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Back issues of the *Ohio Archaeologist* printed prior to 1964 are generally out of print but copies are available from time to time. Write to business office for prices and availability.

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PRESIDENT'S PAGE

At the April Board of Directors Meeting considerable time was devoted to a discussion of the steady decline of "personally found displays" at our meetings. Several ideas were considered to encourage our members to display their collections. The Board decided to establish a new award category: Best of Show-Personally Found Collection, to begin with the July summer meeting. The criteria for this award is that the display must be labeled as personally or family found. To encourage responsible collecting, extra consideration will be given for cataloguing, analysis and documentation of the display. In addition, the Board decided to reserve the first two (2) rows of tables at our regular meetings for display only. The Board hopes this will encourage our members to display their material.

The Board would welcome any ideas the members may have to improve the meetings and increase the participation of the members. It is your Society, so please let us know.

I would also like to encourage our members to follow the fine example of Kendall Saunders in the past and John Mocic recently in recruiting new members for the ASO. Please keep the ASO in mind as you discuss archaeology and your related activities. If each of us would just bring one new member into the Society, we would double our membership.

The American Committee for Preservation of Archaeological Collections' March Newsletter reports the reburial of the Campbells collections including the "Campbell figurine". This collection was reburied in late 1992 and had been collected in part on what is now The Joshua Tree National Monument in California. The ACPAC is funded by voluntary contributions and the Newsletter is distributed free of charge. The Newsletter presents the latest information on the reburial issue and an interesting dialogue for the preservation of archaeological collections.

I look forward to seeing you at our meetings.

Larry L. Morris

2nd Annual

NATIVE AMERICAN ARTIFACT EXHIBIT

August 7, 1993, 10:00 a.m. until 4:00 p.m.

GRAVE CREEK MOUND STATE PARK

801 Jefferson Avenue, Moundsville, WV

Sponsored by The Upper Ohio Valley Chapter of the West Virginia Archaeological Society and the Grave Creek Mound State Park

This is an educational exhibit. Only genuine artifacts found in the tri-state area will be displayed. Assistance will be available to help the public to recognize, identify and preserve their artifacts. There will be no open buying or selling of artifacts on State Park grounds.

FREE ADMISSION

BRING YOUR ARTIFACTS TO SHARE OR IDENTIFY

Exhibit space is available for this event. To reserve table space contact Grave Creek Mound State Park Office at 843-1410 or Bob Kersten at 845-3494. Educational and local collections preferred. Reservations due by Noon, Thursday August 5, 1993.

WEST VIRGINIA DINING ROOM OPEN FOR LUNCH 11:00 a.m. until 2:00 p.m.

Held In Conjunction & Within Walking Distance of MOUNDSVILLE COMMUNITY DAYS CELEBRATIONS

Front Cover: Six birdstones. Top row. Bar type birdstone impregnated with red ocher. Found on Honey Creek 3 miles east of Attica, Seneca Co. Second – Glacial Kame type birdstone made of banded slate with pronounced banded eye, found by Richard Gayle east of Leonardsburg, Delaware Co. Third – Bar type, made of brown quartzite, found in Washington Co., Bottom Row. Flat bodied pop-eyed birdstone of banded slate with basal ridges, Morgan Co. Bar type with pop eyes. Made of banded slate with large black eye inclusion, Hancock Co. Chunky type birdstone with incised eyes; found by the Englert Family on their farm in Portage Co.

A HANDLE PIPE

by
C.J. O'Neill
1701 E. Barden Way
Charlotte, N.C.

This handle pipe was found by J. M. Robincheau near Buffalo Lake, in Packwaukee Township, Marquette County, Wis., in 1880, and is pictured in George West's *Tobacco Pipes and Smoking Customs*, page 790.

The pipe, of highly polished brownish-red Ohio pipestone, appears to be of a type crafted by the so-called Intrusive Mound culture, which dates the pipe to about 650 A.D.

Part of the handle has been restored and, judging by a few intact examples, it is doubtful the handle on the original was much more than half the length of this pipe. (See, for example, the two Intrusive Mound pipes pictured in *Hart's Prehistoric Pipe Rack*.)

As restored, the pipe measures 7¼" in height and 4⅜" in length. The handle, roughly the bottom half of which is restored, is 4 1/16". The bowl's height is 3" and its outside diameter, including flange, is 2 1/16". The pipe's overall length is 4⅜".

The pipe is heavily engraved, with the bowl and handle covered by interconnecting, beak-like incisions which are framed by semilunar incisions. The mount of the bowl is engraved with rectangles, which are themselves decorated with parallel lines. Some of these rectangles intersect at the hole.

The stem of the pipe is ridged on top and has alternating series of incised lines, forming chevrons that extend from the ridge to the edge of the stem on either side. The underside of the stem is decorated with chevrons made up of semilunar incisions, alternating with blank areas.

The pipe was formerly in the collection of Walter Holstein, Lake Mills, Wis. The well-known fluted axe collector, Joseph Ringeisen Jr., bought Holstein's entire collection, including the pipe, on July 12, 1938.

Describing a similar, but smaller, handle pipe, from Delhigh, Oh., author Gordon Hart says: "It is a superb example of lithic craftmanship which emphatically demonstrates the Hopewell cultural influence carried on into the Intrusive Mound culture . . .The latter culture is not directly related or connected to the Hopewell people, other than in the use of the mounds as a place of burial, thus the name, 'Intrusive Mound' culture. However, the Intrusive Mound culture perpetuates some design traits of their predecessors."

Hart also points out that his pipe, like this one, has a rare quality among Indian relics–the use of non-parallel composition. The bowl is of the *round* type, while the handle is *rectangular*, with 90-degree corners, to facilitate bringing the stem to the mouth in a consistent manner.

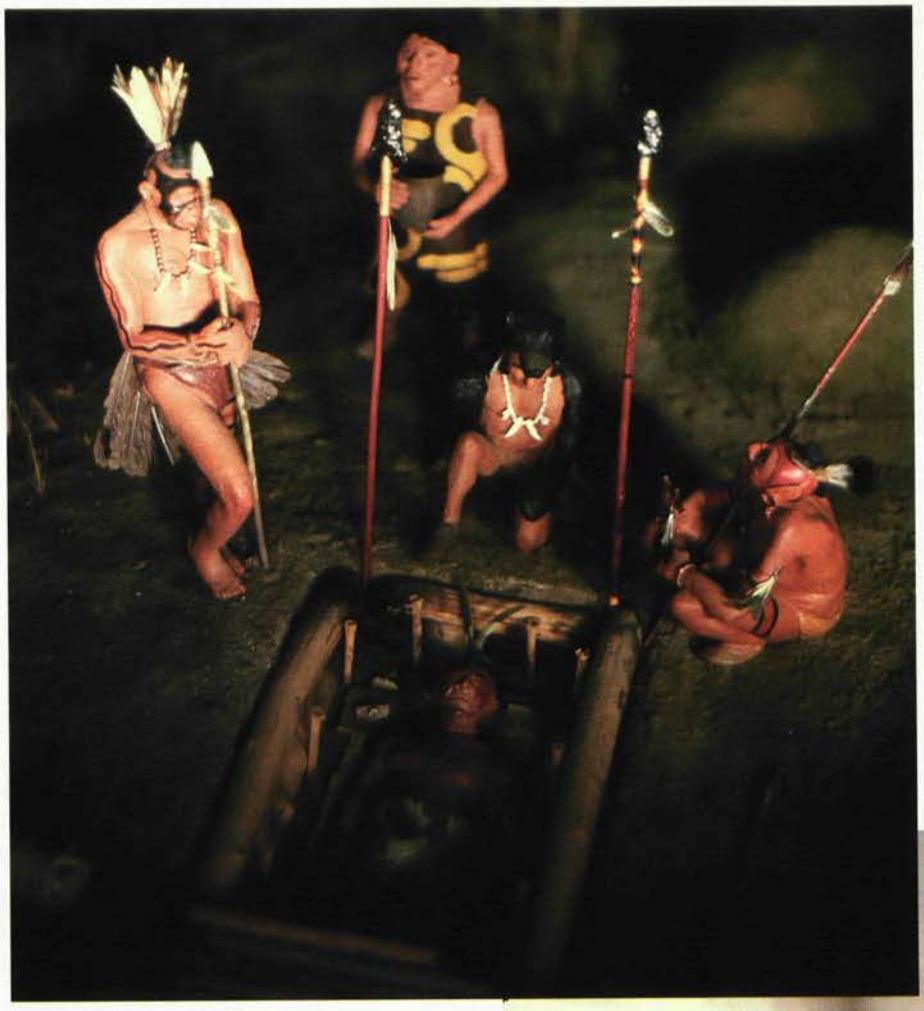
Reference:

