tremendous significance for understanding the regional ceremonial/mortuary system and several recommendations are in order.

1. In terms of the artifacts, the only materials that has not been adequately analyzed are those formerly identified as leather bags and now considered sleeves. The leather, cloth and bark needs to be identified. The cloth fiber needs to be identified and the amount and kinds of fabric that are present needs to be defined. Since these materials represent the only organic remains from the site, they are the only candidates for radiocarbon dating. Given the perfection of the AMS technique, it is recommended that a tiny sample of the bark be identified and then sacrificed for a radiocarbon date if the samples have not been contaminated by preservative and storage.

2. It is recommended that a testing program be structured and initiated for the remaining portions of the embankment before it is completely destroyed. The best section remains at the corner of a farm field; a profile of the embankment at this location should be acquired. The remainder of the embankment should be sampled to determine whether features are present below the embankment. Setzler (1931) reported charcoal in the section of the embankment he tested, and radiocarbon samples for dating the embankment should be a priority for recovery. Given the process of cultivation in reducing elevations in farm fields, there is a possibility that features at the base of the original embankment have been buried through plowing down the walls. Additionally, a 1936 aerial photograph of the site area revealed dark circular areas just inside the northeast corner of the enclosure. This area of the enclosure has recently been developed as a new

homesite and testing needs to be carried out to determine whether a feature exists here.

3. Finally, it is recommended that the site be nominated to the National Register of Historic Places and the Indiana Register of Historic Places. Given that Fudge was the largest enclosure in the state of Indiana, it deserves adequate recognition and whatever protection listing could afford.

Law Mound

Background

The Law Mound was one of several small earthen mounds in east central Indiana (McCord and Cochran 1996). The mound was first reported in 1970 (Morris 1970:9-10, Keesling 1970:232). The mound was located in a woods [redacted] (Figure 40). The mound was reported as 28' in diameter and 4' in height (Morris 1970:9).

Benjamin Morris, an anthropology graduate student at Ball State University, conducted a survey of archaeological sites in Randolph County. As part of the survey, he involved local avocational archaeologists to record sites. One avocational, Mr. James Keesling, was excavating a test pit in the Law Mound and contacted Morris when he encountered a burned area. Morris, Keesling and 2 other avocationals, Everett and Merrill Hinshaw, began exploratory excavations in the summer of 1969 (Morris 1970:9).

A datum for the mound was established on a large boulder southwest of the mound. The excavation began with 2 trenches through the center of the site, but a "modified quartering technique" was later used (Morris 1970:9). The excavations revealed an unbroken charcoal lens approximately 1 inch thick in the trenches. Above the charcoal lens very few artifacts were recovered from the mound fill. Below this lens numerous artifacts and features were encountered. In one area 217 pottery sherds were recovered. In another area, a fire pit contained 11 smoked rectangular tablets, fragments of small animal bone, ashes and small pebbles, and one point fragment. A cluster of several crescent shaped mica strips were recovered from another area and 2 feet away was a human skull fragment. Also recovered in different locations were a celt blank, an expanded center bar-gorget and 2 post holes (Figure 41). The mound was interpreted to be a house that had burned and was covered with earth (Morris 1970:9-10). The artifacts from the mound were likened to those from the original Adena Mound and the Late Adena Fudge Mound (Morris 1970:47)(Figure41).

Mr. Keesling retained the artifacts recovered from the Law Mound. In 1995, Mr. Keesling was interviewed and the artifacts were examined by the authors (McCord and Cochran 1996:26, 132-133). While the collection was documented it was not detailed. Mr. Keesling was visited again in October of 1999 for this project. Mr. Keesling provided recollections of the excavation and graciously donated the artifact collection, except for the expanded center bar gorget, to the Department of Anthropology at Ball State University.

Evaluation

Morris (1970) provided only a 2 page account of the excavation and Keesling (1970)

Site Locations Confidential
Not For Public Disclosure

Figure 40. Portion of the USGS 7.5' Lynn, Indiana Quadrangle showing the location of the Law Mound.

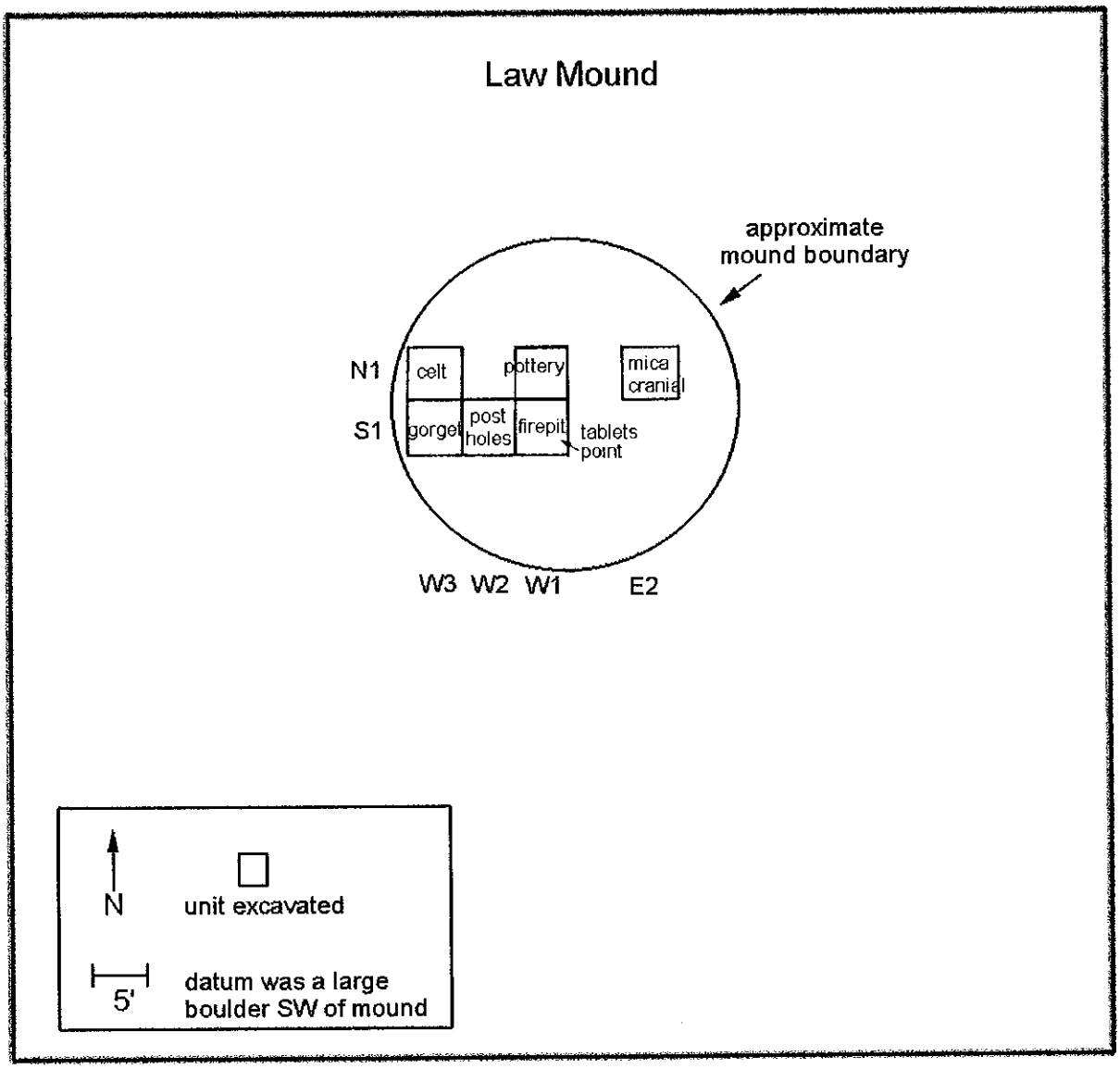

Figure 41. Plan map of the excavation.

wrote a paragraph on the artifacts. The only other written document pertaining to the excavation of the Law Mound was a newspaper article that covered the 1969 excavation (Braum 1969). If any field notes were kept, they were not on file at Ball State and Mr. Keesling had no documents. The only photographs of the actual excavation were in the newspaper article (Braum 1969) and were of little use in examining the mound structure. In addition, the limited sources on Law Mound contained some inconsistencies.

One of the major difficulties was the reported excavation methodology. Morris (1970) provided 5' square unit designations in his descriptions of the artifacts. However, Mr. Keesling stated during our interview that the excavation had not been conducted in a systematic manner and that they did not maintain provenience control. The exact nature of a "modified quartering technique" noted by Morris (1970) was unclear, but apparently he just dug trenches to the center of the mound. In addition, Morris made no mention of the screening methods. There was a photograph of Mr. Merril Hinshaw and Mr. Keesling screening, so at least some of the excavated soil was screened. Mr. Keesling stated that approximately 1/3 of the mound was excavated.

Morris (1970) only made a brief mention concerning the stratigraphy of the mound. He stated that an unbroken charcoal lens approximately 3/4 inch in thickness appeared between the 20 and 23 inch level. The soils above the lens were poorly defined. Other than a few chips of flint, all the artifacts recovered were below the charcoal lens. Morris (1970:9) believed that the "poorly, defined, relatively debris free, homogenous soils covering the site suggest that little time elapsed between the beginning and the end of the dirt covering process". Morris, therefore, suggested that there was little complexity in the mound construction. He believed an Adena house was burnt and covered with earth (Morris 1970).

Morris's (1970) interpretation that the site was a house was apparently based on finding 2 post holes. He did not believe this site to be a burial mound (Braum 1969, Morris 1970). This interpretation was posed even though human remains were recovered and only 2 post holes were recorded.

No radiocarbon dates were available for this site. Braum (1969) reported that charcoal was sent to the University of Chicago for dating, but Morris (1970) never mentioned this. It was unclear if a sample was ever submitted.

Artifacts

The artifact collection donated by Mr. Keesling is curated at ARMS under accession #00.21. There is only a small artifact collection from the Law Mound. The lack of lithic debris and other small artifacts may attest to the sterile mound fill or lack of systematic screening.

Chipped stone

Points

Only 3 point fragments were in the Keesling collection (Figure 42). All of the fragments were portions of the blade element and could not be identified to a particular type. One of the point fragments was of Wyandotte chert that had been heated. The point had not been throughly cleaned and some soil and charcoal were still embedded in the flake scars. Morris (1970) recorded a point tip of Harrison County chert in a fire pit in unit 1S1W. The second point fragment was of an unknown heat damaged material. Some charcoal was embedded in the flake scars. No provenience information was available. The third point fragment was of unknown material. Some soil but no charcoal was found in the flake scars of the point. No provenience information was available for this point.

Debitage

The collection contained one unmodified flake of Laurel chert. This was the only piece of lithic debris in the collection. A light brown soil similar to that on the third point fragment was found on the flake.

Other than the point fragment of Wyandotte, Morris (1970) did not specifically mention the chipped stone artifacts. There is no way to determine if these artifacts were incidental in the mound fill or part of the activities in the mound construction. Morris (1970) noted that only a few chips of flint were recovered above the charcoal lens.

Ground stone

Celt

A slate celt was recovered just below the charcoal lens in unit 1N3W (Figure 43). The celt displays chipping and peck marks. The edges of the celt are all ground. The body shows polish. The bit was still sharp, but it was damaged with a few flake scars probably removed during use. The celt is 12.6 cm in length, has a maximum width of 4.9 cm, and a maximum thickness of 2.2 cm. Celts were not uncommon in Adena mounds (Dragoo 1963:79-81).

Gorget

An undrilled expanded center bar gorget was recovered in unit 1S3W just below the charcoal lens (Figure 44). Mr. Keesling retained the gorget, but gave us a scaled photograph of the artifact. The gorget was made of slate. From the photograph peck marks were evident. The gorget was not drilled. The gorget was approximately 10.75 cm in length and 3.25 cm wide at the center tapering to 1.5 cm at the end. Expanded center bar gorgets were recognized as the hallmark of the Adena Complex artifacts (Dragoo 1963, Swartz 1971).

Figure 42. Point fragments from Law Mound. Materials are Wyandotte, HD unknown and unknown.

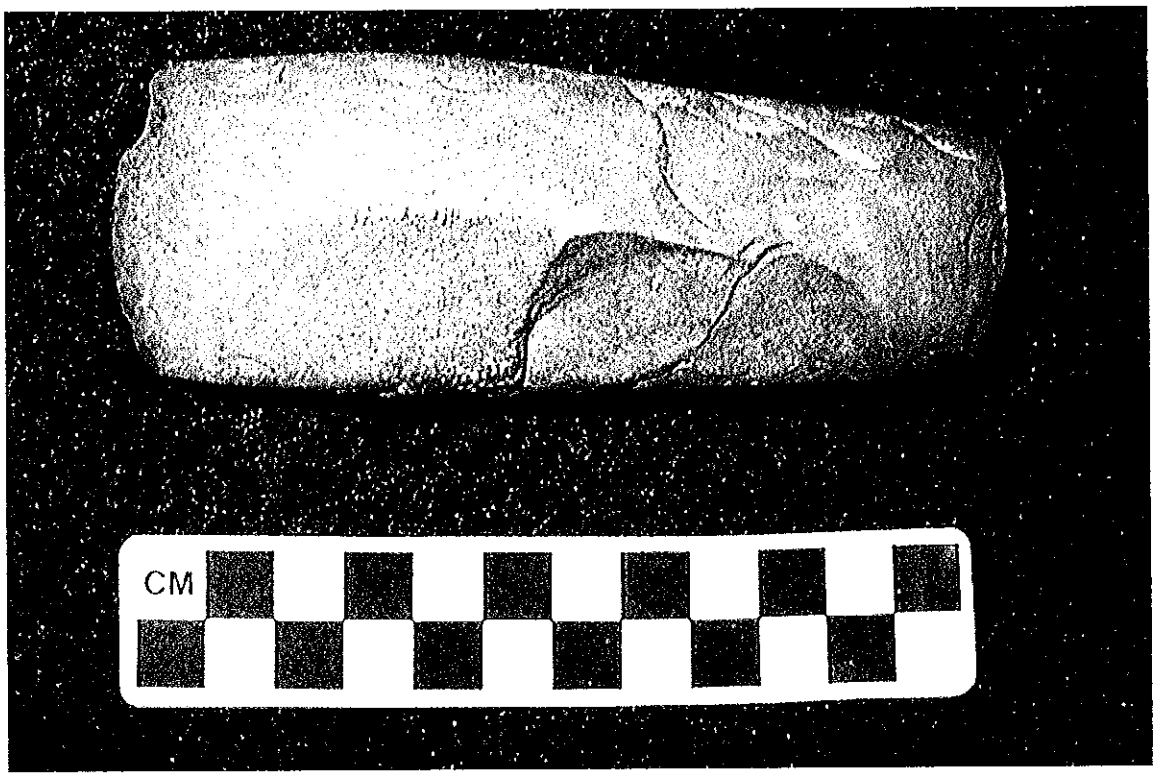

Figure 43. Celt from unit N1W3.

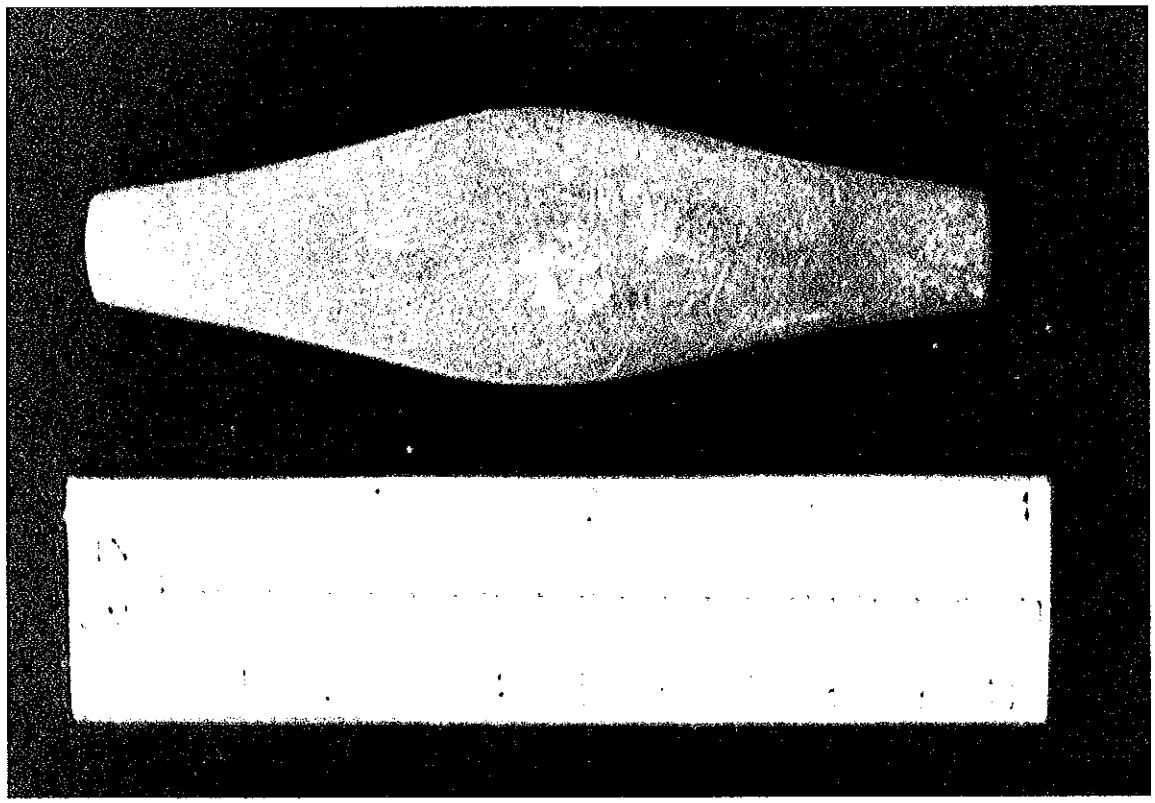

Figure 44. Undrilled expanded center bar gorget from unit S1W3. (Photo courtesy of Mr. James Keesling).

Sandstone Tablets

Morris (1970) reported 11 unengraved rectangular tablets. Seven were of sandstone and 4 were made from polished slate. The tablets were found in a fire pit that was 18" in diameter and 13" deep in unit 1S1W. The pit also contained numerous fragments of small animal bones, ashes, small pebbles, and the point fragment of Wyandotte chert. The tablets were smoked stained. Morris (1970:9) believed the tablets to be boiling stones or whet stones.

There is a discrepancy in the number of tablets recovered from Law Mound. The Keesling collection contained 18 tablets and fragments. There were 4 whole and 2 fragments made from a fine grained sandstone (Figure 45). There were 1 whole and 11 fragments made from a coarse grained sandstone (Figure 46). While several of the tablets were fragmentary there were a minimum of 18 tablets represented. None of the tablets were manufactured from slate. Measurements for all tablets were placed in Appendix D.

The tablets that are complete enough to examine shape are predominately rectangular. One of the fine grained tablets (00.21.1.1) is more square in shape and one (00.21.1.3) has a rounded corner. Another fragment of a fine grained tablet (00.21.1.6) has a rounded corner. One of the coarse grained tablets (00.21.1.8) has more of a rhombus shape. The largest tablets are coarse grained and the smallest one is fine grained. The thickest tablets are coarse grained and the thinnest are fine grained. To quantify, the tablets range from 4.82 to 13.86 cm in length, 3.16 to 9.66 cm wide and 0.74 to 2.25 cm thick. In cross section the tablets are primarily flat to slightly convex. The edges are typically straight to slightly convex. Only one tablet displayed concave sides (00.21.1.10).

One fine grained tablet (00.21.1.2) and one coarse grained tablet (00.21.1.12) were taken to geologists Nelson R. Shaffer, Erik P. Kvale and Maria Mastalerz at Indiana University for examination. The following description of the tablets was compiled from notes taken by Tim Wright (on file at ARMS). The fine grained tablet was composed primarily of quartz and approximately 9% of mica, some feldspar and fine grained pyrite. The grain shape was round. There were quartz overgrowths. There were tiny cleavages that may indicate a carbonate deposit that eroded. The coarse grained tablet was composed of at least 3 varieties of quartz sand; a clear angular quartz, a globular gray quartz and a white opaque quartz. There were obvious quartz overgrowths. There were also 2 types of mica composing 3 to 5% of the content. Some mica was fine grained and evenly distributed and some were large isolated grains. The specimen also contained some pyrite, weathered feldspars and hematite. The particles were poorly sorted and grains were subangular to subround with some angular. The tablets were judged to be from Pennslyvanian deposits. The coarse grained tablet was tentatively identified as Mansfield Sandstone which outcrops in Ohio. The fine grained tablet was also likely from an eastern source, although a source to the west or south of Randolph County could not be ruled out.

All of the tablets displayed some discoloration consisting of dark grey to black colors from

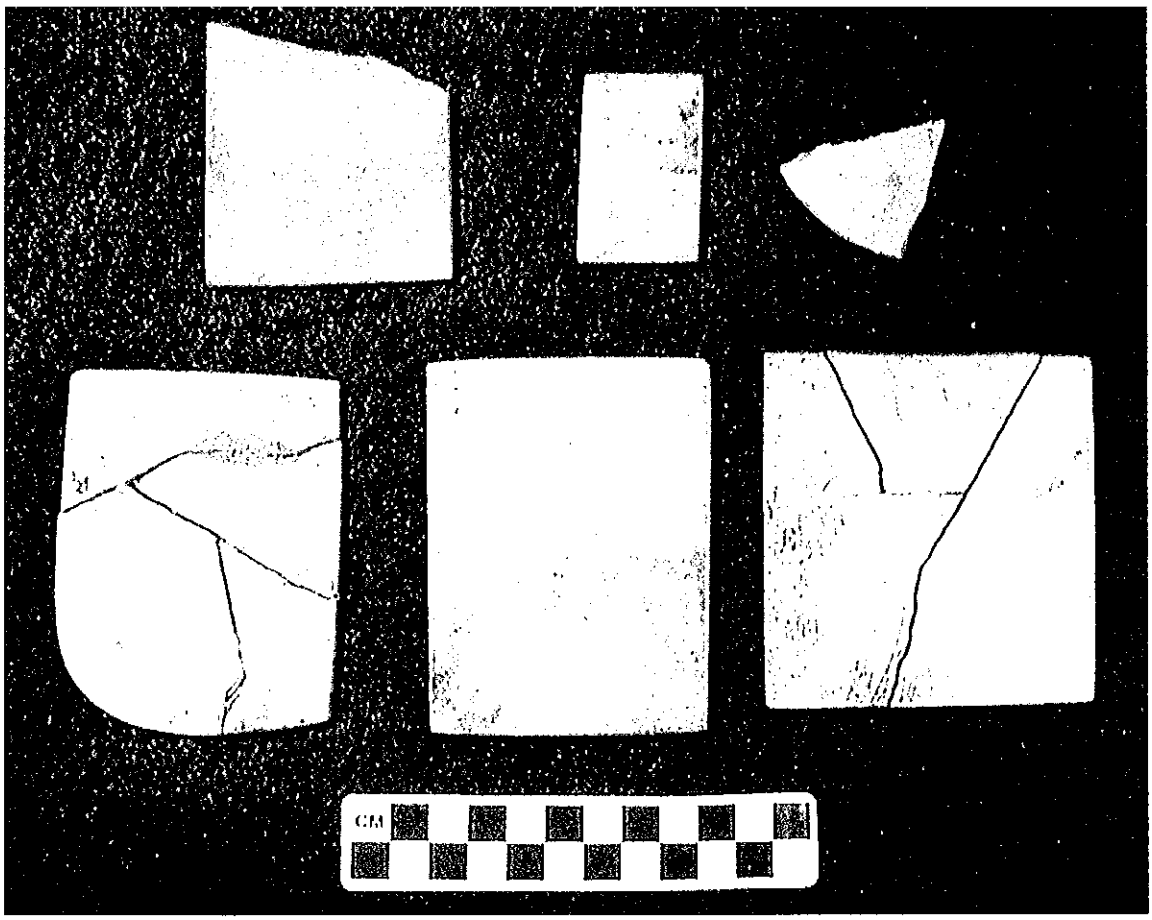

Figure 45. Fine grained sandstone tablets from the fire pit in unit S1W1.

Figure 46. Coarse grained sandstone tablets from the fire pit in unit S1W1.

from heating. Five of the tablets had charcoal embedded on the surface. Two tablets also had areas with a red mineral, presumably red ocher, adhering on the surface.

Peck marks were the most common features occurring on the tablet's surface. Peck marks were identified on 4 of the fine grained tablets and on 4 of the coarse grained tablets. The side of one tablet was heavily pecked and had not been smoothed. The smallest tablet (00.21.1.4), a fine grained specimen, displayed a scoring groove running parallel to one edge of the tablet (Figure 47). This was apparently a manufacturing remnant. Aside from the few peck marks, the surfaces of most tablets were smooth. The tablets, therefore, appear to be manufactured by scoring the outline of the tablet, snapping the edges along the score line, pecking the final shape and smoothing.

Three tablets displayed some irregularities on the smooth, flat surface. One tablet (00.21.1.10), a coarse ground specimen, had grooves on both faces. The grooves were shallow, broad and parallel to the long axis of the tablet (Figure 48). This same tablet had a groove on the two long sides producing a concave cross-section. Another coarse ground tablet (00.21.1.7) displayed approximately 5 narrow and shallow scratches that were parallel to the long axis on one face of the tablet. The fine grained tablet (00.21.1.3) with one rounded edge had numerous narrow and shallow scratches on both faces (Figure 49). These scratches were more random with some parallel and some oblique to the long axis. The origin of these irregularities was uncertain.

Only three of the tablet surfaces showed any modification beyond what may been considered manufacturing. It is not known what activity produced the irregularities seen on these tablets. They may simply be from grinding or smoothing the tablets to shape. However, it is likely that these grooves or scratches indicate a cultural use.

Finished sandstone tablets that have grooves have been characterized as whetstones or palettes for mixing pigments (Webb and Snow 1945:91, Dragoo 1963:218). An ocher like substance was found on two tablets but neither of these were ones that had grooves or scratches. While it is plausible that some sandstone tablets were utilized as whetstones or palettes, at least the majority of the Law tablets show no such indication. The function of these tablets in the ritual and ceremonial life of the culture that produced them was at this time unfathomable.

Mica

Several crescent shaped mica strips with pin holes were reported matted together in a single cluster from unit 1N2E (Morris 1970). The Keesling collection contained over 40 fragments of mica (Figure 50). A photograph of the strips in 1969 shows 12 pieces of mica (Braum 1969). The strips had exfoliated and some of the pieces could be reconstructed by aligning sections of the same width and overlapping the small pin holes. Only one strip had a finished end. It was tapered and rounded. Two pieces fit together end-to-end and either represented one piece that was cut or two pieces that were trimmed to abut one another (Figure 51).

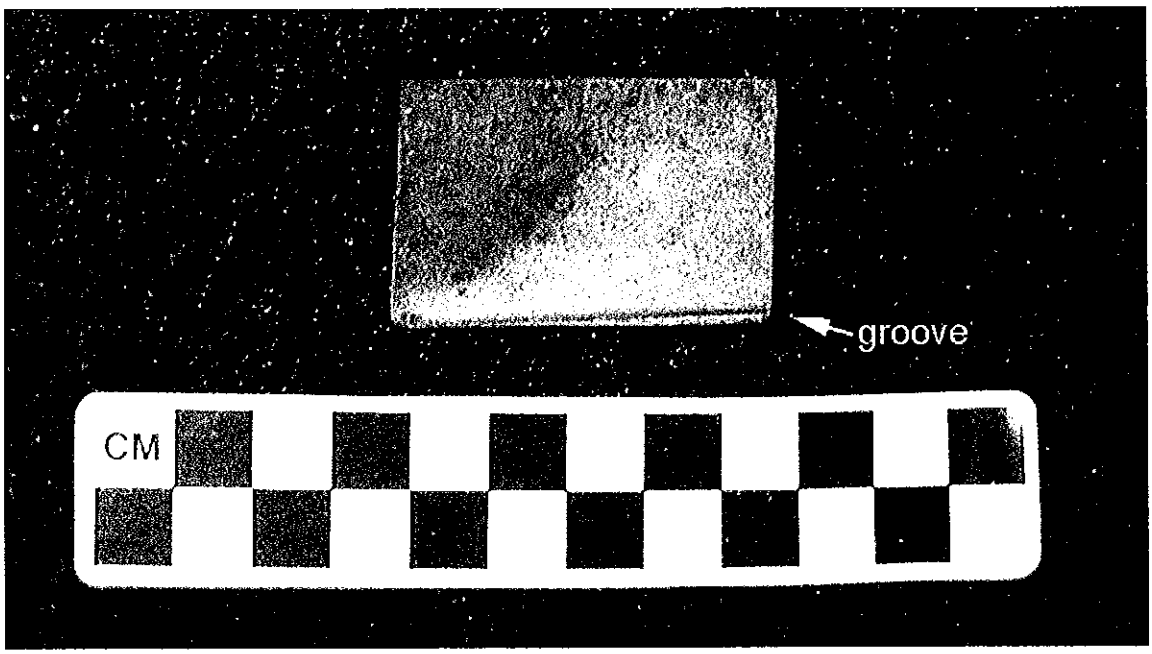

Figure 47. Scoring groove on a small fine grained tablet.

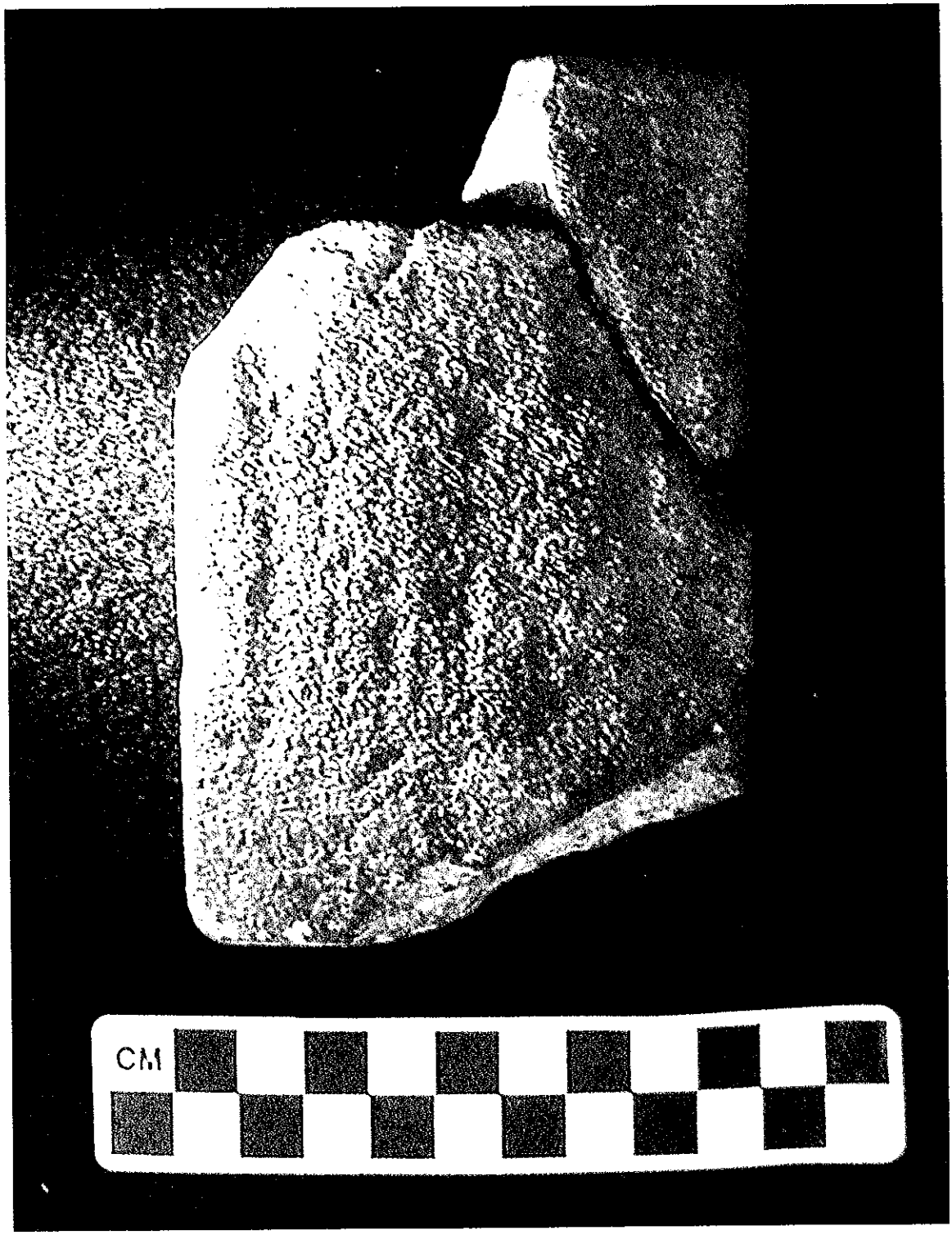

Figure 48. Linear grooves on a coarse grained tablet.

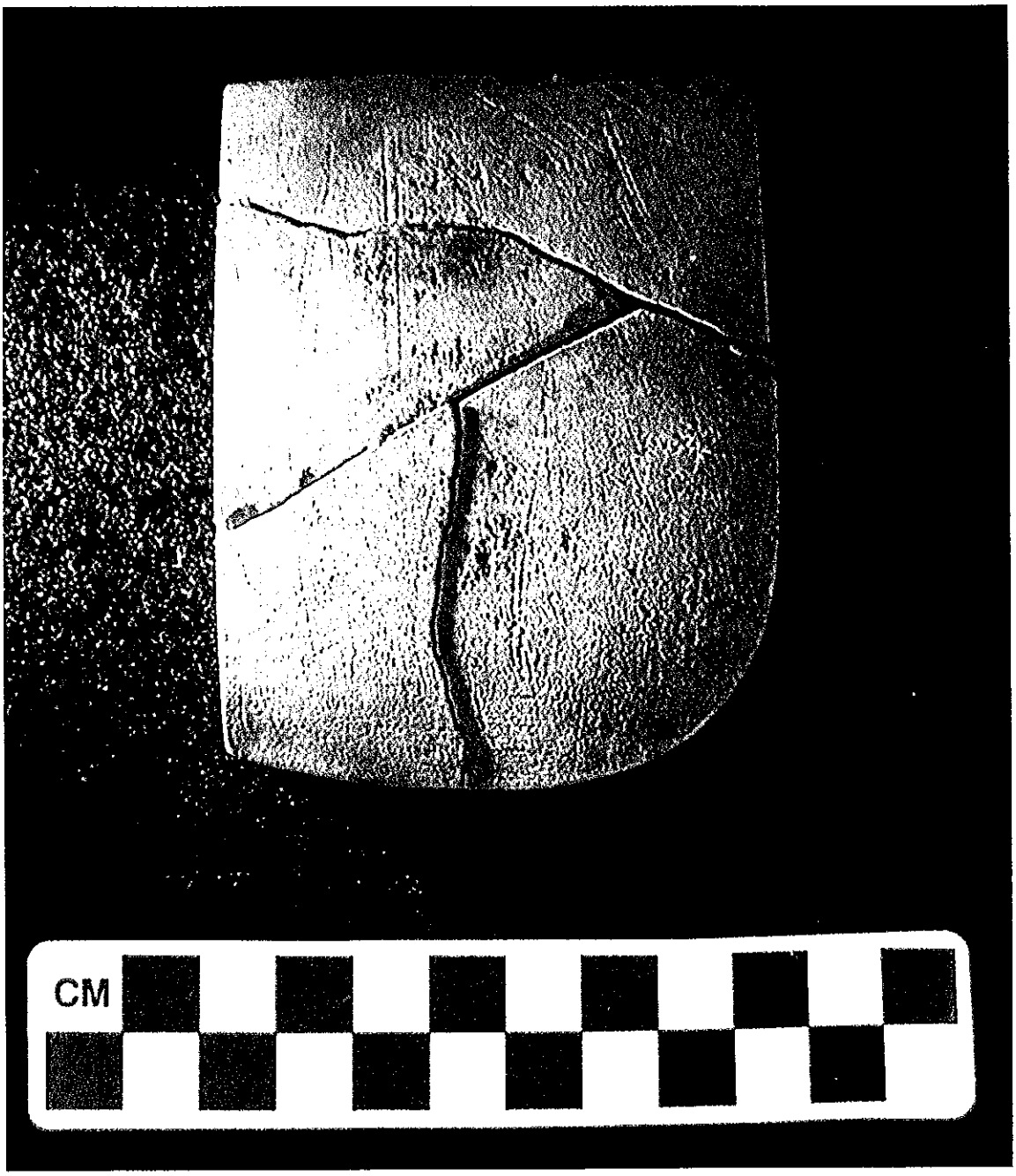

Figure 49. Narrow scratches on a fine grained tablet.

Figure 50. Mica recovered from unit N1E2.

Figure 51. Close up of a cut section of mica.

Based on the reconstructions it is estimated that no more that 3 or 4 large pieces existed originally. The mica strips were curved, but did not form a true crescent shape. The mica had been trimmed to form a long curved strip of perhaps 300 mm in length. The finished end of one strip was 9.3 mm wide and maximum width of the widest strip was 34.0 mm.

Several small "pin" holes were evident along the strips, but in no discernable pattern (Figure 52). Overlapping sections of mica to extend the length has been noted for other mica crescents (Webb 1940:69, Webb and Snow 1945:102). It has been suggested that they served as headdresses, as gorgets or were sewn to garments (Webb 1940:69, Webb and Snow 1945:102, Webb and Baby 1957:20). The pin holes do not strongly support the attachment of the mica to a garment. For example, on the one finished end section of mica, no pin holes occur near the end. Approximately 80 cm of fragile mica would have been left unattached. The idea that the crescents served as gorgets also seemed to fall short based on the pin hole placement. Once again, no hole occurs at the end of the crescent for attachment around the neck. The suggestion that the crescents are parts of headdress may have merit. However, the cranial fragments from the Law Mound were reported to be 2' away from where the cluster of mica was found (Morris 1970). A clear answer to the function of these mica strips is not apparent or supportable.

Ceramics

Morris (1970) reported 217 pottery sherds including 12 rims from unit 1N1W immediately below the charcoal lens. He stated that all of the sherds were thin, plain and grit tempered with the exception of a single sherd with a brushed surface (Morris 1970:9). Keesling (1970) also reported a design on one of the rim sherds. Some of the sherds were sent to James Griffin for study. Griffin (1969) stated the pottery was "late in Adena, probably fairly close to the Hopewellian time period". He was also surprised to find a brushed surface on one of the sherds from the mound (Griffin 1969).

While Morris (1970) reported 217 pottery sherds from the mound, only 149 sherds were in the Keesling collection. The difference in numbers may be due to reconstruction of the pottery reducing the number of sherds. For example, the Keesling collection contained 18 fragments of pottery that were fitted together and counted as 4 rims. The Keesling collection, therefore, contained 149 sherds including 8 rims, 2 shoulders and 139 body sherds. At least two vessels were represented in the collection.

The first vessel, Type I, was represented by four rim sherds (Figure 53). The rim shape was straight with a flattened lip, but was thickened by a rim fold (Figure 54a). The paste was a somewhat sandy clay and appeared to be well mixed. The temper was a crushed grit from a granitic source containing quartz, feldspar and biotite. Temper particles were moderate in size ranging from 1.48 to 3.56 mm. The rims varied in thickness between 4.38 and 6.08 mm at the lip and between 10.55 and 11.49 along the rim fold. The rim diameter of the vessel was

Figure 52. Closeup of pin holes in the mica.

Figure 53. Pottery sherds, Type I.

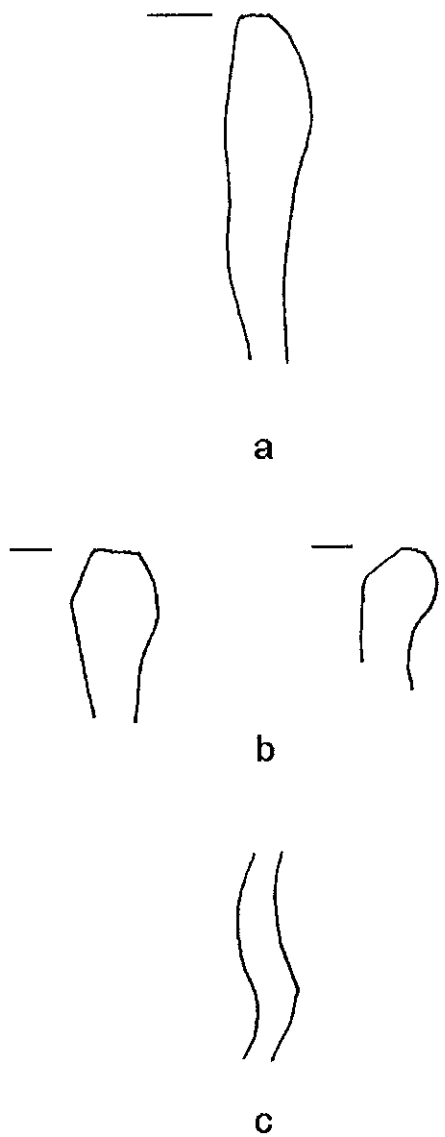

Figure 54. Profiles of the ceramics; a) Type I rim, b) Type II rims, c) angular shoulder.

approximately 26 cm. The rim fold and interior surface were scraped smooth and in some areas displayed burnishing. Below the rim fold the exterior surface was brushed creating a ridged surface treatment (Figure 55). The brush marks were perpendicular to the lip. Some of the rim sherds were heavily cleaned and the brushed surface treatment was obliterated.

The second vessel, Type II, was also represented by four rim sherds (Figure 56). The rim shape appeared to be fairly straight and had been thickened by a rim fold. The lip was flattened and beveled to both the interior and exterior (Figure 54b). The paste was very similar to the first vessel (Type I) being somewhat sandy and well mixed. The temper was a crushed granitic rock that contained quartz and feldspar but not as much biotite as the Type I vessel. The temper was finer and ranged in size between 1.00 and 2.50 mm. The rims were thickest at the lip and varied between 8.9 and 12.1 mm. The rim diameter of the vessel was approximately 22 cm. The interior surface of the rims had been scraped and were burnished in some areas. The exterior surface was plain, scraped and smoothed.

Two angular shoulders were part of the collection (Figure 54c). The sherds were approximately 6.1 mm thick. The paste resembled that of the second vessel (Type II). The temper size was also very similar to the Type II vessel being between 1.4 and 2.6 mm in size. It appeared highly likely that these sherds fit vessel Type II.

The remaining pottery sherds (n=139) were body forms. The sherds were examined by paste, temper and surface treatment to try to determine if more vessels occurred in the assemblage. There were 47 sherds which would fit the Type I vessel. They were similar in paste, temper and the exterior had a brushed surface treatment. The sherds ranged in thickness between 5.3 and 6.3 mm. Only 2 body sherds could be related to the Type II vessel by paste and temper. The sherds were between 3.9 and 4.1 mm in thickness. The remaining 90 body sherds could not be definitely related to the Type I or Type II vessel, but were not so dissimilar to suggest a third vessel. These 90 sherds were more closely related by paste and temper to the Type I vessel, but the exterior was not brushed.

The ceramics were not assigned to a published type but were consistent in form, paste and temper with other regional ceramics from Early/Middle Woodland earthwork sites in east central Indiana (Vickery 1970, Swartz 1973, Swartz 1976, Kolbe 1992a, McCord 1994, Johnson 1995). These ceramics have been likened to Adena Plain and McGraw Plain, but not definitive of either (Kolbe 1992, Johnson 1995). The ceramics were similar to Early and Middle Woodland ceramics recovered from other areas, but represent a regional variation of those types documented in Ohio and Kentucky (McCord 1999). The Law Mound ceramics were unique, however, with the use of the brushed surface treatment. This type of treatment has not been previously recognized for Early or Middle Woodland ceramics in the east central Indiana region. Brushed treatments have been recognized in Hopewellian ceramics in Ohio, eg. Chillicothe Brushed (Prufer 1965:29).

The pottery collection varied from dirty to scrubbed. Some of the sherds had been scrubbed so much that the surface treatment was removed. Other sherds had dirt and a few had

Figure 55. Brushed surface treatment.

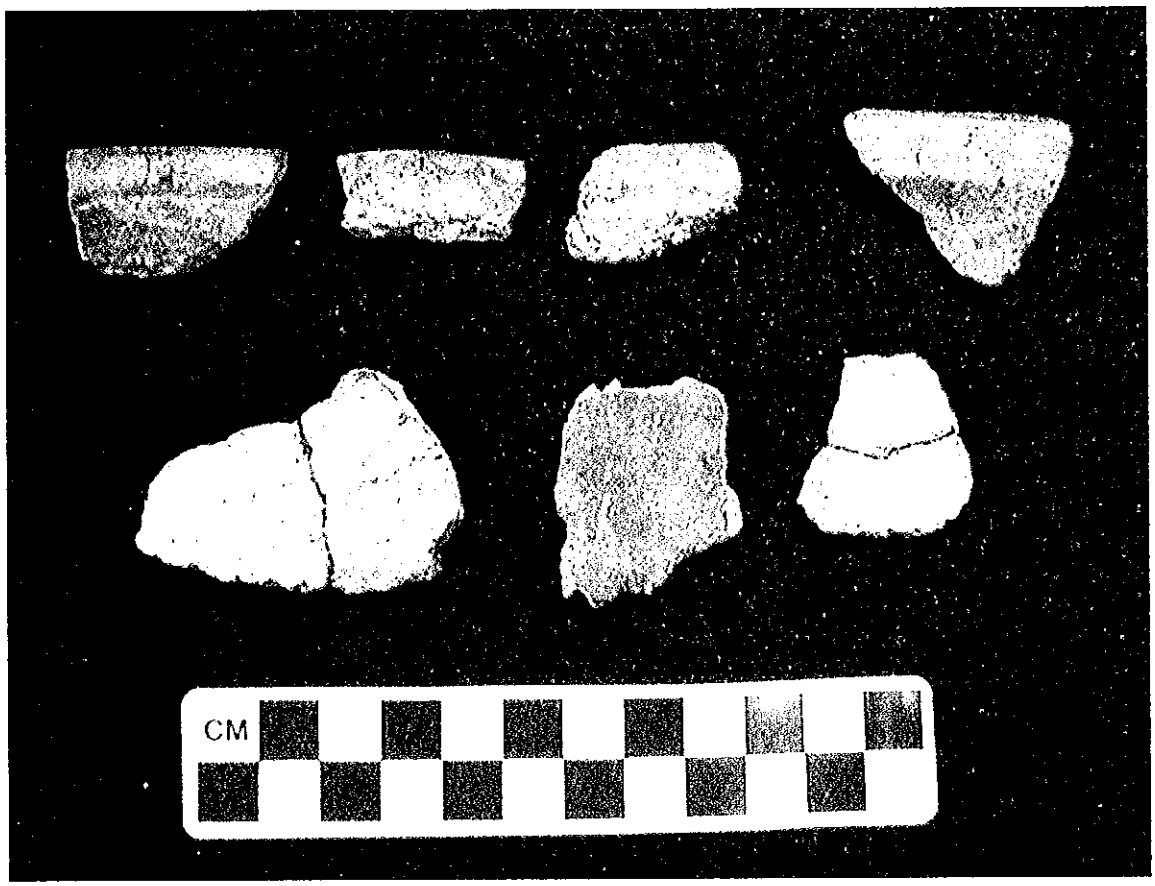

Figure 56. Pottery sherds, Type II.

organic residue still on the surface. Four of the sherds with organic residue were submitted for radiocarbon dating.

Ash

Large ash deposits were not reported from the Law Mound (Morris 1970). But, Mr. Keesling maintained one ash-like chunk (45.6 g) in his collection. Morris (1970:9) noted "ashes" in the fire pit in unit 1S1W, but it was unclear if the ash chunk was from this location. The substance was not tested, but appears similar to materials found in several mounds in the region and likened to a form of calcium carbonate (Setzler 1930, Black 1936, Vickery 1970, Swartz 1976, Tomak 1990, Kolbe 1992a, McCord 1994, McCord 1999). Dragoo (1963:26) documented a hemisphere of calcium carbonate in association with 2 reel shaped gorgets and Robbins points at Cresap Mound.

Bone

Morris (1970) reported a piece of human skull in unit 1N2E and two feet from the mica crescents. There were 2 human cranial fragments in the Keesling collection, but Braum (1969) stated there were 3 fragments. Thus, there was a disparity regarding the number of skull fragments. The 2 fragments from the Keesling collection were both parietals and may represent one bone although they did not fit together. The fragments were from an adult.

Morris (1970) mentioned that animal bones were recovered from the fire pit in unit 1S1W; they appeared to be the hollow bones of fowl. Unfortunately they were not in the Keesling collection and the identification could not be confirmed.

Fire-cracked Rock

Although no fire-cracked rock were reported by Morris (1970), Braum (1969) reported heat-cracked rocks from the mound. Neither the location nor association of the rocks was mentioned.

Radiocarbon Date

A radiocarbon date was obtained from this site. Four pottery sherds from unit 1N1W had organic residue on the surface. The sherds were submitted for radiocarbon analysis. The organic material scraped from the sherds provided plenty of carbon for an AMS date and all analytical steps went normally (Hood 2000a). The resultant date was 1900 +/- 40 BP (Beta-140072). This provides an uncalibrated date of 40 BC +/- 40. The two sigma calibrated range on this sample was between cal 60 BC and cal AD 85. The date from this sample places this site within the accepted time span of the Adena and Hopewell complexes in east central Indiana.

Structure

Although the structure of the Law Mound was difficult to assess given the paucity of information, a few differences with Morris's (1970) interpretation of the site seem warranted. The unbroken charcoal lens Morris reported would appear to represent the original ground surface. Mr. Keesling seemed to believe this was the case. All of the features encountered by the excavations were from below the charcoal lens, and, therefore, appeared to be submound features. Morris (1970) did not provide enough information to substantiate that a "house" was present below the mound. While it was impossible to reconstruct the sequence of mound construction, it was likely that Morris over-simplified the mound construction.