Hart, Gordon
Hart's Prehistoric Pipe Rack, Privately Printed, Bluffton, Indiana

Fig. 1 (O'Neill) Handle Pipe from Wisconsin

DIORAMAS

by
Robert N. Converse
199 Converse Drive
Plain City, Ohio



In the accompanying color plates are two outstanding dioramas created by master dioramists Jim Hahn and Ray King of Newark, Ohio, assisted by Rich Mahoney. Through the skills of the diorama maker the viewer can see a segment of prehistoric life which can be visualized in no other way.

Shown is a Hopewell burial scene as it may have appeared some 1700 years ago. All materials–obsidian, Flint Ridge flint, copper mica and fresh water pearls–are authentic. This scene is only part of a large twelve foot diorama showing all aspects of Hopewell life.

A conception showing Paleo Indians attacking a mastodon which has taken refuge in a swamp. All Hahn-King dioramas are exactly to a scale of 1⅞ inches to the foot.

Many museums of fifty years ago used dioramas as a way to convey to the general public a sense of how prehistoric people lived and died. In the 1960s, museum designers seemed to have been more interested in making displays into art forms rather than vehicles to educate and explain the past. The visitor often left these newer museums with no idea of the richness, beauty and diversity of the cultures represented in their sparse display cases.

Today, museum designers have learned that the people want to see artifacts, lots of them, and be able to understand how prehistoric people lived. Only through the art and skill of the dioramist can anyone appreciate such concepts as a Hopewell earthworks, an archaic village, a mound burial or a paleolithic hunting scene. Dioramas can be found in all the newer museums and often are the focal point of visitor interest.

THE ALEXANDER SITE

by
Wayne A. Mortine
Newcomerstown, Ohio

The site is located on high rounded prominence in northern Guernsey County at an elevation of 1120 feet. The location is a part of the Unglaciated Plateau of eastern Ohio. The site is approximately 3½ miles south of the Tuscarawas River as it flows past Newcomerstown, Ohio, and is situated on the southern end of an extended ridge top that runs for about 2½ miles in a north/south direction. The ridge is part of a 5 to 6 mile range of hills that separates the valleys of the Tuscarawas River and the Wills Creek. It is at this place that these two streams reach their closest point before the Wills Creek empties into the Muskingum River below the city of Coshocton. The Tuscarawas helps form the Muskingum River at Coshocton. (Fig. 1).

Mr. Paul Alexander first brought the site to my attention. He had a small collection of points from an open air site on his farm. They had been found surface hunting over a number of years and shared with me as they were found. The unique feature of his finds was that they were all the same type (Figs. 2, 3, 4). A rather small corner-notched style of artifact that is thought to be transitional from Late Archaic into Early Woodland (Converse, 1973). When I questioned him about the lack of other point styles in his collection, he stated that it was the only kind he ever found. Furthermore, he continued, they were all found in the same vicinity of about one acre or less. Despite repeated invitations, I was only able to surface hunt the site on one occasion. At this time eight recognizable points and/or basal fragments were found. Each of these finds matched the description of the corner-notched points already in the Alexander collection. Mr. Alexander passed away shortly after my visit and the site is no longer farmed.

While all the points in the Alexander collection are the same basic style, there is some diversity. There are six pieces (Fig. 2; top row 1-4, middle-row 1-2) that have been reworked into blunts or scrapers from what were broken or damaged points. In Fig. 3 (fourth from left top row) a small drill or graver point appears to have been worked on the tip of the point. There were 72 corner-notched Late Archaic/Early Woodland points in the collection. Twenty three or 31.9% were pentagonal in form. Fifty percent of the total collection had been manufactured from colorful Van Port Flint Ridge varieties. There is no evidence of grinding on the bases or in the notches. Chippage on the site is scarce and resembles retouch flakes.

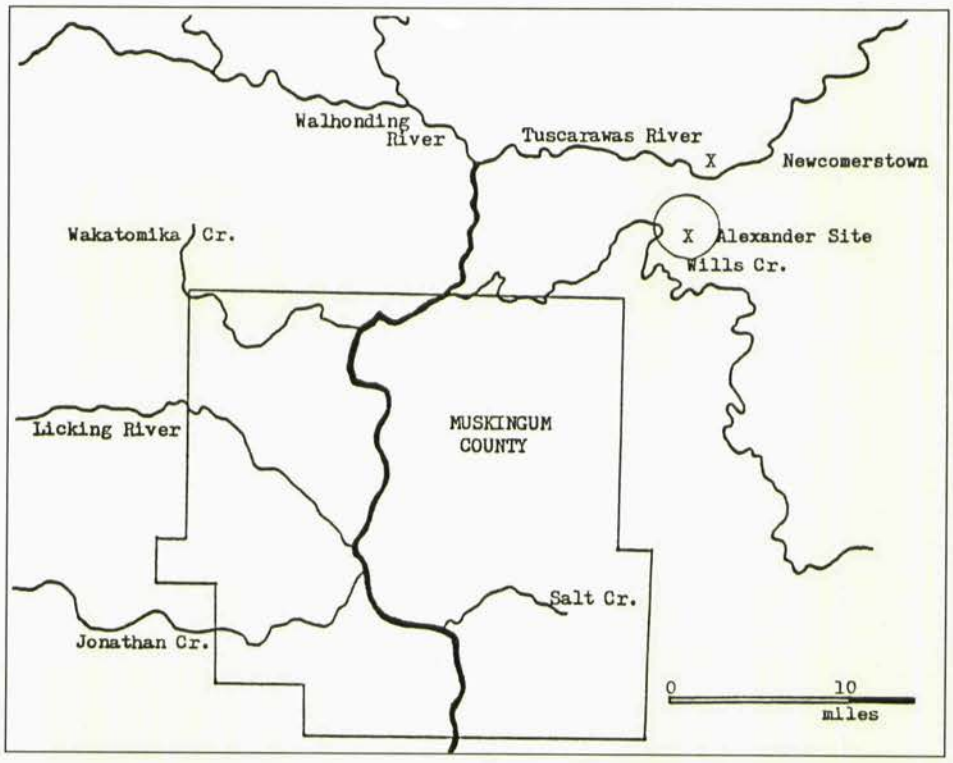


Fig. 1 (Mortine) Map of the Alexander Site.

The type of corner-notched point found at the Alexander Site is a common find on many of the sites in east central Ohio. While not well documented as to their chronological position, there is some evidence of association with Early Woodland material in refuse pits at the Cramlet Site east of Newcomerstown, Ohio (Mortine, 1964). The unusual aspect of the Alexander site is that thus far this style of artifact is the only one found. Although there is some variation on the basic point style it would seem that this collection was a meager inventory of utilitarian tools and projectile points. The author is aware of only one other site in our area where this corner-notched point is the only style found. This site was brought to my attention several years ago by a long time surface hunter, Kris Kunz. Within the last year I was able to verify Mr. Kunz's account by observing another collection from the same area. It, too, consisted of an overwhelming number of these points. This collection also contained a few pieces that could be considered blanks or preforms. The difference between the two sites is that while the Alexander Site is located in a remote upland area, the other site is situated in a riverine setting on a terrace of the Tuscarawas River three miles east of Newcomerstown, Ohio. At the present time, with the evidence we have available to us, at least two possibilities exist for the use of the Alexander Site. First, it may represent a campsite used by people passing from one river system to another by the shortest route. Second, it may have had a more specific use such as a procurement site for hunting game by small bands of hunters.

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1973 Ohio Flint Types. The Archaeological Society of Ohio
Mortine, Wayne A.
1964 The Cramlet Site. *Ohio Archaeologist,* 14 ( ). 112-114

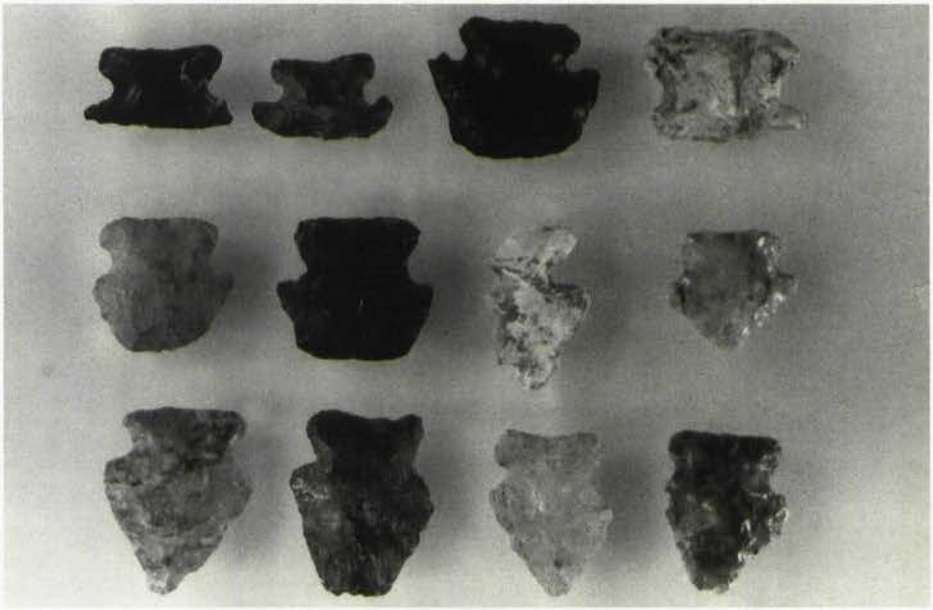

Fig. 2 (Mortine) Corner-notched: Late Archaic/Early Woodland. Top row, 1-4, Middle row 1-2, blunts or scrapers made from damaged or broken points.

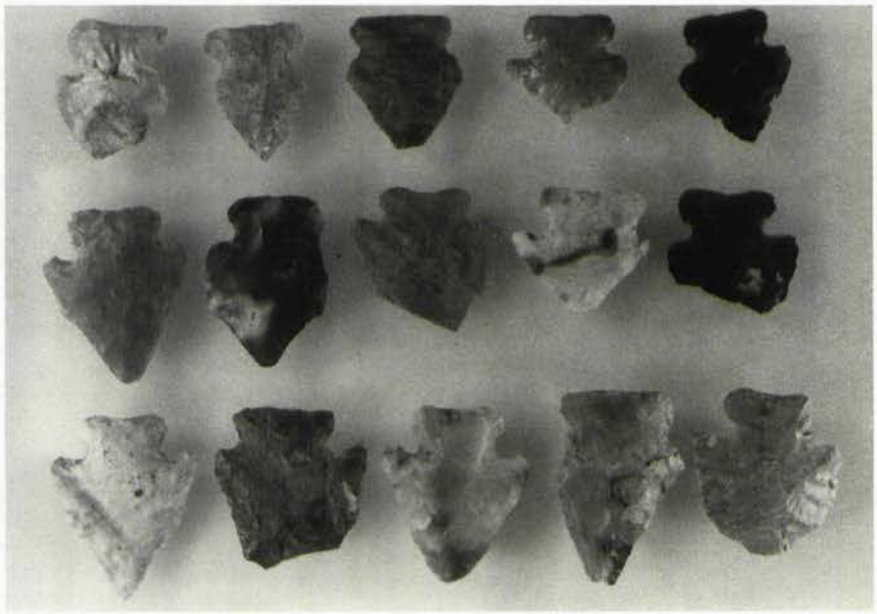

Fig. 3 (Mortine) Corner-notched: Late Archaic/Early Woodland. Fourth from left top row has been retouched to form a small drill or graver point.

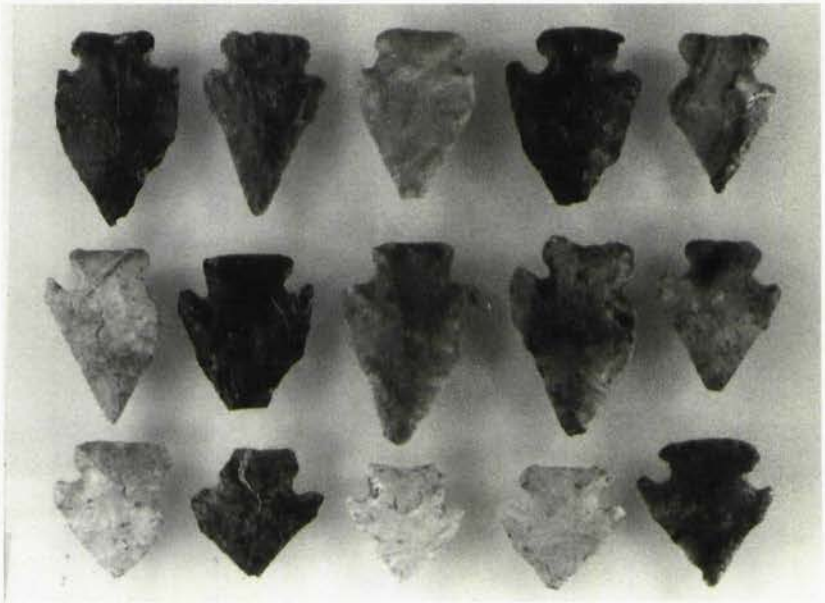

Fig. 4 (Mortine) Corner-notched: Late Archaic/Early Woodland.

AN EARLY SECOND MILLENNIUM B.C. COMPONENT ON A SMALL STREAM IN SENECA COUNTY, OHIO

by
Jonathan E. Bowen
419 Sandusky Ave.
Fremont, Ohio 43420

For the past twenty years I have been conducting surface investigations at 33SE7, a Late Archaic site on the headwaters of Green Creek in Section 6, Reed Township, Seneca County, Ohio. The General Land Office surveyor's field notes indicate that, during the 1820's, the site was located within an oak-hickory-beech-maple forest, about five kilometers south of the southern boundary of a very extensive grassland/oak savannah, the Castalia Prairie, which covered hundreds of square kilometers. I have examined the entire surface of the approximately 5000 square meter site every spring and fall since 1972, for a total of 40 visits. Although thirty items (27 flakes, 3 bifaces) have been recovered, that works out to only 0.75 item per visit. Thus, numerous visits have been necessary to determine the nature of this site.

What makes 33SE7 noteworthy is its single component status. All of the 30 items recovered consist of non-heat treated creamy white Vanport (Flint Ridge) material. The single obviously diagnostic biface is a Genessee point, which dates the assemblage to the period of *ca.* 2000-1500 B.C. (DeRegnaucourt 1991; Ellis *et al* 1990; Fogelman 1988; Justice 1987; Ritchie 1961). Unfortunately for settlement pattern studies, Genessee points are uncommon in the region around 33SE7, so that meaningful distributional comparisons are not yet possible.