While vertical construction of the mound could not be assessed, the horizontal distribution of artifacts and features was examined. Figure 41 provides a plan view of the feature and artifact locations as described by Morris (1970). It appears that the fire pit that contained the tablets and bone was centrally located in the mound. The pottery, mica and post holes were also near the center. The expanded center bar gorget and celt were located more to the periphery of the mound. The spatial segregation of artifacts may suggest separate activity areas. Again, the horizontal distribution of artifacts suggested greater complexity in mound structure than Morris (1970) reported.

Conclusions and Recommendations

The evaluation of the Law Mound produced relatively little data that could be used to reconstruct the mound structure, but new information was attained. The organic residue on the pottery provided a temporal placement for use or construction of the mound circa 40 BC. This date was consistent with the ceramic style and other radiocarbon dates from Adena and Hopewell sites in the region (Vickery 1970, Swartz 1976, Kolbe 1992a, McCord 1994). The date is also consistent with the typical Adena Complex artifacts recovered from the mound; mica strips, rectangular sandstone tablets and expanded center bar gorgets.

Mr. Keesling stated that the mound still exists in the woods. The mound should be visited and photographed. Sketches of disturbance and excavations should be made. The excavation datum, the large boulder, should also be identified. Reopening a section of the area Morris (1970) excavated could be very useful. Such a project could maintain the current integrity of the mound while providing stratigraphic information. In addition, it is recommended that the property owners be advised of the importance of the site to aid in the protection of this mound. The owners should also be approached about the possibility of nominating the mound to the State and National Registers of Historic Places.

Hayes Arboretum

Background

The Hayes Arboretum Mound (12Wy1) was located in Richmond, Indiana on the grounds of the Hayes Arboretum. The earliest published account of the mound occurred in James Heilman's MA thesis (1976) on prehistoric archaeological sites in Wayne County. However, the mound was depicted on an 1876 county atlas (Anonymous 1968). Interestingly, Setzler (1930) never mentioned this mound even though he reported on the Waterworks Mound (12Wy12) located in the same section. Heilman (1976:55) reported the mound as located [redacted] (Figure 57). Based on a plan map and descriptions in Heilman (1965, 1976), the mound was approximately 65' in diameter and 7' high.

Heilman (1976:54-57) states that in the early 1900s, Stanley Hayes dug into the mound but what he found was not clearly documented. The mound was also disturbed by cultivation, particularly on the north side. At some point Mr. Hayes tried to reconstruct the mound. Heilman's (1976) excavation found that approximately 3' of soil/gravel had been added to the top of the mound. Stepleton (1969:24) added that most of the mound was destroyed by pothunting.

The mound was excavated in the summer of 1965 under a joint project by the Joseph Moore Museum at Earlham College and the Hayes Research Foundation. The mound was gridded in 5' squares. Excavation was begun on the south side of the mound with a series of east-west trenches so that profiles could be documented as the excavation progressed to the north (Heilman 1976:55). The excavated soil was not systematically screened, but all soil from the features was screened (J. Heilman 2000, personal communication).

A crematorium (6.2' NS x 3.2' EW) was documented in the approximate center of a concentration of post holes (Figure 58). The crematorium contained charcoal, burned and smoked human bone and the soil had been burned to a depth of 6". The post holes were of various depths and most likely represented the foundation for a screen around the crematorium rather than a structure. A combined charcoal sample from some of the posts and a central pit were submitted for radiocarbon dating. The resultant date was AD 1330 +/- 100 (M-1775). Recovered in the mound fill were 2 Ashtabula-like points, 1 point fragment, a small endscraper, a small hammerstone, and over sixty pieces of pottery. On the mound floor or just above it were a Robbins and Hopewell point within 6" of each other, a small piece of worked slate that was possibly a fragment of a chisel or pick, and a small celt of tillite (Heilman 1976:59-66).

Heilman (1976:59) related the Hayes Mound to the New Castle and Anderson sites. He believed that Hayes Arboretum, Water Works, Bertsch Sacred Circle, the Great Mound at Anderson and the New Castle site were a regional development of Middle Woodland culture that evolved from a pre-existing late Early Woodland base (Heilman 1976:107). Based on the artifact assemblage, Hayes Mound has also been affiliated with the Adena Complex (McCord and Cochran 1996:136).

Site Locations Confidential
Not For Public Disclosure

Figure 57. Location of the Hayes Arboretum Mound as shown on a portion of the USGS 7.5' New Paris, Indiana, Quadrangle.

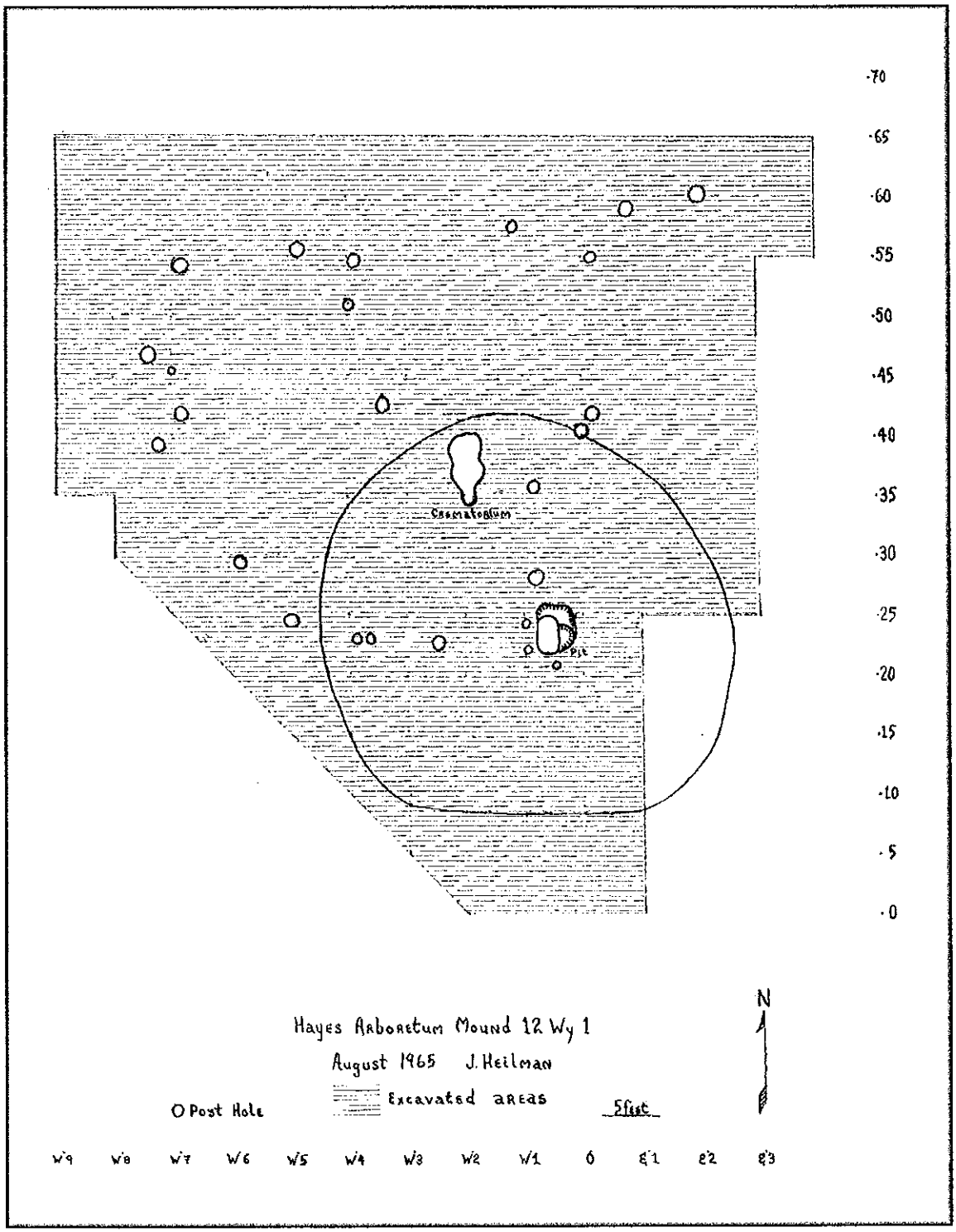

Figure 58. Plan map of the Hayes Arboretum Mound (from Heilman 1976:58).

Evaluation

The field notes, carbon samples and artifacts from the 1965 excavation were curated at the Joseph Moore Museum at Earlham College. The celt, Robbins point and Snyders point were on loan to Hayes Arboretum for display. The remaining artifacts were on loan to Mr. James Heilman at the Boonshaft Museum of Discovery in Dayton, Ohio. Tim Wright documented the artifacts from the mound at Earlham and the Boonshaft Museum. Mr. Heilman also retained a collection of color slides from the excavation that were loaned to ARMS. Also curated at Earlham was a point collection of the Hayes family from the Hayes Arboretum grounds. This point collection was loaned to ARMS for documentation.

As was the case with most of the sites reanalyzed, the lack of detailed excavation information and feature descriptions were the most severe problem encountered. Seven color slides of the excavation were all that existed in the collection reviewed, but the notes indicate that considerably more photographs were taken. Profiles of the mound stratigraphy were drawn (J. Heilman 2000, personnal communication), but only one profile was located during this project. However, stratigraphic information was recorded in numeric form in the field notes.

During a review of the field notes, a discrepancy was found in defining the area excavated in the southeast corner (Figure 58). Figure 59 provides a revised plan of the areas excavated based on the field notes. The circle occurring on Figure 58 was confusing. It was never stated that a primary mound was defined and the entire mound boundary was apparently more expansive than this line. The location of the circle matches a 2' contour interval of the mound as given in a field report (Heilman 1966). The circle was deleted in Figure 59.

Another discrepancy that was noted concerned the location of the mound. Heilman (1976:55) reported the mound as located [redacted] (Figure 57). The mound was relocated on May 9, 2000 by Cameron Cox. It was further to the southwest in [redacted] (Figure 57).

Artifacts

The mound collection contained chipped stone, ground stone, ceramic, bone and carbon samples. The results of the reanalysis are presented below. In addition to the artifacts from the 1965 excavation, a collection of lithics by the Hayes family from the Arboretum grounds was examined. The collection contained points dating from the Early Archaic to the Late Woodland period. Since the collection could not be directly tied to the use and/or construction of the Hayes Arboretum Mound, the analysis was placed in Appendix E.

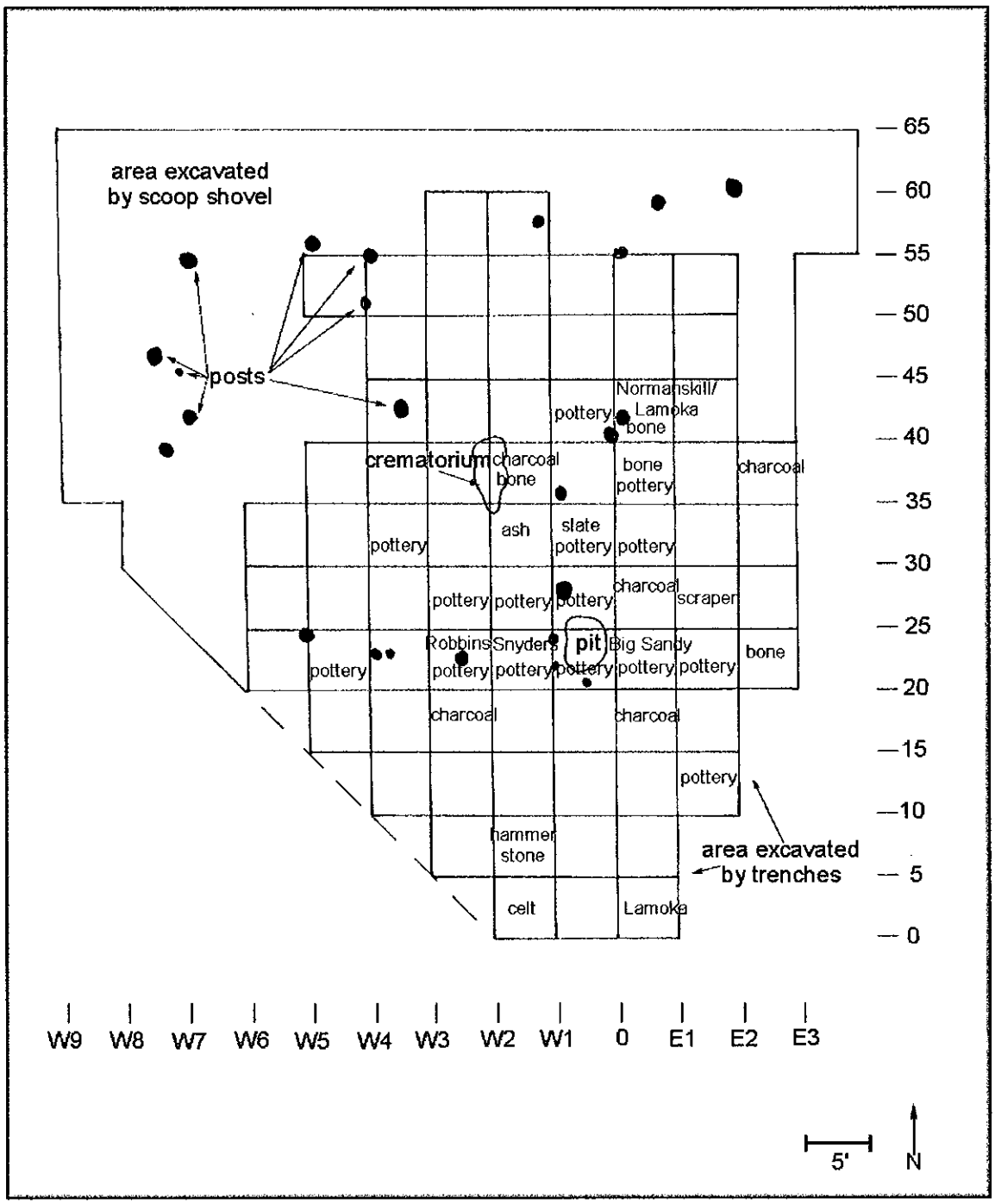

Figure 59. Plan map of the excavation of the Hayes Arboretum Mound (after Heilman 1976).

Chipped Stone

A total of 254 chipped stone artifacts were recovered for the excavation of the Hayes Arboretum Mound. Table 7 displayed a breakdown of artifacts from the mound by type. All chipped stone artifacts except for the Robbins and Snyders points were found in the mound fill.

Table 7
Types of Artifacts from the Mound

Type	No.	Type	No.
Points	5	Core	3
Point fragment	1	Flakes	181
Endscraper	1	Block	63

Points

Five points and one point fragment were recovered from the excavation of the mound. Heilman (1976:59-66) only reported on the 5 points from the mound. Metric information on the points was contained in Appendix D.

Big Sandy

One Big Sandy point (C-545)(Justice 1987:60-62) was recovered from the mound fill in square 20 (Figure 60d). This was reported as a point fragment (Heilman 1976:60). The point was manufactured from heat treated Liston Creek chert. The distal end of the blade and one corner of the base were broken. The remaining portion of the base and notches were ground. The base was concave and had squared ears. Big Sandy point were diagnostic of the Early Archaic period between 8000 and 6000 BC (Justice 1987:61).

Lamoka/Normanskill

One Lamoka point(C-540) and one Lamoka/Normanskill point (C-547) (Justice 1987:127-130) were recovered from the mound fill. Heilman (1967:60) reported these two points as similar to Ashtabula points. The Lamoka (C-540) was manufactured from Laurel chert and found in square 0 (Figure 60c). The point was complete and the distal tip and base both had areas of unmodified cortex. The stem had been ground. The Lamoka/Normanskill (C-547) was manufactured from heat treated Laurel chert (Figure 60b). The point was recovered in square 40. The distal end was broken and displayed an impact fracture. The stem had been lightly ground. Lamoka Cluster points were Late Archaic and date to between 3500 and 2500 BC (Justice 1987:129).

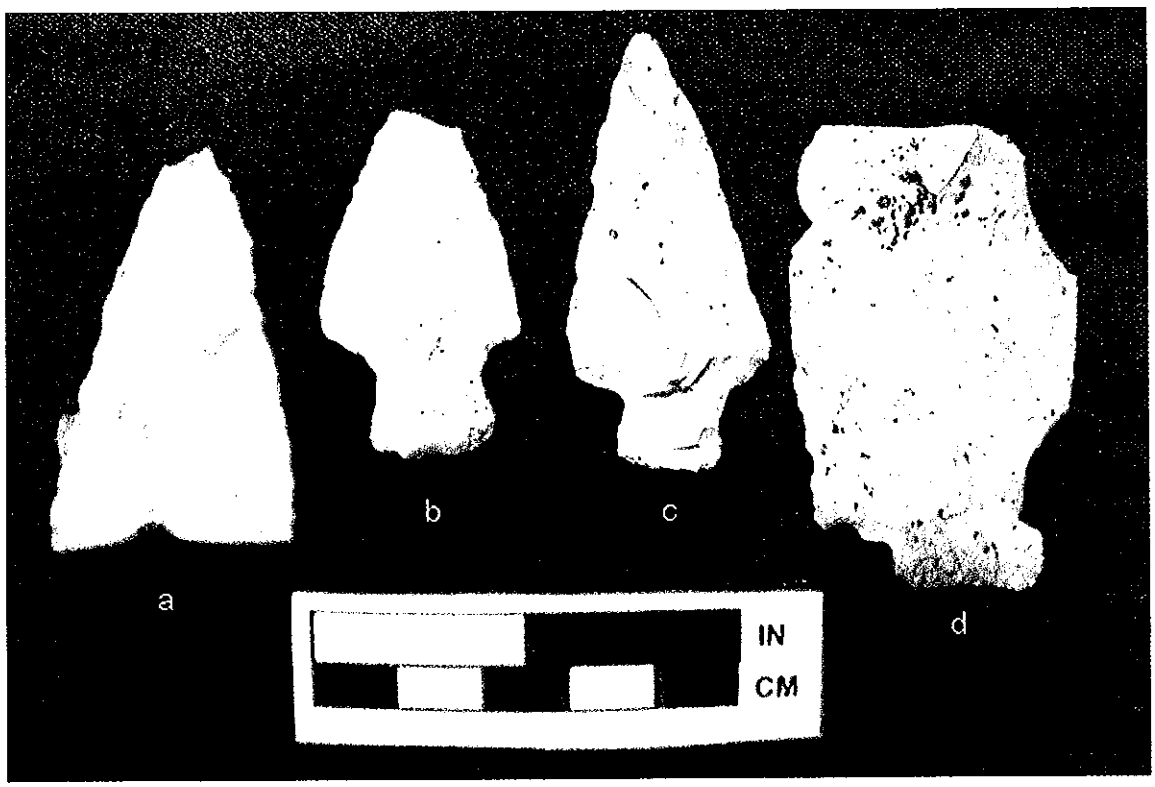

Figure 60. Points from the mound fill: a) point fragment (C-549), b) Lamoka/Normanskill (C-547), c) Lamoka (C-540), d) Big Sandy (C-545).

Robbins

One Robbins point (C-542)(Justice 1987:187-188) was found in square 20W3 (Figure 61). The point was located just above the mound floor. The point was found as a cache with the Snyders point as they were approximately 6" apart (Heilman 1976:63). Heilman (1976:63) identified this point as a Robbins of Flint Ridge chert. The point was complete except for a small corner of the base and was made from Flint Ridge chert. One side of the point showed the point was manufactured from a large flake. Robbins points were diagnostic of the Early Woodland period dating between 500 BC and AD 200 (Justice 1987:188). Robbins points were associated with the late Adena Robbins complex (Justice 1987:188).

Snyders

One Snyders point (C-543) (Justice 1987:201-204) was recovered from just above the mound floor in square 20W2 (Figure 62). The point was found within 6" of the Robbins point in a cache (Heilman 1976:63). Heilman (1976:63) identified the point as a Hopewell point of Harrison County chert. That identification was confirmed by the reanalysis. The point is a Snyders point and is manufactured from Wyandotte chert. The point was complete except for a small section of the barb. Snyders points were early Middle Woodland in age and dated to between 200 BC and AD 200 (Justice 1987:201-202). Snyders were associated with the Hopewell complex (Justice 1987:201).

Point fragment

One point fragment (C-549) was in the mound collection (Figure 60a). The provenience of the point was reported as uncertain because it was found on a backdirt pile. The fragment was either from the mound or scraped up from the surrounding area by a grader. The point was only represented by the blade portion and the distal tip showed an impact fracture. The point fragment was manufactured from Laurel chert.

Endscraper

One endscraper (C-546) of Laurel chert was found in the mound fill in square 25E1. The flake striking platform retains some cortex and occurs on the proximal end of the endscraper. The distal end has the characteristic concentration of unifacial retouch.

Debitage

The excavation recovered 247 pieces of lithic debris (Appendix F). Since specific provenience information was not provided, all lithic debitage was considered to be part of the mound fill and likely incidental to the mound construction. No lithic debris was recovered from

Figure 61. Robbins point (C-542).

Figure 62. Snyders point (c-543).

the #0 to 15 trenches (J. Heilman 2000, personnal communication). Debitage was encountered in trenches # 20 through 50. The collection was reviewed at the Boonshaft Museum and in order to complete the analysis efficiently, the lithic debris were sorted as flakes, cores, block fragments and unmodified/glacial pieces. All raw material was noted to be from local sources with the one exception of a core of Flint Ridge chert from square 40. Fifty-five flakes and block fragments had been heat altered.

Ground Stone

Adze

A ground stone adze was recovered from square 0W2 (C-544)(Figure 63). The adze was recovered just above the floor of the mound in the mound fill. Heilman (1976:66) classified this artifact as a celt but recognized the bit was beveled to one side which was more indicative of an adze. The adze was made from a green hard stone that Heilman (1976:66) identified as tillite. The adze was 8.3 cm in length, had a maximum width of 5.1 cm, a maximum thickness of 1.8 cm, and weighed 118.6 grams. The poll end showed chipping and peck marks were evident along the edges. The bit was offset and beveled to one side. The bit end was heavily polished. Converse (1973:33) associated this style of adze with the Adena complex.

Hammerstone

A quartzite hammerstone (C-541) was recovered in the mound fill in square 5W2. The hammerstone appeared to have been pecked into shape and smoothed, but not polished. It had a flat surface 2.4 cm across that was covered with facets associated with flintknapping. The hammerstone was between 4.5 and 5.0 cm in diameter and weighed 201.0 grams.

Slate Fragment

A fragment of polished banded slate (C-548) was found on the mound floor in square #35W1. The fragment was fractured along both ends and on two sides. The remaining portion was polished. The fragment was 4.1 cm long, 1.9 cm wide and 1.4 cm thick. Heilman (1976:63) thought the fragment might be a mid-section of a chisel or pick. The artifact was too fragmentary to accurately define the complete shape. Several gorget styles, included expanded center bar gorgets, could also have produced such a fragment.

Ceramics

The mound collection contained 58 pieces of pottery and one piece of fired waste clay (Figure 64). The provenience of the ceramics is presented in Table 8. Heilman (1976:66) stated that most of the sherds were found in the mound fill toward the center of the mound but some were also recovered from post holes. The catalog record only indicated that the ceramics were from the mound fill. All of the ceramics had a plain surface treatment. All of the assemblage were

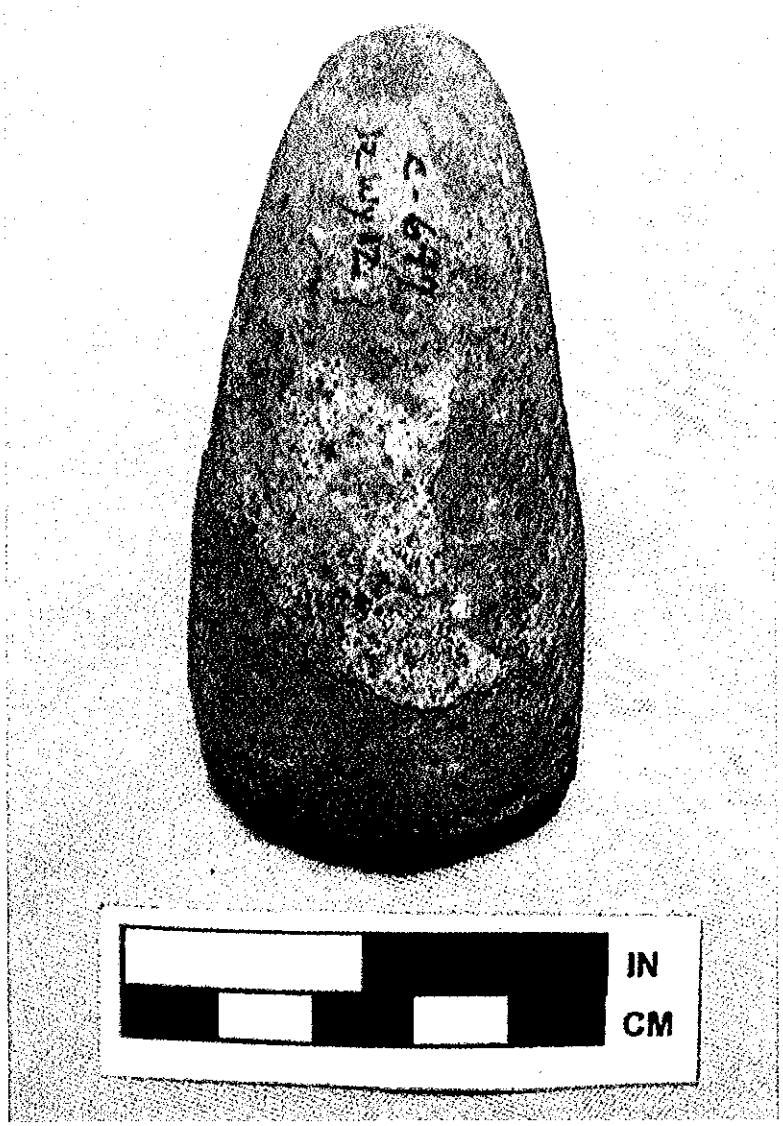

Figure 80. Celt with exfoliating surface (C-647).

Table 10 Ceramics from the Mound				
Catalog No.	Surface Treatment	Location	No.	Wt. (g)
C-657	cordmarked	0W1	3	11.0
C-658	cordmarked	5W3	1	4.5
C-659	cordmarked	15E1	1	8.0
C-660	plain	15W2	1	1.0
C-661	plain/exfoliated	20	3	3.0
C-662	plain	25	1	1.0
C-663	plain	25W1	2	2.5
C-664	plain	30W1	1	3.5
C-665	plain/exfoliated	30W1	2	6.5
C-666	plain	30W1	3	28.5
C-667	plain	25	1	5.5
C-668	plain	35E1	1	11.5
C-669	plain	35W1	1	23.0
C-670	plain	10W4	1	4.0

The ceramics with a plain surface treatment were similar enough in paste and temper to be discussed as one group (Figure 81). The ceramics were grit tempered with crushed granitic rock containing quartz, hornblend and biotite. The paste was a sandy clay. Most sherds had a compact, uniform texture but others were poorly mixed and friable. The temper size ranged between 1 and 4 mm. The surface treatment was plain and had been smoothed. Only one sherd showed any burnishing. Most of the sherds were from the body of the vessel and ranged in thickness between 4.4 to 9.73 mm. There was one neck form that was 8.94 mm thick. Only one small rim sherd (C-670) was recovered (Figure 82). The rim was straight and had a flattened lip. The rim was 8.09 mm thick and there was no thickening at the lip. Heilman (1976:88) reported the rim had hemiconical punctations on the surface, but when the sherd was examined under microscopic magnification the marks appear recent in age. The plain sherds were very similar to those recovered from the Hayes Arboretum Mound and other mound sites in the region (Vickery 1970, Swartz 1973, Swartz 1976, Kolbe 1992a, McCord 1994, Johnson 1995). These ceramics have been characterized as a regional variation of the Early and Middle Woodland types of Adena Plain and McGraw Plain (McCord 1999).

The excavation also recovered five body sherds that were cordmarked (Figure 83). Three

Figure 63. Adze (C-544).

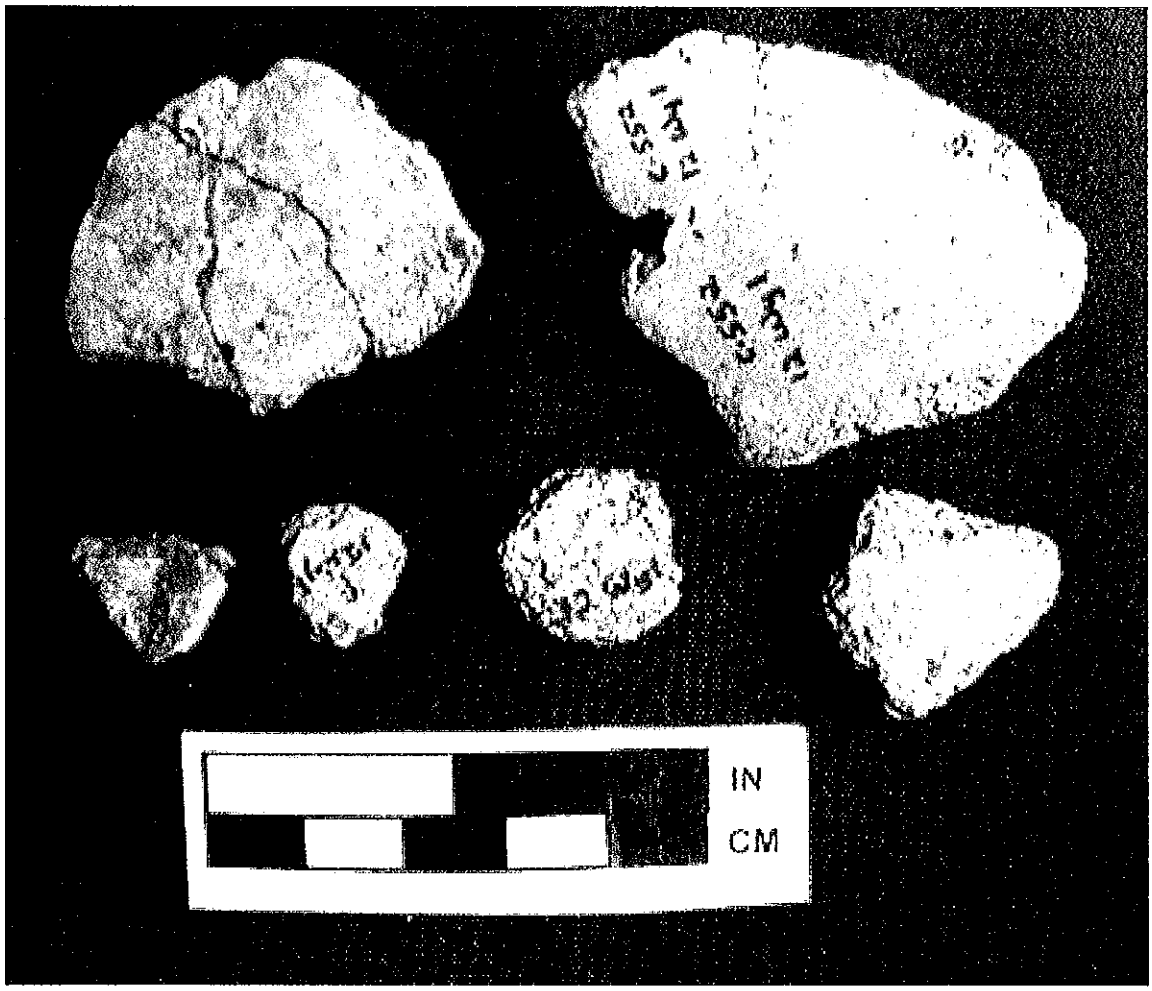

Figure 64. Pottery sherds.

body sherds, except for one which was a neck or near rim. The ceramics were similar enough in paste, temper and surface treatment to be discussed as one group.

Table 8
Ceramics from the Mound

Catalog No.	Location	No.	Wt. (g)
C-550	20W2	2	2.0
C-551	20	2	3.5
C-552	20W3	3	40.0
C-553	20W1	12	27.0
C-554	20W5	3	6.0
C-555	25W3	11	24.5
C-556	25W2	3	16.0
C-557	25W1	8	35.5
C-558	30	3	3.5
C-559	30W1	1	2.0
C-560	30W4	1	12.0
C-561	35	1	0.5
C-562	20E1	2	4.0
C-563	40W1	1	10.5
C-564	10E1	6	10.5

The ceramics were manufactured from a sandy clay paste. The temper was crushed granitic rock that contained quartz, feldspar and biotite. The temper ranged between 2 and 5 mm in size, but 2 to 3 mm in size was common. The paste was generally uniform and moderately compact, but some sherds were friable. The surface treatment was a plain finish that had been smoothed but not burnished. The body sherds ranged in thickness between 4.77 and 9.94 mm but 6 to 7 mm were more common. The one neck or near rim was 10.33 mm thick. This sherd had an angular bevel on the interior surface that is reminiscent of the beveled rims from other earthwork sites in east central Indiana.

Overall, the ceramic assemblage was very similar to ceramics recovered from other mounds in the region (Vickery 1970, Swartz 1973, Swartz 1976, Kolbe 1992a, McCord 1994, Johnson 1995). These ceramics have been likened to Adena Plain and McGraw Plain, but not

definitive of either (Kolbe 1992a, Johnson 1995). The ceramics were similar to Early and Middle Woodland ceramics recovered from Ohio and Kentucky, but represent a regional variation of those types (McCord 1999).

Bone

Several fragments of bone were in the mound collection. Burned and smoked human bone were reported from the crematorium (Heilman 1976:59). A review of the mound collection did not conclusively reveal any human bone. Some of the material identified as burned human bone from the crematorium (C-566) was identified as coal slag. In another box apparently from the crematorium, (also labeled C-566) a few bone fragments that could not be identified to species were found. Eight other pieces of bone were recovered from the mound. One piece of bone or possibly antler (C-565) was recovered from the mound floor in square 20E2. It was so heavily weathered it could not be identified to species. One fragment of a mammal skull (no #) was recovered from square 35W2. Three fragments of a deer metatarsal (no #) were recovered in square 40. One astragalus of a deer or elk, one long bone possibly from a bird and one unidentified fragment (no #s) were recovered from square 35.

Radiocarbon Date

A radiocarbon sample was submitted from a charcoal lens encountered in square 15W3. The deposit was noted to be 2' east of stake 15W3 and 5.3' southeast of stake 20W3 and was approximately 1.5' long and 0.65' wide. The sample did not appear to be contaminated by roots. SEM analysis showed the material was very clean and there was plenty of carbon for accurate analysis (Hood 2000b). The resultant date was 2050 BP +/- 40 or uncorrected 100 BC (Beta-141810). Calibrated results at 2 sigma were 170 BC to AD 45. The date falls within the accepted time range of the Adena Complex.

Structure

The lack of detailed data made the interpretation of the mound structure difficult. Based on information from the notes and site report, the mound had been extensively disturbed prior to the 1965 excavation. Numerous areas of pothunting were indicated and the addition of soil to the top of the mound probably caused some damage. The information recorded did not indicate any type of submound structure or secondary mound construction. Only the base of the mound was undisturbed and the other portions of the mound may have been too extensively disturbed to identify soil changes resulting in sequential mound construction.

As for the features recorded by the excavation, a review of the information indicates that some alternate interpretations can be made. First, the pit identified in square 20W1 in Figure 58 is apparently one of several of the pot holes encountered by the excavation. The pit is not discussed in Heilman's (1976) report. The field notes indicate a large pot hole in this location and it is, therefore, not believed to be of aboriginal origin.

Second, the interpretation of the crematorium was questioned. The crematorium reportedly contained charcoal, burned and smoked human bone and the soil had been burned to a depth of 6" (Heilman 1976:59). The feature was approximately 1 to 1.5' above the mound floor. Heilman (1976:59) reported that the area above the crematorium had been disturbed by Mr. Hayes. Parts of the feature were also disturbed by Hayes, but the edges were apparently still intact (J. Heilman 2000, personnel communication). Hayes reportedly removed burned and smoked bone from the feature, but no one knew where the material was (J. Heilman 2000, personnel communication). The coal slag found in feature came from Hayes' backfill (J. Heilman 2000, personnel communication). Descriptions and slides of this feature definitively indicate that burning occurred in this location. And the slides indicate that the area immediately above the burned soil is disturbed (Figure 65). The disturbance occurred before Hayes had the mound reconstructed because the A-horizon has been interrupted but Hayes' fill has not. However, the characterization of this feature as a crematorium, without the positive identification of human bone appears misleading. The feature was disturbed and may represent another aboriginal structure such as a burned clay platform that occurs in several regional mounds (ie. Vickery 1970, McCord 1999). The slide of the profile may also indicate that the disturbance was deeper and the pothole may have been utilized to burn something or perhaps a tree stump was burnt out. Further analysis of the bone from this feature to identify the species may clarify the use and origin of this feature.

Third, the interpretation of the posts representing a foundation of a screen for the crematorium was reviewed. All the post molds that were observed appeared to have been at the base of the mound. The crematorium was located 1 to 1.5' above the mound floor not at the same level as the posts. It is therefore, unlikely that the posts served in this capacity. Post molds have been noted at numerous other mounds with no discernable pattern (e.g. Vickery 1970). As Heilman (1976:57) suggested, it is unlikely that these posts served to support roofed structures. Clay (1986:584) also questioned the idea the submound domestic structures ever existed below Adena mounds. One possible function that has been suggested is that posts served as markers for astronomical alignments (Cochran 1992:34).

Conclusions and Recommendations

The evaluation revealed an interesting association between Adena and Hopewell complex artifacts. The Robbins and Snyders points were found in close association and defined as a cache. They were located just above the mound floor and were the only diagnostic artifacts that could be directly related to the construction or use of the mound. Robbins style points are diagnostic of the Late Adena Robbins complex while Snyders points are associated with the Hopewell complex (Justice 1987:188 & 201). The close association of these two artifacts was contrary to the view that they were produced by separate archaeological cultures. Chronologically, the dates for the point styles overlap between 200 BC and AD 200 (Justice 1987:188-201) suggesting at a minimum Adena and Hopewell complexes were contemporary in east central Indiana. Technologically, the change of Adena complex point styles through Hopewell complex points appears to be a gradual shift.

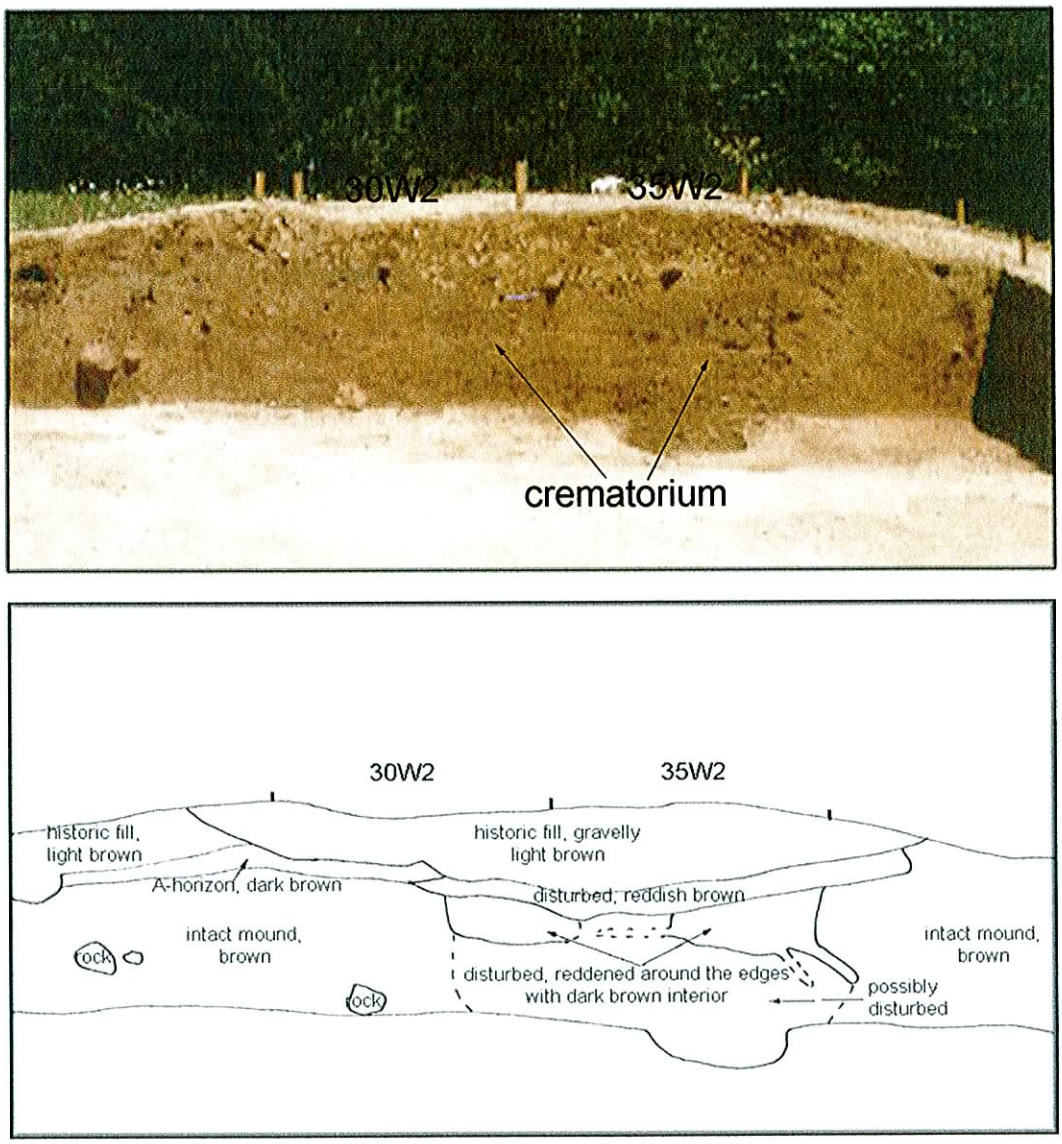

Figure 65. Photograph of squares 30W2 and 35W2 showing the location crematorium and an interpretation of profile.

> " The changes, viewed from Adena Stemmed to Robbins points, appear to indicate a gradual trend in the lithic technology from narrow ovate-based forms to wide-bladed straight stemmed forms. However, later the in the Robbins complex, certain traits typical of Snyders are also reflected" (Justice 1987:188).

Therefore, technologically there is not an abrupt change between Adena and Hopewell complex point styles. The association of Snyders points with Adena complex artifacts and radiocarbon dates has been previously documented (McCord and Cochran 1998). The point cache supports the idea that in east central Indiana, Adena and Hopewell are different expressions of the same Early and Middle Woodland ceremonial complex.

The Hayes Arboretum Mound was extensively disturbed prior to the 1965 excavation. The serious lack of integrity severely limited any interpretations of the mound structure. The only intact deposits were from the base of the mound. The ceramics, the Robbins and Snyders points all indicate an Early/Middle Woodland use of the mound. The lack of human remains from the 1965 excavation does not necessarily indicate that the mound was not utilized for burial. When Stanley Hayes dug into the mound, he reportedly found a human bones (Heilman 1976:54, 1965 field notes).

The remaining portion of the mound appears to have been completely excavated in 1965, but it was backfilled and recontoured (J. Heilman 2000, personal communication). The potential for future work is small. The site should be visited and a sketch of the area should be made. If any intact portions of the mound are apparent they should be documented. Given the extensive destruction and excavation of this mound, there is little likelihood that the site contains significant archaeological deposits. However, testing of the area is required to determine if intact deposits remain. At this time, the site does not appear to be eligible for listing on the State or National Registers of Historic Places.

Waterworks Mound

Background

The Richmond City Waterworks Mound (12Wy12) was located in Richmond, Indiana. The mound was first noted on an 1876 Wayne County atlas (Anonymous 1968). Setzler (1930a:453) was the first to provide a written description of the mound and located it in the NE1/4 of the SE1/4 of the NE 1/4 of Section 35, Township 14 North, Range 1 West as shown on the USGS 7.5' New Paris, Indiana Quadrangle (Figure 66). The mound was 35' in diameter and 5' 8" in height, it was overgrown with bushes and trees (Setzler (1930a:453). The mound was located on a bluff opposite the Hayes Arboretum Mound (12Wy1)(Heilman 1976:68).

The mound was excavated in 1966 under the direction of James Heilman during a joint project between the Joseph Moore Museum at Earlham College and the Hayes Research Foundation. The mound was reported at that time to be 50' in diameter and 4' high. Numerous trees covered the mound and it was apparently undamaged. The mound was gridded in 5' squares. Excavation was conducted by east-west trenches beginning on the south side of the mound (Heilman 1976:69). The excavated soil was not systematically screened (J. Heilman 2000, personal communication).

A primary mound covered by secondary fill was documented and there was no prepared mound floor. The mound contained a central burial pit (Figure 67). The pit was poorly defined along the margins but was approximately an 8 x 5' parallelogram. The pit was approximately 6" below the floor of the mound. The burial was very fragmented and in poor condition. A white ash-like substance was encountered along the bottom of the pit and above the burial which may have represented decayed bark. An endscraper was the only artifact found in the burial pit, but it was probably introduced with the soil. The primary mound built over the burial pit was approximately 30' in diameter and 1.6' high. Nine features of charcoal and burnt earth were encountered about the top of the primary mound and in other parts of the mound. These features did not display intense, in place burning, but some may have been smoldering when covered with soil since the earth was slightly burnt. Artifacts recovered in the mound fill included 7 McWhinney points, 4 Archaic side notched points, 5 unclassified points, 3 knives, 3 drill fragments, 2 hafted scrapers, 7 endscrapers, a fragment of a flake knife, an unfinished biconcave gorget, a finished biconcave gorget with 44 tally marks, 3 slate fragments, a celt, a pitted hammerstone, 11 copper beads and 27 pottery sherds (Heilman 1976:69-92) (Figure 68).

Heilman (1976:59) related the Waterworks Mound to the New Castle and Anderson sites. He believed that Water Works, Hayes Arboretum, Bertsch Sacred Circle, the Great Mound at Anderson and the New Castle site were a regional development of Middle Woodland culture that evolved from a pre-existing late Early Woodland base (Heilman 1976:107). Based on the artifact assemblage, Waterworks has also been affiliated with the Adena Complex (McCord and Cochran 1996:136).

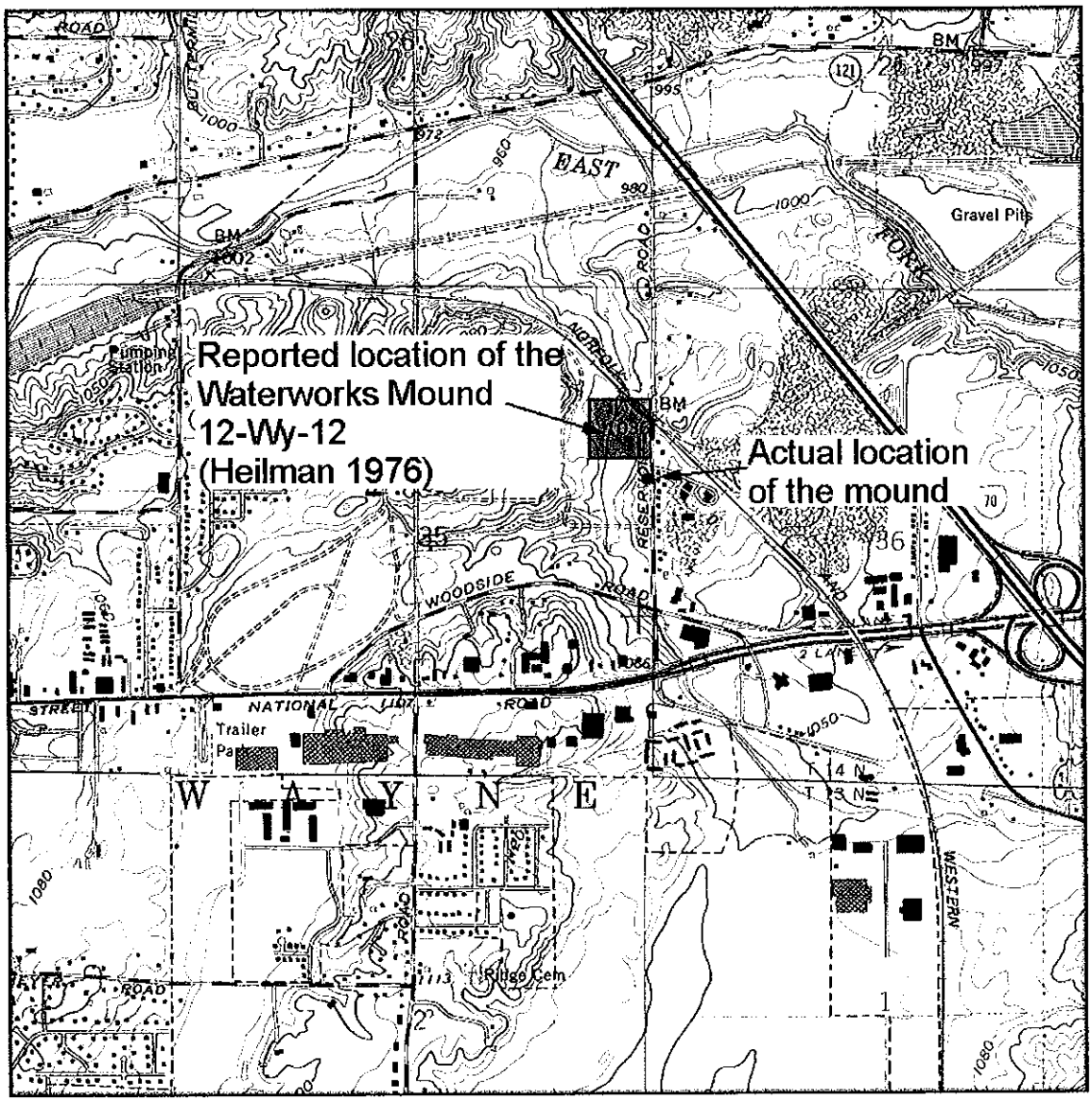

Figure 66. Location of the Waterworks Mound as shown on a portion of the USGS 7.5' New Paris, Indiana Quadrangle.