On the other hand, the artifact assemblage at 33SE7 is most interesting. A single preform (Fig. 1, a), a Genessee point (Fig. 1, b), a severely resharpened Genessee point (Fig. 1, c), and 27 large thinning flakes (Fig. 1, d), all of white Vanport chert, have been recovered. No small sharpening flakes, which would indicate tool maintenance, were found. All of the flakes seem to have been the result of tool manufacture. None show any obvious retouch. The entire sequence of bifaces, from preform, to tool, to worn-out tool is present (Fig. 2).

Sometime during the period of 2000-1500 B.C. some people made at least one tool or preform at 33SE7. They lost a preform and a functional Genessee point, and discarded a worn out point. The uniform nature of the raw material suggests that the occupation of 33SE7 may have been of very short duration, and may have involved a month or less, even a single day. There is no evidence that 33SE7 was occupied before of after that single, brief episode.

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DeRegnaucourt, Tony
1991 A Field Guide to Prehistoric Point Types of Ohio and Indiana. *Occasional Monographs of the Upper Miami Archaeological Research Museum* No. 1. Ansonia, Ohio.

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1990 The Archaic in The Archaeology of Southern Ontario to A.D. 1650, ed. by C.J. Ellis and N. Ferris. pp. 65-124. *Occasional Publication of the London Chapter, Ontario Archaeological Society* No. 5. London.

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1961 A Typology and Nomenclature of New York Projectile Points. *New York State Museum and Science Service Bulletin* No. 384. Albany.

DUES

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All renewal memberships for the coming year should be paid by December 31 of the current year.

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Every member of the Archaeological Society of Ohio has a friend or acquaintance who is interested in the prehistory of Ohio and the Midwest. They may be a collector, surface hunter or just someone interested in our rich archaeological heritage who wants to help preserve Ohio's past. Give this membership application to that friend or acquaintance. He or she will be rewarded by receiving four yearly issues of The Ohio Archaeologist as well as attending meetings and joining one of our many chapters. It is an opportunity to share his or her interest with our nearly 3,000 members.

Fig. 1 a, preform; b, functional point; c, worn out point; d, thinning flake

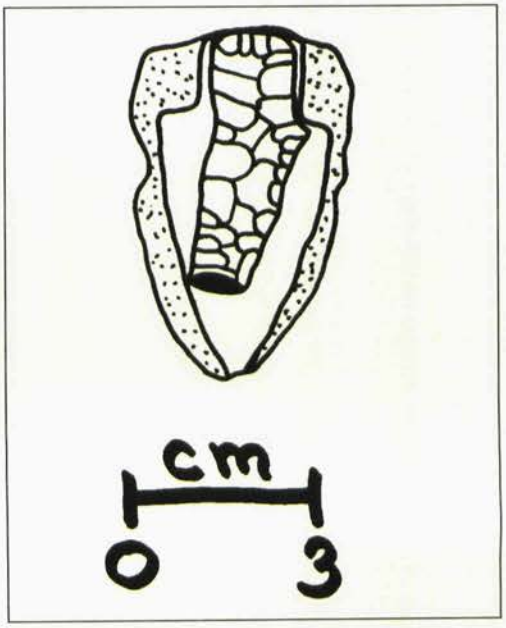

Fig. 2 Superimposed preform, functional point, and worn out point.

A NOTCHED SANDSTONE TOOL

by
David W. Reed
2469 Scott Drive
Wooster, Ohio 44691

Mark O'Donnel found this sandstone tool as he was plowing his garden in September of 1992. The site is in Killbuck Twp. in Holmes County, Ohio.

It is made of soft brown sandstone and measures 4¼ inches long, 2¼ inches wide at the top end, and 1½ inches wide at the stem. The lower portion of the stem has been smoothed, and the middle section has been worked into an incurvate shape. The obverse side shows beveled wear at the top. The stem surface is flat. Both sides of the stem at the lower end show considerable wear. A flat spot appears on the side of the top section.

Possible uses of the artifact vary. It may have been used as a digging or resharpening tool, or perhaps as a pestle. It could also have been used for the wrapping of netting.

Reference

Converse, Robert N.
1978 *Ohio Stone Tools.* The Archaeological Society of Ohio.

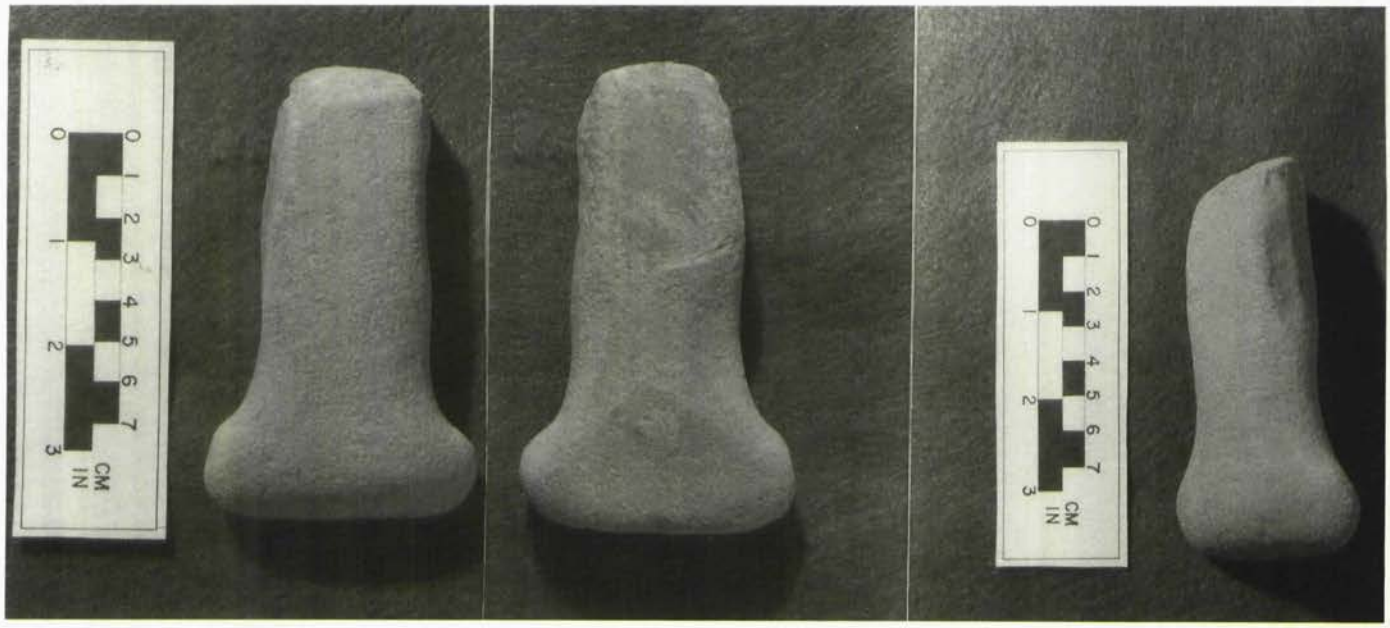

Fig. 1 (Reed) Sandstone tool from Holmes County.

CRINOID, SHELL AND STONE BEADS

by
John Robinson
1414 W. Market St.
Crawfordsville, Indiana

We acquired the beads shown in the illustrations at a farm auction near Fort Recovery, Ohio, some years ago. They were said to be from the Fox-Rammel glacial kame site. The crinoid beads, Fig. 1, are made from fossil crinoids – the smallest is 6mm and the largest 17mm. There were around 250 beads in the lot.

In Figs. 2 and 3 are other beads from the same location. They are made of shell, bone and stone. The stone beads are drilled with conjoining holes.

Reference

Converse, Robert N.,
The Glacial Kame Indians pages 108-133.