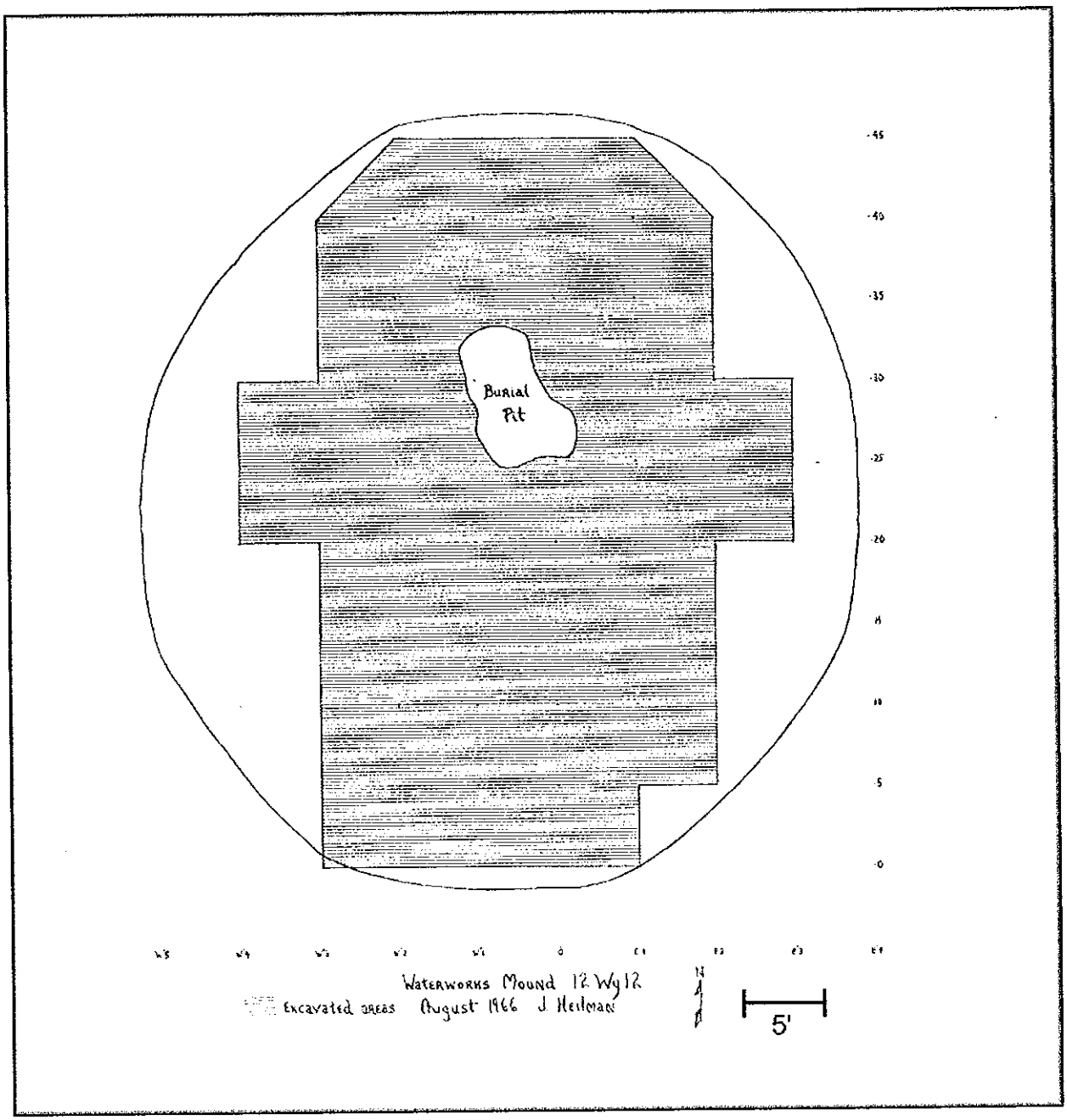

Figure 67. Plan map of the Waterworks Mound (from Heilman 1976:70).

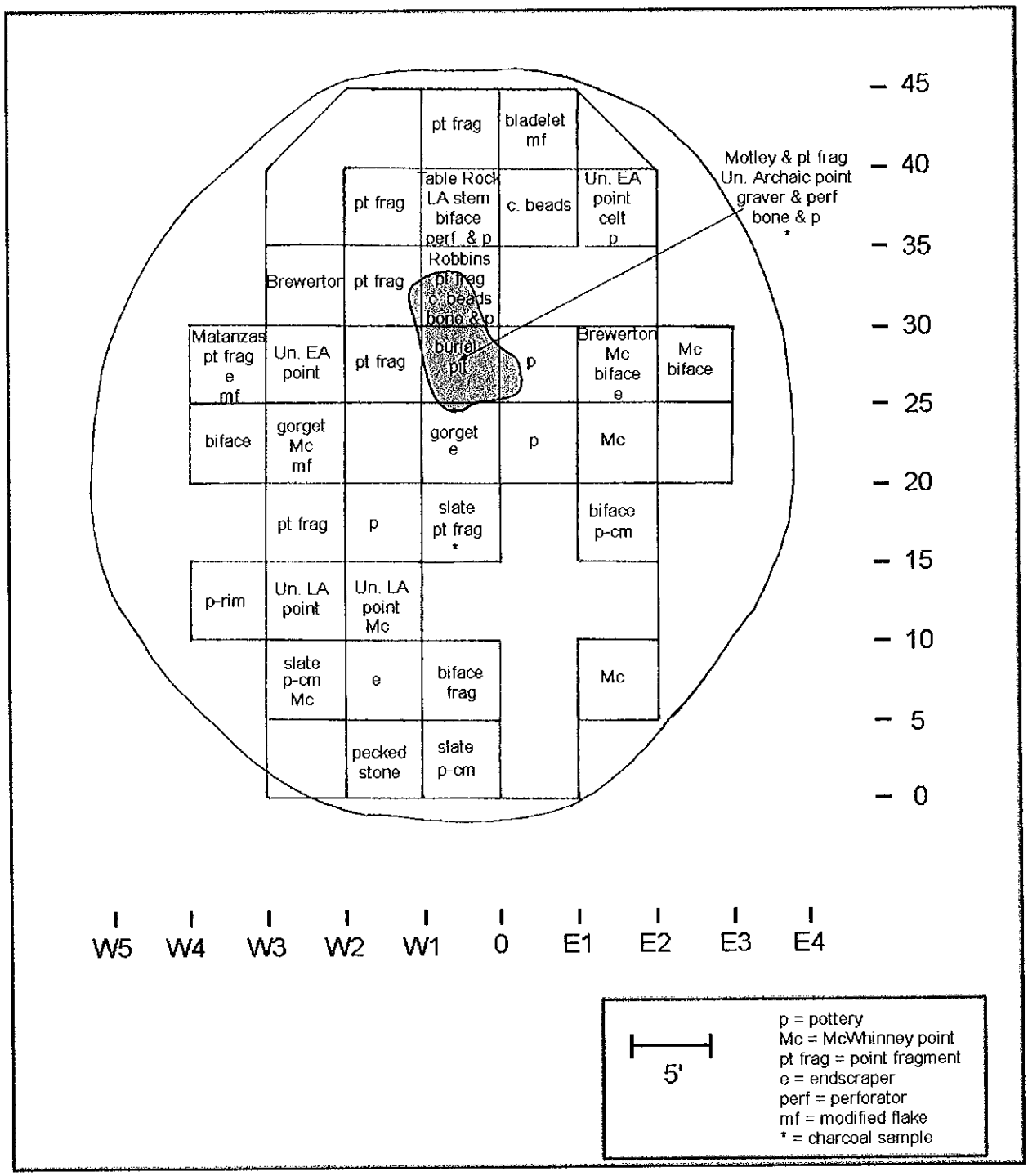

Figure 68. Plan of artifacts recovered from the Waterworks Mound.

Evaluation

The materials from the excavation of the Waterworks Mound were curated at the Joseph Moore Museum at Earlham College. The field notes, carbon samples and most of the bone were at Earlham. The remaining artifacts were on loan to Mr. James Heilman at the Boonshaft Museum of Discovery in Dayton, Ohio; however a few artifacts were not located at either location and will be noted below. Mr. Heilman also retained a duplicate collection of color slides from the excavation. Tim Wright reviewed the artifact collections at the institutions. The notes and photographs were loaned to ARMS.

The excavation and recording procedures were standard given the era when the mound was excavated. However, in reviewing the collection for this project the lack of detailed excavation records, feature records and profiles hindered the reanalysis. The field notes indicated that numerous photographs of the excavation were taken, but the only photos we found were the 26 color slides in Mr. Heilman's possession. Profile maps were drawn (J. Heilman 2000, personnal communication), but were not located during this project. General strata information was recorded in the field notes.

A problem concerning the location of the mound was noted. Both Setzler (1930:453) and Heilman (1976:55) reported the mound as located in the NE 1/4 of the SE 1/4 of the NE 1/4 of Section 35, Township 14 North, Range 1 West (Figure 66). Setzler (1930:453) reported the mound was one-half mile north of the National Highway (US 40) and stood in the yard of the old J. Ballenger property. Setzler's description and an 1893 landowner atlas (Anonymous 1979) would place the mound in SE 1/4 of the SE 1/4 of the NE 1/4 of Section 35. Cameron Cox field checked the location of the mound on May 9, 2000 and found it located in the NE 1/4 of the SE 1/4 of the SE 1/4 of the NE 1/4 of Section 35, Township 14 North, Range 1 West (Figure 66).

Artifacts

The excavation of the Waterworks Mound recovered chipped stone, ground stone, ceramics, bone and carbon samples (Table 9). The collection contained very few pieces of lithic debris and no fire-cracked rock. The field notes from the excavation did note that both debris and fire-cracked rocks were encountered. The reanalysis classification of artifacts differs somewhat from that reported in Heilman (1976) mainly due to the use of a different classification scheme utilized for the chipped stone materials. One artifact (C-684) listed as a worked flint flake scraper and two copper beads (C-650) were not found in the collection during the reanalysis.

Table 9 Types of Artifacts from Waterworks			
Type	No.	Type	No.
Points	19	Celt	1
Point fragments	9	Gorgets	2
Endscrapers	4	Slate fragments	3
Perforators	2	Pecked stone	1
Graver	1	Mica fragments	(<1 g)
Bladelet	1	Copper beads	9
Flakes	3	Pottery sherds	27
Bifaces	6	Bone frags	100+

Chipped Stone

A total of 45 chipped stone artifacts were recovered from the mound. All of the artifacts, except for 1 graver (C-639), were from the mound fill. The mound fill was not differentiated between the primary or secondary episodes.

Points

The excavation of the Waterworks Mound produced 19 points and 9 unclassifiable point fragments. The majority of the diagnostic points were from the Late Archaic period. Only one point, a Robbins, could possibly be associated with the construction and use of the mound. Metric information on all of the points was placed in Appendix D.

Unclassified Early Archaic points

Two points could not be assigned by type, but appeared to be Early Archaic in manufacture. One of the points (C-645) was side notched and made from Laurel chert (Figure 69a). The blade and both corners were broken. Grinding was noted in both notches. It was recovered from square 35E1 in the east wall. The other point (C-626) was stemmed and manufactured from Wyandotte chert (Figure 69b). The point was complete. One side was heavily retouched and the stem was ground. The point was recovered in the mound fill in square 25W3.

Matanzas

One Matanzas point (C-628) (Justice 1987:119-121) was recovered in square 25W4 in the mound fill (Figure 70e). The point was complete and manufactured from heat treated Laurel

Figure 69. Unclassified Archaic points: a) Early Archaic (C-645), b) Early Archaic (C-626), and c) Archaic (C-633).

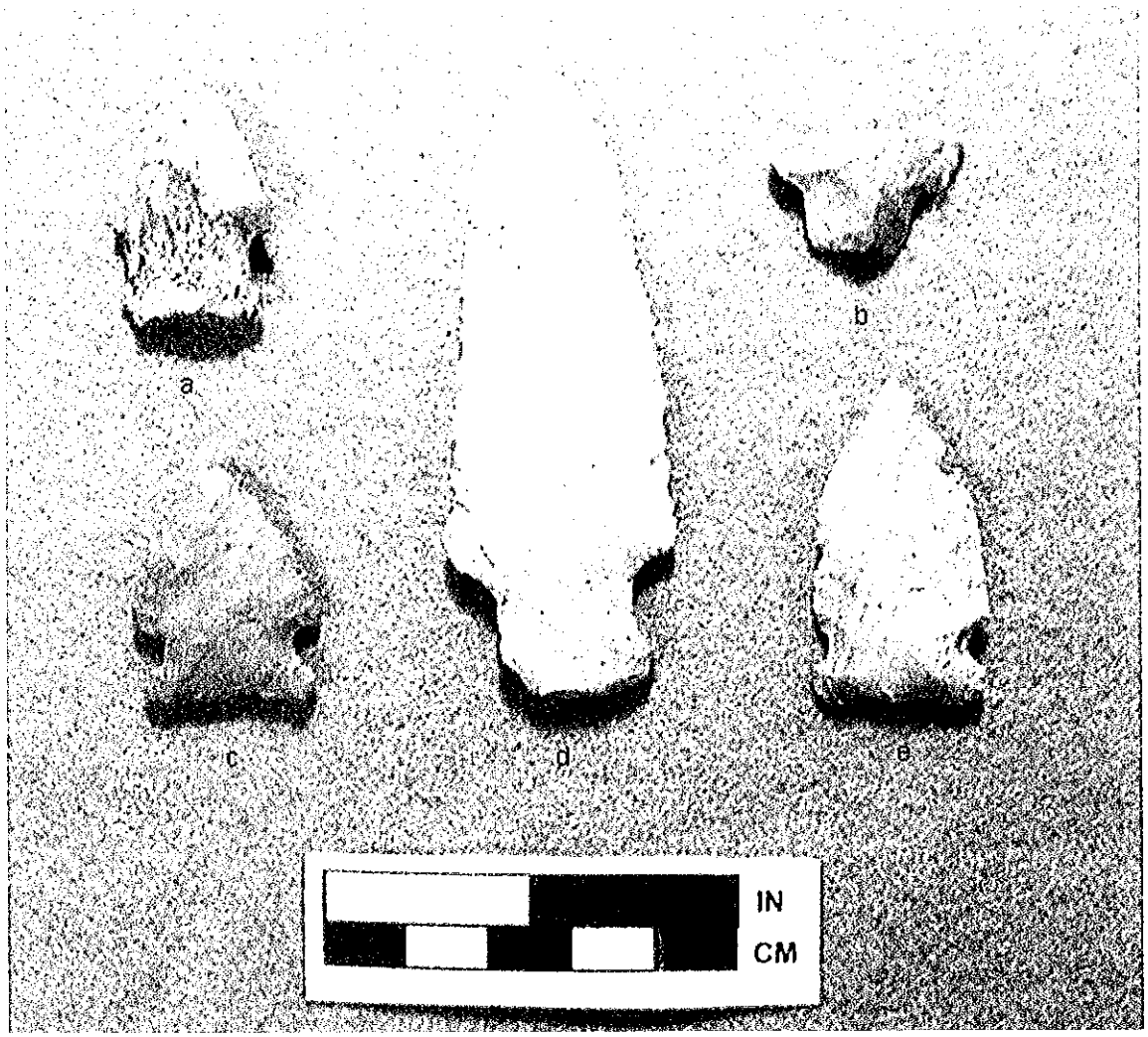

Figure 70. Late Archaic points: a) Brewerton (C-634), b) Late Archaic Stemmed (C-643), c) Brewerton (C-623), d) Table Rock (C-641), and e) Matanzas (C-628).

chert. The base was ground. Matanzas points were diagnostic of the Late Archaic period with dates between 3700 and 2000 BC (Justice 1987:119-120).

Brewerton

Two Brewerton Side Notched points (Justice 1987:115-116) were recovered from the mound. One point (C-623) was recovered from the humus layer in square 25E1 (Figure 70c). The point was complete and displayed grinding on the base and notches. It was manufactured from heat treated Delaware chert. The other Brewerton (C-634) was manufactured from heat treated Laurel chert (Figure 70a). The point was complete and had grinding on the base and notches. It was recovered from square 30W3. Brewerton points were dated to the Late Archaic period (Justice 1987:115).

Table Rock

One Table Rock point (C-641) (Justice 1987:124) of Flint Ridge chert was recovered in square 35W1 (Figure 70d). The distal tip of the point had an impact fracture. The tip and a corner of the stem were broken. The base and notches had been ground. Table Rock points were diagnostic of the Late Archaic and date between 3000 and 1000 BC (Justice 1987:124).

McWhinney

The excavation recovered seven McWhinney points (Justice 1987:138-139) from the mound fill. Point C-615 was complete, made from Laurel chert and recovered from square 5E1 (Figure 71d). Point C-616 was broken across the midsection of the blade (Figure 71a). It was found in square 5W3 and manufactured from Laurel chert. Point C-618 was reworked into an endscraper (Figure 72b). It was found in square 10W2 and made from heat treated Laurel chert. Point C-622 recovered from square 20W3 had an impact fracture on the distal tip (Figure 71e). The point was manufactured from heat treated Laurel chert and still retained much of the cortex. Pint C-627 was complete, of Laurel chert and recovered from square 25E2 (Figure 71b). Point C-679 was broken across the midsection, manufactured from Laurel chert and recovered from square 25E1 (Figure 71f). The final McWhinney point (C-680) was broken across the midsection and the bottom of the stem (Figure 71c). It was made from Laurel chert and recovered in square 20E1. McWhinney points were Late Archaic and dated to between 4000 and 1000 BC (Justice 1987:138-139).

Late Archaic Stemmed

One point (C-643) of heat treated Flint Ridge chert was classified as a Late Archaic Stemmed (Figure 70b). It was not definitive of either a Karnak or a McWhinney (Justice 1987:133-139). The point was broken across the base of the stem and just above the shoulders. There appeared to be some light grinding on the lateral edges of the stem. The point was recovered from the mound fill in square 35W1.

Figure 71. McWhinney points: a) C-616, b) C-627, c) C-680, d) C-615, e) C-622, and f) C- 679.

Unclassified Late Archaic

Two points that were not classifiable appeared to be Late Archaic in manufacture. One point (C-617) was side-notched and manufactured from Laurel chert (Figure 72a). Both corners of the base were broken and the blade had been reworked into an endscraper. The second point (C-612) was also a side-notched form and one corner of the base was broken (Figure 73a). The blade had been utilized as a perforator. The point was recovered in square 10W2 and made from Laurel chert.

Motley

One Motley point (C-646)(Justice 1987:198-201) was recovered in square 25W1 (Figure 74). The point was complete. The raw material was unusual and identified as argillite. Motley points appeared in the Late Archaic and continued into the Early Woodland period dating to between 800 and 600 BC (Justice 1987:199).

Unclassified Archaic

One point (C-633) was not assigned to a specific type, but did appear to be Archaic in manufacture (Figure 69c). The point resembles a Brewerton Eared Notched point, but was too fragmentary to be certain. The remaining portion of the base and notch were ground. The point was manufactured from heat treated Delaware chert. It was recovered in the mound fill in square 25W1.

Robbins

One Robbins point (C-636)(Justice 1987:187-188) was found square 30W1 (Figure 75). The point was complete and manufactured from Flint Ridge chert. The point was reported from the same square as the burial pit. The catalog gives the location for the point as found in burnt earth. The point was not associated with the burial pit (Heilman 1978:79), but it is interesting that the point was found in a burned earth deposit and the burial pit was described as a burned area with scattered bone. Robbins points were diagnostic of the Early Woodland period dating between 500 BC and AD 200 (Justice 1987:188). This point was the only diagnostic chipped stone artifact that could be related to the construction and use of the mound.

Point fragments

There were 9 point fragments (C-619, 624, 625, 629, 632, 635, 637, 640 and 678) recovered from the mound (Figure 76). They were all fragments of point blades without the base and could not be assigned by type or time period. All of the them were recovered from the mound fill in various locations. Two of the points were manufactured from Laurel chert, 5 were of heat treated Laurel chert and 2 were of heat damaged Laurel chert.

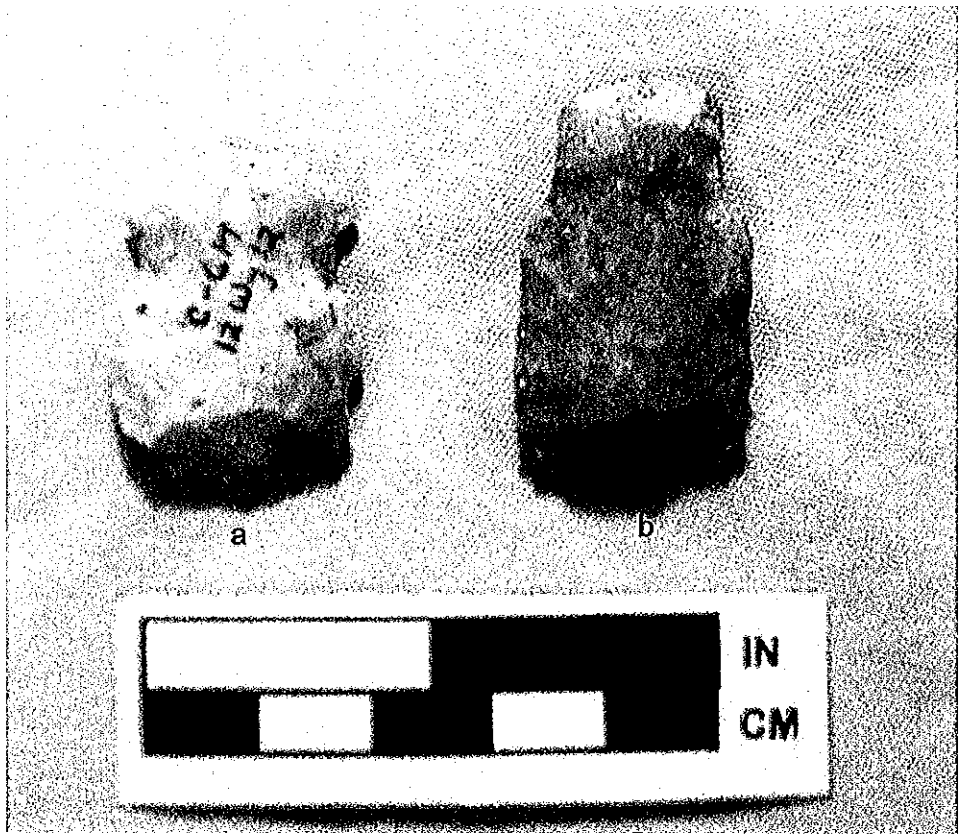

Figure 72. Points reworked as endscrapers: a) Unclassified Late Archaic (C-617), b) McWhinney (C-618).

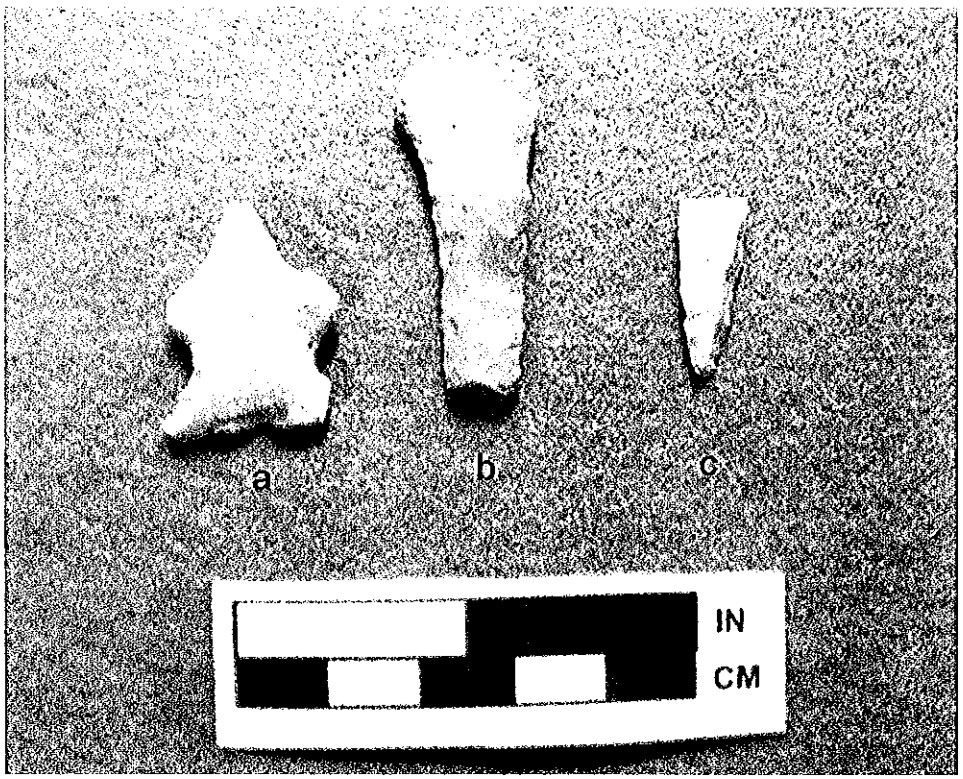

Figure 73. Perforators: a) Unclassified Late Archaic Stemmed reworked (C-612), b) fragment (C-638), and c) fragment (C-644).

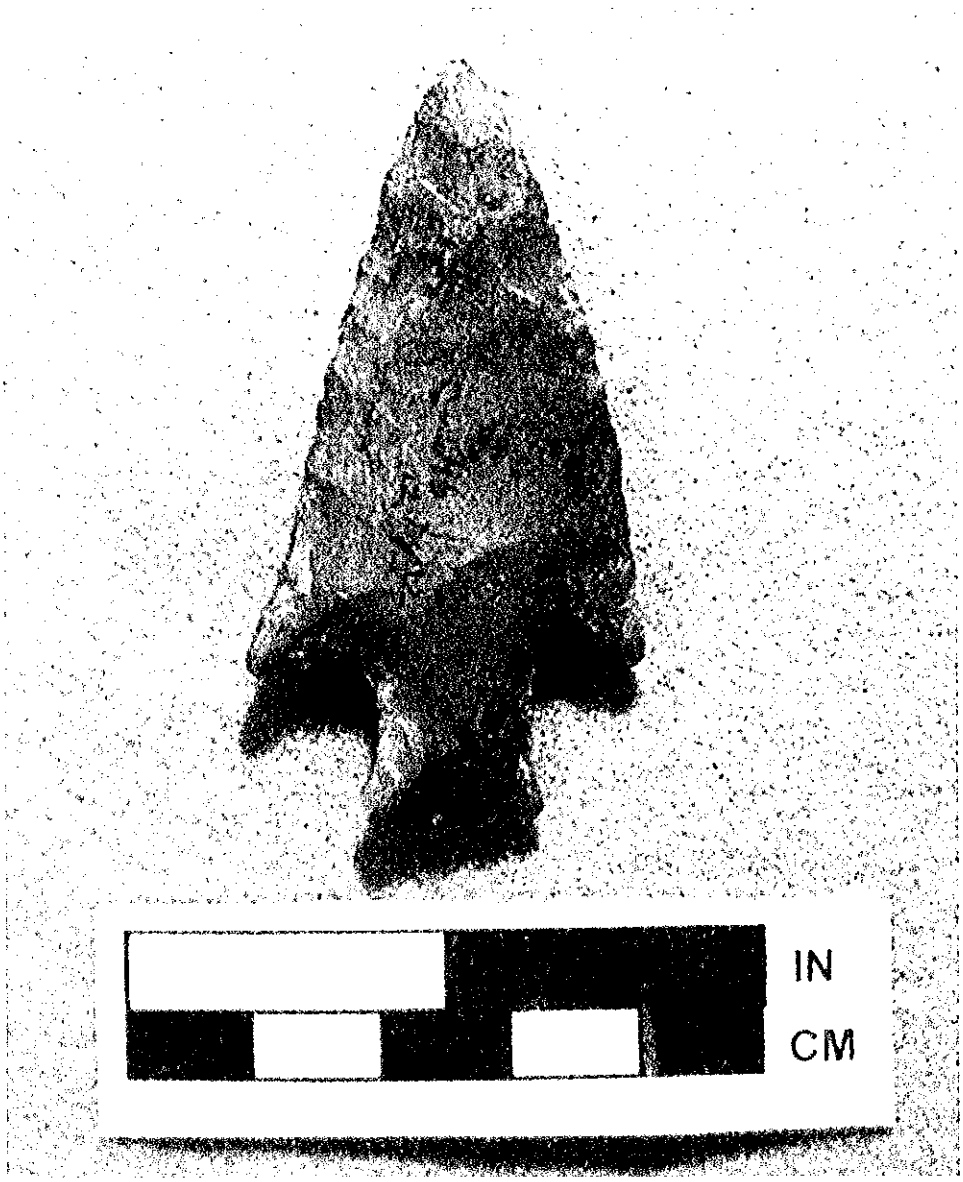

Figure 74. Motley point (C-646).

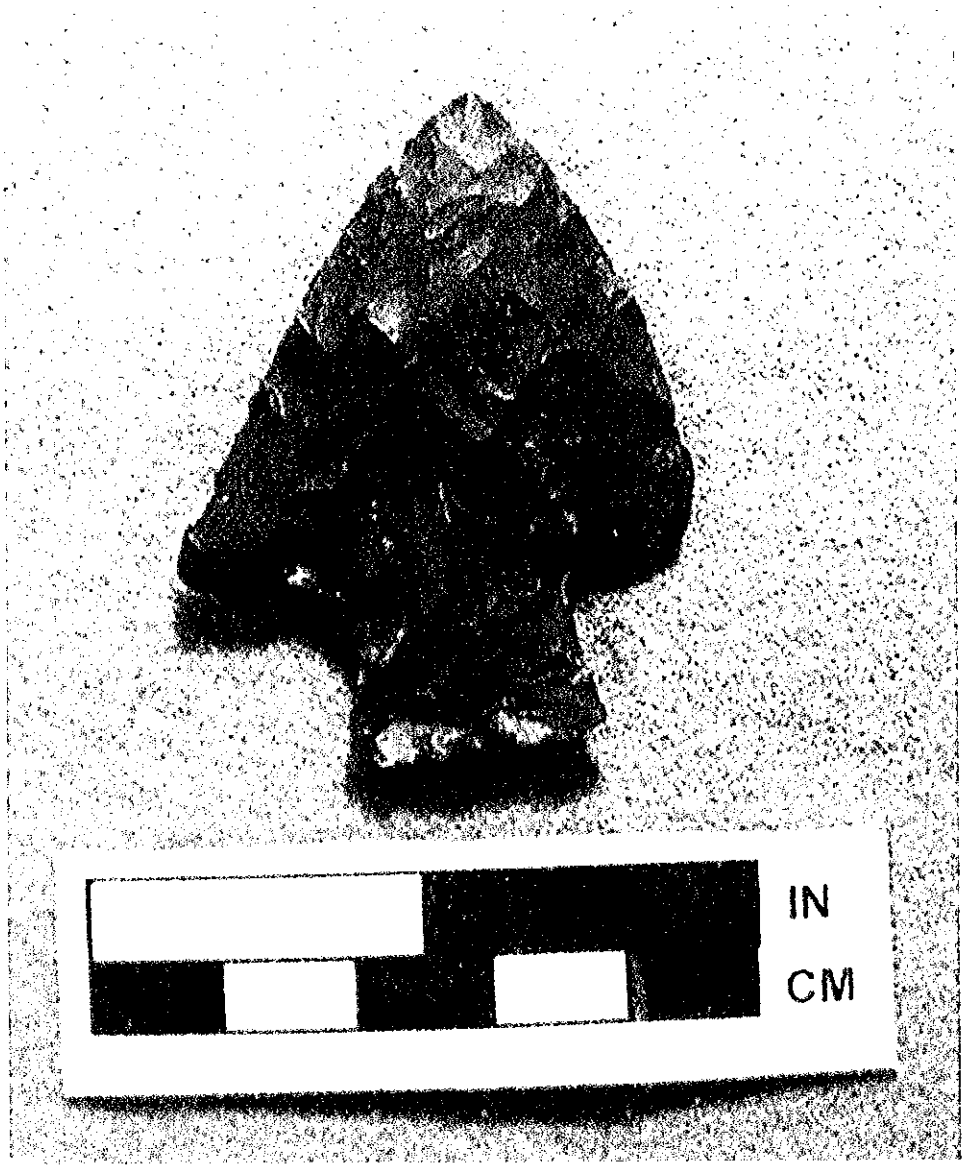

Figure 75. Robbins point (C-636).

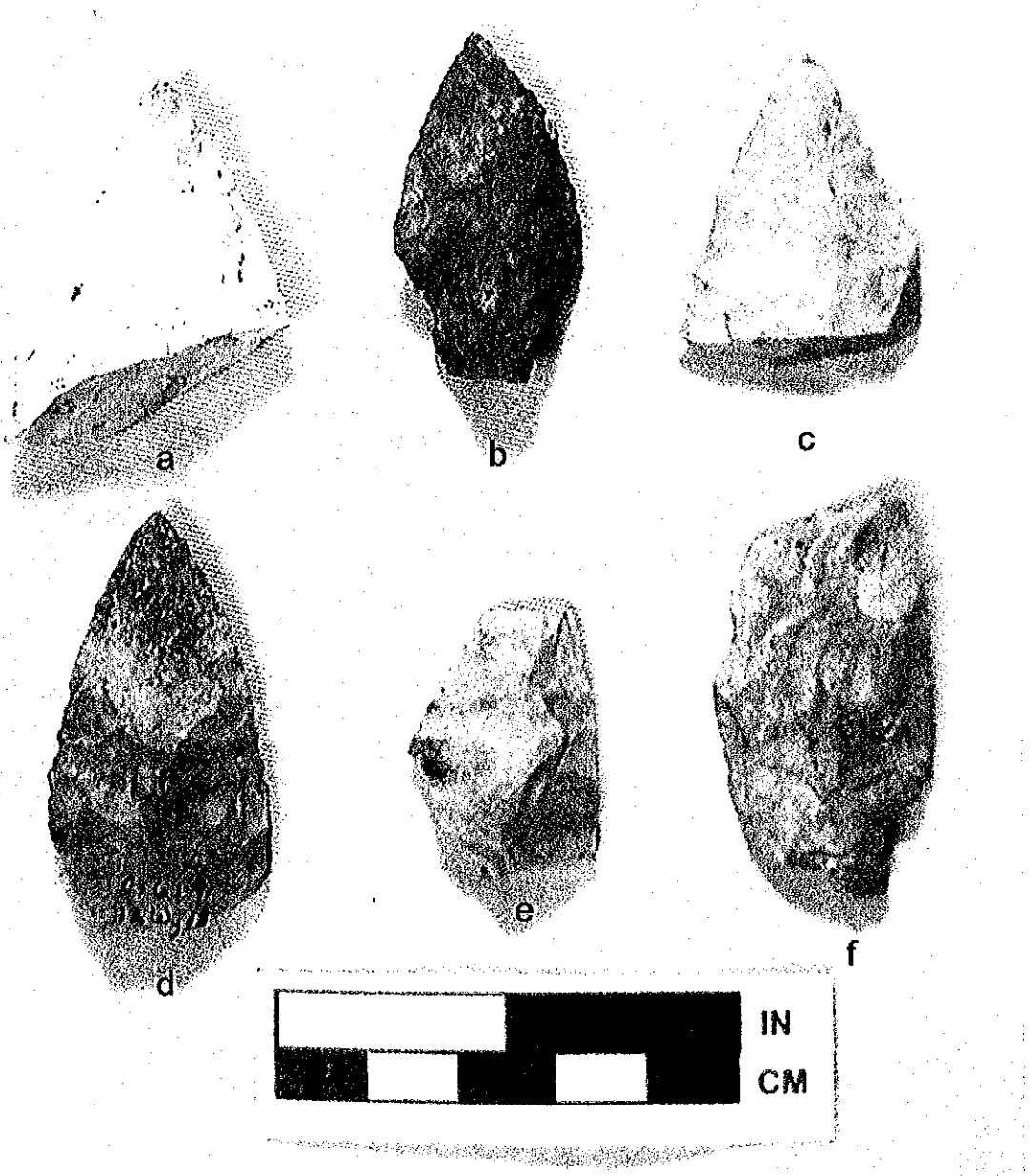

Figure 76. Point fragments: a) C-624, b) C-635, c) C-637, d) C-619, e) C-640, and f) C-678. Distal tips (C-625, 629 and 632) are not pictured.

Bifaces

The excavation recovered 3 bifaces (C-621, 630 and 683) and 3 biface fragments (C-614, 642 and 681). All of the bifaces and fragments were recovered in the mound fill in various locations. The raw material utilized included 2 of Laurel, 2 of heat treated Laurel, 1 of heat damaged Laurel and 1 of Flint Ridge.

Perforators

Two perforator fragments were documented in the mound collection. One perforator (C-638) of Laurel chert was almost complete except for the distal end (Figure 73b). It was recovered in the mound fill in square 25E1. The other perforator fragment (C-644) was represented only by the distal tip (Figure 73c). This fragment was of Flint Ridge material. It was found in square 35W1 in the mound fill.

The collection did contain another perforator. An Unclassified Late Archaic point (C-612) was reworked as a perforator. See the previous section for a discussion.

Endscrapers

Four endscrapers were documented in the mound collection. All four were recovered in the mound fill. One endscraper (C-613) was manufactured from Wyandotte chert and found in square 5W2. The scraper was unifacial and the original bulb of percussion was still evident at the proximal end. The second endscraper (C-620) was of heat damage Laurel material and found in square 20W1. It was unifacially manufactured and had a potlid on the dorsal surface. Another endscraper (C-631) made from Laurel chert was found in square 25W4. It was unifacially manufactured and the bulb of percussion was evident at the proximal end. Another endscraper (C-679) was found in square 25E1 and manufactured from Zaleski chert. The scraper has one flake removed from the ventral side but is otherwise unifacially made.

Two other scrapers were discussed in the point section. An Unclassified Late Archaic point (C-617) was reworked into an endscraper. A McWhinney point (C-616) was also reworked into an endscraper.

Graver

One graver (C-639) was recorded in the mound collection (Figure 77a). The graver was made from a flake that was unifacially retouched. The material utilized was heat treated Laurel chert. The graver was recovered from square 25W1 and was recorded as with the burial. This was the artifact noted as an endscraper-like tool found with the burial but was probably incidental in the fill (Heilman 1976:73).

Figure 77. A) graver (C-639) and b) bladelet (C-674).

Bladelet

One bladelet fragment (C-674) was discovered in square 40 in the mound fill (Figure 77b). The bladelet was made from Flint Ridge material. One lateral margin displayed retouched flaking. Bladelets are diagnostic of the Middle Woodland period (Genheimer 1996:94).

Debitage

Only three flakes (C-674, 675 and 682) were documented in the mound collection. All of the flakes had retouching on at least one margin. Two of the flakes were made from heat treated Laurel and one was from heat treated Flint Ridge chert. The field notes from the excavation noted that lithic debitage was encountered, and all artifacts were collected (J. Heilman 2000, personal communication). Only 3 flakes from the mound were encountered during this project.

Ground Stone

Biconcave Gorgets

Two biconcave or bow tie gorgets, forms with rounded ends and concave sides, were discovered in the Waterworks Mound. One gorget (C-648) was nicely made and polished and had two holes drilled in the center (Figure 78). It was manufactured from a dark gray to green banded slate with the bands running diagonally. One face is polished, but the other face still shows some abrading marks. On the polished face were several "tally" marks all the way around the outer margin. There were 44 tally marks divided so that 11 marks occurred on each of the 4 margins. The marks were restricted to the face and do extend to the sides of the gorget. The two holes in the center were drilled from both faces, but the holes extend deeper from the tally face of the gorget. The holes were placed 17.48 mm apart. The gorget had a maximum length of 93.88 mm, a maximum width of 50.09 mm and was 9.67 mm thick. It was 36.24 mm wide across the constricted center. The gorget was recovered in square 20W3 in the mound fill, but about 2 feet from a burned earth deposit (Heilman 1976:85).

The second gorget (C-649) was an unfinished form and recovered in the mound fill in square 20W1 (Figure 79). It was in the early stages of manufacture with the basic biconcave shape roughed out. One face showed several negative flake scars while the other face was unmodified. It had not been drilled. The slate material was a purple or plum color. The gorget had a maximum length of 85.92 mm, a maximum width of 51.93, was 41.69 mm wide at the center and was 11.57 mm thick.

Biconcave gorget forms are associated with the Adena complex. They have been recovered from several Adena mounds in Ohio including the original Adena Mound (Converse 1978:46-47). Dragoo (1963:183) states that the two holes are usually drilled from one side only

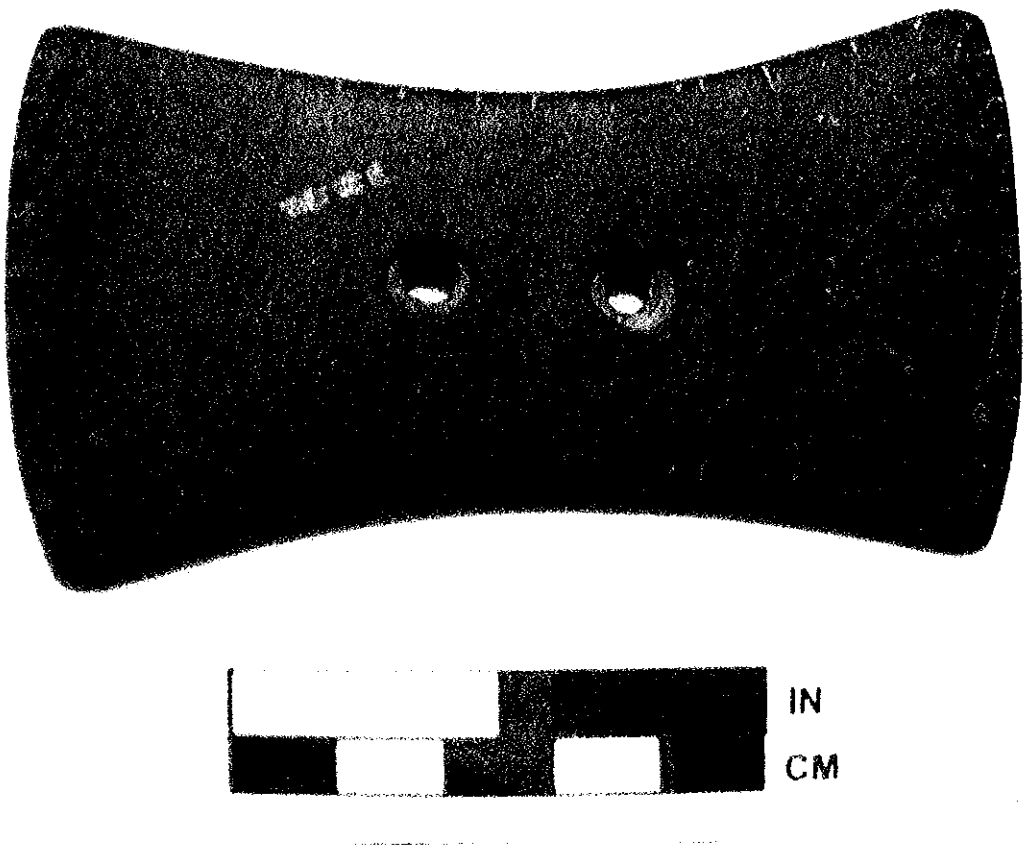

Figure 78. Finished bow tie gorget with tally marks (C-648).

Figure 79. Unfinished bow tie gorget (C-649).

and the type is not common.

Celt

One celt (C-647) was found near the mound floor in square 35E1 (Figure 80). The celt was manufactured from graywacke. The surface of the celt was exfoliated so areas of polish were difficult to distinguish. The bit end did retain a surface that was polished. The celt was 80.5 mm in length, 27.53 mm wide and 38.68 mm thick. It weighed 149.5 grams.

Slate Fragments

Three fragments of modified slate (C-672) were documented. One piece was a large flake of banded slate. The flake had peck marks all around the edges on the dorsal side. This flake was recovered in square 5W3. The second piece of worked slate was a small flat slab with striations on one face. The fragment may have been a portion of a bannerstone. It was recovered in square 15W1. The third piece of worked slate was a small flat slab with one rounded edge. This fragment was found in square 0W1.

Hammerstone

One pecked stone (C-671) was recorded in the collection. The stone was fragmentary and actually consisted of 3 conjoined pieces. The stone had been pecked but not polished. It appeared that this was a fragment of a hammerstone/anvil. It was recovered from square 0W2.

Mica

Several extremely fragmentary pieces of mica (C-676) were found in square 25. The fragments weighed less than 1 gram together. The field notes reported that the mica was badly disturbed by tree roots and the context was unclear. Mica occurs in the glacial till as the result of the decay of micaceous igneous and metamorphic rocks and such a small sample of mica could have occurred naturally in the soil. Heilman (2000, personal communication) believed the mica to be natural, not cultural in origin.

Ceramics

The mound collection contained 22 pieces of pottery. Some sherds had been glued together from several pieces which probably explains why Heilman (1976:88) reported 27 sherds and the reanalysis only documented 22. The ceramics were reported as scattered in the mound fill (Table 10). The ceramics were divided into two categories based on the surface treatment. The majority (n=17) of the sherds had a plain exterior surface and five had cordmarked exteriors.

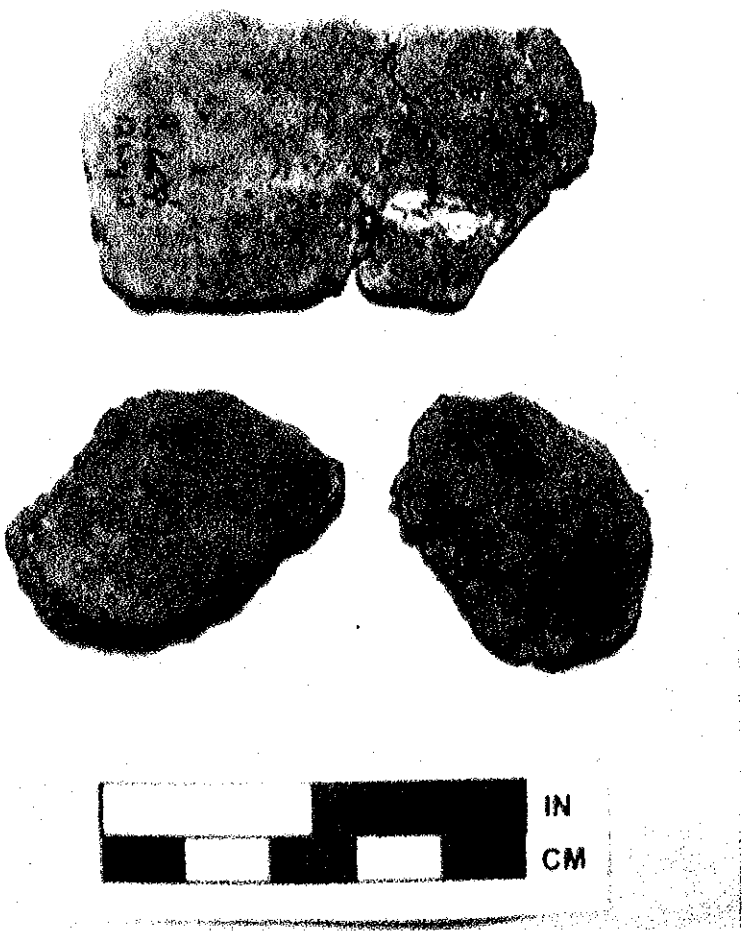

Figure 81. Plain ceramics.

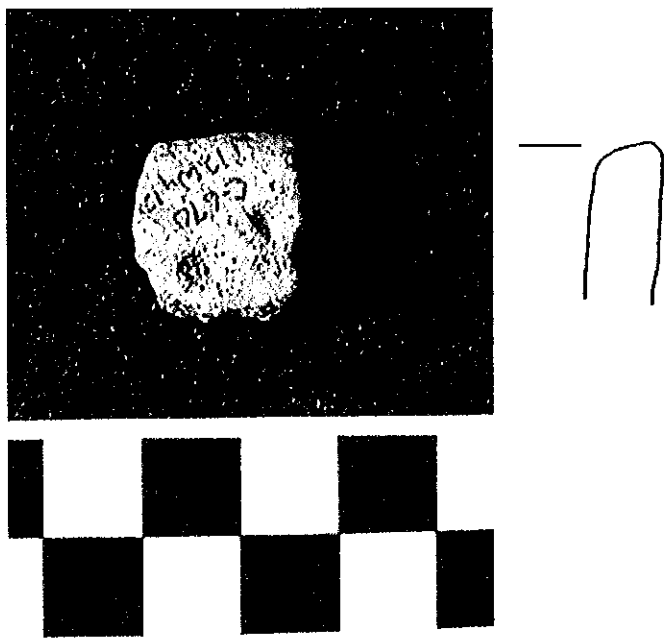

Figure 82. Plain rimsherd (C-670).

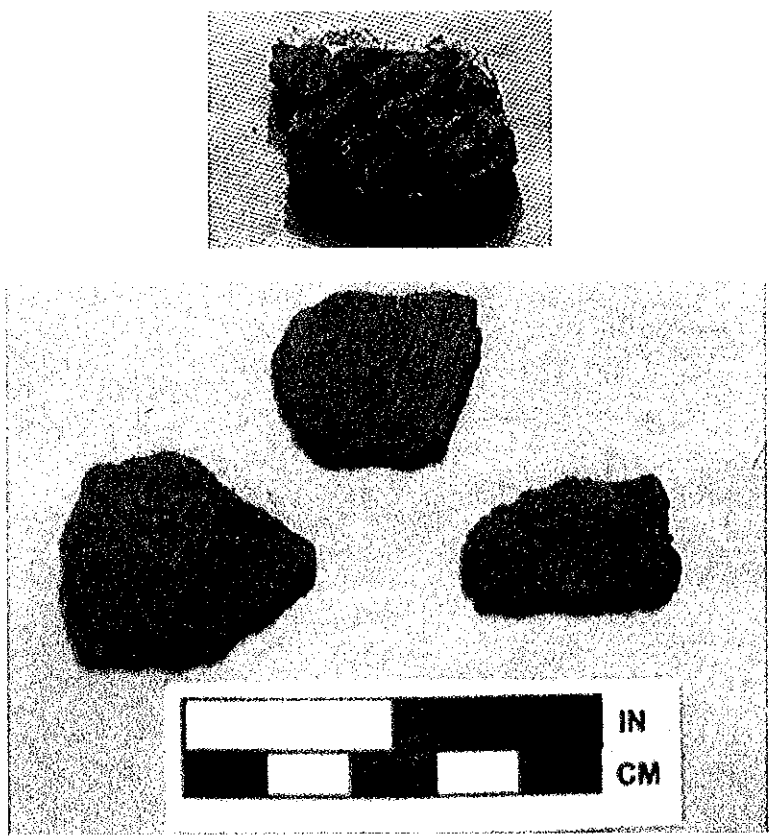

Figure 83. Cordmarked ceramics.

of the sherds (C-657) were tempered with limestone that had been leached. The paste was a sandy clay that was uniform and compact in texture. The sherds were between 5 and 6 mm in thickness. The sherds were recovered in square 0W1 near the surface of the mound. The other two cordmarked sherds were tempered with crushed granitic rock. The paste was a sandy clay that was poorly mixed and friable. One sherd (C-658) was 5.16 mm thick and the other (C-659) was 10.03 mm thick and found in humus layer. The cordmarked ceramics appear to be Late Woodland in manufacture.

Copper beads

A total of 11 copper beads were reported from the mound (Heilman 1976:88); however, the reanalysis only documented 9 beads. The two beads (C-650) that could not be located were reported from square 30W2. There was also some confusion in locating another bead (C-654). It appeared that this bead had been stored with another bead (C-655) with another catalog number. All of the beads were recovered scattered in the mound fill north of the burial pit (Heilman 1976:88) in squares 30W1, 30W2, 35 and 35W1.

All of the beads were corroded with copper salts and some of the beads were only fragments (Figure 84). The beads appeared to be manufactured from strips of copper that were rolled. Six of the beads had an edge to edge closure where the bead was apparently crimped shut. One of the beads was different in that the bead was closed by overlapping the two ends. The other beads were too fragmented to examine the closure.

The beads were variable in diameter, thickness and width. The corrosion of the beads was apparent and certainly influenced their appearance. Even so, each bead appeared to have a unique form. The thickness of the copper strip used ranged between 1.06 and 2.78 mm thick. The beads had a diameter between 5.8 and 7.7 mm. The hole diameter was between 2.62 and 4.77 mm. The beads were between 0.88 and 5.79 mm wide or thick.

In the eastern United States, copper has been a significant prehistoric trade item starting in the Late Archaic (Goodman 1984:9). Copper beads have been associated with the Red Ocher burial complex and the Glacial Kame Culture (Fitting 1975:81, Dragoo 1969:239). Copper beads have been noted to be manufactured from narrow strips of rolled copper and from cut sections of copper cylinders (Dragoo 1963:123, Webb and Snow 1945:99-100). Copper beads have been associated with both the Adena and Hopewell Complexes (Dragoo 1963:274-275).

Bone

Heilman (1976:73) reported human remains from a burial pit located near the center of the mound. He indicated that the burial in the mound was very fragmentary. It was represented by an adult skull and the proximal portion of a right femur. The bone was scattered throughout the pit, but concentrated on the southern end.

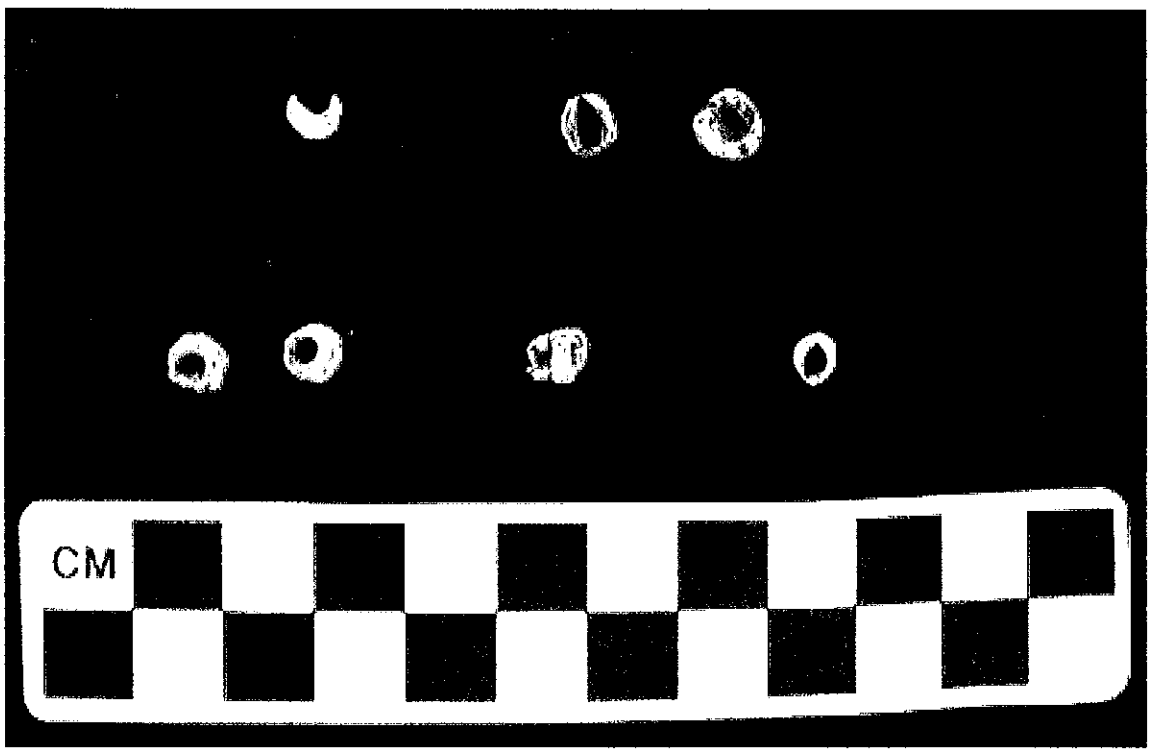

Figure 84. Copper beads.

Over 100 fragments of the bone were documented during the reanalysis. Only five pieces of bone were catalogued (C-673) as bone. The remainder were found in samples labeled as bark or dirt samples (C-1347 through 1377) from the mound. The samples did contain dirt and bone, but no bark was identified. All of the bone was very fragmentary, exfoliating and poorly preserved. Most of the bone appeared to be human but the identification was tentative. Only 3 or 4 cranial bone fragments were identified as human with any certainty. The bone represented cranial and post cranial material, but any idea of minimum number of individuals, age or sex could not be determined. One of the bones (C-1356) was a fragment of a long bone shaft of a large mammal, possible a human humerus. One end of the bone had been cut and showed polish. The remainder of the bone was unmodified.

Ash

Ash deposits in the mound were reported in the field notes (Figure 85). Heilman (1976:71) also stated that the burial pit had a white ash-like substance on the bottom of the burial pit. The material was poorly preserved and it could not be collected (Heilman 2000, personal communication). The reported ash substance could be some form of calcium carbonate or may have been highly leached, light colored soil. Heilman (1976:71) believed that the material in the burial pit could have been decomposed bark.

Radiocarbon Date

A wood charcoal sample from square 25W1 was submitted for radiocarbon dating. The sample was associated with the burial pit, but the exact provenience was not known. The sample provided enough carbon for an accurate date and all analytical steps proceeded normally (Hood 2000c). The resultant date was 1820 +/- 60 BP or uncorrected AD 130 (Beta-141811). The calibrated age range for the sample was AD 65 to 365 at a two sigma deviation. This date was somewhat more recent than expected, but the context of the sample appeared to be with an intrusive burial and, therefore, a later constructional feature. The date was within the accepted time frame for Early/Middle Woodland mound and earthwork construction in eastern Indiana.

Structure

In terms of structure, Heilman (1976:71) documented a central burial pit approximately 8 by 5' in size located 6" below the mound floor. The burial had been capped creating a primary mound about 30' in diameter and 1.6' high over the burial pit. Several fires were built on the primary mound (Figure 85). A secondary capping episode was distinguished in the southern half of the mound, but could not be traced past the 30' profile perhaps due to dry soils.

The interpretation of the structure was reviewed and some alternative interpretations concerning the mound construction were formulated. First, the primary and secondary capping episodes were reassessed. Profile data noted primary and secondary fill in trenches 10, 15 and part of 20. It was not noted elsewhere in the excavation, even in the area of the burial pit. In a

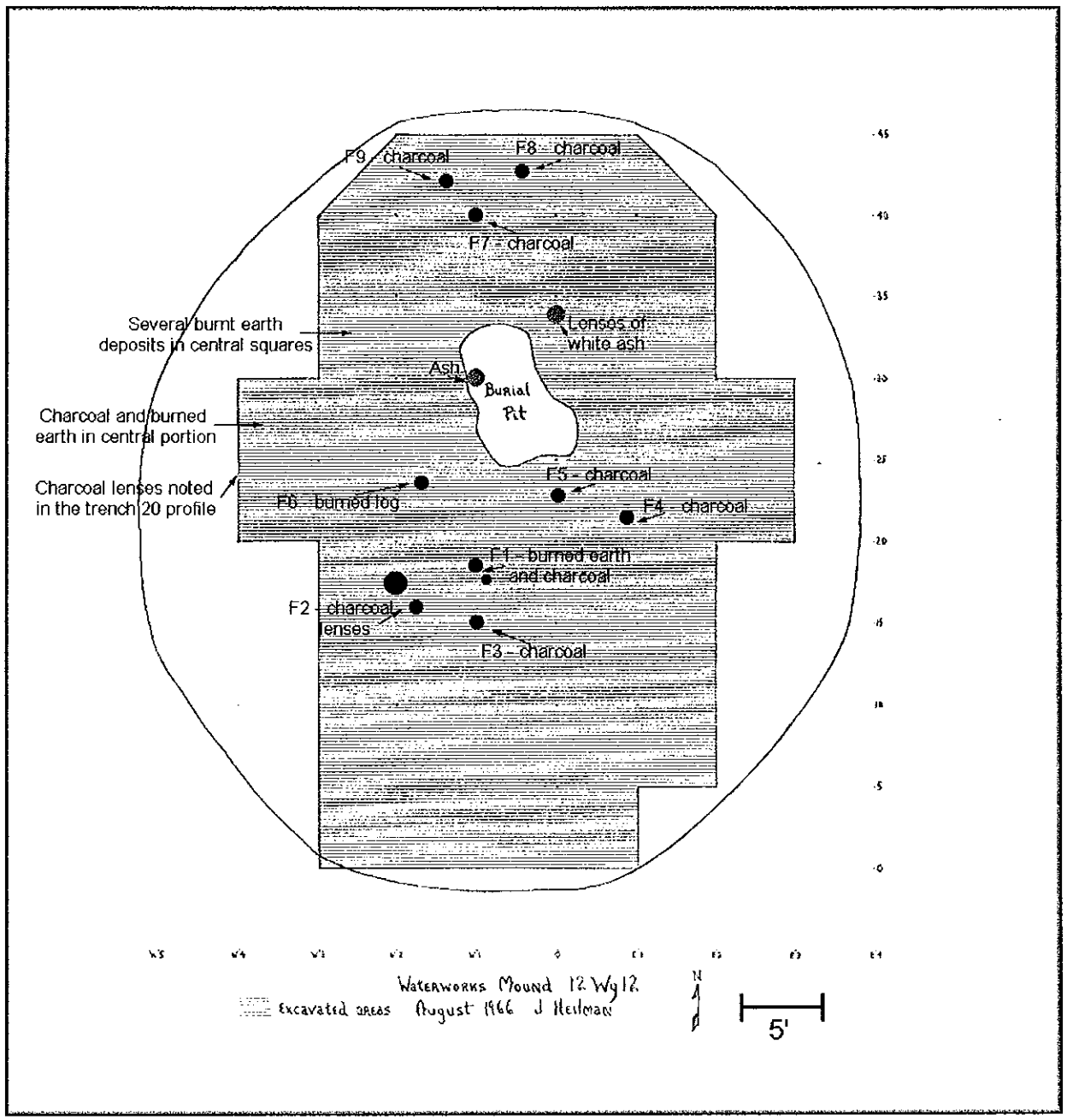

Figure 85. Plan of features (after Heilman 1976).

comparison of the photographs, there was a soil distinction noted. However, it appears that difference was a break between the unmodified original ground surface and the construction of the mound (Figure 86). It is difficult to confirm this supposition without soil samples. It should also be noted that artifacts were encountered in the lower layer. They may have been present due to the Archaic habitation noted by Heilman (1976:74), or as mound fill as Heilman (1976:71) stated.

There was evidence of a secondary capping episode, but it was not located near the base of the mound. Directly below the modern humus zone, a band of light loess looking soil was observed in a few of the photographs (Figure 86). Based on a comparison with the humus zone, the thickness of this capping mantle was approximately 6 to 8" inches. However, it is possible that this zone was created through natural soil development.

The review also examined the nature of the burial pit. An extensive pit was noted in photographs and profile data from trenches 20 and 25. The pit began below the humus zone and probable secondary capping and extended to the mound floor (Figure 86). It was intrusive into the primary mound. This feature does not readily match the description of the submound burial pit, but it occurs in the same horizontal location as the burial pit. The color of the soil in this feature was reddish, and black stains that were apparently charcoal were present. The soil in the burial pit was described as "extremely hard and compact from fires kindled over the primary mound" (Heilman 1976:73). It was unclear if this feature represented "the burial pit", but it may have been associated since it was in the same location.

In summary, a hypothetical interpretation of the Waterworks Mound be as follows. The mound was likely constructed over or near an Archaic occupation. The mound did not appear to have a prepared mound floor. On the original ground surface or mound floor several activities producing charcoal and burned earth features occurred. At some point mound construction began and the activity areas were capped with earth from an Archaic habitation. Also occurring in the mound fill were the pottery sherds, bow tie gorgets, a bladelet and copper beads that date to the Woodland period. An intrusive pit was then dug in the primary mound. Human remains were interred and pit was filled with burned soil, charcoal, a graver and perhaps a Robbins point. The mound structure was then capped. Late Woodland ceramics were later deposited on the surface of the mound.

Conclusions and Recommendations

The evaluation of the Waterworks Mound documented the artifact collection and the reviewed the sequence of mound construction. The artifact collection contained materials that have been considered as belonging to the Adena and Hopewell complexes. The Robbins point and bow tie gorgets were consistent with assemblages from Adena mounds. But, the bladelet of Flint Ridge material was more indicative of the Hopewell complex. The ceramics display characteristics similar to both Adena and Hopewell types. The mound construction displayed sequentially building episodes and probably a series of horizontal activity areas that were not

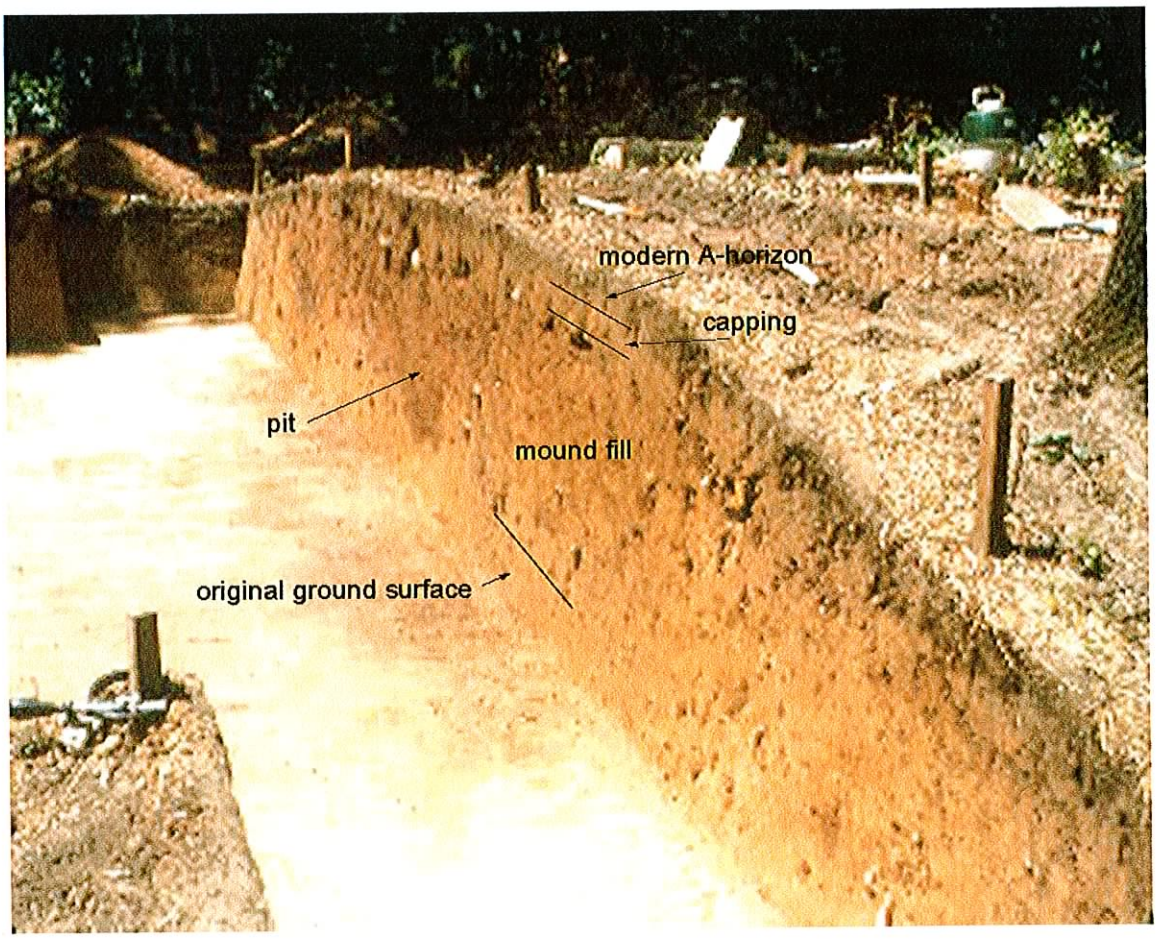

Figure 86. North wall of Trench 20 showing the different soil strata.

readily seen using a trenching method. Heilman's (1976:107) interpretation that the Waterworks Mound was a part of a regional development of a Middle Woodland culture that had evolved from an Early Woodland base was substantiated. It is our contention, however, that the Adena and Hopewell complexes were not different or separate cultures. They were archaeological components of the same ceremonial/mortuary system. The blending and integration of Adena and Hopewell material objects from the Waterworks Mound supports this premise.

It would appear that the majority of the Waterworks Mound was excavated in 1966. However, there should still be the peripheral margins of the mound. The excavation was backfilled and recontoured (J. Heilman 2000, personal communication). Limited test excavation along the periphery of the mound to obtain profiles could provide important information on the mound construction. In addition, it is recommended that the property owners be advised of the importance of the site to aid in the protection of this mound. The owners should also be approached about the possibility of nominating the mound to the State and National Registers of Historic Places.

Bertsch Site

Background

The Bertsch Site (12-Wy-45 and 12-Wy-46) was a circular earthwork complex located near Cambridge City, Indiana. The site was in the [redacted] (Figure 87). The complex was first described as 2 large and 5 smaller circular enclosures (MacPherson 1879:223-225) situated on a terrace east of the Whitewater River (Figure 88). No mounds were reported within the complex, but Wissler (1921) reported a destroyed conical mound across the Whitewater River and west of the small circles. This mound appeared to be the Wolford Mound described by Setzler (1930a:446-447) and the mound excavated by Heilman in 1969. Setzler (1930:447) related the Bertsch site to the Anderson Mounds. The two largest circles were given separate site numbers, the southern circle designated as site 12-Wy-45 and the circle to the north of it was designated 12-Wy-46 (Heilman 1976:45-46).

Setzler (1930a:447) measured the outside wall of the largest enclosure as 333' in diameter with a central platform diameter of 196'. No mound was reported from the central platform. The ditch was recorded as 6' 1" below the top of the wall. The gateway opened to the east. This enclosure has been designated as site 12-Wy-45. The other large circle was situated north of the first enclosure with a gateway to the southwest; it was not as well preserved as the first enclosure. Setzler (1930a:447) measured the outside diameter of the second enclosure as 291' with the ditch 2' 6" deep. This enclosure along with the location of the remaining enclosures described by MacPherson (1879:224) has been given site number 12-Wy-46. In MacPherson's (1879:224) diagram of the other earthworks, 4 were circles 60' in diameter and 1 was oval measuring 137' x 147'. Apparently none of the small circles had recognizable gateways. The complex has been in cultivation for over 100 years, at least since prior to 1879. In 1996, the number of enclosures at the site was revised following a review of the 1936 USDA aerial photographs. Those photos show that at least 16 circular enclosures were at this site, not including the 5 recorded by MacPherson (1879:224), and the second largest enclosure was actually panduriform in shape (McCord and Cochran 1996:142-143)(Figure 89). In addition, the photograph revealed that the central platform of the largest circle contained a very dark circular feature while the panduriform showed a smaller dark circular feature on the northwestern lobe (Figure 90). For this report, the earthworks were numbered to facilitate discussion (Figures 88 & 89). Only the 7 earthworks reported by MacPherson (1879) and the earthwork excavated in 1981 were given numbers. The remaining earthworks on the 1936 aerial photograph were not given numbers until they can be verified further. In addition, we have avoided the confusion of assigning separate site numbers to each earthwork in the site by designating the Bertsch complex as 12-Wy-45/46.

The first professional excavations of the Bertsch site were carried out in 1968 at the largest enclosure, Earthwork 1 (Heilman 1976:93-103) (Figure 91). A 10-foot grid was laid out across the site and the plow zone was shoveled out to expose undisturbed deposits. The plow

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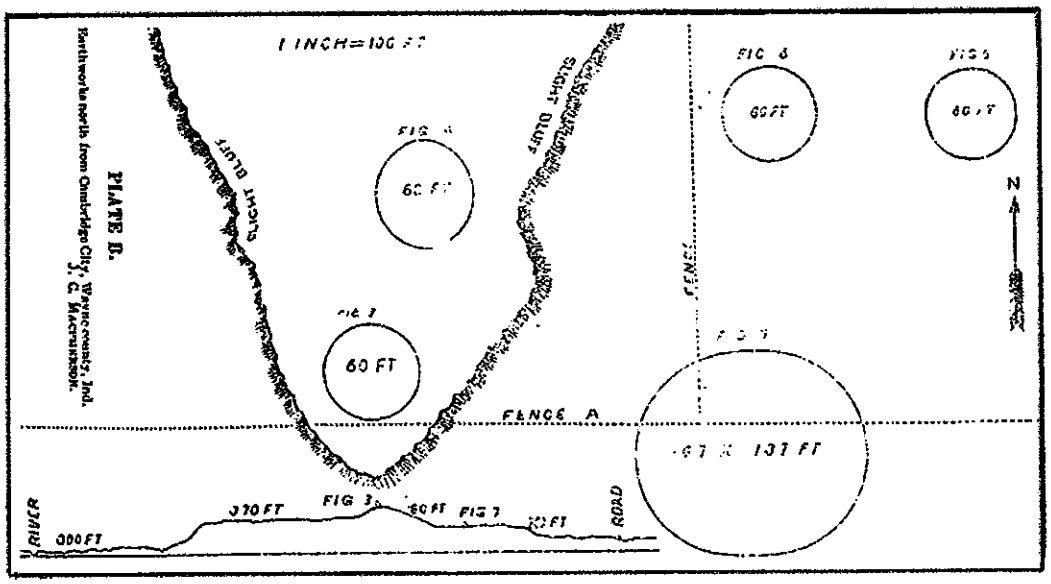
Figure 87. A portion of the USGS 7.5' Cambridge City, Indiana, Quadrangle showing the location of the Bertsch site.



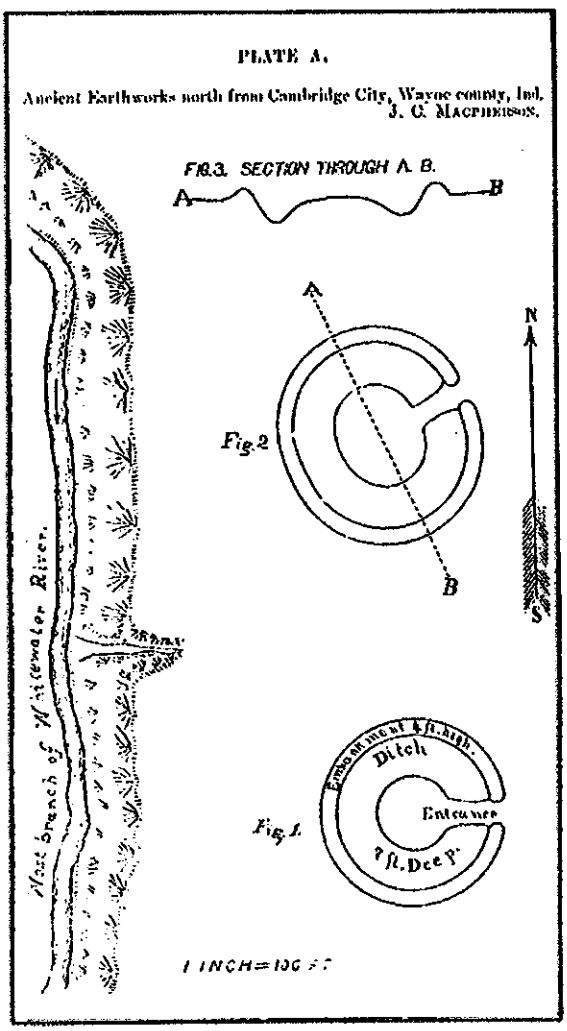


Figure 88. MacPherson's (1879:222 & 224) maps of the Bertsch site.

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Figure 89. The Bertsch site as drawn from a 1936 USDA aerial (after McCord and Cochran 1996:143).

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Figure 90. 1936 aerial photograph of the Bertsch site (on file at the Indiana Historical Society).

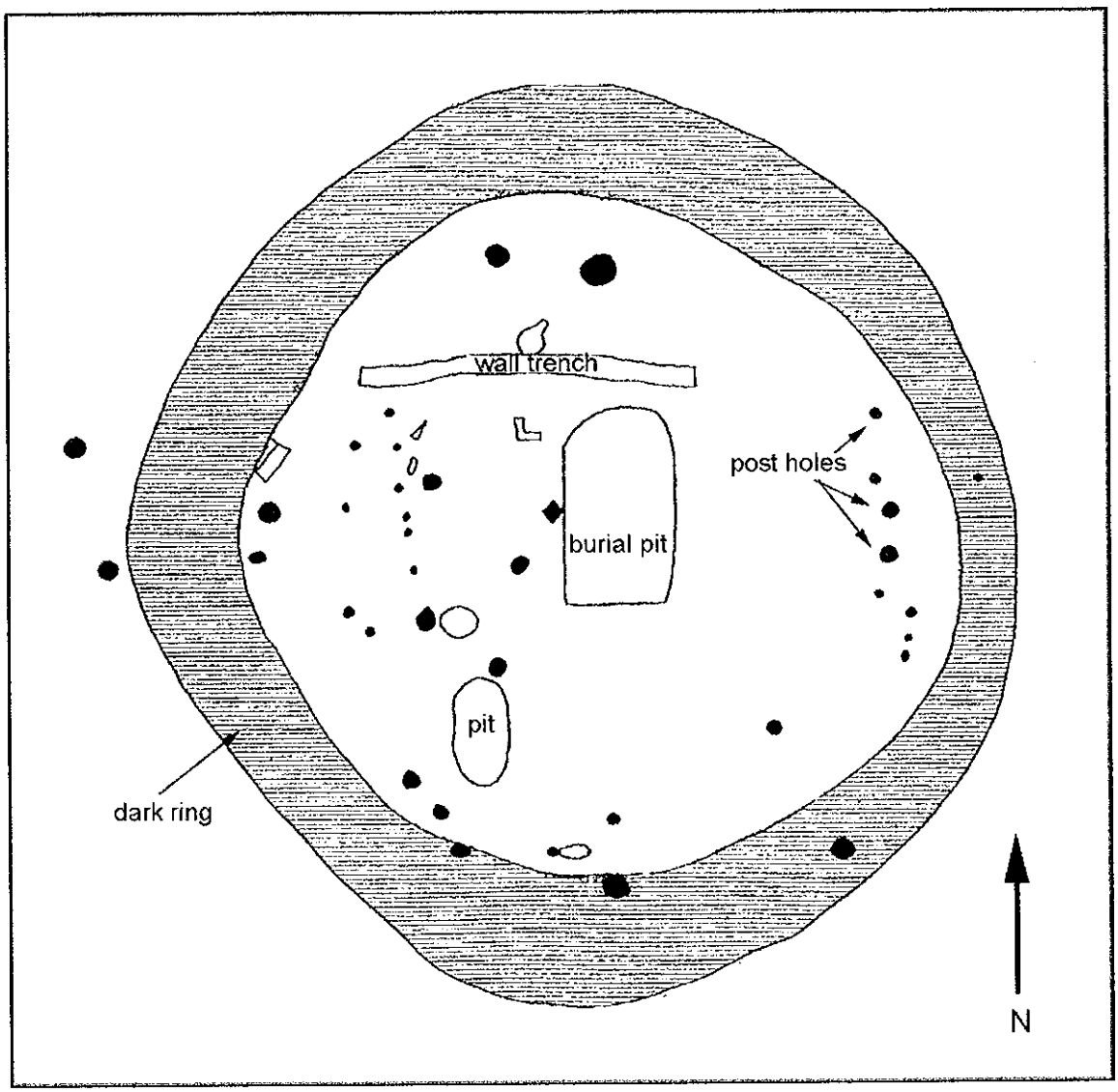

Figure 91. Plan map of Earthwork 1 (after Heilman 1976:94).

zone was not screened but feature fill was (J. Heilman, personal communication 2000). Within the central platform, several post holes, two pit features and a circular stain 30' in diameter were exposed (Figure 91). The post molds were clustered into several groups. A centrally located rectangular pit measuring 9.7' x 5' was recorded (Figure 91). The bottom of the pit was lined with a clay and grit mixture and heavily burned. The pit contained the fragmentary skeletal remains of 3 individuals; some of the remains were calcined. North of the central pit was a 15' long trench that was narrow and 1.2' deep (Figure 91). An oval pit was recorded to the southwest of the central rectangular pit (Figure 91). The circular stain 30' in diameter surrounded the center of the platform and appeared as a burnt area at the base of the plowzone. The stain varied between 2 ½ and 6' in width. Burnt chunks of clay were found associated with the stain. Four post molds were recorded in the circular stain (Heilman 1976).

The features were interpreted as representing the remains of a charnel house. The circular stain was identified as the outer structure wall. The long narrow trench located north of the central pit was identified as a wall trench. The central pit was classified as a burial pit and the other pit feature was unclassified (Heilman 1976).

The excavation produced very few artifacts. Two flakes, a polished horn coral, a polished burned bone fragment, animal bone, burnt daub, and 10 pottery sherds were all of the artifacts recovered. The pottery was considered identical to that found in the Waterworks and Hayes Arboretum Mounds (Heilman 1976:93-103, Stepleton 1969:26-33).

In addition to the excavation of the central platform, a bulldozer was used to remove the plow zone outside of the embankment (Figure 92). A trench, excavated to the base of the plow zone, bisected the ditch and embankment, but no additional features or artifacts were found (Stepleton 1969, Heilman 1976, J. Heilman, personal communication 2000).

The next excavation at the Bertsch site occurred in 1978. A Ball State University field school excavated 3 - 5' x 5' units in the vicinity of Earthwork 3, the largest of the northern cluster of five recorded by MacPherson (1879:224). The earthwork was no longer visible on the ground, but, by using MacPherson's (1879:224) diagram, the area of the reported earthwork was relocated (Figure 93). Three 5' x 5' units were excavated in 6" levels. Excavated soil was screened through 1/4" mesh. As no features or artifacts were found during the excavation, it was concluded that this location was either not a burial mound or it was a natural feature (Berg, Cox and Reseigh 1979).

Low level aerial photographs of the Bertsch site taken in 1980 revealed several previously unidentified circular enclosures (Figure 94). The photos also showed that MacPherson's (1879:224) diagram was somewhat inaccurate as a circular enclosure approximately 100' in diameter was situated between the 2 largest earthworks. This small enclosure, Earthwork 8, was selected for excavation by the 1981 Ball State University field school (Figure 89). The location was included with the large circle to the south, 12-Wy-45. Eleven 5' x 5' units and 2 test pits were excavated at the perceived location of the circular enclosure. Excavated soil was removed in

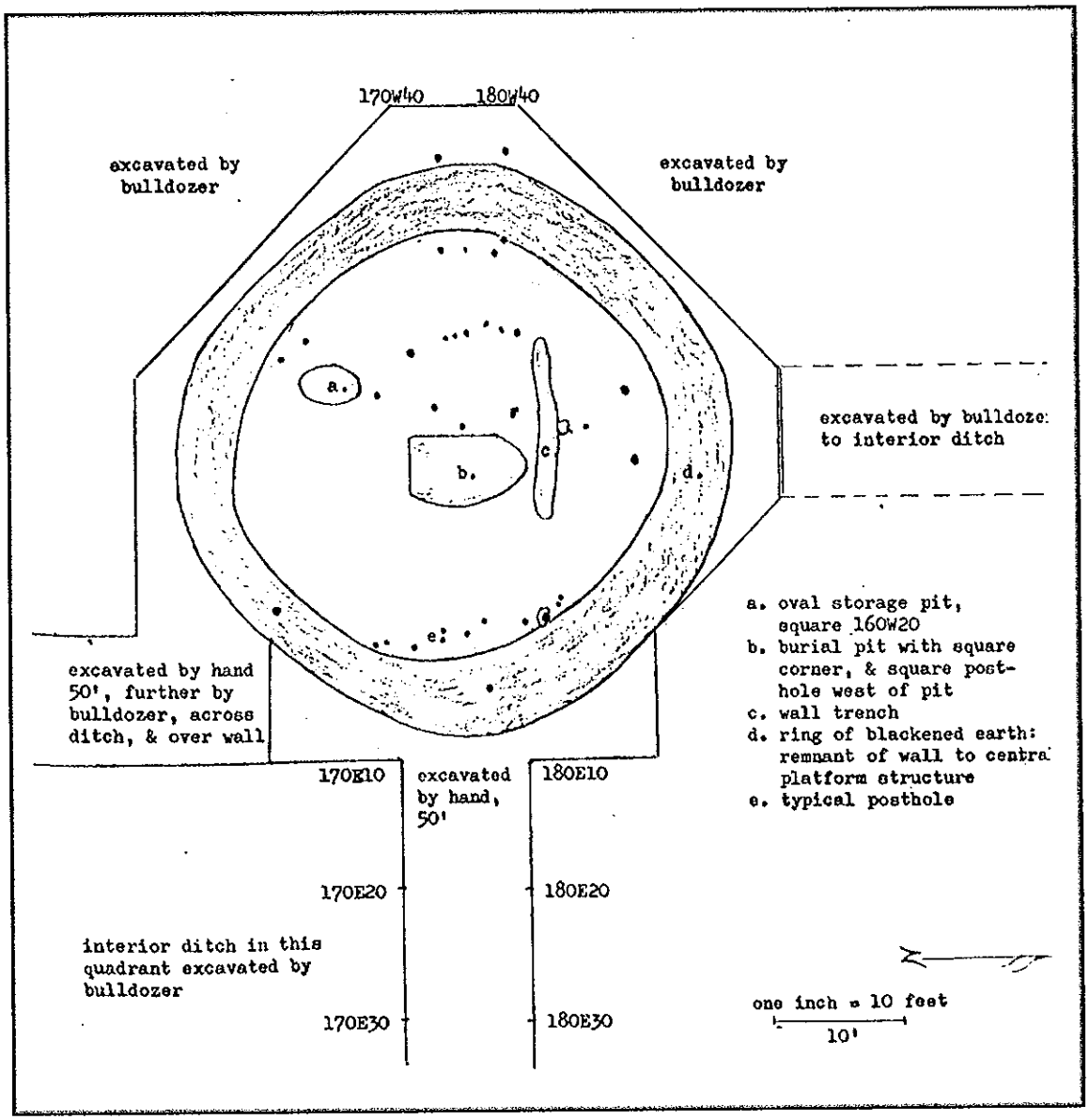

Figure 92. Stepleton's (1969:31) map showing the areas excavated by bulldozer. Note: the post hole pattern differs from Heilman 1976.

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Figure 93. A portion of the USGS 7.5' Cambridge City Quadrangle showing the location of the 1969, 1978 and 1981 excavations.

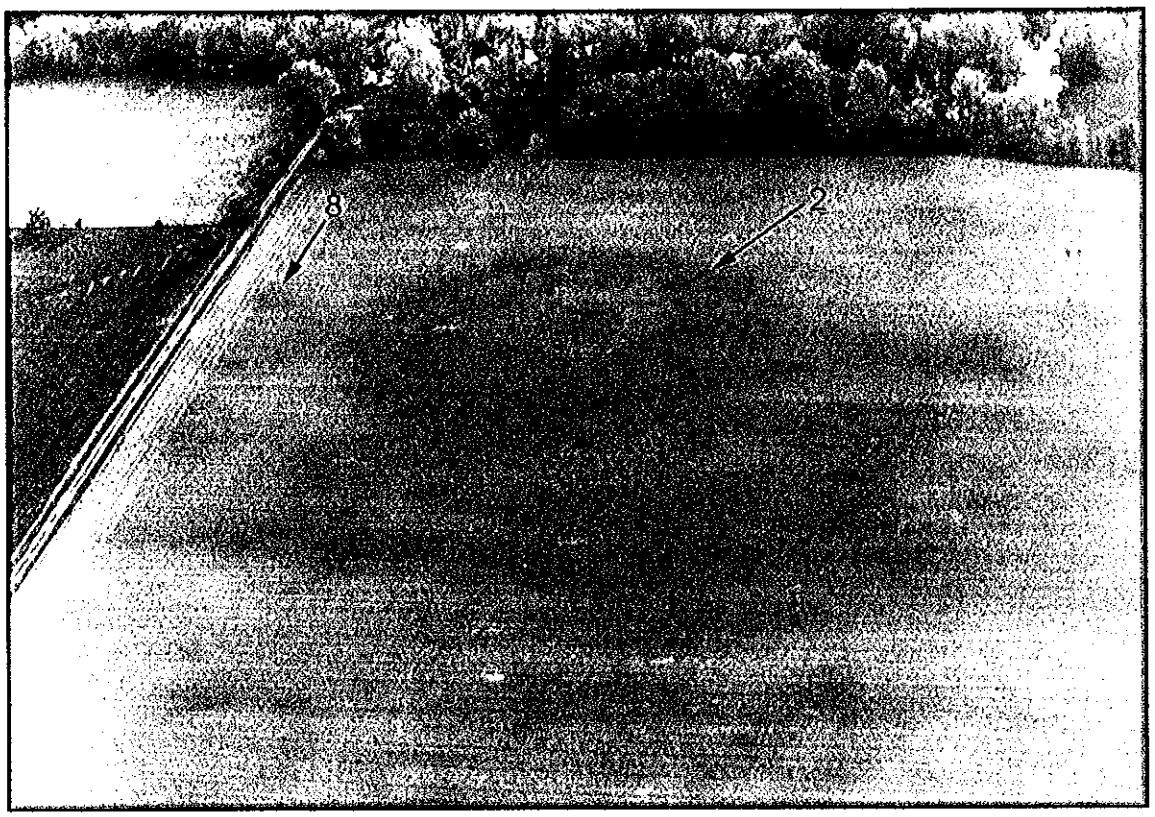

Figure 94. Aerial photo of Earthworks 2 and 8 (photograph by Ronald Hicks, 1980).

arbitrary levels 6" thick and screened through 1/4" mesh. Two "control" pits were excavated outside of the defined boundaries of the enclosure and all materials on the screen were saved. Three features were recorded: a charcoal feature with associated fire-cracked rock and 2 post molds. A charcoal sample "from the interior" of the enclosure was submitted for radiocarbon dating, but the date obtained was recent (Beta 4703) (Swartz 1984:6). Reseigh (1984:3) reported that the only prehistoric artifacts recovered included 2 thumbnail scrapers and a "quantity" of chert flakes. However, both Holbrook (1984) and Arnold (1984) included 144 chipped stone flakes in their analyses of the materials from the site. Holbrook (1984) identified a high percentage of Flint Ridge chert in the sample and suggested that the central platform of the enclosure was the scene of chipped stone reduction. Arnold's (1984) analysis of the chert contained in the control pit samples recorded 999 pieces of chert, only 144 of which were noted as "worked." The excavation report indicated that this earthwork was probably a bank and ditch structure that was leveled by plowing (Reseigh 1984).

Over the many years that the Bertsch site was on record, it was generally classified with Adena/Hopewell sites in the region. Although no diagnostic artifacts or reliable radiocarbon dates had been recovered from any of the excavations, it was believed that the Bertsch site was like the New Castle and Anderson sites (Heilman 1976, Cochran 1992, 1996, McCord and Cochran 1996). The site was classified as one of the three circular earthwork complexes in the region.

Evaluation

In assessing the Bertsch site, the authors relied upon a review of the information in Heilman's (1976) thesis, field notes, photographs and artifacts curated at the Joseph Moore Museum at Earlham. Some of these materials were on loan to the Boonshaft Museum of Discovery in Dayton, Ohio. In addition, information from the BSU excavations were on file in the department of Anthropology at Ball State University. Tim Wright visited both the Joseph Moore Museum at Earlham and the Boonshaft Museum of Discovery at Dayton to document collections and review notes. He also discussed the site with Mr. James Heilman. Field notes, artifacts and photographs from Heilman's excavations were loaned to ARMS for the completion of this project.

In reviewing the original reports of the excavations at Bertsch, a number of problems were encountered. As with many of the other projects, while the documentation was standard for the times in which they were produced, important details by today's standards were missing. For example, Earthwork 1 had only two field notebooks in the curated collections and the information in them was more a record of the progress of the excavation rather than details about the excavation. An excellent scaled plan map was included with the notes, however. Also, there were methodological details that were missing. There was no record of whether the dark ring was sampled beyond exposing it in plan view. Also, there was no clear documentation of the depth of the excavations in all parts of the excavated area. Some of this confusion was clarified through the slides of the excavation although the question remains. As with other excavations, we wished

for more samples of the various feature fill and strata. However, in spite of these kinds of impediments, the review and reanalysis provided an important update and new material about the site.

Artifacts

Artifacts reported from the Bertsch site excavations were few in number. Heilman (1976) accounted for 2 flakes, 1 polished fossil, 1 piece of polished bone, animal bone, burned daub and 12 ceramic sherds. The 1978 BSU field school found no artifacts (Berg, Cox and Reseigh 1979). The 1981 BSU field school reported 144 flakes, 2 endscrapers and 853 pieces of unworked chert (Reseigh 1984, Holbrook 1984, Arnold 1984). The reanalysis of these materials are presented in the following section.

Chipped Stone

The stone artifacts reported from the Bertsch site were predominantly chipped stone. Heilman (1976) reported 2 chipped stone artifacts and the 1981 report of the BSU field school reported 146 (Reseigh 1984, Holbrook 1984). The chipped stone artifacts were presented separately by individual earthwork.

Earthwork 1

Chipped stone artifacts from Earthwork 1 consisted of two edge modified flakes of Wyandotte chert. One of these (C-719) was found in the fill of the large central pit. Neither were illustrated. The curated collection from Earthwork 1 also contained a Stage 2 biface made from Laurel chert. The biface was 4.5 cm long and 2.8 cm wide. Maximum thickness was 1.1 cm. The biface was recovered from mound fill in the 40W15 block.

Earthwork 8

Earthwork 8 reportedly contained 146 chipped stone artifacts obtained during the 1981 excavation (Holbrook 1984). The reanalysis of the materials curated in the Anthropology Department at Ball State University revealed that most of the lithic material was unmodified glacial gravel. The authors completely resorted the materials from the site and Cochran identified all raw materials with the aid of t least 10X magnification. Magnification was necessary due to the small size of the artifacts, primarily flakes. Also, magnification was necessary to clarify the source of the raw materials, particularly were the flakes manufactured from Flint Ridge chert or Burlington chert. The surprise that resulted from this reanalysis was the high percentage of Burlington chert that was present. Table 11 contains a breakdown of the flakes and the raw materials present in the artifacts from Earthwork 8. In addition to the flakes, a bipolar artifact from Burlington chert was recovered along with a small point fragment made from Laurel chert. Thus, the reanalysis revealed a total of 113 artifacts. During the review, no endscrapers were found, but the two artifacts catalogued as endscrapers were found to be naturally faceted pieces

of glacial gravel. Other artifacts catalogued as flakes were also found to be unmodified pieces of glacial gravel.

Table 11
1981 Bertsch Site Raw Materials/Flakes

Raw Material	Unmodified Flakes	Modified Flakes	Totals
Laurel	10	3	13
Heat treated Laurel	2	0	2
Burlington	45	2	47
Heat treated Burlington	34	2	36
Wyandotte	5	0	5
Fall Creek	1	0	1
Upper Mercer	1	0	1
Unknown	6	0	6
TOTALS	104	7	111

A review of Table 11 shows that over 70% of the artifacts recovered during the 1981 excavations at Earthwork 8 were manufactured from Burlington chert. Not only is this situation completely anomalous to any other site in the region, it is also anomalous to any earthwork site in the region. As currently known, Burlington chert in east central Indiana is almost exclusively associated with Middle Woodland Snyders points (e.g. Hicks 1991:25). In addition, testing of other earthworks in the region, particularly the small enclosures associated with the earthwork complexes has revealed a noticeable paucity of artifacts (McCord 1999:95-96). Thus, although Earthwork 8 did not reveal features, it did produce an anomalous situation both in terms of the presence of artifacts and in the predominance of artifacts made from Burlington chert. The current regional wisdom would indicate that this small enclosure was the scene of the reduction, either finishing or resharpening, of Snyders points.

Ground/polished Stone

A polished horn coral (C-720) was recovered from the large central pit in Earthwork 1 (Heilman 1976). The coral was 13.4 mm long, and ranged between 9.7 and 4.5 mm in diameter from top to bottom. Although the coral was found in the central pit with human remains, there was no evidence of human alteration. A number of fossils were recovered from the gravels collected from the control pits during the 1981 excavation at Earthwork 8. None of these had been modified. It was suspected that the horn coral was a natural inclusion in the pit.

Ceramics

Heilman (1976) reported that 10 sherds were recovered from Earthwork 1 (Heilman 1976)(Figure 95). Seven sherds, which fit together, were recovered from a pothole in square 180W20. The other three sherds were found in 160W30, 170W20 and in the profile of 180W10. Three additional sherds were in the curated collection from the site. The latter three sherds were from 40W10.

The 13 pottery sherds were all similar. They were all body sherds that had a plain exterior. A few showed areas of burnishing. The paste was a sandy clay that was compact and tempered with crushed granitic rock . The temper size ranged between 1.0 and 3.75 mm. The sherds were between 6.27 and 7.23 mm thick. Heilman (1976:101) noted that these sherds were identical to those from the Hayes Arboretum and Waterworks mound. The sherds were also similar to ceramics from Anderson Mounds, the New Castle site, the White Site, Windsor Mound and the Law Mound (Vickery 1970, Morris 1970, Swartz 1973 and 1976, Kolbe 1992a, McCord 1994, Johnson 1995).

Burned Clay

Burned chunks of clay were reported occurring along the outer wall or ring of dark earth (Heilman 1976:96). Most of this was apparently encountered in the plowzone, but one piece was reported from a posthole (Heilman 1976:101). None of the clay showed definite contact with wattle (Heilman 1976:101).

The reanalysis documented samples of burned clay from squares 170E20, 170W20, and 180W20. The samples contained inclusions of rock. No casts or impressions were noted. Deposits of burned clay have been documented in the dark organic mound fill at the Fiddleback enclosure at Anderson Mounds (Kolbe 1992a).

Bone

The only bone artifact was recovered from Earthwork 1. This small fragment measured 19.8 mm long, 5.2 mm wide and 5 mm thick. The bone had been smoked and the polish developed after the smoking. The polish was so slick that the artifact was very difficult to hold. The artifact was found in the plowzone near the central pit in square 170W20. Heilman (1976:101) suggested the bone may be a fragment of an awl. The degree of polish, smoking and shape of the bone reminded us of the bone imitation bear canines recovered from the central platform of the great Mound at Anderson.

Heilman (1976:101) noted that throughout the plowzone, occasional pieces of unidentified animal bone were found. The reanalysis documented 14 fragments of unburned mammal bone from a posthole in square 160W30. Three burned mammal bones, one unburned mammal bone and one unburned possible bird bone were noted from 2 post holes in square 180W20. One

Figure 95. Pottery from Earthwork 1.

burned bone fragment from a large mammal was documented from the black ring in square 160W10. None of the animal bone was identified to species by this investigation.