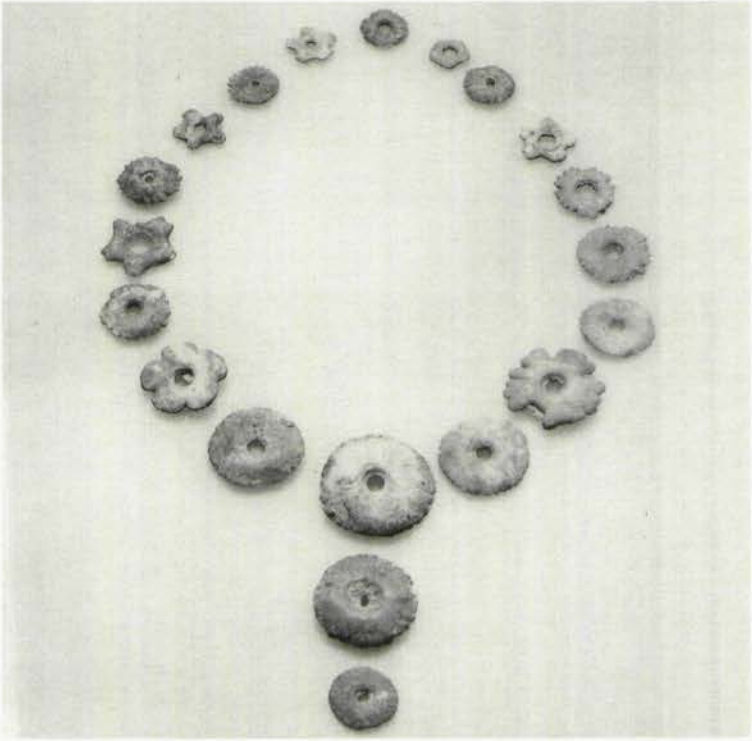

Fig. 1 (Robinson) Crinoid stern beads.

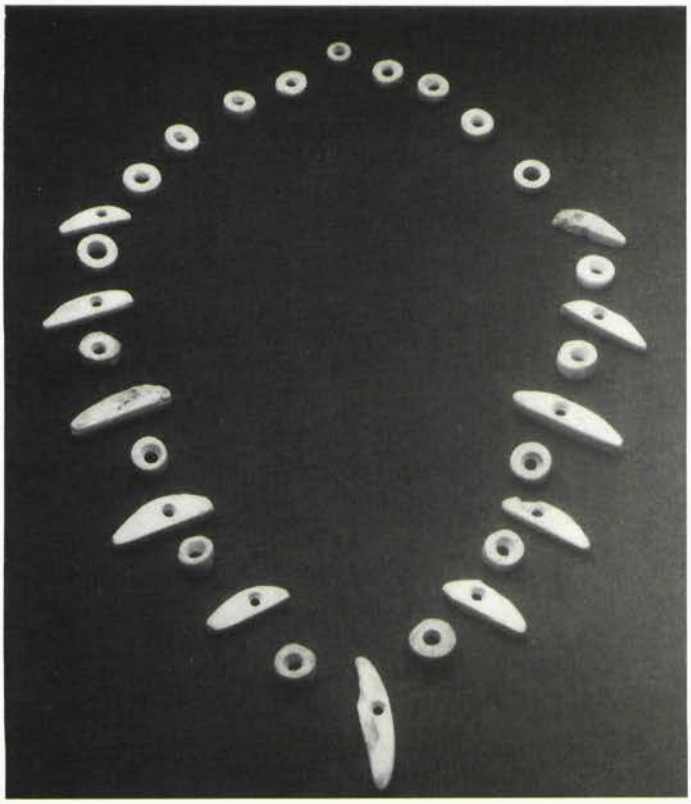

Fig. 2 (Robinson) Shell beads.

Fig. 3 (Robinson) Stone, bone and shell beads.

A DOUBLE-BITTED COPPER ADZE

by
John McKendry
79 Perry Street
Buffalo, NY 14203

Judy Wright, a member of the Beau Fleuve chapter, recently found the above adze on the Three Trees site near the mouth of the Cattaraugus River at Lake Erie.

The adze is made of native copper covered with verdigris and weighs 197.5 grams. It is bi-convex in cross-section. One of the two cutting edges is flaring and the other is constricted. Both cutting edges are excurvate and sharp. The constricted edge has prehistoric damage or dulling, possibly from use. Such artifacts are usually associated with Early to Middle Woodland or Meadowood (500 B.C. to Hopewell 100-300 A.D.).

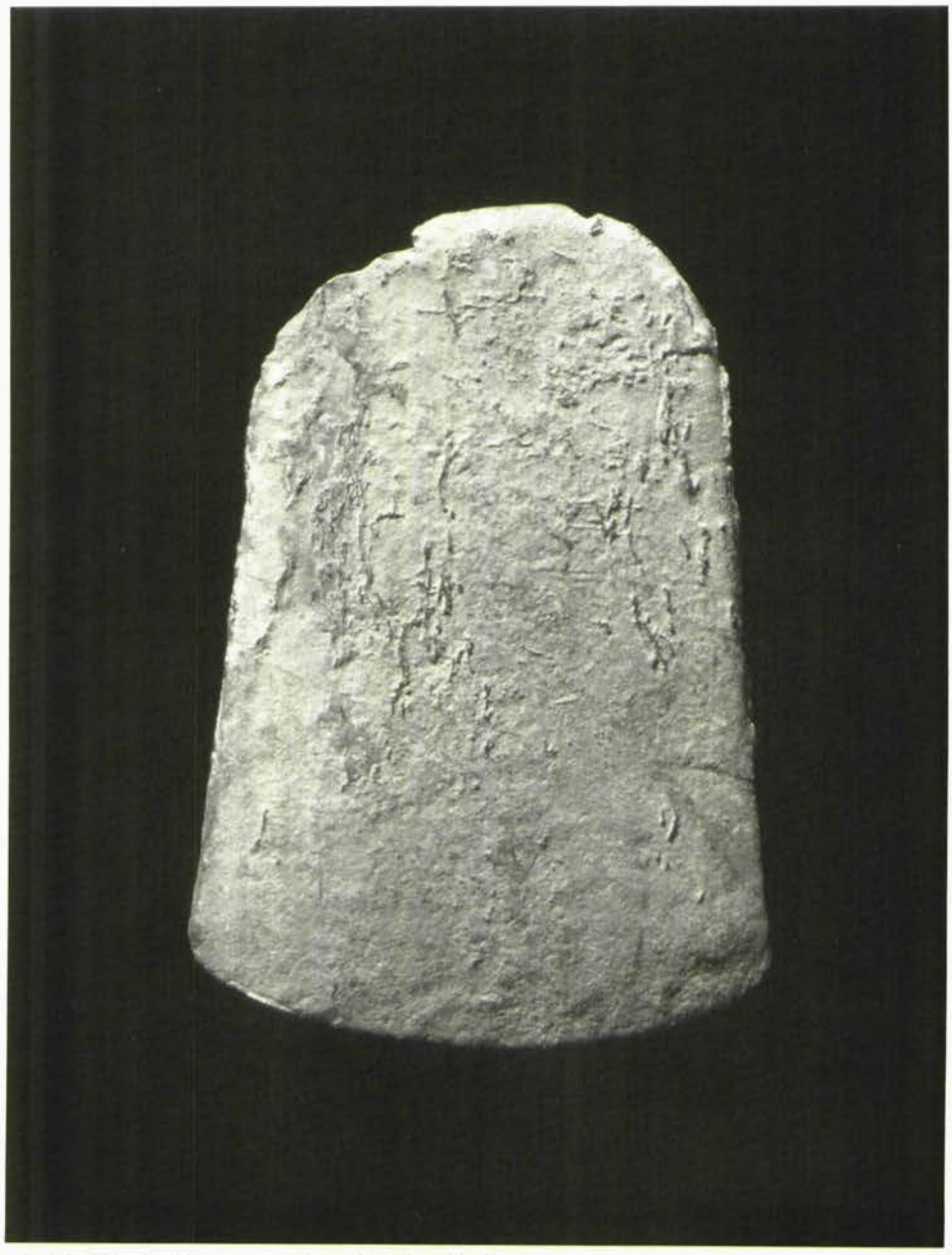

Fig. 1 (McKendry) Copper adze found in Silver Creek area.

PRE-WOODLAND ARTIFACT DISTRIBUTION FOR THE TONTOGANY CREEK AND SUGAR CREEK DRAINAGE SYSTEMS

by
Mike Kiel

I. INTRODUCTION

Within the region of northwestern Wood County there are several drainage systems that empty into the Maumee River. These systems draining from the south flow through an area composed of glacial beach ridges and sand elevations that were important to the settlement and travel of early Aboriginal cultures. The purpose of this study is to analyze the surface collected material from my collection and evaluate the concentration of all pre-Woodland and phase material having direct proximity to specific drainage systems.

As a result of collector location, there is a high concentration of sites lying in direct proximity to two specific drainage systems that have produced surface collected material for this study. This paper will concentrate on the distribution of this material for the Tontogany Creek and Sugar Creek drainage systems. Although the data reported in this paper represents only one collection and two drainage systems, it is believed that this data base is representative of all major drainage systems in this section of Wood County.

II. PROJECT METHODOLOGY

The source for this paper's raw data was isolated strictly to the author's collection in order to avoid the possibility of inaccurate documentation from other collections. All site materials have been historically documented and segregated to ensure accurate analysis. This means of recording site data may not yield the same information that would be found if stratified random sampling were executed. It is a means, however, of utilizing a significant sample of surface-collected material to compare with data analyzed in adjoining sections of northwestern Ohio (Payne 1982:4).

The first step in this project involved plotting all sites in proximity to Tontogany and Sugar Creeks on United States Geographical Survey 7.5 series quadrangle maps. Due to the area of residence of the author, it was found that of 62 sites utilized for this study, 52 sites are clustered in the Grand Rapids Quadrangle. The balance of the sites overflow into the Bowling Green North and Western Quadrangles, respectively (See Fig. 1).

The next step in the process involved recording all surface-collected materials from each site by two means. The first means of breaking site material down was by lithic composition. For the purpose of this study, materials were segregated into fling/chert, stone, and slate categories. Following this segregation, all data was recorded by cultural chronology including Paleo, Archaic, and Woodland phases. Additionally, any materials that could not be readily identified to a specific culture were placed in an unknown category.

For each culture and the unknown, materials were recorded according to readily identifiable configuration and type (i.e. projectile point types, tools, and ornaments). Each lithic subgroup was totalled for each culture, then compiled to show a total for all cultural materials collected by site. All individual site data was then compiled into a composite for the respective drainage systems.

The comparisons reported in this study will deal solely with the summary data recorded in the culturally defined columns. This method was used to eliminate the possibility of inadvertently showing any cultural bias. It may be possible for the reader, however, to draw conclusions as to cultural placement of unknown materials where the identifiable culture and the unknown columns show prevalence by type.

Projectile points are the most commonly found pre-ceramic artifacts that illustrate "sufficient temporal variation and internal or horizontal uniformity to permit meaningful cultural inferences and distinctions to be made" (Murphy 1975:82). For this reason, it will be evident that the bulk of the data reported in this study falls into the projectile point category. At the same time, it is evident that the majority of the data recorded under the unknown category falls into the various tool types. This results from such a broad horizon of cultural use for the "generic" types of tools collected (i.e. scrapers, knives).

All artifacts were assigned to typological names based on the similarities in their morphological attributes to those described in literature. In the case of the classification of knives, however, all data recorded represents only those artifacts having no basal work (i.e. ovate forms, uniface, etc.). This was done to draw a clearer line between knives and Archaic point types, which in many cases were used as utility tools.

III. TONTOGANY CREEK

There were a total of 41 sites plotted for the composite of the Tontogany Creek drainage system. From this total, a cluster of 32 sites lie in the Grand Rapids Quadrangle in direct proximity to the west branch of Tontogany Creek. The balance of the sites fall into the Bowling Green North Quadrangle and relate to the main stream. All sites lie on sand elevations which are likely the remnants of post-glacial beach ridges. This is not to imply, however, that sites do not occur in areas other than on these sand elevations. It is strictly a result of collector preference and location.

There are a total of 992 artifacts recorded on the composite that are culturally identifiable (See Fig. 2). For the purpose of this study, the 37 potsherds accounted for under the Woodland category will be omitted from the total leaving a balance for comparison of 955. This omission results from the possibility that potsherds from the same site may be from the same vessel. If this would be the case, then they should be recorded as one artifact. Since it is unclear whether or not this is the case, their omission reduces the possibility of greatly swaying cultural comparison data. The only real purpose for their being recorded was to show evidence of their existence.

A. The Paleo-Indian Period

For the drainage system there were 50 artifacts recorded having the morphological attributes to fit into this period. This assemblage represents 5.2% of the total data culturally identified. This material was collected off 24 sites in the composite producing a distribution rate of 58.5%.

The earliest phase represented in the assemblage is the Holcombe Complex dating to about 9,000 B.C. (Fitting *et al* 1966; Stothers 1982) with 4 points recorded. These points are smaller than earlier fluted point styles and are not actually fluted. They're very thin, with concaved bases that are basally thinned (Fitting *et al*, 1966). One point is made from Upper Mercer flint the other 3 are produced from Ten Mile Creek chert.

In addition to the 4 points, 3 uniface knives, 3 flake scrapers, and one graver spur were recorded having the morphological attributes to fit into this period. Here again, these tools were manufactured from either Upper Mercer flint or Ten Mile Creek chert.

The balance of the material recorded in this assemblage consists of 39 Hi-Lo points. These points evolved late in the Paleo period and are often referred to as Transitional points (Converse 1973). It is believed that these points may represent a modification of the basally thinned Holcombe point (Stothers 1982) or a phase leading into the bifurcate sequence of the Early Archaic period.

All 24 sites are represented in the distribution of Hi-Lo points, with only 6 sites producing 2 or more points. This indicates a relatively even distribution through the drainage system and a well-established population. In conjunction

with even distribution, another factor that supports an established population, is the predominant use of locally derived chert sources for the manufacture of these points. The primary lithic material used for their manufacture was Ten Mile Creek chert which could be derived from the exposed glacial till within this drainage system (Asmus 1979).

B. The Archaic Period

Recorded in the drainage system composite are 517 artifacts representing the Archaic period. This represents 54.1% of all culturally indentifiable material recorded. The material distribution rate was 92.7% resulting from 38 sites producing Archaic material. From this total, 29 sites produced 2 or more artifacts. This broad distribution correlates with the distribution represented in the earlier Paleo period and supports the opinion that there was a well-established aboriginal population prior to the Woodland period.

The first category listed on the study sheet for the Archaic period was termed Kirk's serrated. For the purpose of this study, both the stemmed and notched varieties were included even though there may be some variation in their respective occurrence during the Archaic period. There were a total of 22 artifacts recorded, representing 2.3% of the total of all identifiable material, with 18 of these being the notched variety. Only 10 sites were represented in the drainage system for a distribution rate of 24.4%.

There were 82 bifurcates accounted for in the summary making them 8.6% of the total of all identifiable material. These artifacts were distributed over 22 sites for a rate of 53.7%. All bifurcate types were represented (i.e. MacCorkle, St. Albans, LeCroy, Lake Erie), however, the Lake Erie and LeCroy variants were predominant.

Archaic Bevels totalled 37 and were 3.9% of the total identifiable material recorded for the drainage system. This group was collected from 17 sites for a distribution rate of 41.5% for the drainage system. The majority of the examples showed extensive resharpening and all had heavy basal grinding.