Human Remains

The human remains (C-717, 722) from the pit in square 170W20 received a cursory review. Analysis of the fragmentary remains by Georg K. Neumann in 1969 indicated that there were 3 individuals present; one male approximately 16-17 years old, one young adult female that had been cremated, and one female approximately 35 years old (Heilman 1976:103). Our review of the remains did find unburned and cremated human bone, but it appeared that only two individuals were represented. The unburned remains were consistent with an individual 15 to 18 years old based on epiphyseal closure. The cremated remains ranged from smoked to completely calcined and were also from a young individual (<25 years old). None of the remains indicated an age of 35. Due to the fragmentary nature of the remains, sex determinations were not attempted.

Radiocarbon Date

A radiocarbon sample consisting of approximately 10 g of wood charcoal from a combined sample taken from 2 postholes in 180W20 were submitted to Beta Analytic for radiocarbon dating. The sample was associated with the 7 conjoined pottery sherds and hickory nut shell also found in the post molds. Since the sample was small, extended counted was required. The sample provided adequate carbon for a reliable date and analysis was normal (Hood 2000c). The resulting radiocarbon date was 1970+/-40 BP or uncorrected 20 BC (Beta-141813). At a two sigma deviation, the calibrated result ranged from 50 BC to AD 115. In spite of being from a combined sample, this date fits well with the other radiocarbon dates obtained from east central Indiana earthworks.

Structure

Earthwork 1

The most extensive excavations were those carried out at Earthwork 1 (Heilman 1976, Stepleton 1969). A number of features were found including post molds, two pits and a dark ring encircling most of the features. In assessing the previous work a the site, it appears that the approach was adequate for defining features at the base of the plow zone. The only difficulty with the data revolves around the interpretations of the features and the approach to the dark ring. Since the collective interpretation of the features representing a charnel house revolved around the interpretation of the dark ring as a house wall, the latter will be discussed first.

First, there is a lack of a clear presentation of data to support the interpretation of the dark ring as representing a house wall. It appears from a review of the excavation data that the dark ring was exposed in plan view at the base of the plow zone but there is no indication that it was bisected or sampled to determine its depth and/or shape below the base of the plow zone. Thus,

there is no indication that a post hole pattern existed within the ring as one would suspect if it were a house wall. In addition, there is no opening in the ring that would represent an entrance. Thus, we are left with a dark circular ring of dark soil that completely encircles the other features within the center of the enclosure platform. How else could the dark ring be interpreted? Two lines of evidence suggest possible interpretations, but they are not completely satisfactory either.

The 1936 aerial photograph of the site shows that the central platform is almost covered by a dark circular deposit (Figure 90). In addition, photographs of the profiles taken during the 1968 excavation reveal that the plow zone is made up of a very dark soil, supporting the image shown in the aerial photographs. Thus, it would appear that the dark ring identified in Heilman's excavation (1976) represents the remains of a deposit that covered most of the central platform of the enclosure. Another possible explanation of this phenomenon is that a circular ring was present that was dispersed by plowing to form a continuous deposit over the central platform. However, we favor the earlier interpretation based on previous research from the Fiddleback enclosure at Anderson Mounds.

If we look beyond the regional literature for similar features like the dark ring at Bertsch, there appear to be few examples. A circular feature similar to the one from Bertsch was documented at the floor of Cresap Mound (Dragoo 1963:19, 33-34). Both features were of similar size, about 30' across at Bertsch and about 40' at Cresap. Both were filled with dark soil. The feature at Cresap was excavated and revealed a shallow trench less than 0.5' in depth. A few post holes were found in the feature at Cresap, but they were difficult to discern (Dragoo 1963:34). The Cresap feature contained an opening, or gateway, while the one at Bertsch did not. The Cresap feature was also interpreted as a house wall (Dragoo 1963:35).

A common feature of the descriptions of the Fiddleback enclosure at Anderson has been the notation of a dark, midden-like deposit that is exposed on the surface of the western-most lobe of the enclosure (eg. Vickery 1970). This deposit was almost black and contained a variety of artifacts (Kolbe 1992a). During the summer of 1999, the BSU archaeological field school excavated a unit through this deposit. The excavation demonstrated that the dark deposit on the surface represented a mound capping. The unusual feature of this capping was that no other mound in the region was known to have been capped with a dark midden deposit, but were capped instead with a sterile layer of loess. The midden like deposit on the surface at Fiddleback and the Bertsch site were more similar to mound cappings in the interior of mounds such as Windsor Mound and Nowlin Mound (McCord 1994, Black 1936). The Bertsch deposit may be somewhat different from the Fiddleback deposit in the small number of artifacts. Possible explanations for the deficiency of artifacts at the Bertsch site were that the site has been under cultivation for over 100 years and artifacts were thus more exposed to erosion and collecting. In addition, the excavated soil was not screened. Thus, although not completely satisfactory, we favor the idea that the dark ring was associated with a capping episode that covered the central features on the platform of Earthwork 1. The fact that the features appeared to have been filled with the same dark deposit lends further credence to this interpretation.

In addition to the questions raised above, the other features do not readily support the idea that they represent the remains of a charnel house, either. The post holes inside the dark ring are not arranged in any discernible pattern as would be expected if they were interior supports. Further, Clay (1986:584) has elegantly questioned the interpretation of submound post patterns as representing roofed structures. There is also no indication that post holes were found within the "wall trench" so that its characterization also seems suspect.

The post features recorded on the central platform of Earthwork 1 are somewhat similar in type and arrangement to those recorded on the central platform at Anderson Mounds (Vickery 1969). Both sites contain parallel, linear post hole patterns although Bertsch had more posts (29) than did Anderson (18). Bertsch had human remains in the submound pit whereas human remains at Anderson only occurred in the small mound constructed on the central platform of the Great Mound and in the midden deposit on the surface of the Fiddleback enclosure.

One additional point about Earthwork 1, the lack of artifacts was consistent with other enclosure interiors that have been excavated in the region with the exception of Earthwork 8. Artifacts were typically only associated with the interior of enclosures in east central Indiana if there was an artificial mound on the central platform. Whatever the interpretations of the sites, the past activities associated with them left few surviving artifacts unless artificial mounds were raised.

Earthwork 3

Earthwork 3 was tested with only three units. The units were placed in the perceived location of the earthwork based on MacPherson's description. No features or artifacts were found and the conclusion drawn from the project that the site had no burial mound or was a natural feature. In assessing this excavation, two points were apparent. First, the location was never described as a burial mound, but was a circular enclosure. Small circular enclosures that have been tested in east central Indiana have consistently lacked features or concentrations of artifacts (McCord 1999). Second, a review of the 1936 aerial photograph revealed no indication of enclosures at the location described by MacPherson (1879). It should also be stated that MacPherson's (1879) location description relied on the presence of a fence row and rather general measurements. From these two points, we can draw a couple of possible conclusions. First, the excavation was not at a location where an enclosure had been, or second, MacPherson (1879) incorrectly located the enclosures. It is interesting that many small circular enclosures were revealed by the 1936 aerial photograph while none were evident in the location identified by MacPherson (1879). Given the current data, it is not possible to accurately assess the situation.

Earthwork 8

Earthwork 8 was discovered through low level aerial photographs that were taken in 1981. The 1936 aerial photograph also showed an enclosure at that location. Thus, two different photographs confirmed an enclosure was situated at that location.

The units excavated in 1981 were oriented along a north-south line through the apparent center of the southern half of the enclosure (Figure 96). Two additional units were excavated at the perceived location of the embankment. The intention of the excavations was deduced by the layout of the units as no purpose for their placement was recorded in the written report (Reseigh 1981). The three features that were recorded during the excavation were not marked on the site map (Reseigh 1984) although they have been marked on Figure 96. The three features were not clearly aboriginal and a radiocarbon sample that was submitted, probably from Feature 1, a charcoal scatter, was of recent age. The artifact analysis reported 2 chipped stone endscrapers, 144 flakes and 853 pieces of "unworked" chert (Reseigh 1984, Swartz 1984, Holbrook 1984, Arnold 1984). Reanalysis of the artifacts and control pit samples revealed fewer chipped stone artifacts than previously reported.

Conclusions and Recommendations

The previous excavations at the earthworks in the Bertsch site have produced intriguing information. Heilman's (1976) excavation of the central platform of Earthwork 1 revealed a number of features, including numerous post holes, two pits one of which contained human remains, a dark ring surrounding the features and a linear feature reminiscent of a wall trench. The reanalysis of data from this excavation found that supporting evidence for interpreting the features as the remains of a charnel house was somewhat lacking. The features were similar in kind and orientation to those found in other mounds and earthworks in the region. Although few artifacts were found in association with the features, the ceramics that were present were completely consistent with those recovered from other earthwork sites in the region. Testing in the vicinity of Earthwork 3 failed to produce evidence of aboriginal activity there. Excavations at Earthwork 8 did not document conclusive aboriginal features but did recover an interesting chipped stone artifact assemblage. Of utmost interest was the high percentage of Burlington flakes that were found. Burlington chert is directly and essentially exclusively associated with Middle Woodland Snyders points in the region. No other chipped stone assemblage documented to date has produced such a concentration of Burlington chert flakes. There was no doubt that bifaces of Burlington chert were being finished and/or resharpened at the location of Earthwork 8. Thus, both the structures, features, radiocarbon date and artifacts recovered from the earlier excavations at the Bertsch site were completely comparable with other earthworks in the region.

The interesting differences between the Bertsch site and other regional earthworks were related to the location of the site and the absence of mounds within the site. The most similar earthwork complexes at Anderson and New Castle were situated in locations that provided a commanding view to the west. Bertsch was on a Pleistocene terrace without commanding views in any direction. In addition, the Anderson and New Castle complexes contained mounds, both within enclosures and outside of them. Unless the Wolford Mound across the river is included with the Bertsch site, then it appears that Bertsch was entirely made up of circular enclosures. None of the enclosures appear to have had mounds within them although over 100 years of cultivation have masked the original structure of the site.

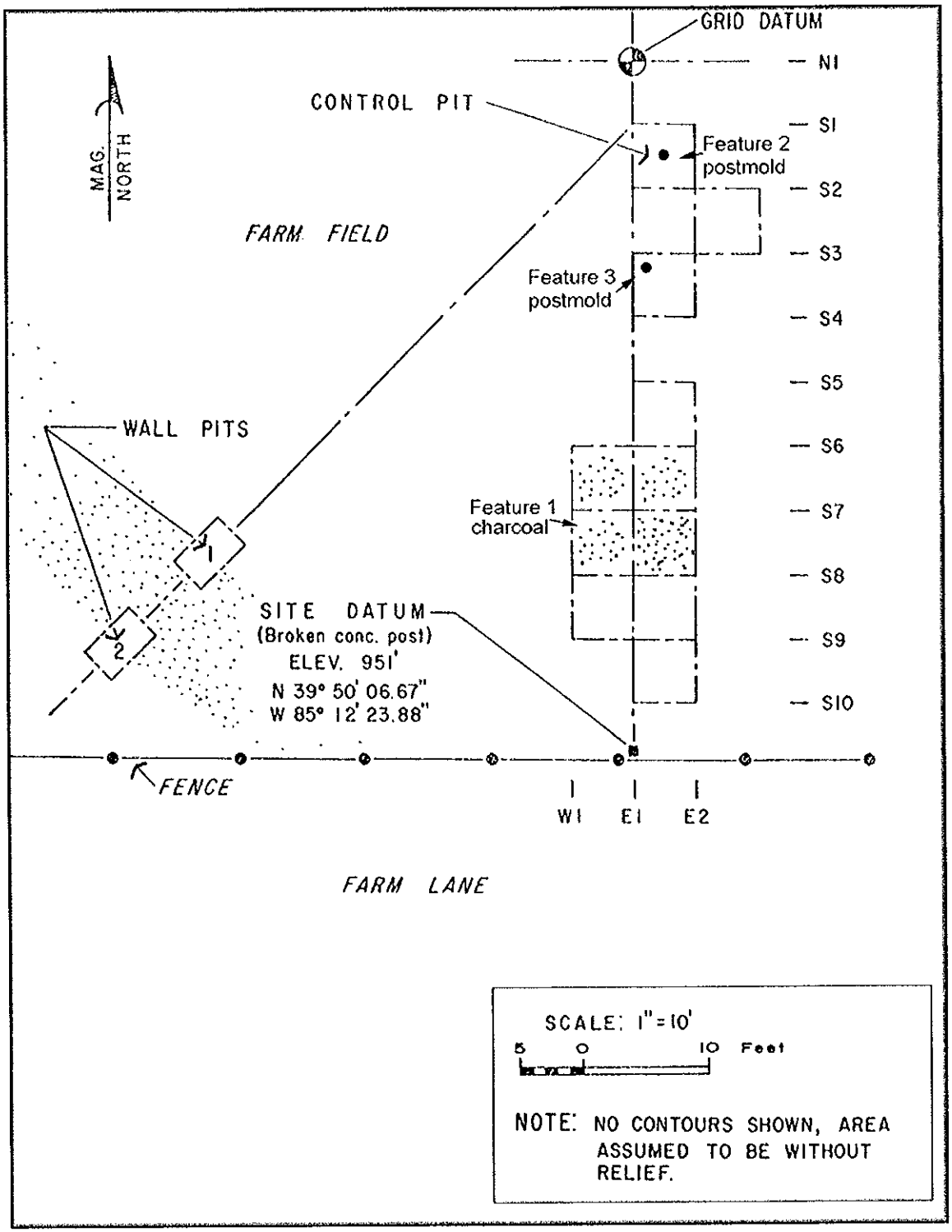

Figure 96. Plan map of Earthwork 8 excavations (after Reseigh 1984).

The Bertsch site contains important information for understanding the Early/Middle Woodland prehistory of east central Indiana. Previous excavations at the site have demonstrated that it contains unique data although the site is suffering from continuing degradation from cultivation. The site is definitely worthy of preservation and ongoing research. Testing of the earthworks should be conducted to document the actual location and nature of deposits. We recommend that the site be nominated to the National and State Registers of Historic Places.

Wolford Mound

Background

While reviewing the curated materials from the Bertsch site, we discovered photographs, notes and artifacts that were labeled "Bertsch Mound." As we sifted through the collections, we came to realize that the "Bertsch Mound" was actually another site that had been excavated, but was not included in the Bertsch site report (Heilman 1976). Stepleton (1969:28) reported that across the river and to the west of the Bertsch complex stood a conical mound that was 6 or 7' high at one time. The mound was excavated in 1969 (Stepleton 1969:28) but a report was apparently never prepared. Although not originally a part of this project, since the materials were on loan from Earlham, we decided to include information about the "Bertsch Mound" excavation.

The mound in question was designated the Wolford Mound by Setzler (1930a:446-447). At the time of his survey the mound was recently cleared of trees and under cultivation. He stated that it was 45' in diameter and 5'6" in height. Setzler (1930a:447) reported that the mound was [redacted]. Stepleton (1969) did not provide specific locational information for the mound nor did Heilman (1976:45). Heilman (1976:45) stated that the mound was about 4' high and 50 feet in diameter and designated the site 12-Wy-44. This was apparently the same mound reported as destroyed by Wissler (1921). Stepleton (1969:28) stated that the mound had been potholed.

Determining the location of the mound was difficult. Setzler (1930a: 447) provided three measurements, two from section lines and one from the river, but they did not agree with his map location when plotted. We reviewed the 1936 aerial photographs of the area, but the mound was not visible. We then reviewed the slides from the 1969 excavation, and by using landmarks in the background of those images, the USGS topographic map, the 1936 aerial photograph, and Setzler's map location, we arrived at a location for the site. According to our calculations, Wolford Mound was located in the [redacted] (Figure 97).

The reconstruction of the excavation of the Wolford Mound presented below is based on our understanding of the field notes and photographs of the excavation. Only one set of field notes is in the curated collection. These notes consist of one written feature description (Feature 1), sketch maps of the site grid and plan of feature distribution, several profile drawings without internal variation and sketch maps of a few of the features. There is only one date, September 8, associated with notes on the provenience of a copper bracelet. The photographic collection consisted of 77 slides. Using these materials, the following scenario is presented.

The mound was apparently excavated like Bertsch, Waterworks and Hayes Arboretum (Heilman 1976). A grid consisting of 5' wide units was laid out across the site. The excavation

Site Locations Confidential
Not For Public Disclosure

Figure 97. A portion of the USGS 7.5' Cambridge City, Indiana Quadrangle showing the location of the Wolford Mound.

proceeded from south to north along 5' wide trenches that were shoveled out across the east-west width of the mound. Features were numbered as encountered and they were excavated separately. There was no indication that excavated soil was screened and no screens were evident in the photos. Trench floors, walls and balks were troweled smooth to reveal features.

The excavation resulted in the documentation of 7 features (Figure 98). These were described as completely as possible in the following.

Feature 1 was an "area of burnt earth and charcoal, ash and ash rich dirt in an irregular deposit" (Field notes pp 1). The feature was found at the base of the plow zone. Depth was not recorded. The box labeled "Box 1" in the curated collection contained three loose paper tags. One of the tags was marked, "Bertsch mound, Feature 1, Sq 25W5 leaf molds & charcoal & burnt earth sample." Artifacts and samples within the box included 3 fire-cracked rocks, 2 unmodified rocks, 3 small pieces of soil, 1 fragment of a bifurcate point made from Attica chert, 2 chunks of burned clay, 1 dirt clod with "impressions", 3 dirt clods with leaf impressions, 2 chunks of wood charcoal and 4 vials containing wood charcoal. There were also two other paper tags in the box, one marked Feature 2 and the other marked Feature 4. There was no way to be sure what artifacts and samples were associated with which tags or, therefore, which feature.

Feature 2 was apparently a submound pit located near the center of the mound (Figure 98). A sketch in the field notes shows measurements of 1.4' NS and 1.3' EW. However, the photographs show a much larger pit with a person sitting in it during excavation. The field notes (pp 8) contain notations for this feature of "puddled clay, limonite, sand." A review of the photographs of this feature did not reveal that the notation was a stratigraphic representation. A paper tag from Box 1 of the curated collection had a notation that reads: "Bertsch Mound, from w/in Feature #2, pottery, leaf and seed impressions, charcoal and soil samples." As noted in the description for Feature 1, the materials in Box 1 were not directly associated with the labels. The box contained 1 dirt clod with impressions which may be part of Feature 2, as well as the charcoal samples noted above. In addition to the materials in Box 1, Box 4 contained other artifacts and samples from Feature 2. These included a small box labeled "puddled clay and limonite" and contained chunks of sediment that showed distinctive laminations. Box 4 also contained 2 vials of wood charcoal, 1 unmodified rock and 2 pottery sherds. All of these materials were apparently from Feature 2.

Feature 3 was an area of burnt earth and charcoal that extended beyond the west edge of the 35W15 line (Figure 98). The photographs show this feature as two irregular burned areas. The outer portions show more intensively red burned earth while the centers are dark. The two areas appear to be connected by mottled burned and dark soils. The feature was at the base of the plow zone and on the west edge of the mound. No samples or artifacts in the curated collection were labeled as from this feature.

Feature 4 was not mentioned in the field notes, but was shown on the sketch map of the features (Figure 98). Feature 4 appeared to be an area shown in the photographs as a light

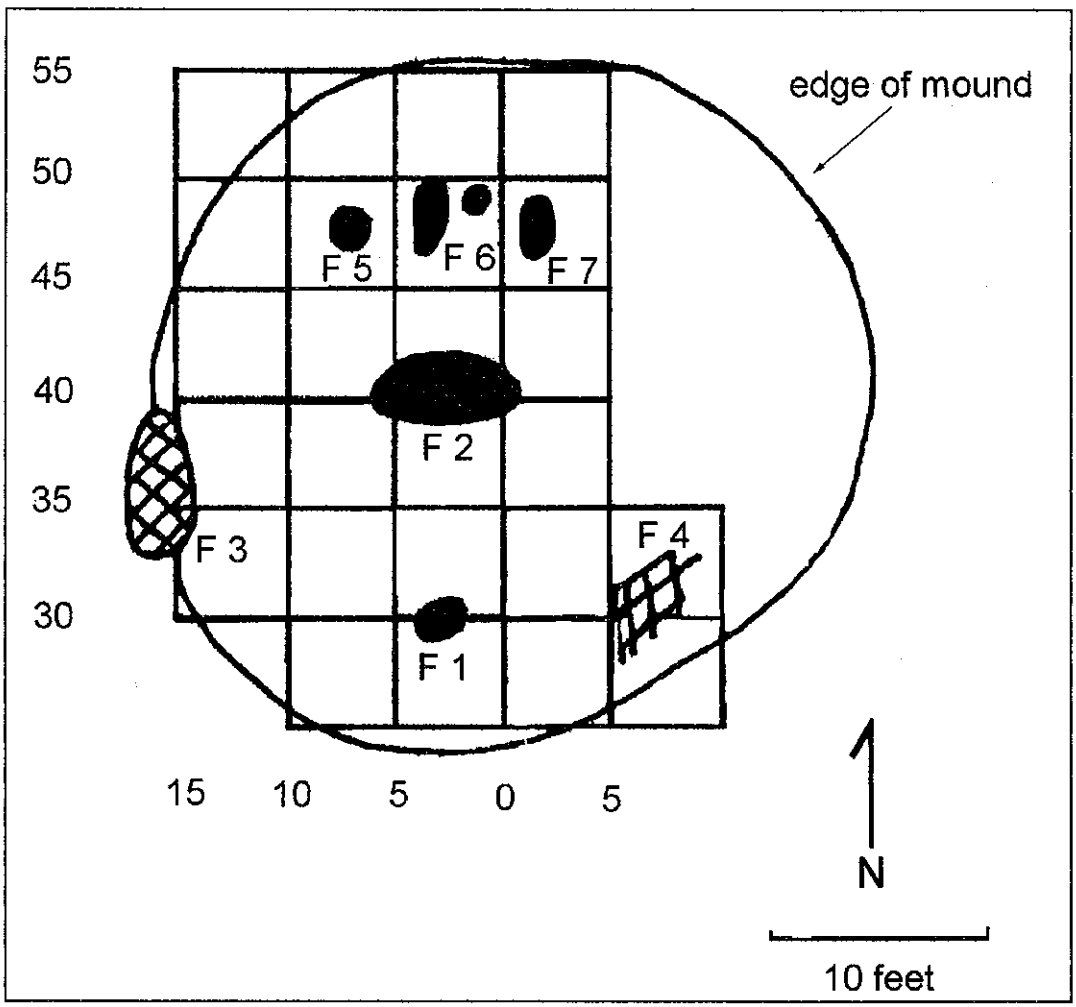

Figure 98. Plan view of Wolford Mound.

colored mottled area that reminded us of erosional laminations. Similar deposits were noted in Mound 1 at the New Castle site and appeared to represent a valley between two mound caps that had been partly filled by lighter colored soils washing down the sides of the mounded caps (McCord 1999: 49). Box 1 contained an unattached label that was marked, "Bertsch Mound, Feature 4." Some of the artifacts and/or samples listed in the discussion of Feature 1 may be from Feature 4.

Feature 5, 6 & 7 were four ash deposits located along the north wall of the excavated portions of the mound (Figure 98). Photographs of the features showed them to be composed primarily of irregular deposits of ash with some charcoal present (Figure 99). The ash appeared similar to the ash documented in other mounds and enclosures in the region (McCord 1999:64) Box 2 in the curated collection contained materials identified as Feature 5. The paper label in the box noted that Feature 5 was in 45W5 and was the charcoal log under which the copper bracelet was found. Within the box were 6 chunks of an unidentified burned organic material, 1 vial of wood charcoal, 2 unmodified rocks and a vial of glacial gravel. However, there was some confusion in the site documentation concerning whether Feature 5 or Feature 6 was the location of the copper bracelet. A photograph from the site shows that one of the Feature 5/6/7 deposits was made up of more charcoal than the others. This seemed to be the small deposit in the same unit as the feature marked "6" on the plan map (Figure 98). Ten grams of charcoal from the vial identified as being from Feature 5 were submitted to Beta Analytic for a radiocarbon date. The results of the radiocarbon dating have been presented in a later section.

In addition to the artifacts and samples that could be associated with features, there was an additional container marked "Bertsch (?) Mound Site." Inside this container were: 2 human juvenile vertebra (1 cervical, 1 thoracic), 2 rim and 10 body sherds of grit tempered, fabric impressed ceramics that were most similar to Jack's Reef horizon or Oliver Phase ceramics, and 2 shell tempered rim sherds. Since no human remains were noted in the field notes and the ceramics appeared related to ceramic traditions that were several hundred years later than the mound, it seemed probable that these materials were not associated with the Wolford Mound.

One additional unprovenienced bag in the curated collection contained large chunks of charcoal, 1 vial of flat, rusted metal and a smaller bag of charcoal had three paper labels inside. The labels were marked Feature 1 (2 tags) and Feature 4 30W10. The writing, date and unit designation were consistent with the Wolford excavation and it appeared that these materials belonged with that site.

Photographs of the profiles exposed within the mound showed little internal variation. The slope of the mound was evident but an original ground surface was not visible. Some areas of mottling and mixed soils were observed, but could not be defined as episodes of mound building.

Figure 99. Photograph of ash deposits looking to the northwest. Feature 5 is at the top, Feature 6 is in the middle and Feature 7 is at the bottom of this photograph.

Evaluation

Assessment of the excavation of the Wolford Mound was difficult. The information we had suggested that the site was excavated with methods consistent with the other Wayne County sites (Heilman 1976). Why this site was not written up is not known. In addition, the lack of a precise location for the site was a problem that should be rectified. We hope that additional field notes were curated and just were not available. The only inconsistence we detected was that the field notes identified Feature 6 as overlying the copper bracelet while the label associated with Box 2 in the curated collection identified Feature 5 as the one associated with the copper bracelet. One of the ash deposits identified as Feature 6 appears the correct location for the copper bracelet.

Artifacts

Few *in situ* artifacts were found in the mound. A point was found in unit 25W5, a copper bracelet was found below Feature 6, and 2 pottery sherds were recovered from Feature 2. The curated collection contained additional artifacts that could not be directly associated with either features or the site. Box 5 contained several chipped stone artifacts that were apparently a surface collection from the site. The artifacts found within the mound are described below. The surface collection is documented in Appendix G.

Chipped Stone

Only one chipped stone artifact was in the curated collection from Wolford Mound. This point is described below.

Points

Unclassified Large Side Notched Point

One large side notched point made from Wyandotte chert was found in the 25W5 unit (Figure 100). No specific provenience was associated with the point and it is assumed it was recovered from mound fill. The point was 5.4 cm long, 3.5 cm wide and 0.7 cm thick. The flake scars on the blade are angled toward the base and the base has been unifacially thinned. The base was also heavily ground. These attributes are consistent with Early Archaic points. The morphological attributes of the point did not match well with defined types and the point was apparently an incidental inclusion in the mound fill.

Copper Bracelet

A copper bracelet was found "below central charcoal feature in trench 45" (Field notes, pp. 11) (Figure 101). The specific provenience was listed as 1.0' south of 50' profile at a point 1.0 E of 50 W 5 and 1.6' below stake 50W5. The bracelet was shown in a couple of the slides and

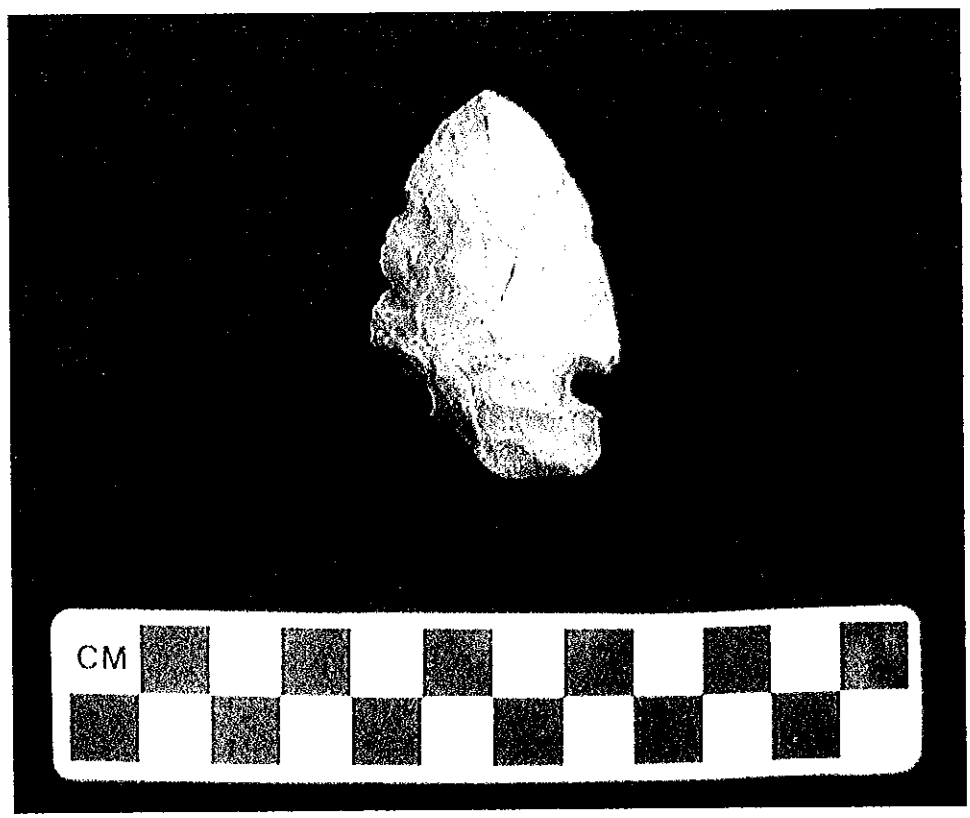

Figure 100. Unclassified Side Notched point.

Figure 101. Copper bracelet.

was apparently encountered when the feature overlying it was removed. The bracelet was corroded and some losses of copper had occurred. The copper was round in cross section and the bracelet measures about 6.5 cm in diameter. Copper bracelets were also found at other regional mound sites including Fudge Mound (Setzler 1931a) and the White site (Swartz 1973) and were recorded in both Adena and Hopewell Complex sites.

Ceramics

Two sherds appeared definitely associated with Feature 2. An additional 14 sherds in the curated collection were not clearly associated with the mound or the site. All of the ceramics were described below.

The 2 sherds from Feature 2 were both body sherds that ranged between 4.2-5.6 mm thick. The surface was eroded on both. They were tempered with granitic grit that ranged between 1.0-2.1 mm in size. The paste was somewhat sandy and not well mixed. The sherds were soft and rather poorly fired. The sherds were consistent with ceramics from other mound and earthwork sites in the region (Vickery 1970, Swartz 1973 & 1976, Heilman 1976, Kolbe 1992a, McCord 1994, Johnson 1995).

The remaining 14 sherds were not provided with specific provenience and were labeled as questionable for Wolford Mound. Two rims in this collection had a small collar and an eroded surface that appeared plain. The sherds were shell tempered. The temper was predominantly leached out. The paste was well mixed, fine and somewhat sandy. The sherds were 6.3 mm thick at the collar and 5.3 mm thick below the collar. These sherds may have derived from a Fort Ancient component.

The other 12 sherds were tempered with granitic grit that ranged between 1.0-2.2 mm in size. The paste was somewhat sandy, not compact and contained a heavy density of temper. The body sherds (10) ranged between 4.8-5.1 mm thick and the surface was fabric impressed. Two rim sherds in this collection had cord impressions across the lip. The rims were 8.7 mm thick at the lip. The sherds in this group appeared to be related to either a Jack's Reef Horizon or an Oliver Phase ceramic tradition.

Radiocarbon Date

Approximately 10 g of wood charcoal from a sample marked as Feature 5, the charcoal log under which the copper bracelet was found, was submitted to Beta Analytic for a radiocarbon date. Given the confusion over whether Feature 5 or Feature 6 was the one under which the copper bracelet was found, it can only be stated with certainty that the carbon sample was associated with the ash deposits on the north end of the excavated portion of the mound and the copper bracelet. A standard dating process with extended counting was requested and all analytical steps went normally (Hood 2000c). The result was reported as Beta-141812, dating to 2010 +/-50 BP. This date represents an uncalibrated age of 60 BC or a calibrated age range of

155 BC to AD 85. The date is consistent with other radiocarbon dates from mounds and enclosures in the region (McCord 1999:97-99).

Structure

Given the data that was available, the structure of the Wolford mound was apparently a single primary mound erected over several submound features. However, if Feature 4 was an erosional deposit reflecting erosion of a mound cap, then the possibility existed that Wolford Mound was more complex than we were able to determine from the data. There were no human remains in the curated collection or reported in the field notes that could be directly associated with any of the features. Curiously absent from Wolford were postholes. Artifacts were very scarce and only a copper bracelet and two small sherds could be definitely associated with an Adena or Hopewell Complex component.

Conclusions and Recommendations

The review of data from the Wolford Mound revealed that the majority of the site was excavated in 1969. Unexcavated remnants of the mound were apparently left on the east and north edges. The majority of the mound was destroyed during excavation. Thus, the significance of the site in terms of the National Register of Historic Places is tenuous.

We recommend that a concerted effort be made to locate additional notes from the 1969 excavation of the mound. In addition, the remnants of the mound should be tested to determine whether additional information on the site remains to be recovered. Of primary importance, however, is to establish the precise location of the site and a field inspection is recommended.

CONCLUSIONS AND RECOMMENDATIONS

The goal of this project was to conduct a reanalysis of excavated materials from eight earthwork sites in eastern Indiana. Each of the sites had been previously documented, but the information lacked the detail and integration necessary for inclusion in regional research of Early and Middle Woodland ceremonial lifeways. This project presented the data in a consistent format with a review of the excavations, analyses of the artifacts, and examinations of site structure. The project also provided new information on chronology by obtaining five new radiocarbon dates. Since the data from Parkinson, Mound Camp, Fudge, Hayes Arboretum, Waterworks, Bertsch and Wolford was renovated, it could be incorporated into ongoing investigations of Adena and Hopewell studies. A summary of the information obtained and a brief review of some lines of inquiry that could be expanded were presented below.

Evaluation

The evaluation of the eight sites was a difficult and oftentimes frustrating process. The documentation from each of the sites was variable. Some of the sites were better documented than others, but all lacked details. For example, there were no field notes for Mound Camp and there were no excavation photographs for Law Mound. The project did not find any detailed, scaled profile drawings or feature plans in the site collections Perhaps, the hardest part of evaluating the sites was dealing with conflicting information such as that encountered with Fudge. There were several instances where we were just stymied.

Even with the obstacles, the project resulted in the fullest documentation of the sites possible at this time. The background information was throughly reviewed. The artifacts were all identified, measured and photographed as appropriate. Interpretations of the site structure were also reviewed. This report contains a complete and current evaluation of the available data for the eight sites.

Artifacts

The majority of the artifacts documented by this project were not necessarily associated with the construction or use of these sites. Most of the artifacts were not temporally diagnostic and were recovered in the mound fill. The majority of the artifacts in mound fill were probably incidental, occurring in the soil used in the mound construction.

The most common artifact class encountered in the collections was chipped stone. The majority of the diagnostic lithics were Archaic in age and were inadvertent additions in the mound fill. Most of the lithic debitage could not be related to any specific time period, but the high percentage of Burlington chert use at Enclosure 8 at the Bertsch site suggested a Middle Woodland use.

Three types of chipped stone artifacts were related to the Adena or Hopewell utilization of

the sites: Robbins points, Snyders points and bladelets. Robbins points were documented at Mound Camp, Hayes Arborerum and Waterworks. Snyders points occurred at Fudge and Hayes Arboretum. Only one bladelet was documented in a mound, Waterworks, but a bladelet was recovered near Parkinson Mound.

Most of the ground stone artifacts documented could be related to the Adena and Hopewell Complexes. These included expanded center bar gorgets from Law and Fudge and bow tie gorgets from Fudge and Waterworks. The Fudge and Law collections contained rectangular sandstone tablets. Trapezoidal pendants and a tubular pipe were recovered from Mound Camp.

All of the sites, except Parkinson Mound, contained ceramics. A few Late Woodland sherds were documented at the sites, but most of the ceramics were Early to Middle Woodland in age. These ceramics were so similar in paste, temper and rim form that they could all be considered one type. They were also similar to the ceramic collections from the Anderson (Vickery 1970, Kolbe 1992a) and New Castle (Swartz 1976, Johnson 1995, McCord 1999) complexes, the White Mound (Swartz 1973) and Windsor Mound (McCord 1994). The ceramics appear to be a regional variation similar to Adena Plain (Haag 1940) and McGraw Plain (Prufer 1965 and 1968).

There is a large enough ceramic assemblage from the regional mounds and enclosures that a ceramic type could be defined. The ceramics have slightly sandy pastes that are variably mixed and tempered with crushed granitic rock. The rim form is straight to slightly everted. The rim is typically thickened at the top and has either a rounded or beveled lip. The ceramics do display some intra-site variability in terms of surface treatment and decoration. The New Castle Incised type (Swartz 1976) has been recognized at the Anderson and New Castle sites (Swartz 1976). The Mound Camp ceramics are also incised, but do not really match the type description of New Castle Incised. Some of the rims recovered from Windsor Mound have small notches incised across the lip (McCord 1994). One vessel from the Law Mound had a brushed surface treatment. New Castle Plain would seem to be a logical type name for the plain sherds and subtypes, such as New Castle Incised, could be utilized to describe the variation.

All the copper artifacts recovered could be associated with the Adena or Hopewell Complex. Copper bracelets were recovered from Fudge and Wolford. A copper bracelet was also reported as coming from Mound Camp, but it was not recovered by Setzler (1930a). Copper beads were recovered from the Waterworks Mound.

The last of the diagnostic Early and Middle Woodland artifacts documented were the mica cresents found in the Law Mound. Cut mica crescents were associated with the Adena Complex.

Radiocarbon Dates

The five radiocarbon dates obtained during this project fit very well into the regional chronology of the Adena and Hopewell Complexes (Table 12) (Figure 102). The Adena complex

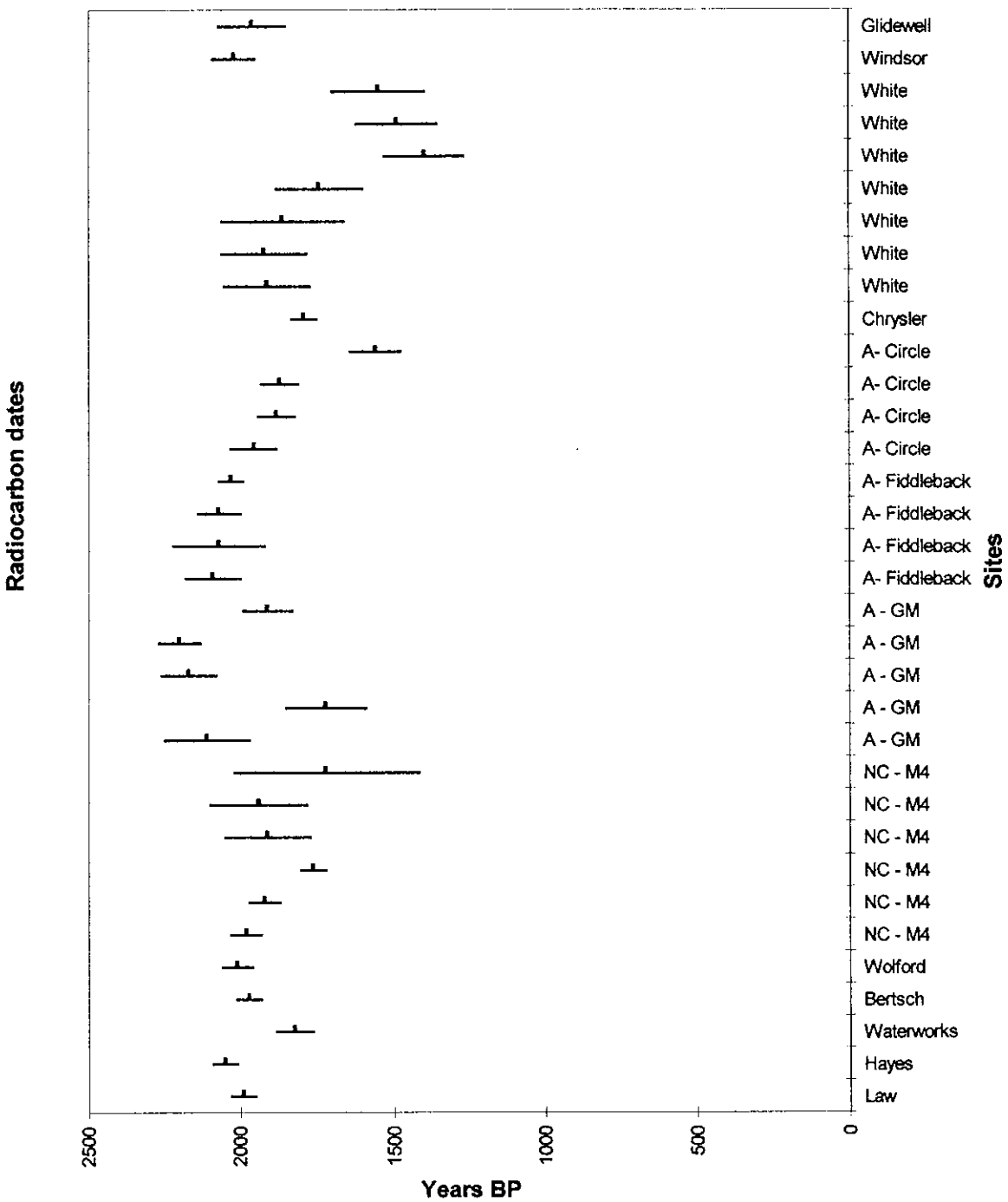

Figure 102. Radiocarbon Dates from Eastern Indiana Earthworks.

has been dated between 500 BC and AD 1 (Seeman 1986:566), although some radiocarbon dates associated with Adena have been reported in the 6th century BC (Maslowski, Niquette and Wingfield 1995). The Hopewell complex is reported to occur between AD 1 and 350 (Seeman 1979:258) in the Scioto area, but some dates extend past AD 400 (Carr and Haas 1996:31). The radiocarbon dates from eastern Indiana supported the Adena and Hopewell affiliation for them.

Table 12
Radiocarbon Dates from Eastern Indiana Earthworks

Site	Sample Location	Conventional Age	Calibrated Age* (intercept date)	Sample No.	Reference
Law Mound	1N1W - pottery	1990 +/- 40 BP (40 BC)	60 BC to AD 85 (AD 20)	Beta-140072	
Hayes Arboretum	square 15W3	2050 +/- 40 BP (100 BC)	170 BC to AD 45 (50 BC)	Beta-141810	
Waterworks	burial pit in 25W1	1820 +/- 60 BP (AD 130)	AD 65 to AD 365 (AD 225)	Beta-141811	
Bertsch	posts in 180W20	1970 +/- 40 BP (20 BC)	50 BC to AD 115 (AD 45)	Beta-141813	
Wolford	feature 5, 45W5	2010 +/- 50 BP (60 BC)	155 BC to AD 85 (5 BC)	Beta-141812	
New Castle	east side - ground surface	1980 +/- 50 BP (30 BC)	80 BC to AD 120 (AD 30)	Beta-133450	ARMS files
	west side- burial area	1920 +/- 50 BP (AD 40)	5 BC to AD 230 (AD 85)	Beta-133449	ARMS files
	west side - charcoal	1760 +/-40 BP (AD 190)	AD 155 to 390 (AD 225)	Beta-133451	ARMS files
	Unit 6-1	860 +/- 50 BP (AD 1090)	AD 1155 to 1235 (AD 1195)	Beta-127455	McCord 1999
	Unit 7-1	4070 +/- 60 BP (2120 BC)	2845 to 2820 BC 2670 to 2555 BC 2535 to 2490 BC (2585 BC)	Beta-127456	McCord 1999
	Unit 9-2	modern	modern	Beta-127457	McCord 1999
	east side	1910 +/- 140 BP (AD 40)	41 BC to AD 253 (AD 88, 98, 115) AD 303 to 314	M-1851	Swartz 1976
	west side, bottom	1940 +/- 160 BP (AD 10)	102 BC to AD 249 (AD 76)	M-1852	Swartz 1976

Table 12 (cont.)
Radiocarbon Dates from Eastern Indiana Earthworks

Site	Sample Location	Conventional Age	Calibrated Age* (intercept date)	Sample No.	Reference
New Castle	west side, top	1720 +/- 300 BP (AD 230)	2 BC to AD 647 (AD 341)	M-2045	Swartz 1976
Anderson Complex	Great Mound post 3	2110 +/- 140 BP (60 BC)	365 to 265 BC 265 BC to AD 60 (114 BC)	M-2429	Vickery 1970
	Great Mound post 2	1720 +/- 130 BP (AD 230)	AD 146 to 446 (AD 341)	M-2428	Vickery 1970
	Great Mound embankment	2170 +/- 90 BP (160 BC)	369 to 58 BC (193 BC)	Beta-22129	Cochran 1988
	Fiddleback embankment	2090 +/- 90 BP (140 BC)	196 BC to AD 12 (90, 67 BC)	Beta-22130	Cochran 1988
	Fiddleback ditch	2070 +/- 150 BP (120 BC)	353 to 303 BC 208 BC to AD 84 (50 BC)	Beta-27169	Kolbe 1992a
	Fiddleback mound - W	2070 +/- 70 BP (120 BC)	174 BC to AD 12 (50 BC)	Beta-27170	Kolbe 1992a
	Fiddleback mound - E	2030 +/- 40 BP (80 BC)	155 BC to AD 60 (40 BC)	Beta-133452	ARMS files
	Great Mound post 2	2200 +/- 70 BP (250 BC)	373 to 164 BC (337, 324, 202 BC)	Beta-45955	McCord and Cochran 1996
	Great Mound log tomb	1910 +/- 80 BP (AD 40)	AD 19 to 223 (AD 88, 98, 115)	Beta-52612	McCord and Cochran 1996
	Circle Mound embankment	1955 +/- 75 BP (5 BC)	32 to 16 BC 9 BC to AD 130 (AD 69)	I-11, 848	Buehrig and Hicks 1982
	Circle Mound under s. mound	1880 +/- 60 BP (AD 70)	AD 75 to 231 (AD 130)	Beta-2416	Buehrig and Hicks 1982
	Circle Mound under s. mound	1870 +/- 60 BP (AD 80)	AD 134 to 261 (AD 235)	Beta-2417	Buehrig and Hicks 1982
	Circle Mound embankment	1560 +/- 80 BP (AD 390)	AD 419 to 606 (AD 538)	Beta-24115	Buehrig and Hicks 1982
Chrysler Enclosure	bottom of ditch	1790 +/- 40 BP (AD 160)	AD 220 to 265 (AD 245) AD 290 to 320	Beta-110202	McCord 1998

Table 12 (cont.)
Radiocarbon Dates from Eastern Indiana Earthworks

Site	Sample Location	Conventional Age	Calibrated Age* (intercept date)	Sample No.	Reference
White	fire area	1910 +/- 140 BP (AD 40)	41 BC to AD 253 (AD 88, 98, 115) AD 303 to 314	M-2017	Swartz 1973
	fire area	1920 +/- 140 BP (AD 30)	45 BC to AD 249 (AD 84)	M-2018	Swartz 1973
	primary mound 2	1860 +/- 200 BP (AD 90)	45 BC to AD 412 (AD 141)	M-2015	Swartz 1973
	primary mound 1	1740 +/- 140 BP (AD 210)	AD 129 to 439 (AD 264, 281, 329)	M-2016	Swartz 1973
	log tomb 1	1400 +/- 130 BP (AD 550)	AD 547 to 728 (AD 654) AD 732 to 772	M-2021	Swartz 1973
	timber	1490 +/- 130 BP (AD 460)	AD 427 to 665 (AD 600)	M-2019	Swartz 1973
	timber	1550 +/- 150 BP (AD 400)	AD 381 to 654 (AD 541)	M-2020	Swartz 1973
Windsor	near bottom	2020 +/- 70 BP (70 BC)	91 to 85 BC 68 BC to AD 72 (2 BC)	Beta-25224	Cochran 1992
Glidewell	near bottom	1960 +/- 110 BP (10 BC)	50 BC to AD 147 (AD 66) AD 170 to 194	Beta-50830	Kolbe 1992b

* Calibrated by CALIB v. 3.0.3, Stuvier and Pearson 1993

The five dates added significant information on the chronological placement of the sites. The dates from Law, Hayes Arboretum, and Wolford all fall within the time frame of Adena. The samples submitted from these 3 sites were obtained near the mound floor. The date for Bertsch was from a combined carbon sample from 2 posts on the central platform of Earthwork 1 and bridges the time span of Adena and Hopewell. The date from Waterworks fell within the Hopewell time frame. The sample was from the burial pit.

The information contained in Table 12 provides a clustered range of dates for Adena and Hopewell earthwork construction in the region. Discarding the dates that fall outside of the accepted range of Adena and Hopewell (ca. 500 BC to AD 400), the radiocarbon dates cluster

roughly between 200 BC and AD 200. The earliest and youngest dates are associated with the earthwork complexes of Anderson and New Castle, not at isolated mounds or circular enclosures as one might expect.

The date obtained from Law Mound was very interesting. The date was obtained from an organic residue that covered some of the pottery sherds. It represents the first clearly associated date with ceramics from an earthwork. The uncalibrated range places the Law ceramics between 80 BC and 0. Radiocarbon dates that have been obtained from deposits that contained New Castle Incised ceramics were AD 10 +/- 160 from Mound 4 at New Castle (Swartz 1976) and 120 BC +/- 70 from the Fiddleback at Anderson (Kolbe 1992a). When these dates from Law, New Castle and Anderson are taken together the dates overlap between 150 BC and 0. The plain and incised ceramics recovered from the earthworks in eastern Indiana would, therefore, appear to date between 150 BC and 0.

The radiocarbon dates were very helpful in dating the ceremonial landscape of eastern Indiana. The dates were also useful in defining the temporal placement of the plain ceramics. Of the excavated mounds in the region, only Parkinson, Fudge and Mound Camp have not been radiocarbon dated. No organic materials were recovered from Parkinson, but organic materials were in the curated collections from both Fudge and Mound Camp.

Structure

Constructional information from the eight sites evaluated lacked the details to fully investigate the building of the earthworks. In general, the earthworks were all probably more complex than originally documented. But, the horizontal and vertical provenience of features and artifacts were not reported with the clarity necessary to distinguish the exact relationship of activity areas, primary mounds, and capping episodes. Only general comments on the structure of sites were appropriate.

The Parkinson Mound was extensively disturbed. There were no *in situ* features documented. The profiles did not document any constructional episodes. Therefore, the vertical and horizontal construction of the mound was indeterminate.

At Mound Camp, the burned clay floor, posts and secondary burials all suggested horizontal activities occurring at the mound floor. The exact association of these activities was unknown. There was also evidence for some vertical constructional episodes, but this was incomplete since only a remnant of the mound was extant at the time of excavation.

Both horizontal and vertical activities were documented at Fudge. A submound burial pit surrounded by a vertical post structure was encountered. There was no supporting evidence that this tomb structure was burned. Around the pit a double line of vertical posts were documented at or near the original ground surface. Apparently within this structure, at or near the original ground surface another burial wearing copper bracelets was encountered. In another area, on or

near the original ground surface was an artifact cache. The central portion of the mound containing all of these features was covered with a layer of red ochre and bark. The exact stratigraphic relationship of the features was unclear, but vertically and horizontally arranged activities occurred.

Constructional information was severely deficient at Law Mound. There appeared to be several horizontally arranged activity areas many of which may have been submound features. The data did not allow for any delineation of vertical construction. The features documented certainly did not support the interpretation of a house that had been burned and mounded over.

The Hayes Arboretum Mound was extensively disturbed with only the base of the mound intact. The aboriginal origin of the crematorium could not be confirmed, no submound features were identified, and the posts all apparently occurred at the base of the mound so no vertical construction episodes were documented. While vertically and horizontally segregated activities may have occurred, they could not be verified.

Horizontal and vertical activities were evident at the Waterworks Mound. There were features of burned earth and charcoal horizontally distributed on either the original ground surface on across the top of a primary mound. Primary mound construction, an intrusive burial and a secondary capping was demonstrated.

The Bertsch site was a series of enclosures with no evidence of mound construction and was, therefore, different from the mound sites covered by this project. The majority of the excavations focussed on the central platforms of the enclosures where vertical construction would not be expected. The excavations at Earthwork 1 documented several subsurface features across the platform. A midden deposit may have also occurred across the platform. The features did not support the interpretation of a charnel house existing on the platform. The excavations at Earthwork 3 were inconclusive and recovered no aboriginal material. The excavations at Earthwork 8 documented the existence of a circular enclosure. The platform appeared to be a location for chipped stone tool production and/or resharpening, but no aboriginal features were confirmed.

No constructional sequences were documented for the Wolford Mound. Features were horizontally separated across the mound, but there was no stratigraphic placement for them. It would appear the activities were horizontally arranged. It was unclear if any vertical activities occurred.

Each of the sites covered by this project had a unique arrangement of constructional features. When it could be determined, most of the mounds had vertical construction episodes that would be consistent with accretional mound building. Fudge, Law, Waterworks, and Wolford also showed indications of horizontally arranged activities. It has been proposed that Adena Complex sites were vertically organized and Hopewell Complex sites were horizontally organized (Prufer 1964:72-73). Clay (1986:581) also suggested that Adena and Hopewell

mounds would have been organized differently. Adena organization was a reflection of "differing types of ritual behavior sequential in time" and Hopewell organization was a reflection of "concurrent and differing types or ritualized behavior within the earthwork setting" (Clay 1986:581). While Adena mounds may have been accretional and constructed over a long period of time, the mounds in eastern Indiana with Adena Complex artifacts do show some horizontal organization at least on the floor of the mound.

Ceremonial Landscape

The project confirmed the inclusion of Mound Camp, Fudge, Law, Hayes Arboretum, Waterworks, Bertsch and Wolford in the Adena and Hopewell ceremonial landscape of eastern Indiana. The incorporation of the Parkinson Mound could not be demonstrated by this project. Some of the data gathered by the project made a further examination of the dynamics of the ceremonial landscape possible.

The relationship between the Adena and Hopewell Complexes remains ambiguous and multiple interpretations have been posited as explanations (eg. Dragoo 1963, Swartz 1971, Brose and Greber 1979, Pacheco 1996). Regional overviews concerning the issue present Adena as an Early Woodland complex and Hopewell as a Middle Woodland culture that was distinct but originated from Adena (eg. Fagan 1991). The temporal ranges presented for Adena and Hopewell support this notation. But the endurance of Adena Complex artifacts beyond AD 1 challenges this position. In the Scioto Valley some continuity and overlap in Adena and Hopewell artifact types and use of ceremonial space has been recognized, but they were still reported to be two separate cultures (Greber 1991). For areas peripheral to the core Scioto Valley in Ohio, it has been recognized that Adena may have continued and been contemporaneous with peoples that developed the Hopewell Complex (Carr and Haas 1996:28). This idea still maintains a separation of Adena and Hopewell. In 1970, Fitting suggested an idea for studying Adena and Hopewell in eastern Indiana: "Why couldn't you take everything within this time period in this one area and assume it is a single system to begin with" (Swartz 1971:132-133). Taking Fitting's advice, it has been proposed that the "archaeological concepts of Adena and Hopewell converge into one ceremonial expression that are inextricably linked, both chronologically and culturally" (Cochran 1996:340). We maintain that Adena complex artifacts and Hopewell complex artifacts represent somewhat different expressions of the same ceremonial system. The differences between the material culture have long eclipsed the similarities. Given the range of dates for the Adena and Hopewell Complexes, should not some change in the material culture be expected over an 800 to 900 year period? Given the geographic distribution of Adena and Hopewell sites, should not some regional variation be expected? Should not some variation of material goods be expected from different types of sites, ie. burial mounds or geometric earthworks?

Data gathered by this project, has further identified that there was no separate boundary between the Adena and Hopewell Complexes in eastern Indiana. Within the collections reviewed, several sites contained both Adena Complex and Hopewell Complex artifacts. Adena artifacts represented by a Robbins point and two bow tie gorgets and a Hopewellian bladelet were

recovered from the Waterworks Mound. At the Hayes Arboretum, an Adena Robbins point was within 6" of a Hopewell Snyders point. In the same artifact cache at Fudge were an Adena sandstone tablet, an Adena biconcave gorget and two Hopewell Snyders points. The context of the artifacts from Hayes Arboretum and Fudge leaves little doubt that artifacts diagnostic of the Adena and Hopewell Complexes were coeval in this region. This information supports the continuity previously demonstrated at the earthwork complexes of Anderson Mounds and the New Castle site (Cochran 1996), but also incorporates isolated mounds into the model.

In a brief review of the Adena and Hopewell literature, the association of Adena and Hopewell artifacts occurred at several sites. At the Nowlin Mound in Dearborn County several Robbins points and Snyders points were recovered from the eastern tomb (Black 1931:341). Additionally, a plain sandstone tablet and a Snyders point were recovered from the same burial (Black 1931:268, 337). At the Hopewell type site, the Hopewell complex in Ross County, Ohio, Mound 17 contained a cache of artifacts containing an Adena plain sandstone tablet with several Hopewellian type artifacts including bear claws, chlorite artifacts, quartz artifacts, pyrite artifacts, cut mica fragments and several other artifacts (Shetrone 1926:48, 49, 196). At the original Adena Mound in Chillicothe Ohio, the famous human effigy pipe is depicted with very Hopewellian-looking ear spools (Mills 1902:147-149).

The project obtained important information for examining the Adena-Hopewell relationship in eastern Indiana. The data gathered by this project and information from other regional earthworks suggests that in eastern Indiana, Adena and Hopewell were essentially the same ceremonial/mortuary complex. The only difference in this ceremonial complex appears to be a difference in the expression of material objects. The ceremonial landscape in eastern Indiana could, therefore, be stated as a construction by one ceremonial complex that was differentially recognized in the archaeological record as the Adena and Hopewell Complexes.

Recommendations

All of the sites included in this project are regionally significant. In some way, they all contribute unique and important information on the ceremonial lifeways of the Early and Middle Woodland period, except perhaps Parkinson Mound. Unfortunately, the majority of the sites or major portions of the sites have been destroyed. Parkinson, Mound Camp, Hayes, Waterworks, and Wolford have been either extensively disturbed or almost completely excavated. While some test excavations should be conducted to confirm this, these sites do not appear to contain enough integrity to be nominated to the State or National Register of Historic Places. Portions of Law, Fudge and Bertsch are still believed to be extant. Survey and test excavations to document the remaining structures and to obtain additional information on site construction and chronology should be conducted. It is believed that Law, Fudge and Bertsch could be nominated to the State and National Registers.

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APPENDIX A

Chipped Stone Artifact Classifications

Appendix A
Chipped Stone Artifact Classification

Core. A core is a nucleus of stone exhibiting one or more negative flake scars (Crabtree 1972:54). Objects categorized as cores may range from a simple nucleus with only one negative flake scar to specialized forms with multiple flake removals. Striking platforms may be prepared or unprepared. Cores can be subdivided into more specific types (cf. Monet-White 1963:6-7; Callahan 1979:41; Wepler and Cochran 1983:38-40).

Biface. An artifact with negative flake scars covering both surfaces either partially or wholly is herein termed a biface (Crabtree 1972:38; Tixier 1974:4). As used here, a biface has no modification for hafting and bifaces are viewed as stages in the manufacture of points. In order to avoid confusion, the terms "blank", "blade", and "preform" are not normally applied to bifaces. Blank and preform are general terms that can be applied to a number of manufacturing sequences (e.g., gorget blank or preform, celt blank or preform, etc.). Use of the term blade is restricted to a specific of type flake with parallel sides and a length that is two times greater than width, or a particular portion of a point: the blade element. In the latter case, the term is only used when discussing points. Callahan (1979) separates bifaces into stages or levels of reduction beginning with the selection of the raw material (Stage 1) and continuing through successive levels of refinement (Stages 2, 3, 4, etc.).

Stage 2 Bifaces. A stage 2 biface is defined as "that stage during which the core blank or spall is given an edge . . . or, where the edge is too sharp and low-angled,. . it is thickened so that roughly centered, circumferential edge-angles of between 55 degrees to 75 degrees result. Flake scars may cover less than half of the width of the biface, producing a hexagonal, irregular to thick lenticular cross-section" (Callahan 1979:36).

Stage 3 Bifaces. Stage 3 bifaces represent "that stage (primary thinning) during which a lenticular cross-section is obtained by means of striking so as to drive flakes from the edge to or slightly beyond the center of the biface, contacting or slightly undercutting similar flake scars taken from the opposite margin. . . . Aligned, centered edge-angles of between 40 and 60 degrees should result so that secondary thinning may be effected subsequently" (Callahan 1979:37).

Stage 4 Bifaces. Stage 4 bifaces represent "that stage (secondary thinning) in which a flattened cross-section is obtained by means of striking flakes so that they considerably undercut prior flake scars from the opposite margin and so that the width/thickness ratio is made to fall between roughly 4.00 and 5.00 or more. Aligned, centered edge-angles of between 25 and 45 degrees and surfaces without significant humps, hinges, step-fractures, or median convexity. . ." (Callahan 1979:37).

Biface Fragment. Biface fragments consist of various portions of bifaces broken either during manufacture or through use.

Flake. A flake is "any piece of stone removed from a larger mass by the application of force - either intentional, accidentally, or by nature" (Crabtree 1972:64).

Unmodified Flakes. Artifacts in this class have one or more positive or negative flake attributes (Watson 1956:17; Oakley 1957:16). Flake margins show no evidence of use or retouch.

Notch Flakes. A notch flake is "the result of pressure flaking to remove notches along the basal and/or lateral margins of a biface in order to create a hafting element" (Austin 1986:96). They are defined as having "a peculiar half-cone shape" (Waldorf 1984:35) that makes them distinctive. "The most recognizable and distinctive characteristic of the flake is the presence of a recessed, U-shaped platform. While most flakes exhibit a relatively straight, continuous margin at the juncture of the striking platform and dorsal flake surface, the notching flake is typified by a deep, semi-circular scallop which is the result of prior notching" (Austin 1986:96).

Block Flakes. Block flakes are sharp-edged, irregularly shaped pieces of isotropic stone that lack a striking platform, a positive or negative bulb of percussion, compression rings, or any other attribute associated with conchoidal fracture. Block flakes may occur naturally through frost cracking or uncontrolled heating (Watson 1956:19-21: Oakley 1956:9-11). They can also be produced during chipped stone reduction where the raw material has been exposed to either of the above processes or when the material breaks along internal planes of weakness. In an archaeological assemblage, block flakes would occur in greater percentages where early stages of reduction occurred.

Edge Modified Flakes. Edge modified flakes are unspecialized flake tools distinguished by regular edge wear or retouch. The former is most often recognized as a continuous row of small flakes removed along one flake edge. Flake margins can be modified during cultivation of a site, by lake shore erosion, spontaneous retouch during lithic reduction, and a variety of other natural and mechanical processes. Retouched flakes can represent one resharpening of a dulled flake margin to conservation of a flake through extensive resharpening. objects in this class are usually not morphologically distinct, and the class encompasses a wide range of diversity in size, shape, and construction of the retouched edge or edges. It is not normally possible to distinguish between prehistoric utilization and edge damage resulting from other causes without microscopic examination of all flake margins. For this classification, all flakes with regular edge modification were sorted into this class.

Blades. A blade is a specialized flake that has more-or-less parallel sides and is at least twice as long as it is wide. Thickness varies little along the length of the blade. Blades also have straight, parallel, or converging ridges on the dorsal surface (Movius et al. 1968:4; Crabtree 1972:42)

Gravers. A flake, blade or other artifact that exhibits one or more small sharp points (graver spurs) intentionally retouched from one or more margins of the artifact is classified as a graver (Crabtree 1972:68: Nero 1957:300). The retouching that isolates the graver spur may be unifacial or bifacial.

Denticulate. Artifacts in this class are distinguished by a toothed or serrated edge created by the alternating removal of a series of flakes from the margin of a flake, biface or core (Crabtree 1972:58). Cores with unprepared platform edges and nonmarginal areas of applied force may exhibit "denticulate" edges but are not included in this class.

Endscraper. Endscrapers are a morphologically distinct unifacial tool form resulting from the concentration of retouch on one end of a flake or blade (Crabtree 1972:60; Movius et al. 1968:9).

Point. A point is "any bifacially flaked, bilaterally symmetrical, chipped stone artifact exhibiting a point of juncture on one (distal) end and some facility (notching, constriction, lateral grinding) for hafting on the opposite (proximal) end. Thus, *point* is a morphological defined class of chipped stone tool, and the term . . . does not convey any particular functional interpretation" (Ahler and McMillan 1976:165).

Point Fragments. Broken portions of points are sorted into this category. Hafting elements from broken points are, however, when distinctive, classified as points.

Perforator. "Bifacially chipped stone artifacts or artifact fragments with extremely narrow, parallel-sided blades and steep angled lateral edges are classified as perforators" (Ahler and McMillan 19766:179). Perforators are equivalent to artifacts frequently referred to as drills. Perforator is herewith preferred due to the more generalized suggestion of function as a piercing tool. Some artifacts in this class may represent exhausted cutting tools.

Bipolar Artifacts. This category includes those artifacts that are the result of bipolar flaking. Bipolar flaking involves resting a stone nucleus on an anvil and striking the nucleus with a hammerstone or billet (Flenniken 1982:32). The artifacts that result from bipolar flaking include bipolar cores (Hayden 1980:23), bipolar flakes (Kobuyashi 1975), and pieces esquillees (Hayden 1980:2-3). Bipolar cores exhibit opposing striking platforms of several types (Binford and Quimby 1964) and prominent negative flake scars. Bipolar flakes consist of the flakes detached during bipolar flaking. *Pieces esquilles* are similar to bipolar cores except that they exhibit opposing ridge striking platforms and lack prominent negative flake scars; pieces esquillee tend to be rectangular while bipolar cores may exhibit any number of forms.

There is confusion in the archaeological literature in the use of the terms "bipolar core" and "*pieces esquillee*". Some investigators use them interchangeably while others designate all bipolar nuclei as *pieces esquillee* (Hayden 1980). For the purposes of this classification, all bipolar artifacts are grouped under the single heading "bipolar artifact".

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APPENDIX B

Recording Forms

Site _____

Catalog number _____ Location_____

Number of sherds _____

Form - Rim Neck Body Base

Thickness at max. point (mm) - _____ Thickness at lip (mm)- _____

Temper - granitic limestone sand grog shell

Temper size (mm) - _____

Paste -
Sandy? Yes No
Uniform or Friable?
Describe - _____
_____
_____

Surface treatment - Cordmarked Plain Fabric marked Exfoliated or eroded

Rim shape- Straight Everted Inverted Rim strip Collared

Rim diameter (mm) -_____

Lip shape - Rounded Flattened Beveled (interior or exterior) Rolled Notched

Illustration- identify location, describe and illustrate any **decoration**. Also illustrate plan/profile of rims.

Comments

Site _____

Catalog number _____ Location_____

Identification _____

Raw material _____

Number _____

Weight (g) _____

For tools:
Illustration - identify any areas of grinding or cortex.

Measurements (mm)- use appropriate categories

Max. Length - _____ Max. Width - _____

Max. Thickness - _____ Max. Thickness at Base - _____

Base Width - _____

Tang Width - _____ Tang Length - _____

Notch Depth - _____ Notch Width - _____

Comments

Site _____

Catalog number _____ Location _____

Identification _____

Number _____

Weight (g) _____

Measurements (mm) -

Width - _____

Length - _____

Thickness - _____

Other -

Method of manufacture -

Illustration

Comments

APPENDIX C

Artifacts from Parkinson Mound

Appendix C
Materials from the Parkinson Mound Excavation

Catalog No.	Unit	Level	No.	Identification	Raw Material
121F-1	S1E1	0-6"	2	UNMODIFIED FLAKES	HT FALL CREEK
121F-1	S1E1	0-6"	1	UNMODIFIED FLAKE	UPPER MERCER
121F-1	S1E1	0-6"	1	UNMODIFIED FLAKE	HD WYANDOTTE
121F-2	S1E1	0-6"	1	UNMODIFIED FLAKE	ATTICA
121F-3	S3E1	6-12"	1	UNMODIFIED FLAKE	LAUREL
121F-4			0	MISSING	
121F-5	S2E1	0-6"	1	MODIFIED FLAKE	LAUREL
121F-6	S2E1	6-12"	3	MODIFIED FLAKES	FALL CREEK
121F-6	S2E1	6-12"	1	MODIFIED FLAKE	ALLENS CREEK
121F-7	S3E1	6-12"	1	UNMODIFIED FLAKE	HT LAUREL
121F-8	N1E1	12-18"	2	UNMODIFIED FLAKES	UNKNOWN
121F-8	N1E1	12-18"	4	UNMODIFIED FLAKES	HT FALL CREEK
121F-8	N1E1	12-18"	10	UNMODIFIED FLAKES	FALL CREEK
121F-8	N1E1	12-18"	1	BLOCK	HD FALL CREEK
121F-9	N1E1	12-18"	1	UNMODIFIED FLAKE	FALL CREEK
121F-10	N1E1	0-6"	4	UNMODIFIED FLAKES	HT FALL CREEK
121F-10	N1E1	0-6"	3	UNMODIFIED FLAKES	FALL CREEK
121F-10	N1E1	0-6"	1	UNMODIFIED FLAKE	ATTICA
121F-11	N2E1	12-18"	1	UNMODIFIED FLAKE	HT ALLENS CREEK
121F-11	N2E1	12-18"	1	UNMODIFIED FLAKE	ATTICA
121F-11	N2E1	12-18"	4	UNMODIFIED FLAKES	FALL CREEK
121F-11	N2E1	12-18"	11	UNMODIFIED FLAKES	HT FALL CREEK
121F-12	N1E1	6-12"	4	UNMODIFIED FLAKES	HT FALL CREEK
121F-12	N1E1	6-12"	4	UNMODIFIED FLAKES	FALL CREEK
121F-13	N1E1	12-24"	3	UNMODIFIED FLAKES	HT FALL CREEK
121F-13	N1E1	12-24"	3	UNMODIFIED FLAKES	FALL CREEK
121F-14	N2E1	6-12"	2	UNMODIFIED FLAKES	FALL CREEK
121F-15	N2E1	12-24"	1	UNMODIFIED FLAKE	WYANDOTTE
121F-15	N2E1	12-24"	8	UNMODIFIED FLAKES	FALL CREEK
121F-15	N2E1	12-24"	14	UNMODIFIED FLAKES	HT FALL CREEK
121F-15	N2E1	12-24"	8	UNMODIFIED FLAKES	FALL CREEK
121F-15	N2E1	12-24"	1	MODIFIED FLAKE	FALL CREEK
121F-15	N2E1	12-24"	1	POINT FRAGMENT	HT ALLENS CREEK
121F-16	N3E1	18-24"	1	UNMODIFIED FLAKE	FALL CREEK
121F-17	N2E1	24-30"	1	UNMODIFIED FLAKE	LAUREL
121F-18	N2E1	24-30"	9	UNMODIFIED FLAKES	FALL CREEK
121F-18	N2E1	24-30"	6	UNMODIFIED FLAKES	HT FALL CREEK
121F-18	N2E1	24-30"	1	FIRE CRACKED ROCK	
121F-18	N2E1	24-30"	1	BIFACE FRAGMENT	HT FALL CREEK
121F-19	N3E1	18-24"	1	UNMODIFIED FLAKE	HT LAUREL
121F-20	N3E1	18-24"	1	UNMODIFIED FLAKE	UPPER MERCER
121F-20	N3E1	18-24"	3	UNMODIFIED FLAKES	HD FALL CREEK
121F-20	N3E1	18-24"	11	UNMODIFIED FLAKES	HT FALL CREEK
121F-20	N3E1	18-24"	10	UNMODIFIED FLAKES	FALL CREEK
121F-21	S1E1	12-18"	8	UNMODIFIED FLAKES	FALL CREEK
121F-21	S1E1	12-18"	3	UNMODIFIED FLAKES	HT FALL CREEK
121F-21	S1E1	12-18"	1	UNMODIFIED FLAKE	DELAWARE
121F-21	S1E1	12-18"	1	UNMODIFIED FLAKE	UPPER MERCER
121F-22	N2E1	30-36"	0	CHARCOAL	
121F-23			0	NATURAL	
121F-24	N3E1	30-36"	1	BIFACE FRAGMENT	FALL CREEK
121F-25	N3E1	30-36"	1	UNMODIFIED FLAKE	ATTICA
121F-25	N3E1	30-36"	1	UNMODIFIED FLAKE	UPPER MERCER
121F-25	N3E1	30-36"	1	MODIFIED FLAKE	HT LAUREL
121F-25	N3E1	30-36"	1	MODIFIED FLAKE	LAUREL
121F-26	N3E1	30-36"	1	MODIFIED FLAKE	FALL CREEK
121F-26	N3E1	30-36"	1	UNMODIFIED FLAKE	HD WYANDOTTE
121F-26	N3E1	30-36"	2	UNMODIFIED FLAKES	HD FALL CREEK
121F-26	N3E1	30-36"	20	UNMODIFIED FLAKES	FALL CREEK
121F-26	N3E1	30-36"	13	UNMODIFIED FLAKES	HT FALL CREEK
121F-27	N2E1	30-36"	4	UNMODIFIED FLAKES	FALL CREEK
121F-27A	N2E1	30-36"	3	UNMODIFIED FLAKES	HT FALL CREEK
121F-27A	N2E1	30-36"	1	UNMODIFIED FLAKE	HD FALL CREEK
121F-27B	UNKNOWN	UNKNOWN	1	BLOCK	HD FALL CREEK
121F-27B	UNKNOWN	UNKNOWN	1	BIPOLAR	HT FALL CREEK
121F-27B	UNKNOWN	UNKNOWN	1	EDGE MODIFIED FLAKE	UPPER MERCER
121F-27B	UNKNOWN	UNKNOWN	36	UNMODIFIED FLAKES	FALL CREEK

Appendix C
Materials from the Parkinson Mound Excavation

Catalog No.	Unit	Level	No.	Identification	Raw Material
121F-27B	UNKNOWN	UNKNOWN	1	UNMODIFIED FLAKE	HD ATTICA
121F-27B	UNKNOWN	UNKNOWN	1	UNMODIFIED FLAKE	HT FALL CREEK
121F-27B	UNKNOWN	UNKNOWN	1	UNMODIFIED FLAKE	UNKNOWN
121F-28	N1E1	24-30"	1	MATANZAS POINT	WYANDOTTE
121F-29	N3E1	6-12"	1	UNMODIFIED FLAKE	FALL CREEK
121F-30	N1E1	24-30"	11	UNMODIFIED FLAKES	HT FALL CREEK
121F-30	N1E1	24-30"	20	UNMODIFIED FLAKES	FALL CREEK
121F-30	N1E1	24-30"	1	UNMODIFIED FLAKE	WYANDOTTE
121F-30	N1E1	24-30"	1	UNMODIFIED FLAKE	HT UNKNOWN
121F-30	N1E1	24-30"	1	UNMODIFIED FLAKE	UNKNOWN
121F-31	N2E1	36-42"	1	OTHER CHIPPED STONE	
121F-31	N2E1	36-42"	2	UNMODIFIED FLAKES	FALL CREEK
121F-32	N2E1	30-36"	0	CHARCOAL SAMPLE	
121F-33	N1E1	30-36"	1	UNMODIFIED FLAKE	HT LAUREL
121F-33	N1E1	30-36"	1	UNMODIFIED FLAKE	HT FALL CREEK
121F-34	N1E1	24-30"	1	WATERMELON SEED	
121F-35	N1E1	24-30"	1	UNMODIFIED FLAKE	LAUREL
121F-35	N1E1	24-30"	1	UNMODIFED FLAKE	LISTON CREEK
121F-36			0	NATURAL	
121F-37	N1E1	18-24"	10	UNMODIFIED FLAKES	HT FALL CREEK
121F-37	N1E1	18-24"	5	UNMODIFIED FLAKES	FALL CREEK
121F-37	N1E1	18-24"	1	UNMODIFIED FLAKE	ATTICA
121F-37	N1E1	18-24"	1	UNMODIFIED FLAKE	UNKNOWN
121F-37	N1E1	18-24"	1	OTHER CHIPPED STONE	
121F-38			0	MISSING	
121F-39			0	MISSING	
121F-40	S3E1	18-24"	1	ENDSCRAPER	FALL CREEK
121F-41	S3E1	18-24"	1	UNMODIFIED FLAKES	WYANDOTTE
121F-41	S3E1	18-24"	3	UNMODIFIED FLAKES	HT FALL CREEK
121F-41	S3E1	18-24"	1	UNMODIFIED FLAKE	UPPER MERCER
121F-41	S3E1	18-24"	3	UNMODIFIED FLAKES	FALL CREEK
121F-41	S3E1	18-24"	3	UNMODIFIED FLAKES	HD FALL CREEK
121F-42	S3E1	18-24"	1	UNMODIFIED FLAKE	HT FALL CREEK
121F-42	S3E1	18-24"	1	UNMODIFIED FLAKE	UNKNOWN
121F-43	S3E1	24-30"	1	POINT FRAGMENT	HT FALL CREEK
121F-44	S3E1	24-30"	3	UNMODIFIED FLAKES	FALL CREEK
121F-44	S3E1	24-30"	4	UNMODIFIED FLAKES	HT FALL CREEK
121F-45	S3E1	30-36"	1	BIFACE FRAGMENT	LAUREL
121F-46	S3E1	30-36"	1	ENDSCRAPER	FALL CREEK
121F-47			0	NATURAL	
121F-48	S3E1	30-36"	1	UNMODIFIED FLAKE	HT LAUREL
121F-48	S3E1	30-36"	1	UNMODIFIED FLAKE	FALL CREEK
121F-49	S6E1	0-6"	1	ENDSCRAPER	HT LAUREL
121F-50	E24S6	0-6"	1	UNMODIFIED FLAKE	CEDARVILLE GUELPH
121F-51	E24S6	0-6"	1	UNMODIFIED FLAKE	FALL CREEK
121F-52	E24S6	0-6"	1	CORE	LAUREL
121F-53	E24S6	0-6"	1	BLADE FRAGMENT	UNKNOWN
121F-53	E24S6	0-6"	1	MODIFIED FLAKE	FALL CREEK
121F-53	E24S6	0-6"	12	UNMODIFIED FLAKES	FALL CREEK
121F-53	E24S6	0-6"	7	UNMODIFIED FLAKES	ATTICA
121F-53	E24S6	0-6"	1	UNMODIFIED FLAKE	HD FALL CREEK
121F-53	E24S6	0-6"	3	UNMODIFIED FLAKES	UNKNOWN
121F-53	E24S6	0-6"	39	UNMODIFIED FLAKES	FALL CREEK
121F-54	S1E1	18-24"	6	UNMODIFIED FLAKES	FALL CREEK
121F-54	S131	18-24"	4	UNMODIFIED FLAKES	HT FALL CREEK
121F-54	S1E1	18-24"	1	UNMODIFIED FLAKE	HT ALLENS CREEK
121F-54	S1E1	18-24"	1	UNMODIFIED FLAKE	WYANDOTTE
121F-55	S1E1	18-24"	1	CORE	LAUREL
121F-55	S1E1	18-24"	1	CORE	HT LAUREL
121F-56			0	MISSING	
121F-57	S1E1	12-18"	1	RIVERTON POINT	LAUREL
121F-58	S1E1	18-24"	1	UNMODIFIED FLAKE	HT LAUREL
121F-58	S1E1	18-24"	1	UNMODIFIED FLAKE	LAUREL
121F-59	S1E1	18-24"	1	UNMODIFIED FLAKE	HT LAUREL
121F-59	S1E1	18-24"	1	ENDSCRAPER	FLINT RIDGE
121F-60	S1E1	18-24"	1	UNMODIFIED FLAKE	FALL CREEK
121F-61	S1E1	18-24"	0	RED OCHRE	

Appendix C
Materials from the Parkinson Mound Excavation

Catalog No.	Unit	Level	No.	Identification	Raw Material
121F-62			0	MISSING	
121F-63	S1E1	12-18"	1	BIFACE FRAGMENT	FALL CREEK
121F-64	S1E1	12-18"	10	UNMODIFIED FLAKES	FALL CREEK
121F-64	S1E1	12-18"	5	UNMODIFIED FLAKES	HT FALL CREEK
121F-64	S1E1	12-18"	2	UNMODIFIED FLAKES	UPPER MERCER
121F-64	S1E1	12-18"	2	UNMODIFIED FLAKES	UNKNOWN
121F-64	S1E1	12-18"	1	UNMODIFIED FLAKE	LAUREL
121F-65	S1E1	18-24"	1	UNMODIFIED FLAKE	LAUREL
121F-66	S1E1	18-24"	1	UNMODIFIED FLAKE	LAUREL
121F-67	S1E1	18-24"	12	UNMODIFIED FLAKES	HT FALL CREEK
121F-67	S1E1	18-24"	9	UNMODIFIED FLAKES	FALL CREEK
121F-67	S1E1	18-24	5	UNMODIFIED FLAKES	UNKNOWN
121F-67	S1E1	18-24"	1	UNMODIFIED FLAKE	LAUREL
121F-67	S1E1	18-24"	1	UNMODIFIED FLAKE	HT LAUREL
121F-67	S1E1	18-24"	1	UNMODIFIED FLAKE	UPPER MERCER
121F-68	S1E1	18-24"	1	BIPOLAR	HT LAUREL
121F-69		SURFACE	1	POINT FRAGMENT	UNKNOWN
121F-70	N1E1	12-18"	1	UNMODIFIED FLAKE	LAUREL
121F-71	N1E1	12-18"	1	BLOCK	HD LAUREL
121F-72	S3E1	0-12"	4	UNMODIFIED FLAKES	FALL CREEK
121F-73	S3E1	12-18"	1	UNMODIFIED FLAKE	WYANDOTTE
121F-73	S3E1	12-18"	4	UNMODIFIED FLAKES	HT FALL CREEK
121F-73	S3E1	12-18"	5	UNMODIFIED FLAKES	FALL CREEK
121F-73	S3E1	12-18"	1	UNMODIFIED FLAKE	HD FALL CREEK
121F-74	S3E1	12-18"	1	BIPOLAR	LAUREL
121F-74	S3E1	12-18"	1	BURNED SANDSTONE	
121F-75A	S3E1	18-30"	1	POINT FRAGMENT	HT FALL CREEK
121F-75A	S3E1	18-30"	1	MODIFIED FLAKE	FALL CREEK
121F-75A	S3E1	18-30"	10	UNMODIFIED FLAKES	FALL CREEK
121F-75A	S3E1	18-30"	12	UNMODIFIED FLAKES	HT FALL CREEK
121F-75A	S3E1	18-30"	1	UNMODIFIED FLAKE	HD WYANDOTTE
121F-75A	S3E1	18-30"	1	UNMODIFIED FLAKE	ATTICA
121F-75A	S3E1	18-30"	1	UNMODIFIED FLAKE	WYANDOTTE
121F-75A	S3E1	18-30"	1	UNMODIFIED FLAKE	UPPER MERCER
121F-75B	S2E1	24-30"	1	UNMODIFIED FLAKE	LAUREL
121F-75B	S2E1	24-30"	1	UNMODIFIED FLAKE	HD FALL CREEK
121F-75B	S2E1	24-30"	3	UNMODIFIED FLAKES	FALL CREEK
121F-75B	S2E1	24-30"	4	UNMODIFIED FLAKES	HT FALL CREEK
121F-75B	S2E1	24-30"	1	UNMODIFIED FLAKE	UPPER MERCER
121F-76	S2E1	24-30"	1	CORE	FALL CREEK
121F-77			0	MISSING	
121F-78	E24S6	6-12"	1	UNMODIFIED FLAKE	HT FALL CREEK
121F-79	S1E1	12-18"	1	UNMODIFIED FLAKE	LAUREL
121F-79	S1E1	12-18"	1	UNMODIFIED FLAKE	HT LAUREL
121F-80			0	NATURAL	
121F-81	S2E1	12-18"	1	UNMODIFIED FLAKE	UNKNOWN
121F-81	S2E1	12-18"	1	UNMODIFIED FLAKE	LAUREL
121F-81	S2E1	12-18"	5	UNMODIFIED FLAKES	HT FALL CREEK
121F-81	S2E1	12-18"	5	UNMODIFIED FLAKES	FALL CREEK
121F-82	S1E1	18-24"	2	UNMODIFIED FLAKES	HT FALL CREEK
121F-82	S1E1	18-24"	1	EDGE MODIFIED FLAKE	FALL CREEK
121F-83			0	MISSING	
121F-84	N1E1	24-30"	3	UNMODIFIED FLAKES	HT FALL CREEK
121F-84	N1E1	24-30"	2	UNMODIFIED FLAKES	LAUREL
121F-84	N1E1	24-30"	1	UNMODIFIED FLAKE	UNKNOWN
121F-85	N1E1	18-24"	2	UNMODIFIED FLAKES	LAUREL
121F-86			0	NATURAL	
121F-87	N1E1	24-30"	1	UNMODIFIED FLAKE	LAUREL
121F-88	N1E1	12-24"	1	UNMODIFIED FLAKE	LAUREL
121F-88	N1E1	12-24"	1	UNMODIFIED FLAKE	HT LAUREL
121F-89	N1E1	12-24"	1	UNMODIFIED FLAKE	LAUREL
121F-90	N1E1	18-24"	1	UNMODIFIED FLAKE	HT LAUREL
121F-91			0	NATURAL	
121F-92	N1E1	18-24"	3	UNMODIFIED FLAKES	LAUREL
121F-92	N1E1	18-24"	1	UNMODIFIED FLAKE	HT LAUREL
121F-93			0	NATURAL	
121F-94	N3E1	18-24"	1	EDGE MODIFIED FLAKE	FALL CREEK

Appendix C
Materials from the Parkinson Mound Excavation

Catalog No.	Unit	Level	No.	Identification	Raw Material
121F-94	N3E1	18-24"	1	UNMODIFIED FLAKE	LAUREL
121F-94	N3E1	18-24"	1	UNMODIFIED FLAKE	UPPER MERCER
121F-94	N3E1	18-24"	1	UNMODIFIED FLAKE	HT LAUREL
121F-94	N3E1	18-24"	1	UNMODIFIED FLAKE	UNKNOWN
121F-95	N3E1	12-18"	3	UNMODIFIED FLAKES	HT FALL CREEK
121F-95	N3E1	12-18"	1	UNMODIFIED FLAKE	FALL CREEK
121F-96	S1E1	24-30"	1	UNMODIFIED FLAKE	LAUREL
121F-96	S1E1	24-30"	1	UNMODIFIED FLAKE	HT LAUREL
121F-97	N3E1	24-30"	4	UNMODIFIED FLAKES	FALL CREEK
121F-97	N3E1	24-30"	2	UNMODIFIED FLAKES	HT FALL CREEK
121F-98			0	MISSING	
121F-99	N3E1	30-36"	1	UNMODIFIED FLAKE	HT FALL CREEK
121F-99	N3E1	30-36"	1	UNMODIFIED FLAKE	FALL CREEK
121F-100	S1E1	12-18"	1	UNMODIFIED FLAKE	LAUREL
121F-100	S1E1	12-18"	1	UNMODIFIED FLAKE	HT LAUREL
121F-101	N3E1	36-42"	2	UNMODIFIED FLAKES	HT FALL CREEK
121F-101	N3E1	36-42"	1	UNMODIFIED FLAKE	FALL CREEK
121F-102	S1E1	18-24"	5	UNMODIFIED FLAKES	HT FALL CREEK
121F-102	S1E1	18-24"	3	UNMODIFIED FLAKES	FALL CREEK
121F-103	S1E1	18-24"	1	UNMODIFIED FLAKE	HT LAUREL
121F-104	N2E1	18-24"	1	UNMODIFIED FLAKE	ATTICA
121F-104	N2E1	18-24"	1	UNMODIFIED FLAKE	HT FALL CREEK
121F-104	N2E1	18-24"	1	BLOCK	HD FALL CREEK
121F-104	N2E1	18-24"	1	OTHER CHIPPED STONE	
121F-105			0	MISSING	
121F-106	N2E1	24-30"	2	UNMODIFIED FLAKES	UNKNOWN
121F-106	N2E1	24-30"	1	UNMODIFIED FLAKES	HT FALL CREEK
121F-107	N2E1	30-36"	1	UNMODIFIED FLAKE	UNKNOWN
121F-107	N2E1	30-36"	1	UNMODIFIED FLAKE	FALL CREEK
121F-107	N2E1	30-36"	1	BIPOLAR	FALL CREEK
121F-108		BACK DIRT	0	LIMESTONE SLAB	
121F-109	S2W1	0-6"	2	UNMODIFIED FLAKES	LAUREL
121F-109	S2W1	0-6"	1	UNMODIFIED FLAKE	HT LAUREL
121F-110	N1W1	0-6"	2	UNMODIFIED FLAKES	FALL CREEK
121F-110	N1W1	0-6"	1	UNMODIFIED FLAKE	HT LAUREL
121F-111			0	MISSING	
121F-112	UNKNOWN	UNKNOWN	1	UNMODIFIED FLAKE	LAUREL
121F-113			0	MISSING	
121F-114			0	MISSING	
121F-115	N2W1	0-6"	2	UNMODIFIED FLAKES	HT FALL CREEK
121F-115	N2W1	0-6"	4	UNMODIFIED FLAKES	FALL CREEK
121F-116	N2W1	0-6"	1	MODIFIED FLAKE	UNKNOWN
121F-117	S3E1	6-12"	2	UNMODIFIED FLAKES	LAUREL
121F-117	S3E1	6-12"	1	UNMODIFIED FLAKE	FALL CREEK
121F-118	S3W1	0-6"	1	MODIFIED FLAKE	WYANDOTTE
121F-118	S3W1	0-6"	1	UNMODIFIED FLAKE	HT LAUREL
121F-118	S3W1	0-6"	1	UNMODIFIED FLAKE	HT FALL CREEK
121F-118	S3W1	0-6"	1	UNMODIFIED FLAKE	LAUREL
121F-118	S3W1	0-6"	1	UNMODIFIED FLAKE	UNKNOWN
121F-119			0	NATURAL	
121F-120	S3W1	6-12"	1	PERFORATOR TIP	LAUREL
121F-121			0	MISSING	
121F-122	S1W1	6-12"	1	UNMODIFIED FLAKE	LAUREL
121F-123	S1W1	0-6"	1	CORE	LAUREL
121F-123	S1W1	0-6"	1	BLOCK	HD LAUREL
121F-124	S1W1	0-6"	4	UNMODIFIED FLAKES	FALL CREEK
121F-124	S1W1	0-6"	1	UNMODIFIED FLAKE	UPPER MERCER
121F-124	S1W1	0-6"	1	UNMODIFIED FLAKE	HT FALL CREEK
121F-125			0	NATURAL	
121F-126	N2W1	6-12"	1	UNMODIFIED FLAKE	FALL CREEK
121F-127	N2W1	6-12"	0	RED OCHER SAMPLE	
121F-128	N1W1	12-18"	1	UNMODIFIED FLAKE	HT LAUREL
121F-129	N3W1	12-18"	1	UNMODIFIED FLAKE	FALL CREEK
121F-130	N3W1	0-6"	1	ENDSCRAPER	LAUREL
121F-131	N3W1	0-6"	1	UNMODIFIED FLAKE	HT LAUREL
121F-132	N3W1	0-6"	2	UNMODIFIED FLAKES	HT LAUREL
121F-133			0	MISSING	

Appendix C
Materials from the Parkinson Mound Excavation

Catalog No.	Unit	Level	No.	Identification	Raw Material
121F-134			0	MISSING	
121F-135	N1W1	12-18"	1	UNMODIFIED FLAKE	UPPER MERCER
121F-135	N1W1	12-18"	1	UNMODIFIED FLAKE	FLINT RIDGE
121F-135	N1W1	12-18"	1	UNMODIFIED FLAKE	UNKNOWN
121F-136	N1W1	18-24"	1	GLACIAL	GLACIAL
121F-136	N1W1	18-24"	1	BLOCK	HD LAUREL
121F-137	N1W1	18-24"	0	RED OCHER SAMPLE	
121F-138	N1W1	18-24"	1	UNMODIFIED FLAKE	WYANDOTTE
121F-139	S1W1	12-18"	1	UNMODIFIED FLAKE	UPPER MERCER
121F-140	S2W1	0-6"	1	UNMODIFIED FLAKE	LAUREL
121F-141	S2W1	6-12"	1	BIFACE FRAGMENT	WYANDOTTE
121F-141	S2W1	6-12"	1	UNMODIFIED FLAKE	FALL CREEK
121F-142	S2W1	6-12"	1	UNMODIFIED FLAKE	HT LAUREL
121F-143			0	MISSING	
121F-144			0	MISSING	
121F-145			0	NATURAL	
121F-146			0	NATURAL	
121F-147	S2W1	0-6"	1	UNMODIFIED FLAKE	LAUREL
121F-148	S2W1	6-12"	1	UNMODIFIED FLAKE	HT LAUREL
121F-148	S2W1	6-12"	1	UNMODIFIED FLAKE	LAUREL
121F-150	S3W1	12-18"	1	UNMODIFIED FLAKE	HT LAUREL
121F-151	S1W1	12-18"	0	RED OCHRE SAMPLE	
121F-152	S1W1	6-12"	14	UNMODIFIED FLAKES	FALL CREEK
121F-152	S1W1	6-12"	4	UNMODIFIED FLAKES	HT FALL CREEK
121F-152	S1W1	6-12"	0	RED OCHRE SAMPLE	
121F-153	S1W1	12-18"	0	RED OCHRE SAMPLE	
121F-154			0	NATURAL	
121F-155			0	NATURAL	
121F-156	S1W1	6-12"	1	UNMODIFIED FLAKE	LAUREL
121F-157	S3W1	18-24"	1	CORE	LAUREL
121F-158			0	NATURAL	
121F-159	S3W1	18-24"	4	UNMODIFIED FLAKES	FALL CREEK
121F-159	S3W1	18-24"	1	UNMODIFIED FLAKE	HT LAUREL
121F-159	S3W1	18-24"	1	UNMODIFIED FLAKE	HT FALL CREEK
121F-160	S3W1	18-24"	2	UNMODIFIED FLAKES	HT LAUREL
121F-160	S3W1	18-24"	1	UNMODIFIED FLAKE	UNKNOWN
121F-161	S3W1	24-30"	1	MODIFIED FLAKE	LAUREL
121F-162	S3W1	24-30"	1	POINT FRAGMENT	HT FALL CREEK
121F-163			0	NATURAL	
121F-164	N3W1	12-18"	1	MODIFIED FLAKE	LAUREL
121F-164	N3W1	12-18"	2	UNMODIFIED FLAKES	HT LAUREL
121F-165	N3W1	18-24"	1	UNMODIFIED FLAKE	LAUREL
121F-166	N3W1	18-24"	1	UNMODIFIED FLAKE	FALL CREEK
121F-166	N3W1	18-24"	1	UNMODIFIED FLAKE	LAUREL
121F-167	N3E1	30-36"	1	UNMODIFIED FLAKE	HT LAUREL
121F-167	N3E1	30-36"	1	UNMODIFIED FLAKE	UNKNOWN
121F-168			0	NATURAL	
121F-169	N2W1	12-18"	2	UNMODIFIED FLAKE	ATTICA
121F-169	N2W1	12-18"	2	UNMODIFIED FLAKES	FALL CREEK
121F-169	N2W1	12-18"	2	UNMODIFIED FLAKES	HT FALL CREEK
121F-169	N2W1	12-18"	1	UNMODIFIED FLAKE	UPPER MERCER
121F-170	N2W1	12-18"	1	EDGE MODIFIED FLAKE	HT LAUREL
121F-171	N2W1	12-18"	1	BLOCK	HD LAUREL
121F-172	S2W1	18-24"	1	BLOCK	HD LAUREL
121F-173	S2W1	24-30"	1	UNMODIFIED FLAKE	HT LAUREL
121F-174	S2W1	24-30"	1	MODIFIED FLAKE	LAUREL
121F-175	N1W1	18-24"	0	RED OCHRE SAMPLE	
121F-176	N1W1	18-24"	1	MATANZAS POINT	LAUREL
121F-177			0	NATURAL	
121F-178	N1W1	18-24"	1	UNMODIFIED FLAKE	FALL CREEK
121F-179	N1W1	12-18"	1	UNMODIFIED FLAKE	LAUREL
121F-180	S3W1	30-36"	1	UNMODIFIED FLAKE	FALL CREEK
121F-181	S3W1	30-36"	1	UNMODIFIED FLAKE	WYANDOTTE
121F-182	S3W1	30-36"	1	UNMODIFIED FLAKE	FALL CREEK
121F-183	S3W1	30-36"	1	UNMODIFIED FLAKE	FALL CREEK
121F-184	N4E1	0-6"	1	BIPOLAR	FALL CREEK
121F-184	N4E1	0-6"	1	MODIFIED FLAKE	FALL CREEK