The Side Notch category accounted for 86 points or 9% of all identifiable material recorded. This assemblage was accumulated from 30 sites for a distribution rate of 73.2%. Included in this category of base style were Archaic Side Notch, Meadowood (Converse 1973), Brewerton Side Notch (Hothem 1986), and Feheeley points (Fitting 1975). As with all of the earlier reported point forms, it is evident that locally derived cherts were the primary source for manufacturing. Ten Mile Creek and Pebble cherts predominated, however, Pipe Creek, Columbus, and Delaware cherts were also represented.

A total of 40 Corner Notch points, or 4.2% of the total material, was collected from the drainage system. There were 30 sites that produced this material giving the type a 51.2% distribution rate. Specific types recorded with this basal morphology were Archaic Corner Notch, Concave Base Corner Notch, Vosburg (Converse 1973; Hothem 1986), Amos and Brewerton Corner Notch (Hothem 1986).

For the system, there were 9 Corner Removed points and 7 Basal Notch points collected. These totals only represent 1.7% of all identifiable material catalogued and were the least represented in the drainage system. The one unique feature with the Basal Notch points was that the examples were predominantly manufactured from Flint Ridge flint.

The most significant point type represented in the system was the Stemmed Base type. There were 110 examples collected for a rate of 11.5% of all material identified. These points were assembled from 21 sites for a distribution rate of 51.2%. The key to this distribution, however, is that 73 points were collected from only two sites.

The Freeworth and the Free East sites both produce large, crude lanceolate and stemmed argillite or sub-greywacke points (Fox 1978; Kenyon 1980; Stothers 1983) belonging to the Satchell Complex. In the Ohio Archaeologist, 33(2):29, 1983, David M. Stothers of the Laboratory of Ethnoarchaeology, University of Toledo, reported on the radiocarbon dating for the Satchell Complex in Northwestern Ohio. Material collected from the Freeworth site was dated at 1240 +/- 65 B.C. giving it a Late Archaic temporal placement.

The balance of the examples in this assemblage consisted primarily of Late Archaic Stemmed points and a few Archaic Expanded Stem. As with all previous point types, locally derived cherts were the primary sources for manufacturing.

In the Flint/Chert tool kit there were 24 knives, 32 preforms/ovate blades, 39 scrapers, 7 drills, and 3 awls for a total of 105 tools recorded having the morphological attributes to fit into the Archaic period. The problem encountered with cataloging these tool styles lies in the fact that they were used through all cultural periods. For the drainage system there was a total of 692 tools recorded, but 546 of this total was recorded under the unknown column since their morphological attributes didn't clearly identify cultural placement. It's the author's opinion that a significant percentage of the undefined tools probably originated during the Archaic period based on the findings in the point type categories. More time will be required to thoroughly analyze this tool assemblage to give it better definition.

In the Stone Tool category there were 5 three quarter groove hammers, 6 three quarter groove axes, and 1 notched celt (Converse 1973) recorded. This assemblage represents only 1.3% of all material identified and may lead some to assume that the relative lack of stone tools indicates very light settlement. It is the author's opinion, however, that this poor representation results from factors other than those relating directly to settlement patterns in the Archaic period.

The primary factor is that many of the sites in this drainage system have been known and hunted for many years. In this region Tontogany Creek has long been known to be one of the primary travel routes inland from the Maumee River and heavy hunting pressure has resulted. It is believed that, between long-term hunting pressure and the ease in which artifacts of this size can be identified, the stone tools from the major sites have been distributed into several area collections.

Another factor having a significant bearing on volume is the change in agricultural practices. Over the past 15 years no-till and chisel plowing has virtually eliminated collecting opportunities on the majority of the sites in this area. While this factor has little bearing on the major sites that have been hunted for many years prior to this change, there are still a significant number of sites that received very little hunting pressure prior to the change. The author believes that these sites still hold a good sample of stone tools, but it is unlikely they will be recovered in the future if current tilling practices are continued.

Finally, the stone tools collected in this system, and those that will be discussed for the Sugar Creek system, are made from a variety of hardstones. The examples that are manufactured from the more porous varieties show a significantly greater amount of deterioration than those made of fine grained hardstones. It is believed that this results from the more porous varieties absorbing moisture, then breaking down during the freezing and thawing process over the years. A significant number of the sites are littered with fragments of hardstone that show signs of surface work, but not enough to give an indication of tool classification.

In the Slate Tools/Ornaments category there were a total of 7 artifacts recorded consisting of 2 slate knives and 5 bannerstones. The knives recorded in this category were placed in the Archaic sequence as a result of their morphological attributes being consistent with other site examples made from different lithic materials. For bannerstones, there were 4 of the winged variety and 1 geniculate. All were manufactured from gray banded slate. As with the stone tools category, this sample should not be considered as a complete representation for the Archaic period. Heavy hunting pressure in years past has contributed significantly to the absence of larger artifacts for collecting today.

IV. SUGAR CREEK

The main stream of Sugar Creek flows in a northerly route through northwestern Wood County and empties into the Maumee River approximately two miles upstream from the mouth of Tontogany Creek. Its route is relatively parallel to the west branch Tontogany Creek and in some points the distance between the two is only a half mile. As a result, the land composition where the sites are located in this system is virtually identical to that of the Tontogany Creek system.

The site composite for the Sugar Creek drainage system consists of 21 sites all located on sand elevations similar to those discussed for the Tontogany Creek system. A total of 507 artifacts were recorded having the morphological attributes to give accurate cultural placement (See Fig. 3). As with the Tontogany Creek composite, I've excluded potsherds from the total used to calculate type density.

A. The Paleo Indian Period

For the system there were 18 artifacts recorded having the morphological attributes to fit into this period. This assemblage represents 3.6% of the total data culturally identified. Ten sites were represented in the assemblage making the distribution rate for Paleo related material 47.6%.

As with the Tontogany Creek system, the earliest phase represented was the Holcombe Complex. The one point recorded was manufactured from Ten Mile Creek chert and possesses all the morphological attributes for the style. Both basal thinning and heavy lateral and basal grinding are present, along with the absence of any fluting.

Fitting into the period, but not necessarily into the Holcombe Complex, were one large uniface scraper and two awls produced from Ten Mile Creek chert. Both awls are flakes with a single chipped spur protruding.

The balance of the material recorded consisted of 14 Hi-Lo points. These points were assembled from 9 sites for a distribution rate in the system of 42.9%. Ten Mile Creek chert predominated as the lithic material of preference, however, there were examples of Columbus and Delaware cherts.

B. The Archaic Period

There were 230 artifacts recorded in the drainage system composite representing the Archaic period. This assemblage represents 45.4% of the total of all culturally identifiable material recorded in the system. All but two of the sites produced Archaic material giving the system a distribution rate 90.5%. The lithic materials used for the manufacture of the artifacts to be described in this system are virtually identical to those used in the Tontogany Creek drainage system.

The system produced 16 points of the two Kirk's varieties described earlier. This total represents 3.2% of all the material culturally identified. The site distribution rate for the type was 42.6% with 9 sites producing these points.

Bifurcates were collected from 13 sites giving the type a distribution rate in the system of 61.9%. A total of 35 points were assembled from the system which equals 6.9% of all culturally identifiable material. MacCorkle, St. Albans, LeCroy, and Lake Erie variants were all represented with the Lake Erie variant predominating.

A total of 17 Archaic Bevels were assembled in the drainage system. This assemblage represents 3.4% of the total identifiable material recorded. There were 8 sites that produced this type giving it a distribution rate of 38.1% in the system.

For the Side Notch category there were 53 points recorded. This represents 10.5% of all the culturally identifiable material recorded. The variants represented in this assemblage was Archaic Side Notch, Meadowood (Converse 1973), and Brewerton Side Notch (Hothem 1986). This assemblage was collected from 15 sites in the drainage system for a distribution rate of 71.4%.