Appendix C
Materials from the Parkinson Mound Excavation

Catalog No.	Unit	Level	No.	Identification	Raw Material
121F-184	N4E1	0-6"	6	UNMODIFIED FLAKES	HT FALL CREEK
121F-184	N4E1	0-6"	6	UNMODIFIED FLAKES	FALL CREEK
121F-184	N4E1	0-6"	1	UNMODIFIED FLAKE	JEFFERSONVILLE
121F-185	S3W1	BACK FILL	1	CORE	FALL CREEK
121F-185	S3W1	BACK FILL	1	UNMODIFIED FLAKE	LAUREL
121F-186	S1W1	24-30"	1	MODIFIED FLAKE	FALL CREEK
121F-186	S1W1	24-30"	1	ENDSCRAPER FRAGMENT	FALL CREEK
121F-186	S1W1	24-30"	3	UNMODIFIED FLAKES	UPPER MERCER
121F-186	S1W1	24-30"	11	UNMODIFIED FLAKES	HT FALL CREEK
121F-186	S1W1	24-30"	1	UNMODIFIED FLAKE	ALLEN'S CREEK
121F-186	S1W1	24-30"	1	UNMODIFIED FLAKE	WYANDOTTE
121F-186	S1W1	24-30"	2	UNMODIFIED FLAKES	UNKNOWN
121F-186	S1W1	24-30"	10	UNMODIFIED FLAKES	FALL CREEK
121F-187	S1W1	24-30"	1	POINT FRAGMENT	HT LAUREL
121F-188	S1W1	24-30"	2	UNMODIFIED FLAKES	HT FALL CREEK
121F-188	S1W1	24-30"	4	UNMODIFIED FLAKES	FALL CREEK
121F-188	S1W1	24-30"	2	UNMODIFIED FLAKES	UNKNOWN
121F-188	S1W1	24-30"	1	UNMODIFIED FLAKE	ALLEN'S CREEK
121F-189	S1W1	24-30"	1	UNMODIFIED FLAKE	ALLEN'S CREEK
121F-190	S1W1	24-30"	2	UNMODIFIED FLAKES	LAUREL
121F-191			0	MISSING	
121F-192	N4W1	6-12"	1	BLOCK	HD LAUREL
121F-193	N4W1	6-12"	4	UNMODIFIED FLAKES	HT LAUREL
121F-193	N4W1	6-12"	1	UNMODIFIED FLAKE	LAUREL
121F-194	N4W1	12-18"	1	UNMODIFIED FLAKES	LISTON CREEK
121F-194	N4W1	12-18"	1	UNMODIFIED FLAKES	LAUREL
121F-195	N3W1	18-24"	1	CORE	LAUREL
121F-196	N3W1	18-24"	1	MODIFIED FLAKE	LAUREL
121F-197	N3W1	18-24"	1	UNMODIFIED FLAKE	LAUREL
121F-198	N3W1	18-24"	1	BIPOLAR	LAUREL
121F-198	N3W1	18-24"	1	UNMODIFIED FLAKE	HT LAUREL
121F-198	N3W1	18-24"	1	MODIFIED FLAKE	LAUREL
121F-199			0	MISSING	
121F-200	N3W1	18-24"	1	UNMODIFIED FLAKE	ATTICA
121F-200	N3W1	18-24"	1	UNMODIFIED FLAKE	HT LAUREL
121F-201	N2W1	18-24"	4	UNMODIFIED FLAKES	FALL CREEK
121F-201	N2W1	18-24"	8	UNMODIFIED FLAKES	HT FALL CREEK
121F-201	N2W1	18-24"	2	UNMODIFIED FLAKES	LAUREL
121F-202			0	MISSING	
121F-203	N2W1	18-24"	1	UNMODIFIED FLAKE	LAUREL
121F-203	N2W1	18-24"	1	UNMODIFIED FLAKE	HT LAUREL
121F-203	N2W1	18-24"	1	OTHER CHIPPED STONE	
121F-204			0	NATURAL	
121F-205	N2W1	24-30"	1	OTHER CHIPPED STONE	
121F-205	N2W1	24-30"	1	UNMODIFIED FLAKE	FALL CREEK
121F-205	N2W1	24-30"	1	UNMODIFIED FLAKE	FLINT RIDGE
121F-205	N2W1	24-30"	10	UNMODIFIED FLAKES	HT FALL CREEK
121F-205	N2W1	24-30"	1	UNMODIFIED FLAKE	HD UNKNOWN
121F-205	N2W1	24-30"	19	UNMODIFIED FLAKES	LAUREL
121F-205	N2W1	24-30"	1	UNMODIFIED FLAKE	HT LAUREL
121F-205	N2W1	24-30"	2	UNMODIFIED FLAKES	HD FALL CREEK
121F-205	N2W1	24-30"	1	UNMODIFIED FLAKE	ATTICA
121F-206	N2W1	30-36"	1	POINT FRAGMENT	FALL CREEK
121F-206	N2W1	30-36"	4	UNMODIFIED FLAKES	HT FALL CREEK
121F-206	N2W1	30-36"	2	UNMODIFIED FLAKES	LAUREL
121F-206	N2W1	30-36"	4	UNMODIFIED FLAKES	FALL CREEK
121F-206	N2W1	30-36"	2	UNMODIFIED FLAKES	HD FALL CREEK
121F-207	N2W1	24-30"	1	ENDSCRAPER	FALL CREEK
121F-208	N1W1	30-36"	0	SHELL	
121F-209	N1W1	30-36"	1	UNMODIFIED FLAKE	LAUREL
121F-210	N1W1	30-36"	1	UNMODIFIED FLAKE	LAUREL
121F-210	N1W1	30-36"	1	UNMODIFIED FLAKE	HT LAUREL
121F-211	N1W1	30-36"	2	MODIFIED FLAKES	LAUREL
121F-212			0	MISSING	
121F-213	S1W1	12-18"	2	UNMODIFIED FLAKES	UNKNOWN
121F-213	S1W1	12-18"	2	UNMODIFIED FLAKES	HT LAUREL
121F-213	S1W1	12-18"	1	UNMODIFIED FLAKE	LAUREL

Appendix C
Materials from the Parkinson Mound Excavation

Catalog No.	Unit	Level	No.	Identification	Raw Material
121F-214			0	MISSING	
121F-215	S1W1	24-30"	1	UNMODIFIED FLAKE	HT FALL CREEK
121F-216	S1W1	24-30"	1	MODIFIED FLAKE	LAUREL
121F-217	S1W1	24-30"	3	UNMODIFIED FLAKES	LAUREL
121F-217	S1W1	24-30"	1	UNMODIFIED FLAKE	HT ALLEN'S CREEK
121F-218	S1W1	24-30"	1	UNMODIFIED FLAKE	LAUREL
121F-219	N3W3	6-12"	1	EDGE MODIFIED FLAKE	ATTICA
121F-219	N3W3	6-12"	2	UNMODIFIED FLAKES	HT FALL CREEK
121F-219	N3W3	6-12"	3	UNMODIFIED FLAKES	FALL CREEK
121F-219	N3W3	6-12"	1	UNMODIFIED FLAKE	HT BURLINGTON
121F-219	N3W3	6-12"	1	UNMODIFIED FLAKE	HD UNKNOWN
121F-220	N3W3	6-12"	1	.22 CALIBER BULLET	
121F-221	N3W3	0-6"	1	BIFACE FRAGMENT	UNKNOWN
121F-222			0	MISSING	
121F-223			0	MISSING	
121F-224	N2W2	0-6"	1	UNMODIFIED FLAKE	HT FALL CREEK
121F-225			0	MISSING	
121F-226	N2W2	6-12"	1	POINT FRAGMENT	FALL CREEK
121F-226	N2W2	6-12"	1	BIPOLAR	FLINT RIDGE
121F-226	N2W2	6-12"	1	EDGE MODIFIED FLAKE	UNKNOWN
121F-226	N2W2	6-12"	1	UNMODIFIED FLAKE	UNKNOWN
121F-226	N2W2	6-12"	12	UNMODIFIED FLAKES	HT FALL CREEK
121F-226	N2W2	6-12"	7	UNMODIFIED FLAKES	FALL CREEK
121F-226	N2W2	6-12"	1	UNMODIFIED FLAKE	WYANDOTTE
121F-227	N3W2	6-12"	2	CORES	FALL CREEK
121F-227	N3W2	6-12"	1	EDGE MODIFIED FLAKE	ATTICA
121F-227	N3W2	6-12"	6	UNMODIFIED FLAKE	HT FALL CREEK
121F-227	N3W2	6-12"	8	UNMODIFIED FLAKES	FALL CREEK
121F-227	N3W2	6-12"	1	UNMODIFIED FLAKE	HD FALL CREEK
121F-227	N3W2	6-12"	1	UNMODIFIED FLAKE	LAUREL
121F-227	N3W2	6-12"	1	UNMODIFIED FLAKE	HD DELAWARE
121F-228	N2W2	6-12"	1	UNMODIFIED FLAKE	ALLEN'S CREEK
121F-229	N2W2	6-12"	1	UNMODIFIED FLAKE	HT LAUREL
121F-230	N1W1	0-6"	1	BLOCK	HD FALL CREEK
121F-230	N1W1	0-6"	1	MODIFIED FLAKE	HT FALL CREEK
121F-230	N1W1	0-6"	1	UNMODIFIED FLAKE	FALL CREEK
121F-231	N1W3	0-6"	1	POINT FRAGMENT	HD UNKNOWN
121F-231	N1W3	0-6"	1	UNMODIFIED FLAKE	UNKNOWN
121F-231	N1W3	0-6"	8	UNMODIFIED FLAKES	HT FALL CREEK
121F-231	N1W3	0-6"	3	UNMODIFIED FLAKES	FALL CREEK
121F-231	N1W3	0-6"	2	UNMODIFIED FLAKES	LAUREL
121F-232	N1W3	6-12"	1	BLOCK	HD FALL CREEK
121F-232	N1W3	6-12"	15	UNMODIFIED FLAKES	FALL CREEK
121F-232	N1W3	6-12"	1	UNMODIFIED FLAKE	HT ALLEN'S CREEK
121F-232	N1W3	6-12"	4	UNMODIFIED FLAKES	HT FALL CREEK
121F-233	N1W3	6-12"	1	UNMODIFIED FLAKE	FALL CREEK
121F-234	N1W3	6-12"	1	UNMODIFIED FLAKE	HT LAUREL
121F-234	N1W3	6-12"	1	UNMODIFIED FLAKE	LAUREL
121F-235	TRAIL 3	SURFACE	1	ROBBIN'S POINT	HT LAUREL
121F-236			0	MISSING	
121F-237			0	MISSING	
121F-238	N4W2	0-6"	5	UNMODIFIED FLAKES	HT FALL CREEK
121F-238	N4W2	0-6"	3	UNMODIFIED FLAKES	LAUREL
121F-238	N4W2	0-6"	5	UNMODIFIED FLAKES	FALL CREEK
121F-239			0	NATURAL	
121F-240			0	NATURAL	
121F-241			0	MISSING	
121F-242	N2W3	6-12"	1	ENDSCRAPER	FALL CREEK
121F-243	N2W3	6-12"	4	UNMODIFIED FLAKES	HT FALL CREEK
121F-243	N2W3	6-12"	2	UNMODIFIED FLAKES	FALL CREEK
121F-244	N2W3	6-12"	1	UNMODIFIED FLAKE	LAUREL
121F-244	N2W3	6-12"	1	UNMODIFIED FLAKE	WYANDOTTE
121F-245			0	NATURAL	
121F-246	N2W3	12-18	1	MODIFIED FLAKE	LAUREL
121F-247			0	MISSING	
121F-248	N2W2	12-18"	1	EDGE MODIFIED FLAKE	FALL CREEK
121F-249			0	NATURAL	

Appendix C
Materials from the Parkinson Mound Excavation

Catalog No.	Unit	Level	No.	Identification	Raw Material
121F-250			0	NATURAL	
121F-251	N2W2	12-18"	1	UNMODIFIED FLAKE	WYANDOTTE
121F-251	N2W2	12-18"	12	UNMODIFIED FLAKES	HT FALL CREEK
121F-251	N2W2	12-18"	27	UNMODIFIED FLAKES	FALL CREEK
121F-252			0	NATURAL	
121F-253			0	NATURAL	
121F-254	N1W3	6-12"	1	EDGE MODIFIED FLAKE	FALL CREEK
121F-254	N1W3	6-12"	2	UNMODIFIED FLAKE	FALL CREEK
121F-254	N1W3	6-12"	2	UNMODIFIED FLAKE	HT FALL CREEK
121F-255	N1W3	6-12"	4	UNMODIFIED FLAKES	HT FLL CREEK
121F-255	N1W3	6-12"	2	UNMODIFIED FLAKES	FALL CREEK
121F-256	N1W2	18-24"	1	BLOCK	HD LAUREL
121F-257			0	NATURAL	
121F-258	N1W2	18-24"	1	UNMODIFIED FLAKES	HD FALL CREEK
121F-258	N1W2	18-24"	3	UNMODIFIED FLAKES	HT FALL CREEK
121F-259	N1W2	0-6"	1	MODIFIED FLAKE	LAUREL
121F-259	N1W2	0-6"	1	UNMODIFIED FLAKE	FALL CREEK
121F-260	N1W2	6-12"	1	CORE	FALL CREEK
121F-261	N1W2	6-12"	2	UNMODIFIED FLAKES	WYANDOTTE
121F-261	N1W2	6-12"	1	UNMODIFIED FLAKE	FALL CREEK
121F-261	N1W2	6-12"	1	UNMODIFIED FLAKE	FLINT RIDGE
121F-261	N1W2	6-12"	1	UNMODIFIED FLAKE	HT LAUREL
121F-262	N1W2	6-12"	1	UNMODIFIED FLAKE	LAURELA
121F-263	N1W2	6-12"	1	UNMODIFIED FLAKE	LAURELA
121F-264	N1W2	6-12"	1	UNMODIFIED FLAKE	FALL CREEK
121F-264	N1W2	6-12"	1	UNMODIFIED FLAKE	HT LAUREL
121F-264	N1W2	6-12"	1	UNMODIFIED FLAKE	UPPER MERCER
121F-265	N1W3	18-24"	7	EDGE MODIFIED FLAKES	FALL CREEK
121F-265	N1W3	18-24"	1	UNMODIFIED FLAKE	FALL CREEK
121F-265	N1W3	18-24"	1	UNMODIFIED FLAKE	LAUREL
121F-265	N1W3	18-24"	1	UNMODIFIED FLAKE	ATTICA
121F-265	N1W3	18-24"	2	UNMODIFIED FLAKES	HT FALL CREEK
121F-265	N1W3	18-24"	1	UNMODIFIED FLAKE	UNKNOWN
121F-266			0	MISSING	
121F-267	N1W3	12-18"	1	UNMODIFIED FLAKE	HT FALL CREEK
121F-268	N1W3	12-18"	2	BLOCKS	HD LAUREL
121F-269	N1W3	12-18"	2	GLACIAL	
121F-269	N1W3	12-18"	1	MODIFIED FLAKE	HD UNKNOWN
121F-269	N1W3	12-18"	1	UNMODIFIED FLAKE	HD LAUREL
121F-269	N1W3	12-18"	8	UNMODIFIED FLAKES	FALL CREEK
121F-269	N1W3	12-18"	1	UNMODIFIED FLAKE	UPPER MERCER
121F-269	N1W3	12-18"	3	UNMODIFIED FLAKES	WYANDOTTE
121F-269	N1W3	12-18"	1	UNMODIFIED FLAKE	CEDARVILLE GUELPH
121F-269	N1W3	12-18"	3	UNMODIFIED FLAKES	LAUREL
121F-269	N1W3	12-18"	8	UNMODIFIED FLAKES	HT FALL CREEK
121F-270	N1W3	12-18"	1	ENDSCRAPER	HD FALL CREEK
121F-270	N1W3	12-18"	1	POINT FRAGMENT	HD FALL CREEK
121F-270	N1W3	12-18"	1	UNMODIFIED FLAKE	HT FALL CREEK
121F-270	N1W3	12-18"	3	UNMODIFIED FLAKES	FALL CREEK
121F-271			0	MISSING	
121F-272			0	NATURAL	
121F-273	S2W1	30-36"	1	UNMODIFIED FLAKE	WYANDOTTE
121F-274	N1W3	30-36"	1	UNMODIFIED FLAKE	HT LAUREL
121F-274	N1W3	30-36"	1	UNMODIFIED FLAKE	FALL CREEK
121F-274	N1W3	30-36"	1	UNMODIFIED FLAKE	LISTON CREEK
121F-275	N1W3	30-36"	1	UNMODIFIED FLAKE	ALLEN'S CREEK
121F-275	N1W3	30-36"	1	UNMODIFIED FLAKE	HT LAUREL
121F-276	N1W3	30-36"	1	MODIFIED FLAKE	LAUREL
121F-277	N1W3	WEST BULK	1	UNMODIFIED FLAKE	WYANDOTTE
121F-278	N1W3	WEST BULK	1	UNMODIFIED FLAKE	UNKNOWN
121F-279	N1W3	30-36"	1	MODIFIED FLAKES	LAUREL
121F-279	N1W3	30-36"	1	EDGE MODIFIED FLAKE	FALL CREEK
121F-280	N1W2	24-30"	1	EDGE MODIFIED FLAKE	FALL CREEK
121F-281	N1W2	24-30"	1	CORE	HT LAUREL
121F-281	N1W2	24-30"	1	BLOCK	HD LAUREL
121F-282	N1W2	24-30"	3	UNMODIFIED FLAKES	FALL CREEK
121F-282	N1W2	24-30"	1	UNMODIFIED FLAKE	HT FALL CREEK

Appendix C
Materials from the Parkinson Mound Excavation

Catalog No.	Unit	Level	No.	Identification	Raw Material
121F-283	N3W1	24-30"	1	MATANZAS POINT	HT LAUREL
121F-284	N3W1	24-30"	1	POINT FRAGMENT	HT FALL CREEK
121F-285	N3W1	24-30"	1	KIRK CORNER NOTCHED POINT	LAUREL
121F-286	N3W1	24-30"	1	UNMODIFIED FLAKE	KENNETH
121F-288	N3W1	30-36"	1	RIVERTON POINT	HT FALL CREEK
121F-289	N3W1	30-36"	1	UNMODIFIED FLAKE	WYANDOTTE
121F-290	N3W1	30-36"	1	EDGE MODIFIED FLAKE	HT LAUREL
121F-291	N3W2	24-30"	1	UNMODIFIED FLAKE	HT LAUREL
121F-292	N3W2	24-30"	1	EDGE MODIFIED FLAKE	HT FALL CREEK
121F-292	N3W2	24-30"	2	EDGEMODIFIED FLAKES	FALL CREEK
121F-292	N3W2	24-30"	4	UNMODIFIED FLAKES	FALL CREEK
121F-292	N3W2	24-30"	1	UNMODIFIED FLAKE	HT FALL CREEK
121F-292	N3W2	24-30"	1	UNMODIFIED FLAKE	UPPER MERCER
121F-292	N3W2	24-30"	2	UNMODIFIED FLAKE	LAUREL
121F-293			0	NATURAL	
121F-294			0	NATURAL	
121F-295	N2W2	18-24"	7	UNMODIFIED FLAKES	FALL CREEK
121F-295	N2W2	18-24"	1	UNMODIFIED FLAKE	HT LAUREL
121F-295	N2W2	18-24"	5	UNMODIFIED FLAKES	HT FALL CREEK
121F-296			0	NATURAL	
121F-297	N2W2	24-30"	12	UNMODIFIED FLAKES	FALL CREEK
121F-297	N2W2	24-30"	11	UNMODIFIED FLAKES	HT FALL CREEK
121F-297	N2W2	24-30"	1	UNMODIFIED FLAKE	UNKNOWN
121F-298	N2W2	24-30"	1	UNMODIFIED FLAKE	HD FALL CREEK
121F-298	N2W2	24-30"	2	UNMODIFIED FLAKES	HT FALL CREEK
121F-298	N2W2	24-30"	5	UNMODIFIED FLAKES	FALL CREEK
121F-299	N2W2	24-30"	1	MODIFIED FLAKE	LAUREL
121F-300	N2W2	24-30"	1	ENDSCRAPER	LAUREL
121F-301	N2W2	24-30"	1	EDGE MODIFIED FLAKE	FALL CREEK
121F-301	N2W2	24-30"	1	UNMODIFIED FLAKE	HT LAUREL
121F-301	N2W2	24-30"	1	UNMODIFIED FLAKE	UNKNOWN
121F-302	N2W2	24-30"	1	MODIFIED FLAKE	LAUREL
121F-303	N2W2	30-36"	1	STAGE 2 BIFACE	LISTON CREEK
121F-304	N2W2	30-36"	14	UNMODIFIED FLAKES	FALL CREEK
121F-304	N2W2	30-36"	5	UNMODIFIED FLAKES	HT FALL CREEK
121F-304	N2W2	30-36"	1	UNMODIFIED FLAKE	LAUREL
121F-305	N2W2	30-36"	1	ENDSCRAPER	FALL CREEK
121F-306	N2W2	30-36"	1	UNMODIFIED FLAKE	UPPER MERCER
121F-306	N2W2	30-36"	1	UNMODIFIED FLAKE	HT FALL CREEK
121F-306	N2W2	30-36"	1	UNMODIFIED FLAKE	UNKNOWN
121F-307	UNKNOWN	UNKNOWN	1	MODIFIED FLAKE	LAUREL
121F-308	N1W2	24-30"	1	BIFACE FRAGMENT	LAUREL
121F-309	N2W3	18-24"	1	BIFACE FRAGMENT	UNKNOWN
121F-310	N2W3	18-24"	1	MODIFIED FLAKE	FALL CREEK
121F-310	N2W3	18-24	1	UNMODIFIED FLAKE	FLINT RIDGE
121F-310	N2W3	18-24"	2	UNMODIFIED FLAKE	HT FALL CREEK
121F-310	N2W3	18-24"	2	UNMODIFIED FLAKES	UNKNOWN
121F-310	N2W3	18-24"	1	UNMODIFIED FLAKE	FALL CREEK
121F-311	N2W3	18-24"	2	UNMODIFIED FLAKES	LAUREL
121F-312	N2W3	18-24"	1	BIPOLAR	UNKNOWN
121F-312	N2W3	18-24"	1	UNMODIFIED FLAKE	FLINT RIDGE
121F-312	N2W3	18-24"	1	UNMODIFED FLAKE	HT FALL CREEK
121F-312	N2W3	18-24"	2	UNMODIFIED FLAKES	FALL CREEK
121F-313			0	NATURAL	
121F-314	N4W1	6-12"	1	UNMODIFIED FLAKE	HT LAUREL
121F-315	N4W1	6-12"	1	UNMODIFIED FLAKE	LAUREL
121F-316	N1W3	30-36"	1	UNMODIFIED FLAKE	HT FALL CREEK
121F-316	N4W1	30-36"	3	UNMODIFIED FLAKES	FALL CREEK
121F-317	N1W3	30-36"	2	BIPOLARS	LAUREL
121F-318	N1W3	24-30"	3	CORES	FALL CREEK
121F-318	N1W3	24-30"	1	UNMODIFIED FLAKE	HT FALL CREEK
121F-318	N1W3	24-30"	9	UNMODIFIED FLAKES	FALL CREEK
121F-319	N1W3	24-30"	1	ENDSCRAPER	FLINT RIDGE
121F-320	PATH	SURFACE	1	MODIFIED FLAKE	FALL CREEK
121F-320	PATH	SURFACE	1	CORE	HT FALL CREEK
121F-320	PATH	SURFACE	2	UNMODIFIED FLAKES	HT FALL CREEK
121F-320	PATH	SURFACE	1	UNMODIFIED FLAKE	FALL CREEK

Appendix C
Materials from the Parkinson Mound Excavation

Catalog No.	Unit	Level	No.	Identification	Raw Material
121F-321	PATH	SURFACE	1	UNMODIFIED FLAKE	HT LAUREL
121F-322	PATH	SURFACE	1	UNMODIFIED FLAKE	HT FALLC REEK
121F-322	PATH	SURFACE	1	UNMODIFIED FLAKE	ATTICA
121F-322	PATH	SURFACE	1	UNMODIFIED FLAKE	WYANDOTTE
121F-323	N3W2	12-18"	1	EDGE MODIFIED FLAKE	UPPER MERCER
121F-323	N3W2	12-18"	1	UNMODIFIED FLAKE	HT LAUREL
121F-324	N4W2	12-18"	1	SANDSTONE	
121F-325	N3W2	6-12"	1	UNMODIFIED FLAKE	LAUREL
121F-326	N1W2	30-36"	1	ENDSCRAPER	HT FALL CREEK
121F-327	N1W1	30-36"	1	ENDSCRAPER	HT FALL CREEK
121F-327	N1W2	30-36"	2	UNMODIFIED FLAKE	HT FALL CREEK
121F-327	N1W2	30-36"	3	UNMODIFIED FLAKES	FALL CREEK
121F-328	N1W2	30-36"	1	UNMODIFIED FLAKE	HT FALL CREEK
121F-328	N1W2	30-36"	1	UNMODIFIED FLAKE	LAUREL
121F-329	N1W3	18-24"	1	MODIFIED FLAKE	FALL CREEK
121F-329	N1W3	18-24"	1	EDGE MODIFIED FLAKE	UPPER MERCER
121F-329	N1W3	18-24"	1	BLOCK	HD UNKNOWN
121F-329	N1W3	18-24"	1	UNMODIFIED FLAKES	HD FALL CREEK
121F-329	N1W3	18-24"	1	UNMODIFIED FLAKES	UNKNOWN
121F-329	N1W3	18-24"	9	UNMODIFIED FLAKES	HT FALL CREEK
121F-330	N1W3	18-24"	1	MODIFIED FLAKE	FALL CREEK
121F-330	N1W3	18-24"	1	EDGE MODIFIED FLAKE	FALL CREEK
121F-330	N1W3	18-24"	10	UNMODIFIED FLAKES	HT FALL CREEK
121F-331	N2W2	24-30"	1	MODIFIED FLAKE	LAUREL
121F-331	N2W2	24-30"	1	UNMODIFIED FLAKE	HT LAUREL
121F-331	N2W2	24-30"	1	UNMODIFIED FLAKE	LAUREL
121F-332	N2W3	24-30"	1	OTHER CHIPPED STONE	
121F-332	N2W3	24-30"	10	UNMODIFIED FLAKES	FALL CREEK
121F-332	N2W3	24-30"	1	UNMODIFIED FLAKE	HT FALL CREEK
121F-332	N2W3	24-30"	1	UNMODIFIED FLAKE	LAUREL
121F-333	N2W3	24-30"	1	UNMODIFIED FLAKE	FALL CREEK
121F-333	N2W3	24-30"	1	UNMODIFIED FLAKE	LAUREL
121F-334			0	MISSING	
121F-335			0	NATURAL	
121F-336	N4W2	6-12"	1	UNMODIFIED FLAKE	HT LAUREL
121F-337	N4W2	6-12"	1	UNMODIFIED FLAKE	FALL CREEK
121F-337	N4W2	6-12"	4	UNMODIFIED FLAKES	HT FALL CREEK
121F-338	N3W3	6-12"	2	UNMODIFIED FLAKES	FALL CREEK
121F-338	N3W3	6-12"	2	UNMODIFIED FLAKES	HT FALL CREEK
121F-338	N3W3	6-12"	1	UNMODIFIED FLAKE	HT BURLINGTON
121F-339	N3W3	6-12"	1	UNMODIFIED FLAKE	FALL CREEK
121F-340	N4W2	12-18"	4	UNMODIFIED FLAKES	FALL CREEK
121F-340	N4W2	12-18"	1	UNMODIFIED FLAKE	HT FALL CREEK
121F-341	N4W2	12-18"	1	BIFACE FRAGMENT	UNKNOWN
121F-341	N4W2	12-18"	1	BLOCK	HD UNKNOWN
121F-341	N4W2	12-18"	3	UNMODIFIED FLAKES	FALL CREEK
121F-342	N1W2	24-30"	1	UNMODIFIED FLAKE	HT LAUREL
121F-343	N1W2	24-30"	1	GRAVER	FALL CREEK
121F-343	N1W2	24-30"	2	UNMODIFIED FLAKES	FALL CREEK
121F-343	N1W2	24-30"	1	UNMODIFIED FLAKE	HT FALL CREEK
121F-343	N1W2	24-30"	1	UNMODIFIED FLAKE	HD FALL CREEK
121F-344	N1W2	24-30"	2	UNMODIFIED FLAKES	FALL CREEK
121F-344	N1W2	24-30"	1	UNMODIFIED FLAKE	HT FALL CREEK
121F-345			0	NATURAL	
121F-346	N1W2	18-24"	2	UNMODIFIED FLAKES	FALL CREEK
121F-346	N1W2	18-24"	1	UNMODIFIED FLAKE	LAUREL
121F-347			0	NATURAL	
121F-348	UNKNOWN	30-36"	1	UNMODIFIED FLAKE	HT LAUREL
121F-349	UNKNOWN	30-36"	2	UNMODIFIED FLAKES	HT LAUREL
121F-349	UNKNOWN	30-36"	1	UNMODIFIED FLAKE	HT FALL CREEK
121F-350	N4W2	18-24"	2	UNMODIFIED FLAKES	FALL CREEK
121F-350	N4W2	18-24"	1	CORE	FALL CREEK
121F-351			0	MISSING	
121F-352			0	MISSING	
121F-353			0	MISSING	
121F-354	N2W2	6-12"	1	TABLE ROCK POINT	LAUREL
121F-355			0	NATURAL	

Appendix C
Materials from the Parkinson Mound Excavation

Catalog No.	Unit	Level	No.	Identification	Raw Material
121F-356			0	NATURAL	
121F-357	N1W3	30-36"	1	MODIFIED FLAKE	LAUREL
121F-358	N1W3	30-36"	3	UNMODIFIED FLAKES	FALL CREEK
121F-359			0	NATURAL	
121F-360	N1W3	18-24"	1	UNMODIFIED FLAKE	HT LAUREL
121F-361	N2W2	BAULK	1	UNMODIFIED FLAKE	LAUREL
121F-362			0	NATURAL	
121F-363	N1E3	24-30"	1	EDGE MODIFIED FLAKE	HT LAUREL
121F-363	N1E3	24-30"	1	UNMODIFIED FLAKE	UPPER MERCER
121F-363	N1E3	24-30"	1	UNMODIFIED FLAKE	FALL CREEK
121F-364			0	MISSING	
121F-365			0	NATURAL	
121F-366	N2W1	BAULK	1	UNMODIFIED FLAKE	LAUREL
121F-367	N1E3	24-30"	1	MATANZAS POINT	FALL CREEK
121F-368	N2W1	N. BAULK	1	UNMODIFIED FLAKE	HT LAUREL
121F-369	N2W1	N. BAULK	1	UNMODIFIED FLAKE	HT LAUREL
121F-370	N2W1	N. BAULK	1	UNMODIFIED FLAKE	UNKNOWN
121F-371	N2W1	N. BAULK	1	UNMODIFIED FLAKE	LAUREL
121F-372			0	MISSING	
121F-373			0	MISSING	
121F-374	N3W1	24-30"	1	UNMODIFIED FLAKE	HT LAUREL
121F-375			0	MISSING	
121F-376	TRAIL 2	SURFACE	1	UNMODIFIED FLAKE	FLINT RIDGE
121F-377			0	MISSING	
121F-378	TRAIL 2	SURFACE	5	UNMODIFIED FLAKES	FALL CREEK
121F-379	N3W1	24-30"	1	POINT FRAGMENT	ATTICA
121F-380	UNKNOWN		1	MODIFIED FLAKE	HT FLINT RIDGE
121F-380	UNKNOWN		1	MODIFIED FLAKE	FALL CREEK
121F-381	N3E1	24-30"	26	UNMODIFIED FLAKES	HT FALL CREEK
121F-381	N3E1	24-30"	7	UNMODIFIED FLAKES	UNKNOWN
121F-381	N3E1	24-30"	1	UNMODIFIED FLAKES	ATTICA
121F-381	N3E1	24-30"	10	UNMODIFIED FLAKES	LAUREL
121F-381	N3E1	24-30"	3	UNMODIFIED FLAKES	HT LAUREL
121F-381	N3E1	24-30"	11	UNMODIFIED FLAKES	FALL CREEK
121F-381	N3E1	24-30"	1	BIPOLAR	FALL CREEK
121F-382	TRAIL 1	SURFACE	1	BIFACE FRAGMENT	UNKNOWN
121F-382	TRAIL 1	SURFACE	1	BIPOLAR	HT FALL CREEK
121F-382	TRAIL 1	SURFACE	1	ENDSCRAPER	FALL CREEK
121F-382	TRAIL 1	SURFACE	1	UNCLASSIFIED POINT	FALL CREEK
121F-382	TRAIL 1	SURFACE	4	UNMODIFIED FLAKES	LAUREL
121F-382	TRAIL 1	SURFACE	6	UNMODIFIED FLAKES	HT FALL CREEK
121F-382	TRAIL 1	SURFACE	1	UNMODIFIED FLAKE	UNKNOWN
121F-383	E24S6	12"	0	FEATURE - FCR	2-22
121F-384	E24S5orS6		0	FLOAT SAMPLE	
121F-385	E24S5		0	FLOAT SAMPLE	
121F-386	E24S5orS6		0	FLOAT SAMPLE	
121F-387	E24S5		0	FLOAT SAMPLE	
121F-388	E24S6		0	FLOAT SAMPLE	
121F-389	E24S5		0	FLOAT SAMPLE	

APPENDIX D

Artifact Metrics

Appendix D
Artifact Metrics from Parkinson Mound

Catalog	Identification	Material	No.	Weight (g)	Max. Length	Max. Width	Max. Thickness	Thickness at Base	Base Width	Tang Width	Tang/Stem Length	Notch Depth	Notch Width
121F-28	Matanzas point	Wyandotte	1	1.60	0.00	20.42	4.37	3.89	20.42	13.71	11.35	3.33	6.29
121F-57	Riverton point	Laurel	1	0.80	19.41	13.78	4.97	3.54	9.42	9.95	8.45	0.00	0.00
121F-176	Matanzas point	Laurel	1	3.10	0.00	19.95	5.89	4.17	19.95	14.07	9.29	4.05	5.66
121F-235	Robbins point	HT Laurel	1	9.90	45.42	29.03	9.95	7.30	17.18	14.55	14.09	0.00	0.00
121F-283	Matanzas point	HT Laurel	1	5.10	41.18	19.60	8.62	6.23	19.36	15.41	10.20	3.27	5.93
121F-285	Kirk Corner Notched	Laurel	1	4.40	33.68	27.31	4.53	2.99	0.00	16.08	8.07	4.45	3.38
121F-288	Riverton point	HT Fall Creek	1	0.90	0.00	14.88	4.66	4.24	10.45	8.68	0.00	0.00	0.00
121F-354	Table Rock point	Laurel	1	5.90	41.61	22.94	7.37	5.35	12.78	11.54	12.11	0.00	0.00
121F-367	Matanzas point	Fall Creek	1	1.00	0.00	19.48	5.06	4.05	0.00	0.00	9.53	2.91	0.00
121F-382	Unclassified point	Fall Creek	1	0.90	1.41	1.15	3.70	0.00	0.00	0.00	0.00	0.00	0.00

Appendix D
Artifact Metrics from Mound Camp

Catalog	Idenitification	Material	No.	Weight (g)	Max. Length	Max. Width	Max. Thickness	Thickness at Base	Base Width	Tang Width	Tang Length	Notch Depth	Notch Width
40/4	ROBBINS POINT	FLINT RIDGE	1	9.70	47.10	30.10	7.09	6.20	14.94	17.53	15.54	5.30	0.00
40/21/C	ROBBINS POINT	UNIDENTIFIED	1	13.60	0.00	34.81	7.85	6.18	0.00	15.76	14.24	6.99	0.00
40/21/B	BREWERTON CORNER NOTCHED	LAUREL	1	3.40	0.00	0.00	7.46	6.66	24.55	20.15	0.00	3.45	4.40
21A	MATANZAS POINT	HEAT ALTERED UNIDEN	6	2.60	0.00	18.34	6.81	5.14	18.34	14.28	0.00	3.12	4.97
40/21/D	UNIDEN POINT FRAGMENT	FLINT RIDGE	1	9.70	0.00	39.20	8.45	0.00	0.00	0.00	0.00	0.00	7.42
40/21/E	POINT/BIFACE FRAGMENT	LAUREL	1	13.90	0.00	26.34	8.60	0.00	0.00	0.00	0.00	0.00	0.00
40/21/F	FLAKE (ASSOCIATED WITH 21A)	HEAT ALTERED LAUREL	1	0.50	16.45	10.69	2.97	0.00	0.00	0.00	0.00	0.00	0.00
40/14	PENDANT		1	131.20	102.29	48.29	13.72	0.00	0.00	0.00	0.00	0.00	9.06
40/19	PENDANT	BANDED SLATE	1	0.00	94.43	50.22	14.38	0.00	0.00	0.00	0.00	0.00	0.00
40/3	EXPANDED CENTER BAR GORGET	BANDED SLATE	1	98.60	166.45	41.88	12.45	0.00	0.00	0.00	0.00	0.00	0.00
40/15	EXPANDED CENTER BAR GORGET	BANDED SLATE	1	100.00	151.30	38.45	14.75	0.00	0.00	0.00	0.00	0.00	0.00
40/7	EXPANDED CENTER BAR GORGET	BANDED SLATE	1	98.70	126.26	39.25	17.00	0.00	0.00	0.00	0.00	0.00	0.00
40/18	GORGET PREFORM	BANDED SLATE	1	56.70	57.80	39.42	11.57	0.00	0.00	0.00	0.00	0.00	0.00
40/1	TUBULAR PIPE	LIMESTONE	1	55.60	100.92	23.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40/17	BIT FRAGMENT OF CELT	GREENSTONE	1	28.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40/16	GRAPHITE LUMPS	GRAPHITE	3	4.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40/16	GRAPHITE LUMPS	GRAPHITE	3	4.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix D
Artifact Metrics from Fudge Mound

Catalog	Idenitification	Material	No.	Weight (g)	Max. Length	Max. Width	Max. Thickness	Thickness at Base	Base Width	Tang Width	Tang Length	Notch Depth	Notch Width
43/1	SNYDERS POINT	HD BURLINGTON	1	86.10	129.82	73.16	7.44	7.44	47.78	26.98	13.80	24.48	21.49
43/4	SNYDERS POINT	BURLINGTON	1	21.83	49.28	0.00	7.48	2.55	35.42	25.53	15.12	13.43	19.58
43/14	CRESAP STEMMED	LISTON CREEK	1	28.71	120.77	32.59	7.53	3.29	16.34	29.15	37.92	0.00	0.00
43/16	MCWHINNEY POINT	LAUREL	1	13.30	61.24	23.81	9.90	2.53	21.18	16.85	11.65	2.34	8.76
43/18	UNCLASSIFIED BIFURCATE	ATTICA	1	3.70	32.58	20.05	6.73	4.11	0.00	9.58	6.98	3.14	10.34
43/15	UNCLASSIFIED EARLY ARCHAIC	LAUREL	1	20.60	69.22	39.95	9.95	0.00	0.00	0.00	0.00	8.77	0.00
43/17	UNCLASSIFIED SIDE NOTCHED	LAUREL	1	4.90	35.98	24.51	6.87	2.03	0.00	19.44	9.57	4.21	11.06
43/2	SANDSTONE TABLET	FINE SANDSTONE	1	221.60	124.77	61.35	15.44	0.00	0.00	0.00	0.00	0.00	0.00
43/3	BICONCAVE GORGET	SLATE	1	87.76	107.24	9.54	9.09	0.00	0.00	0.00	0.00	0.00	0.00
43/7	EXPANDED CENTER BAR GORGE	BANDED SLATE	1	99.10	126.02	50.91	9.76	7.97	0.00	0.00	0.00	0.00	0.00

Copper Bracelets

Pouch	Catalog	Completeness	Weight	Outside Diameter (mm)	Inside Diameter (mm)	Thickness (mm)	Long Axis (Outside)	Short Axis (Outside)	Long Axis (Inside)	Short Axis (Inside)	Cross Section at Joint
pouch 1	43/8 A	fragment	13.70	23.70	21.60	4.48	72.28	0.00	67.85	0.00	flattened
pouch 1	43/8 B	complete	39.80	23.90	19.40	5.46	83.16	66.46	71.47	55.14	square
pouch 1	43/8 C	complete	49.00	24.30	19.80	5.82	82.37	68.79	69.52	55.43	square
pouch 1	43/8 D	complete	48.00	24.30	19.80	6.64	19.35	59.77	65.18	57.15	square
pouch 1	43/8 E	complete	64.30	25.40	20.30	7.52	85.02	73.34	70.30	58.77	slightly flattened
pouch 1	43/8 F	complete	58.30	24.20	19.40	7.03	80.69	70.75	66.34	57.66	slightly flattened
pouch 1	43/8 G	complete	83.60	26.30	21.00	10.05	92.21	70.82	77.31	54.70	round
pouch 1	43/8 H	complete	81.50	26.20	21.30	8.49	89.32	74.68	75.05	60.01	square
pouch 2	43/9 A	complete	43.60	24.10	20.10	5.59	72.89	84.75	51.23	61.81	round
pouch 2	43/9 B	4 pieces	12.00	0.00	0.00	4.47	0.00	0.00	0.00	0.00	
pouch 2	43/9 C	complete	30.20	22.60	16.60	5.56	70.47	80.11	52.41	60.82	square
pouch 2	43/9 D	2 pieces	12.20	0.00	0.00	4.57	0.00	0.00	0.00	0.00	
pouch 2	43/9 E	bent	15.30	0.00	0.00	5.38	0.00	0.00	0.00	0.00	
pouch 2	43/9 F	3/4 present	31.50	24.50	20.90	5.50	72.41	82.93	61.36	69.37	square
pouch 2	43/9 G	3 pieces	14.60	0.00	0.00	4.47	0.00	0.00	0.00	0.00	
pouch 2	43/9 H	4 pieces	11.60	0.00	0.00	4.76	0.00	0.00	0.00	0.00	

Appendix D
Sandstone Tablets from Law Mound

No.	Material	Weight (g)	Length (mm)	Width (mm)	Thickness (mm)	Comments
00.21.1.1	fine	123.0	90.09	85.0^	7.76	pecked
00.21.1.2	fine	139.2	97.07	72.49	9.21	pecked
00.21.1.3	fine	115.0	92.51^	73.1	9.33	rounded corner, pecked and scratches
00.21.1.4	fine	23.7	48.22	31.6	7.42	scoring groove
00.21.1.5	fine	64.5*		63.03	7.98	pecked
00.21.1.6	fine	5.7*				frag. of rounded corner
00.21.1.7	coarse	328.2	116.31	61.3	22.46	scratches
00.21.1.8	coarse	264.1*	95.35	94.8^	19.23	pecked, 1 side unsmoothed
00.21.1.9	coarse	430.7*	138.61	96.58	18.28	pecked
00.21.1.10	coarse	316.1*	129.98^	82.53	20.68	grooves, 1 side concave
00.21.1.11	coarse	340.8*		94.1	19.53	
00.21.1.12	coarse	86.1*		43.22	15.26	
00.21.1.13	coarse	59.9*		45.25	14.03	
00.21.1.14	coarse	60.6*		56.42	16.36	pecked
00.21.1.15	coarse	46.1*		42.6	15.23	pecked
00.21.1.16	coarse	72.6*	70.48	48.9	14.08	
00.21.1.17	coarse	20.7*				small fragment
00.21.1.18	coarse	5.8*				small fragment

* tablet is incomplete
^ tablet was broken and may not reflect accurate measurement

Appendix D
Artifact Metrics from Hayes Arboretum Mound

Catalog	Idenitification	Material	No.	Weight (g)	Max. Length	Max. Width	Max. Thickness	Thickness at Base	Base Width	Tang Width	Tang Length	Notch Depth	Notch Width
C-540	LAMOKA POINT	LAUREL	1	7.00	49.99	23.14	7.33	2.65	12.01	12.04	9.44	6.46	9.29
C-547	LATE ARCHAIC STEMMED	HT LAUREL	1	6.50	29.19	22.48	8.15	5.11	14.26	12.19	12.54	6.01	12.44
C-542	ROBBINS POINT	FLINT RIDGE	1	40.54	99.94	46.50	9.14	3.43	0.00	23.25	0.00	8.41	16.37
C-543	SNYDERS POINT	WYANDOTTE	1	62.57	102.90	56.58	11.14	3.63	36.09	26.44	19.69	13.97	17.14
C-549	UNCLASSIFIED POINT FRAGMENT	LAUREL	1	13.00	475.60	82.81	10.88	0.00	0.00	0.00	0.00	0.00	0.00

Appendix D
Artifact Metrics from Waterworks Mound

Catalog	Idenitification	Material	No.	Weight (g)	Max. Length	Max. Width	Max. Thickness	Thickness at Base	Base Width	Tang Width	Tang Length	Notch Depth	Notch Width
C-645	UNCLASSIFIED EARLY ARCHAIC	LAUREL	1	6.50	0.00	23.23	6.52	1.96	0.00	14.88	12.13	0.00	5.79
C-626	UNCLASSIFIED EARLY ARCHAIC	WYANDOTTE	1	10.00	53.17	21.15	7.45	3.31	21.29	17.55	16.74	3.69	15.08
C-628	MATANZAS POINT	HT LAUREL	1	5.50	38.92	21.30	5.78	3.36	20.99	16.62	8.97	2.71	4.76
C-623	BREWERTON SIDE NOTCHED POINT	HT DELAWARE	1	4.50	28.21	22.70	6.20	3.42	20.99	15.58	8.90	3.23	6.19
C-634	BREWERTON SIDE NOTCHED POINT	HT LAUREL	1	6.00	28.57	19.86	8.61	5.20	17.79	15.21	9.07	2.40	8.92
C-641	TABLE ROCK POINT	FLINT RIDGE	1	21.00	73.62	27.62	8.50	2.89	18.82	16.02	17.03	4.10	11.46
C-615	MCWHINNEY POINT	LAUREL	1	17.50	59.83	19.53	14.29	6.76	15.41	13.30	17.46	1.59	9.41
C-616	MCWHINNEY POINT	LOCAL GLACIAL CHERT	1	10.50	0.00	23.54	11.37	7.74	17.48	17.05	13.07	1.20	6.94
C-618	MCWHINNEY SCRAPER	HT LAUREL	1	9.50	35.26	20.55	9.53	8.13	14.29	14.06	11.38	0.75	5.87
C-627	MCWHINNEY POINT	LAUREL	1	12.50	47.88	23.77	10.19	5.57	17.23	15.96	15.29	1.79	10.41
C-679	MCWHINNEY POINT	LAUREL	1	25.50	0.00	25.63	16.28	8.07	0.00	15.89	16.18	2.66	11.56
C-680	MCWHINNEY POINT	LAUREL	1	10.00	0.00	23.08	11.93	7.80	19.47	12.75	8.67	3.34	8.62
C-622	MCWHINNEY POINT	HT LAUREL	1	11.50	50.06	19.54	10.28	6.80	14.11	13.62	10.37	1.49	6.96
C-643	LATE ARCHAIC STEMMED	HT FLINT RIDGE	1	3.50	0.00	24.19	9.91	3.84	10.45	13.84	7.55	1.82	8.46
C-617	LATE ARCHAIC ENDSCRAPER	LAUREL	1	6.50	29.04	21.81	8.23	6.55	0.00	16.71	12.59	2.06	5.69
C-612	LATE ARCHAIC PERFORATOR	LAUREL	1	3.50	24.22	4.88	6.89	4.96	18.95	12.88	9.65	3.44	6.18
C-646	MOTLEY	GLACIAL	1	16.50	593.03	0.52	9.69	2.18	14.56	12.59	11.68	7.13	12.00
C-633	UNCLASSIFIED ARCHAIC POINT	ARGILLITE HT DELAWARE	1	4.00	0.00	22.33	6.84	2.17	0.00	13.80	11.01	4.44	6.02
C-636	ROBBINS POINT	FLINT RIDGE	1	14.50	47.91	38.89	73.50	6.12	18.94	16.05	14.01	6.06	12.08
C-619	POINT FRAGMENT	HT LAUREL	1	9.00	43.34	23.73	11.14	0.00	0.00	0.00	0.00	0.00	0.00
C-624	POINT FRAGMENT	LAUREL	1	10.50	0.00	0.00	14.62	0.00	0.00	0.00	0.00	0.00	0.00
C-625	POINT FRAGMENT	LAUREL	1	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-629	POINT FRAGMENT	HT LAUREL	1	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-632	POINT FRAGMENT	HT LAUREL	1	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-635	POINT FRAGMENT	HT LAUREL	1	7.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-637	POINT FRAGMENT	HT LAUREL	1	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-640	POINT FRAGMENT	HT LAUREL	1	6.00	0.00	0.00	8.26	0.00	0.00	0.00	0.00	0.00	0.00
C-678	POINT FRAGMENT	HD LAUREL	1	11.00	0.00	23.54	8.28	0.00	0.00	0.00	0.00	1.71	9.97

APPENDIX E

Hayes Family Collection

Appendix E
Hayes Family Collection

Catalog	Idenitification	Material	No.	Weight (g)	Max. Length	Max. Width	Max. Thickness	Thickness at Base	Base Width	Tang Width	Tang Length	Notch Depth	Notch Width
C-405	LOST LAKE POINT	FLINT RIDGE	1	34.00	82.62	44.78	7.49	7.33	32.20	24.37	13.44	8.80	8.84
C-405	LOST LAKE POINT	FLINT RIDGE	1	27.80	72.72	44.52	8.59	5.60	21.60	18.27	15.77	7.25	3.39
C-405	ST. CHARLES POINT	UPPER MERCER	1	11.80	64.58	31.79	8.20	4.88	23.87	15.68	9.98	6.12	4.42
C-405	ST. CHARLES POINT	FLINT RIDGE	1	13.50	65.39	27.30	7.75	5.27	22.86	17.90	9.30	5.73	3.22
C-405	BIG SANDY POINT	FLINT RIDGE	1	19.40	79.31	32.58	7.47	5.20	31.01	19.83	11.56	6.67	5.20
C-405	KIRK CORNER NOTCHED POINT	UNKNOWN	1	26.10	80.59	37.88	7.44	7.05	24.53	21.65	9.60	7.55	5.80
C-405	AMOS CORNER NOTCHED POINT	UPPER MERCER	1	18.90	71.41	33.68	8.89	6.33	0.00	12.14	10.83	10.92	4.32
C-405	ST. ALBANIS POINT	UPPER MERCER	1	17.40	0.00	0.00	9.60	8.53	0.00	19.70	11.89	0.00	0.00
C-405	KIRK STEMMED POINT	UPPER MERCER	1	13.50	0.00	0.00	6.31	5.96	0.00	0.00	0.00	0.00	0.00
C-405	UNIDENTIFIED EARLY ARCHAIC	FLINT RIDGE	1	16.50	79.77	26.31	7.49	4.02	21.40	20.77	7.52	0.00	0.00
C-405	LATE ARCHAIC STEMMED POINT	FLINT RIDGE	1	15.70	73.04	23.34	9.20	5.04	17.56	13.89	14.43	3.25	4.31
C-405	LATE ARCHAIC STEMMED POINT	UPPER MERCER	1	17.31	63.66	25.52	10.65	6.02	15.63	15.26	18.45	0.00	0.00
C-405	LATE ARCHAIC STEMMED POINT	UPPER MERCER	1	22.00	72.55	34.09	8.29	6.82	19.13	19.91	10.31	0.00	0.00
C-405	LATE ARCHAIC UNCLASSIFIED PT	FLINT RIDGE	1	25.40	65.45	33.77	11.94	8.66	12.26	12.87	13.17	0.00	0.00
C-405	ADENA POINT	FLINT RIDGE	1	18.00	0.00	28.27	8.28	6.92	17.08	16.16	18.57	0.00	0.00
C-405	ADENA POINT	FLINT RIDGE	1	15.20	64.58	24.24	12.60	6.30	12.34	13.51	14.15	0.00	0.00
C-405	ADENA POINT	FLINT RIDGE	1	27.60	90.00	29.10	8.97	6.98	17.86	20.82	21.90	0.00	0.00
C-405	ADENA POINT	UNKNOWN	1	17.40	67.24	31.39	8.18	6.88	17.73	19.37	19.38	6.46	6.21
C-405	ADENA POINT	UPPER MERCER	1	21.30	85.00	28.94	7.45	6.53	21.75	22.81	20.34	0.00	0.00
C-405	ROBBIN'S POINT	FLINT RIDGE	1	16.10	0.00	34.34	7.43	6.84	16.82	17.01	17.39	5.61	8.51
C-405	UNCLASSIFIED POINT	FLINT RIDGE	1	1.80	63.42	20.22	7.07	5.23	15.12	14.97	11.04	0.00	0.00
C-405	UNCLASSIFIED POINT	FLINT RIDGE	1	21.10	70.08	31.50	93.88	7.80	28.58	20.46	17.80	6.11	9.84
C-405	UNCLASSIFIED POINT	UPPER MERCER	1	9.70	0.00	18.16	6.91	4.50	0.00	0.00	8.87	0.00	0.00
C-405	POINT FRAGMENT, BLADE	UPPER MERCER	1	18.80	0.00	29.61	6.40	0.00	0.00	14.77	0.00	6.29	0.00
C-405	POINT FRAGMENT, BLADE	UNKNOWN	1	30.20	81.84	35.67	10.41	6.89	16.80	19.22	9.11	0.00	0.00
C-405	POINT FRAGMENT, BLADE	UNKNOWN	1	24.80	0.00	34.71	11.70	0.00	0.00	18.33	0.00	0.00	0.00
C-405	POINT FRAGMENT, BLADE	HT LAUREL	1	8.00	0.00	0.00	6.56	5.05	0.00	0.00	0.00	0.00	0.00
C-406	THEBES POINT	UPPER MERCER	1	16.50	65.81	28.46	9.25	6.36	0.00	17.08	19.92	7.35	6.44
C-406	THEBES POINT	LAUREL	1	17.50	55.36	36.70	9.12	5.15	31.12	20.46	21.37	9.35	8.76
C-406	UNCLASSIFIED STEMMED POINT	FLINT RIDGE	1	14.40	64.67	21.87	9.59	4.74	18.80	0.00	0.00	0.00	0.00
C-407	MATANZAS POINT	FLINT RIDGE	1	8.20	50.57	14.04	9.74	6.57	18.06	13.50	9.04	0.00	0.00

Appendix E
Hayes Family Collection

Catalog	Idenitification	Material	No.	Weight (g)	Max. Length	Max. Width	Max. Thickness	Thickness at Base	Base Width	Tang Width	Tang Length	Notch Depth	Notch Width
C-407	MATANZAS POINT	UPPER MERCER	1	7.60	54.20	15.13	8.76	6.00	17.77	13.33	10.95	1.23	7.02
C-407	TRIANGULAR POINT	UPPER MERCER	1	3.50	38.94	19.15	8.33	5.24	19.15	0.00	0.00	0.00	0.00
C-407	COMMISSARY POINT	UPPER MERCER	1	12.70	62.34	28.02	8.06	5.62	27.15	0.00	0.00	0.00	0.00
C-408	SNYDERS POINT	FLINT RIDGE	1	5.50	28.95	17.17	6.01	3.69	28.66	18.71	17.51	6.51	5.89
C-406	CHIPPED ADZ	FLINT RIDGE	1	133.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-406	UNCLASSIFIED EDGE GROUND BIFACE	UNKNOWN	1	9.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-406	EDGE MODIFIED BIFACE	ZALESKI	1	39.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-406	BIFACIAL ENDSCRAPER	FLINT RIDGE	1	9.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-406	BIFACE	LAUREL	1	22.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-408	BIFACE	HT LAUREL	1	27.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-406	BIFACE	CEDARVILLE GUELPH	1	35.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-406	BIFACE	UNKNOWN	1	36.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-406	BIFACE	FLINT RIDGE	1	15.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-406	BIFACE	FLINT RIDGE	1	32.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-406	BIFACE	FLINT RIDGE	1	17.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-406	BIFACE	FLINT RIDGE	1	36.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-406	BIFACE	FLINT RIDGE	1	19.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-406	BIFACE	FLINT RIDGE	1	21.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-406	BIFACE	FLINT RIDGE	1	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-406	BIFACE	FLINT RIDGE	1	12.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-406	BIFACE	FLINT RIDGE	1	14.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-406	BIFACE	FLINT RIDGE	1	83.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-406	BIFACE	UPPER MERCER	1	18.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-406	BIFACE	UPPER MERCER	1	45.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-406	BIFACE	UPPER MERCER	1	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-406	BIFACE	UPPER MERCER	1	42.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-406	BIFACE	UPPER MERCER	1	42.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-406	BIFACE	UPPER MERCER	1	65.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-406	BIFACE	UPPER MERCER	1	48.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-406	BIFACE	UPPER MERCER	1	37.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

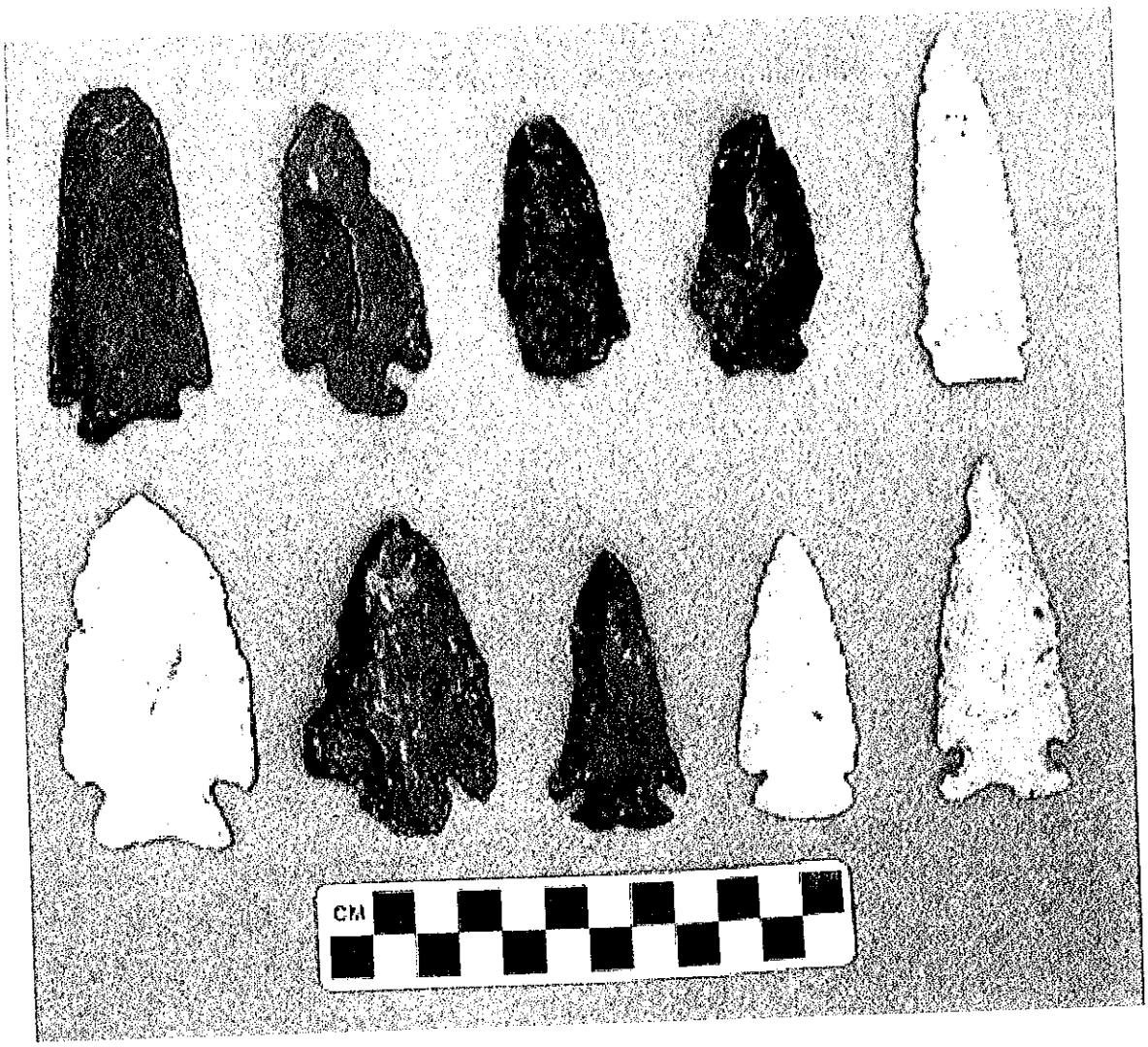

Figure 1. Early Archaic points (C-405). Bottom: Lost Lake, Lost Lake, St. Charles, St. Charles, Big Sandy. Top: Kirk Corner Notched, Amos Corner Notched, St. Albans, Kirk Stemmed, Unclassified Early Archaic.

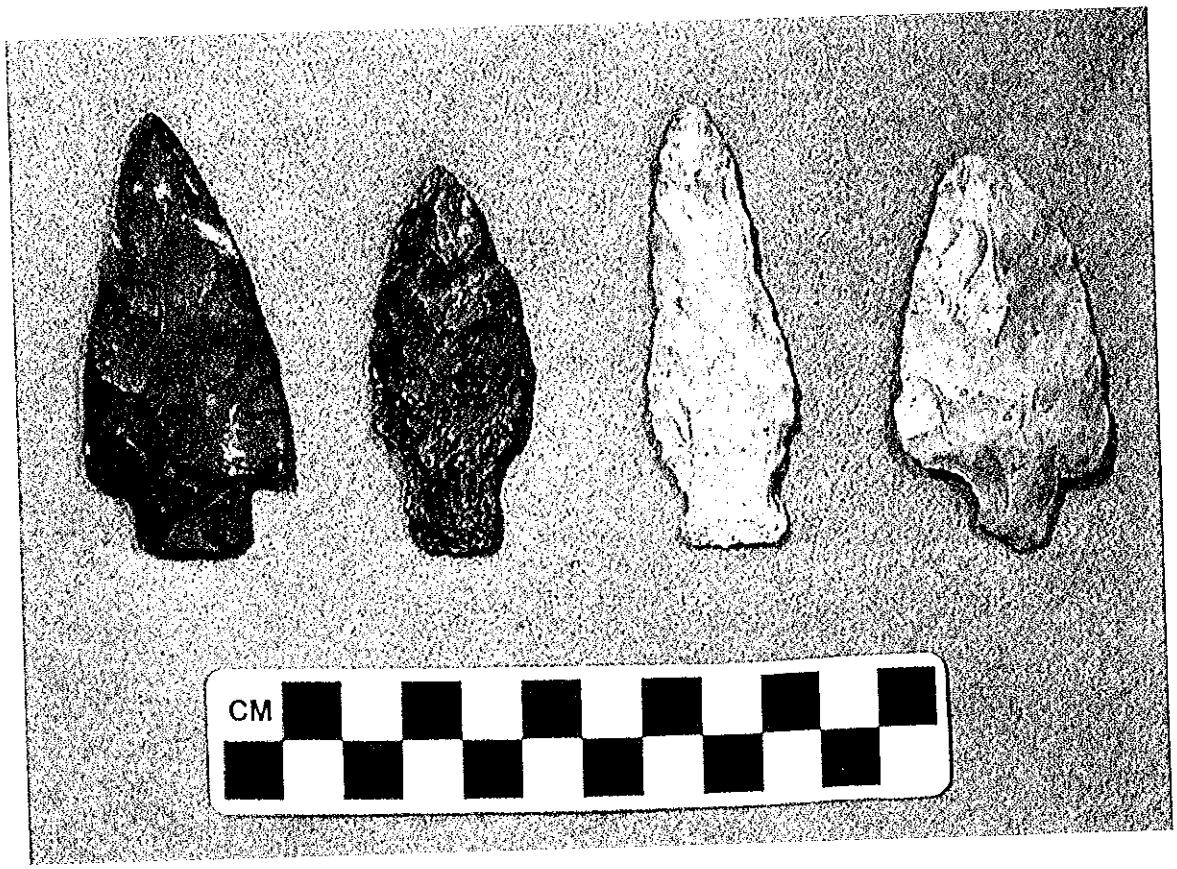

Figure 2. Late Archaic points (C-405): 3 Late Archaic Stemmed and 1 Unclassified Late Archaic.

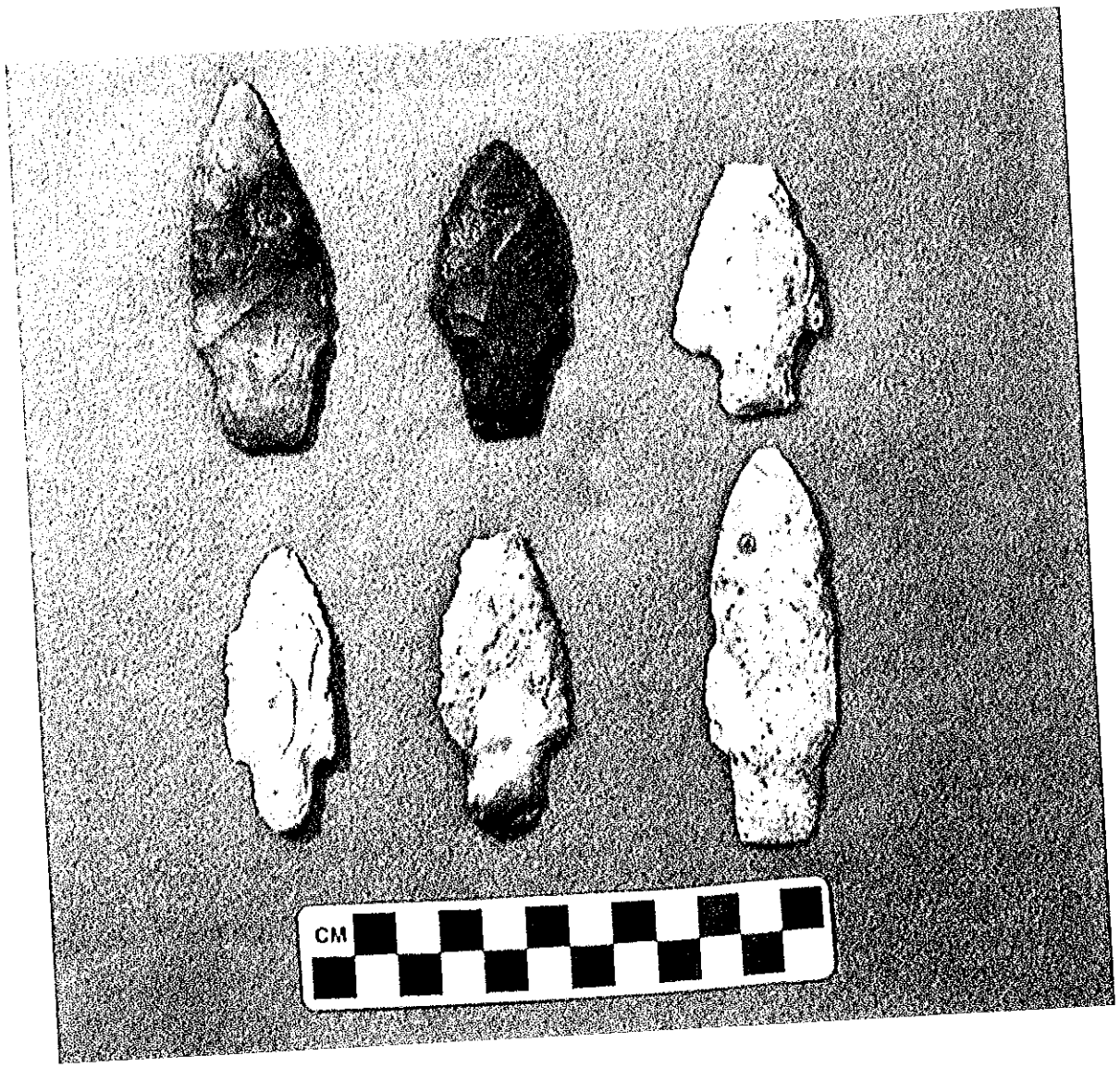

Figure 3. Woodland points (C-405). Bottom: Adena. Top: 2 Adena and 1 Robbins.

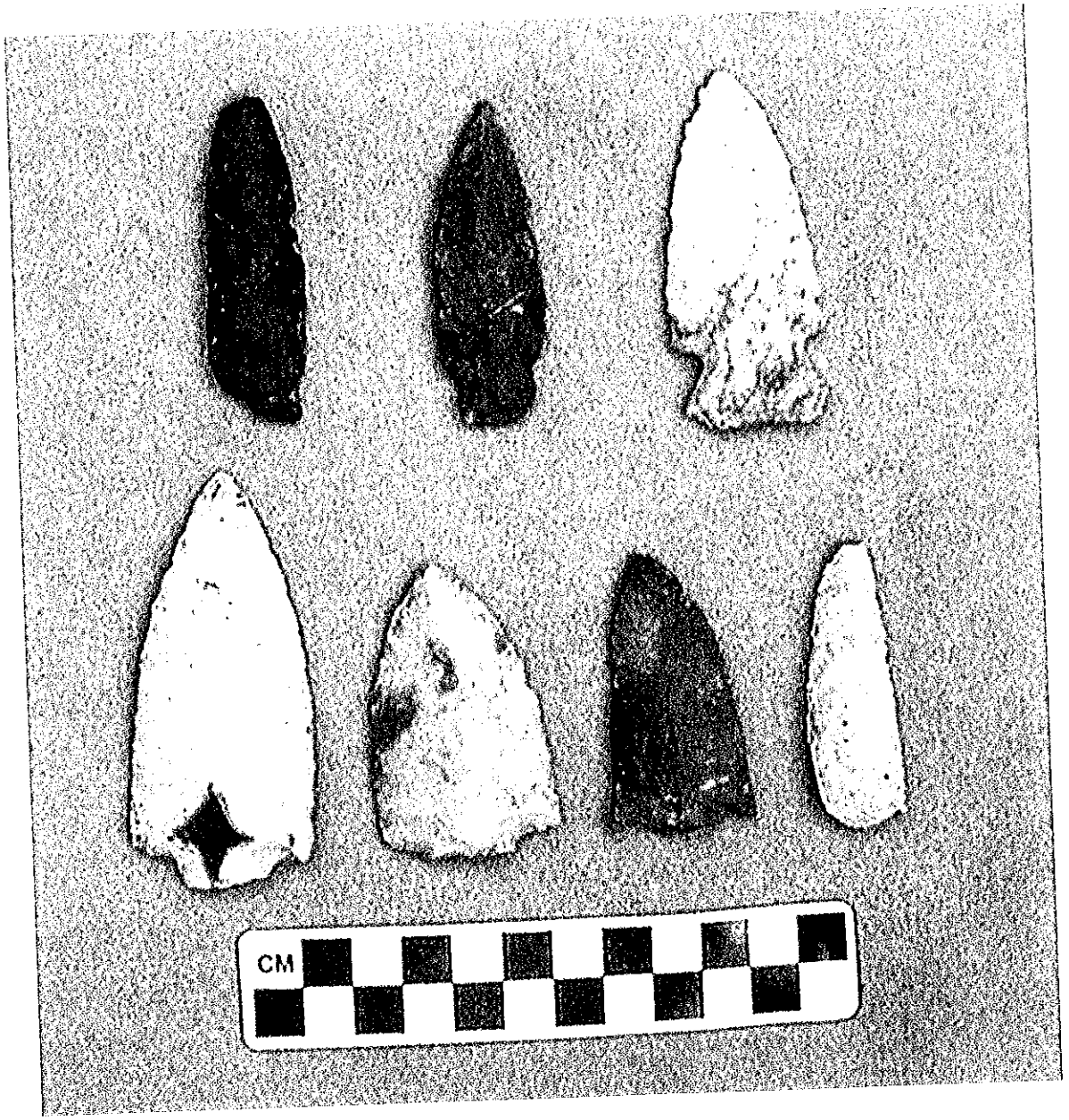

Figure 4. Point fragments (bottom) and Unclassified points (top) (C-405).

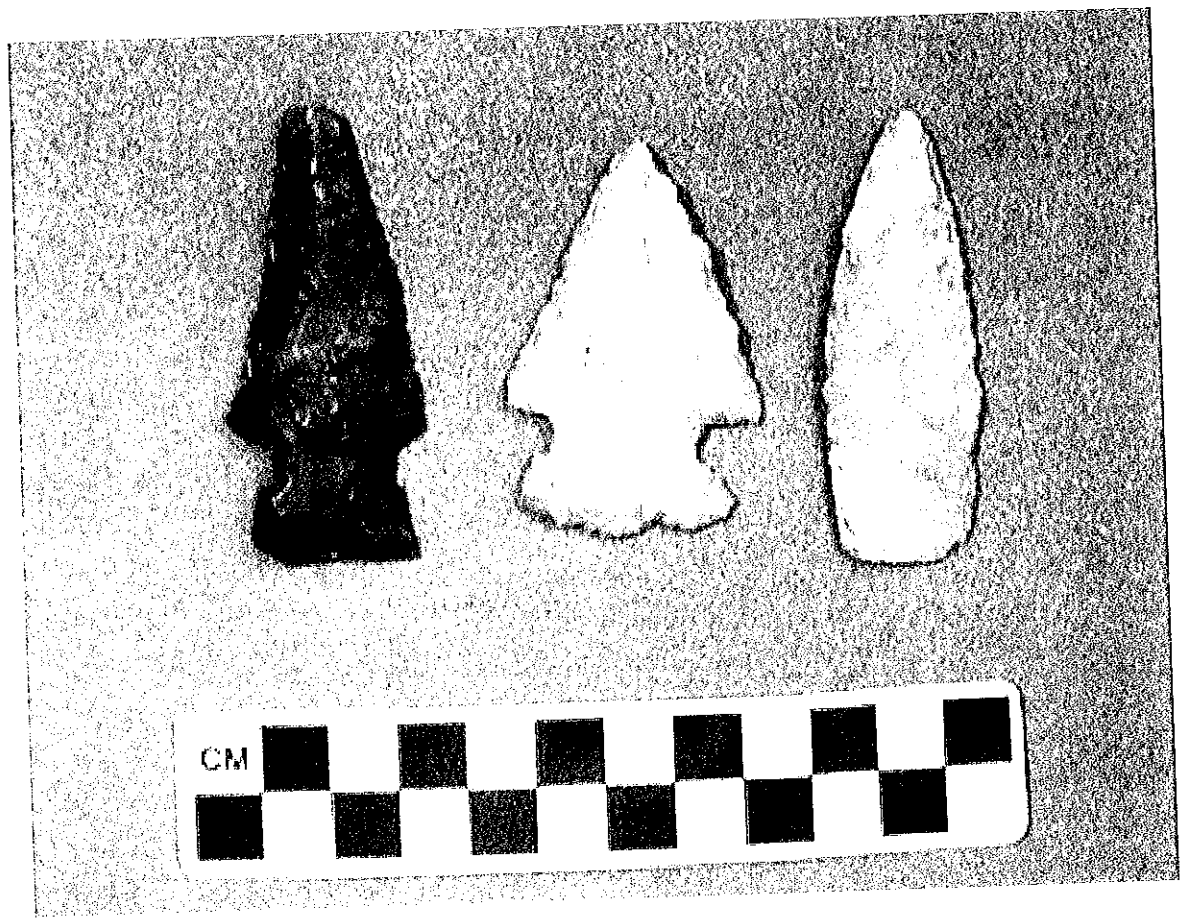

Figure 5. Points (C-406): Thebes, Thebes, and an Unclassified stemmed point.

Figure 6. Points (C-407): Matanzas, Matanzas, Commissary and Triangular point.

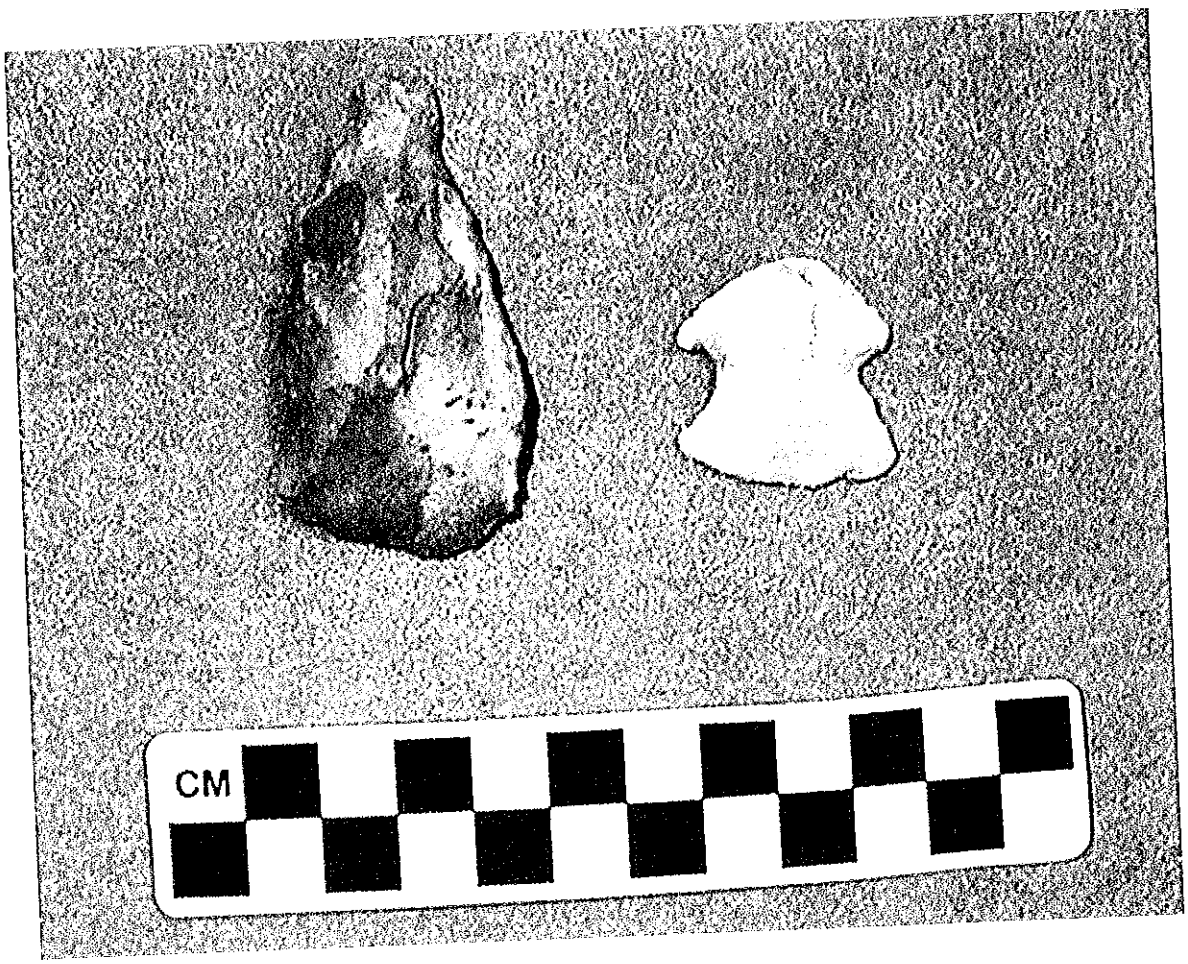

Figure 7. Biface and Snyders point reworked into an endscraper (C-408).

Figure 8. Chipped stone adze (C-406).

Figure 9. Bifaces of Upper Mercer (C-406).

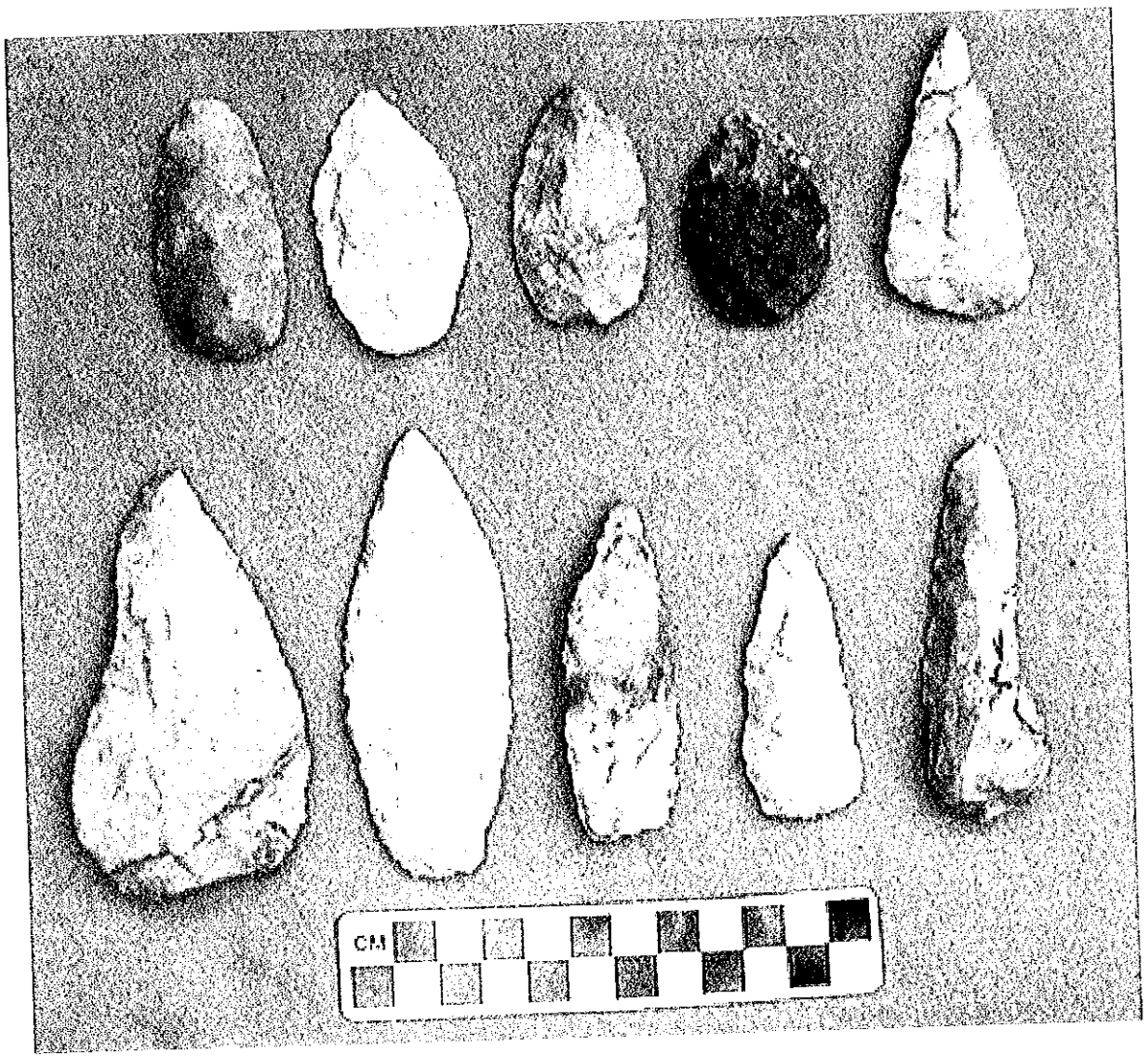

Figure 10. Bifaces of Flint Ridge (C-406).

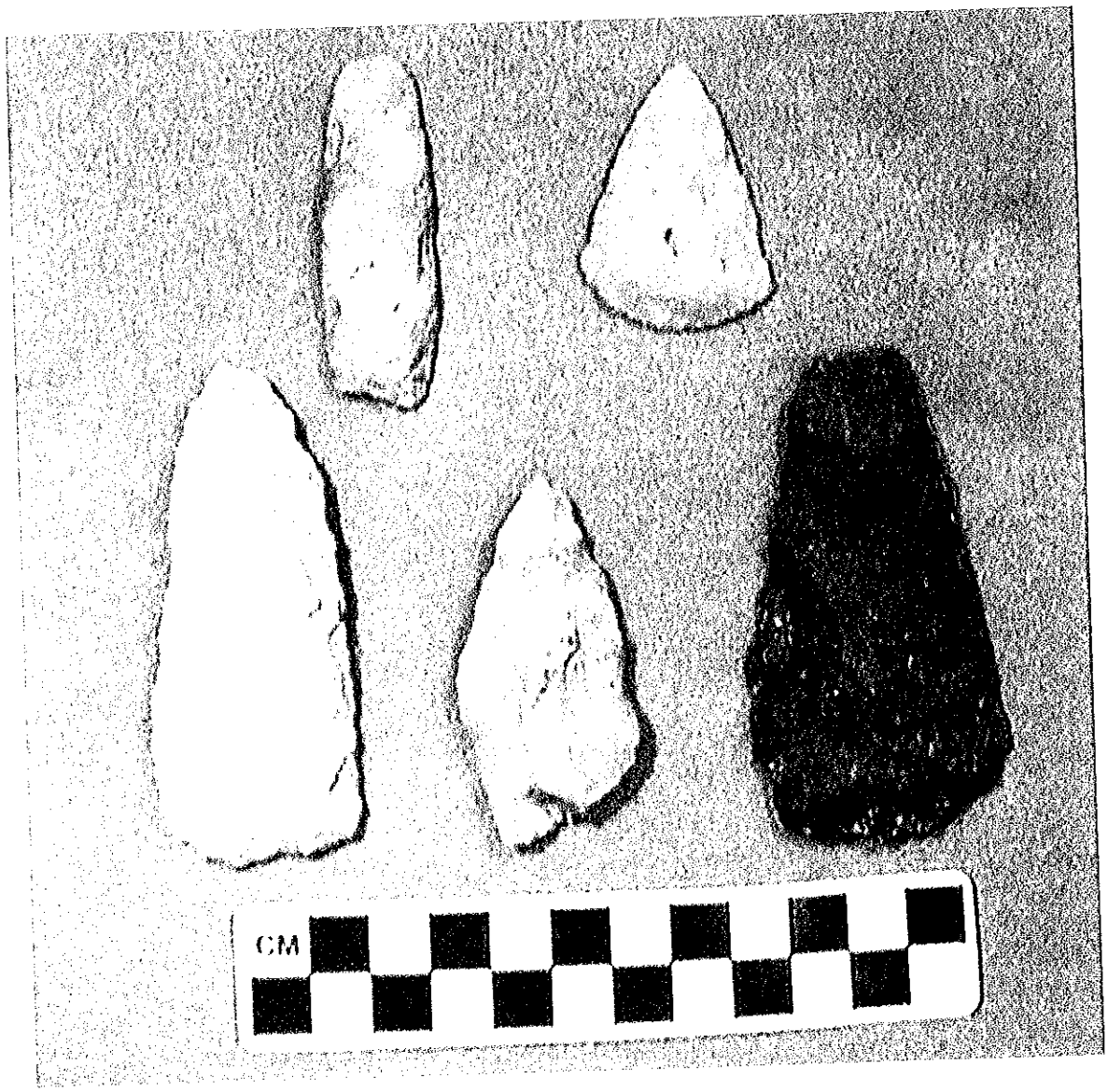

Figure 11. Bifaces (bottom), edge ground biface (top), and bifacial endscraper (top)(C-406).

APPENDIX F

Lithic Debitage from Hayes Arboretum

Appendix F Lithic Debitage from Hayes Arboretum			
Unit	Identification	Wt. (g)	Comments
20	8 flakes 1 block 1 natural	87.0	2 flakes were heat altered
20W1	5 flakes 1 block	22.0	
20W2	5 flakes 1 block	62.0	1 flake was heat altered
20W3	8 flakes 2 natural	82.0	
20W4	9 flakes 8 blocks	80.5	3 blocks were heat damaged
20W5	3 flakes 2 blocks	26.0	3 flakes were heat altered 1 block was heat damaged
20W6	4 flakes	3.5	1 flake was heat altered
25	3 flakes 5 blocks 1 natural	91.0	
25W1	1 flake 1 block 1 natural	7.0	1 flake was heat altered
25W2	4 flakes 1 block 1 natural	23.5	
25W3	3 flakes 2 block 1 natural	51.5	1 block was heat altered
25W4	2 flakes 1 block 1 naturel	87.5	
25W5	2 flakes	1.0	
25W6	13 flakes 1 natural	28.0	2 flakes were heat altered
25E1	2 flakes 2 cores 1 block	105.0	

Appendix F (cont.) Lithic Debitage from Hayes Arboretum			
Unit	Identification	Wt. (g)	Comments
30	2 block 1 natural	10.0	2 blocks were heat altered
30W1	4 flakes 3 block 1 natural	47.0	
30W2	7 flakes 1 block	46.0	1 flake was heat altered
30W3	9 flakes 1 block 1 natural	168.5	2 flakes were heat altered
30W4	5 flakes 2 block 1 natural	71.5	1 block flake was heat altered
30W5	4 flakes 4 block 1 natural	45.0	1 block was heat altered
30W6	10 flakes 1 natural	37.5	1 flake was heat altered
35	3 flakes 1 block 1 natural	50.5	
35W1	4 flakes 4 blocks 2 natural	53.5	2 blocks were heat damaged
35W2	4 flakes 3 blocks 1 natural	41.0	2 flakes were heat altered 2 blocks were heat altered
35W3	5 flakes 2 blocks	15.0	
35W4	4 flakes 2 blocks 1 natural	36.0	1 flake was heat altered
35W6	3 natural	16.0	
35W7	1 natural	3.5	

Appendix F (cont.) Lithic Debitage from Hayes Arboretum			
Unit	Identification	Wt. (g)	Comments
40	3 flakes 1 core 1 natural	33.5	1 flake was heat altered and 1 flake was heat damaged Core was of Flint Ridge material
40W1	5 flakes 2 blocks 3 natural	22.5	
40W2	1 flake 2 blocks 1 natural	15.5	
40W3	10 flakes 1 block 1 natural	54.0	7 flakes were heat altered
40W4	3 flakes 2 block	20.5	1 flake was heat altered
40W5	5 flakes 2 block	7.0	1 flake was heat altered and 1 flake was heat damaged
40W8	1 flake	1.5	Flake was heat altered
45	2 flakes	2.5	Flakes were heat altered
45W1	1 flake	0.5	Flake was heat altered
45W2	2 flakes	5.5	1 flake was heat altered
45W3	5 flakes	9.5	3 flakes were heat altered
45W4	3 flakes 2 blocks 1 natural	35.5	1 flake was heat altered 1 block was heat altered
45W5	2 flakes 3 blocks	30.0	
45W6	1 flake	3.0	
50W2	1 natural	27.0	
50W3	5 flakes 2 natural	48.5	2 flakes were heat altered
50W4	1 flake 1 block 1 natural	15.0	1 block was heat altered
50W5	1 block	2.5	

APPENDIX G

Surface Collection from Wolford Mound

Appendix G
Surface Collection from Wolford Mound

Catalog	Idenitification	Material	No.	Weight (g)	Max. Length	Max. Width	Max. Thickness	Thickness at Base	Base Width	Tang Width	Tang Length	Notch Depth	Notch Width
			1	7.10	43.76	26.35	6.23	4.31	15.79	10.70	6.07	3.13	3.58
C-1517	UNCLASSIFIED POINT	LAUREL	1	38.90	79.67	32.87	12.61	8.29	32.87	0.00	0.00	0.00	0.00
C-1518	BIFACE	HT UNKNOWN	1	16.40	0.00	40.37	10.25	7.57	21.47	16.85	11.35	9.30	8.37
C-1519	SNYDERS POINT	LAUREL	1	12.60	0.00	21.75	11.41	7.76	18.18	16.29	13.24	1.51	7.41
C-1520	MCWHINNEY POINT	LAUREL	1	22.70	66.04	35.29	10.25	7.56	0.00	0.00	0.00	0.00	0.00
C-1521	BIFACE	LAUREL	1	12.30	45.86	32.96	8.00	6.36	22.94	21.38	11.14	4.72	5.17
C-1522	BREWERTON POINT	HT LAUREL	1	26.00	61.19	33.42	13.90	6.86	0.00	0.00	0.00	0.00	0.00
C-1523	BIFACE	LAUREL	1	10.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-1524	GROUND STONE FRAGMENT		1	7.60	0.00	27.43	7.66	6.92	24.24	20.05	14.95	3.67	10.04
C-1526	BREWERTON POINT	LAUREL	1	10.10	46.33	24.25	8.27	5.35	0.00	15.99	14.41	4.12	6.32
C-1525	BIG SANDY POINT	HT LAUREL	1	26.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-1528	CORE	HT LAUREL	1	1.80	25.92	18.32	2.87	2.78	18.32	0.00	0.00	0.00	0.00
C-1529	TRIANGULAR POINT	LAUREL	1	5.70	0.00	26.30	6.03	4.30	23.72	16.37	9.69	6.48	6.95
C-1527	KIRK CORNER NOTCHED POINT	LAUREL	1	10.60	49.03	16.74	10.87	5.56	16.74	0.00	0.00	0.00	0.00
C-1530	MCWHINNEY POINT	LAUREL	1	4.00	0.00	22.61	5.06	4.40	17.90	17.73	6.01	0.00	0.00
	UNCLASSIFIED BIFURCATE	LAUREL	1	14.00	54.17	0.00	7.82	5.10	0.00	19.54	13.33	6.02	5.85
	GODAR POINT	WYANDOTTE	1	7.50	0.00	23.12	8.97	6.85	19.20	13.48	12.51	5.08	9.95
	TABLE ROCK POINT	LAUREL	1	11.20	0.00	21.62	12.94	0.00	0.00	0.00	0.00	0.00	0.00
	MCWHINNEY POINT	LAUREL	1	9.00	0.00	20.04	12.33	0.00	0.00	0.00	0.00	0.00	0.00
	MCWHINNEY POINT	LAUREL	1	11.00	57.48	17.41	12.96	5.08	12.74	11.80	5.63	0.00	0.00
	MCWHINNEY POINT	HT LAUREL	1	14.50	0.00	23.80	12.56	7.17	13.55	13.55	8.44	0.00	0.00
	MCWHINNEY POINT	HT LAUREL	1	18.80	0.00	23.27	13.35	8.69	0.00	0.00	4.84	0.00	0.00
	MCWHINNEY POINT	HT LAUREL	1	6.50	0.00	22.47	9.19	5.98	17.09	14.37	11.82	3.43	4.59
	MCWHINNEY POINT	HT LAUREL	1	13.60	57.39	21.95	11.00	8.60	0.00	13.61	14.55	1.79	12.52
	MCWHINNEY POINT	HT LAUREL	1	8.40	0.00	22.12	11.01	0.00	0.00	0.00	0.00	0.00	0.00
	MCWHINNEY POINT	HT LAUREL	1	2.80	0.00	19.44	5.37	5.11	0.00	0.00	11.19	5.69	5.44
	POINT FRAGMENT	HD UNKNOWN	1	5.00	0.00	0.00	6.04	0.00	0.00	0.00	9.78	3.84	4.90
	POINT FRAGMENT	UNKNOWN	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

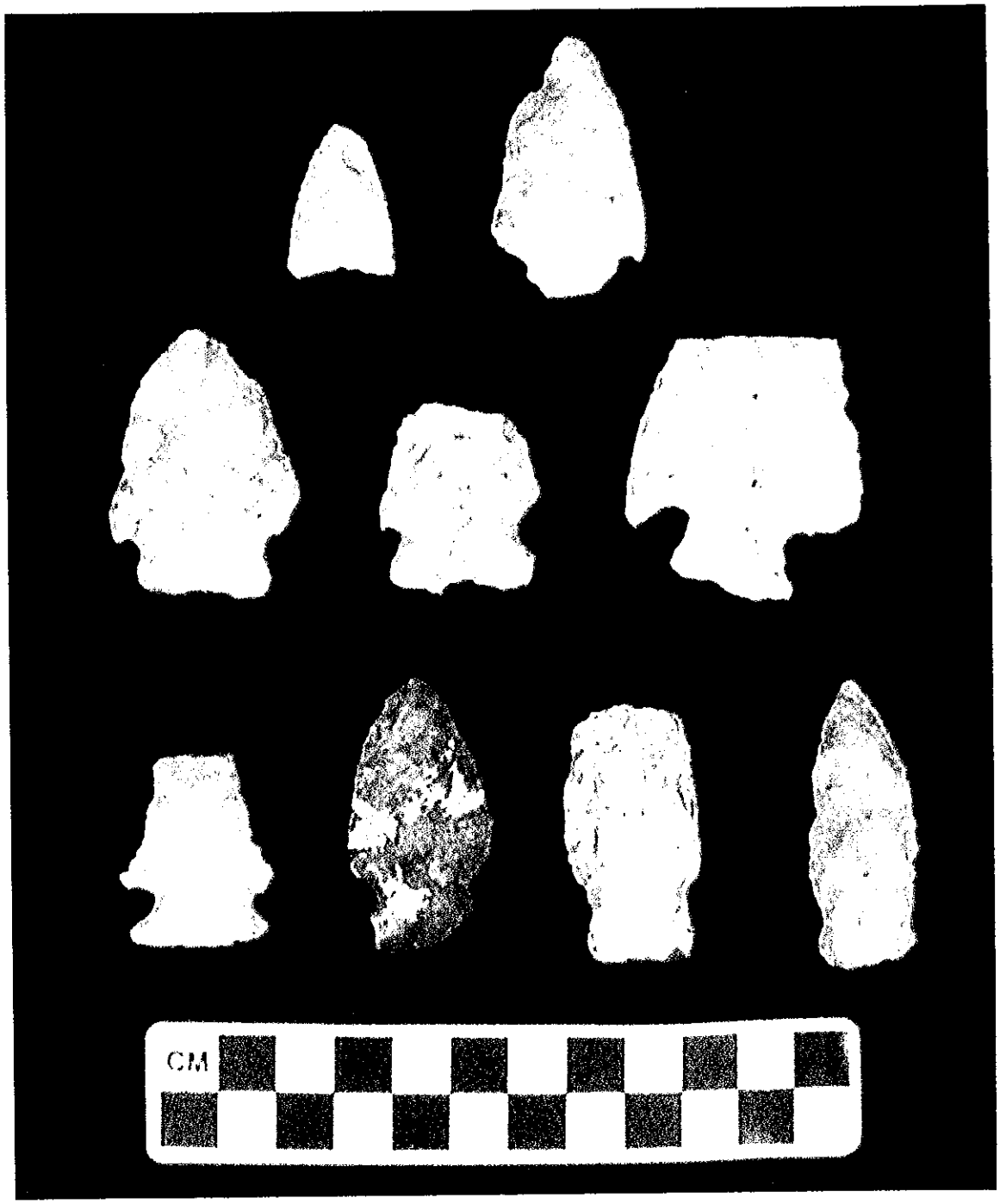

Figure 1. Catalogued points from surface collection. Bottom: KirK Corner Notched, Big Sandy, and McWhinney. Middle: Brewerton (C-1522), Brewerton (C-1526), and Snyders. Top: Triangular point and Unclassified point.

Figure 2. Uncatalogued points from surface collection. Bottom: Unclassified Bifurcate, McWhinney, McWhinney, and McWhinney. Middle: McWhinneys. Top: Table Rock, Unclassified, and point fragment.

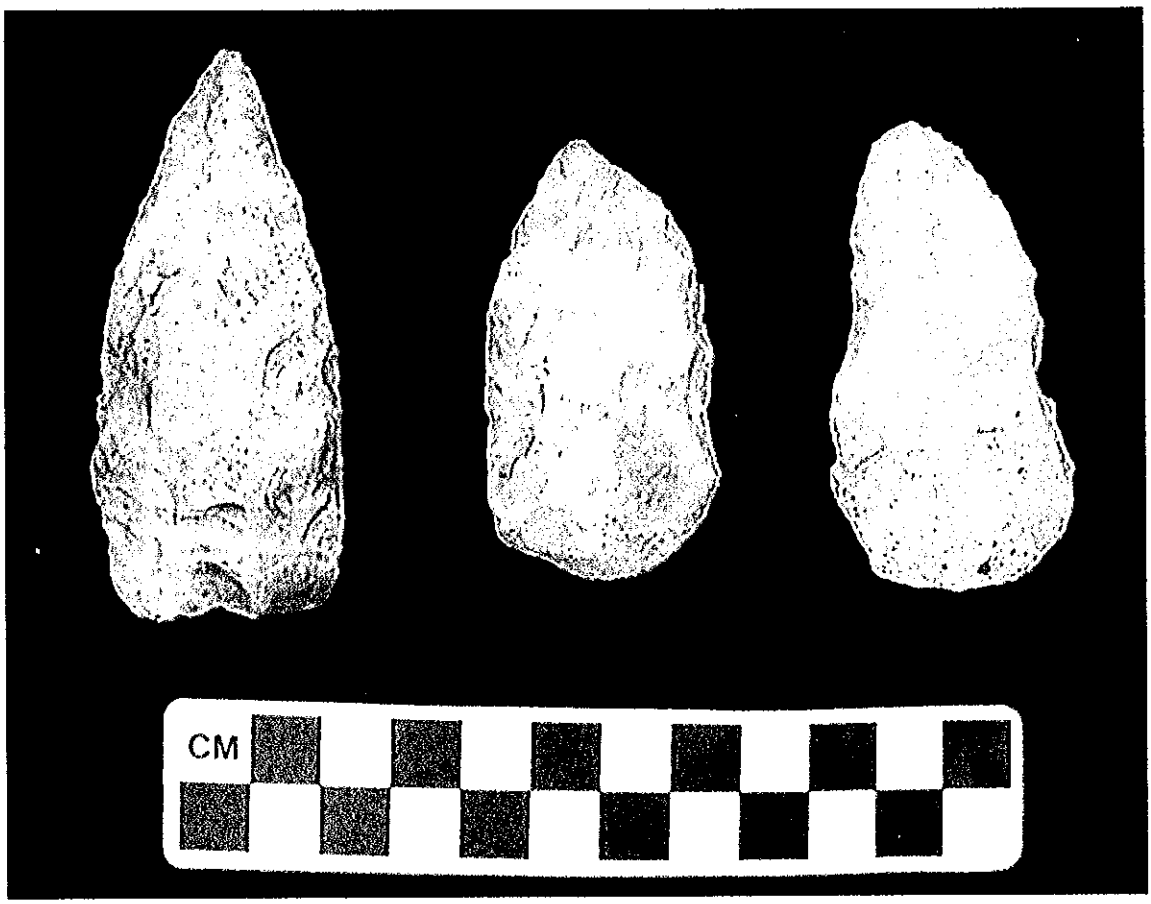

Figure 3. Bifaces from surface collection.

Figure 4. Groundstone fragment from surface collection.