There were 19 Corner Notch points recorded, or 3.7% of all identifiable material reported for the drainage system. From the 21 sites in the system, 8 produced artifacts of this basal morphology for a distribution rate of 38.1%. The variants recorded under this type were Archaic Corner Notch, Concave Base Corner Notch, Vosburg (Converse 1973; Hothem 1986), and Brewerton Corner Notch (Hothem 1986).

There was a combined total of 5 Corner Removed and Basal Notch points recorded for the system. As with the Tontogany Creek system, these were the least represented of the point types reported. This total is the equivalent of only 1% of all identifiable material recorded in the system. Likewise, the distribution rate was well below the other types coming in at 19%.

Stemmed points assemble from the system totalled 30 points and were 5.9% of the total material identified. These points were collected from 10 different sites giving the type a distribution rate of 47.6% for the drainage system. The two variants represented in this category were Late Archaic Stemmed and Expanded Stem points.

In the Flint/Chert tool kit there were 16 knives, 11 scrapers, and 2 drills recorded having the morphological attributes to fit into the Archaic period. This assemblage of 29 tools represents 5.7% of all material culturally identified. By comparison, there was a total of 359 tools recorded for the system including those that weren't culturally identifiable. It is evident that the same problem existed during the identification process for this system as was described for the Tontogany Creek system.

In the Stone Tool category there were 22 three quarter groove hammers and 4 three quarter groove axes recorded for a total of 26 tools. This total represents 5.1% of the total material culturally identified in the drainage system. Interestingly, this total is more than double the total assembled for the Tontogany Creek system. This correlates with the opinion that the lack of stone tools in the Tontogany Creek system results from long-term hunting pressure. The sites in the Sugar Creek system were relatively unknown until hunted by the author.

There were no artifacts recorded in the Slate Tools/Ornaments category for the system. Since several of the sites produce an abundance of Archaic related materials, it is the author's opinion that they have yet to surface. This opinion results from two factors. First, the majority of the sites in this system are relatively young in terms of years known to surface collectors. Second, due to the change in agricultural practices discussed in the Tontogany Creek section, there has been very little opportunity to collect from the sites most likely to produce this material for the past ten years.

V. SUMMARY

In view of the information shared for the Tontogany Creek and Sugar Creek drainage systems, it is the author's opinion that a substantial pre-Woodland population existed in this section of Wood County. Even though this analysis has been limited to one collection and two drainage systems, it is believed that other area collections would produce relatively the same proportion of pre-Woodland material if analyzed.

These two systems are relatively close in proximity, therefore, all of the sites contained in both systems fall into an area that is approximately 4 miles square. This concentration of sites, coupled with the volume of material collected from the area, gives a relatively clear picture of the density and distribution of pre-Woodland material.

Collectively, for the Tontogany Creek and Sugar Creek drainage systems there were 1462 artifacts recorded that could be culturally identified based on their morphological attributes (See Fig. 4). Combined Paleo artifacts totalled 68, or 4.7% of the total of all identifiable material recorded. Between the systems, 34 sites were represented for a distribution rate of 54.8%. Archaic material recorded totalled 747 artifacts and was 51.1% of the total identifiable material recorded. This material was distributed over 56 sites for a distribution rate of 90.3%.

A review of the point types recorded in this study indicates that the aboriginal population in this area developed late in

the Paleo period and grew significantly during the transition into the Early Archaic period. This is supported by the progression from the 5 Holcombe points recorded for the combined systems to the 53 Hi-Lo points, which are considered to be a transitional type leading into the Early Archaic period. Continued growth in the Early Archaic period is supported by the 38 Kirk's and 117 Bifurcates recorded for the combined systems.

Finally, the absence of earlier Paleo material in this study should not be taken as an indication that this region was not frequented by Paleo hunters prior to the Holcombe Complex. Numerous examples of Barnes, Gainey, and Enterline points, all of which preceded the Holcombe phase, are present in the author's and several other area collections. However, none have been collected within the boundaries of this study or in any quantity other than isolated finds.

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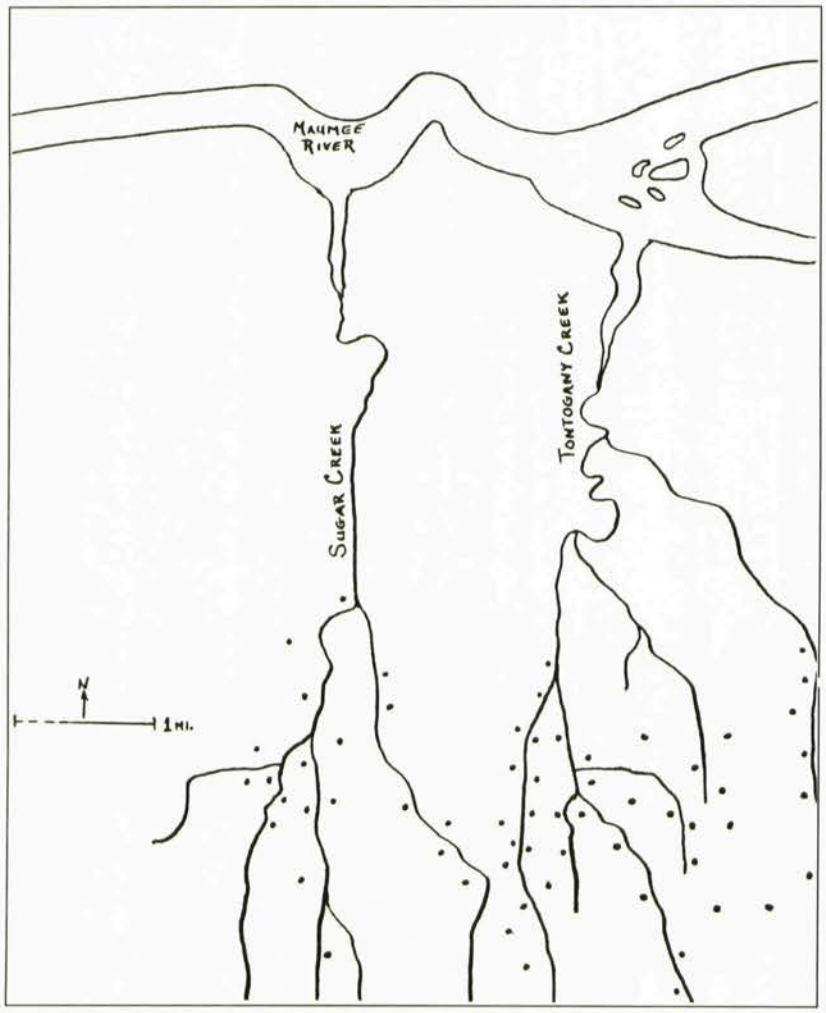

Fig. 1

TONTOGANY CREEK SITE COMPOSITE

ARTIFACT DESCRIPTION

FLINT & CHERT PROJ. POINTS & TOOLS	Paleo	Archaic	Woodland	Unknown	Total
Fluted/Unfluted	4				4
Hi-Lo	39				39
Kirk's Serrated		22			22
Bifurcate		82			82
Beveled		37			37
Side Notch		86	139	2	227
Corner Notch		40	26	2	68
Corner Removed		9	16		25
Basal Notch		7			7
Stemmed		110	65		175
Triangular			91		91
Knives	3	24	9	99	135
Preforms/Blades		32	2	69	103
Scrapers	3	39	20	330	392
Drills		7	3	23	33
Awls	1	3		25	29
Subtotal	50	498	371	550	1,469
STONE TOOLS					
3/4 Groove Hammers		5			5
Pitted Hammers				6	6
Ungrooved Hammers				7	7
3/4 Groove Axes		6		2	8
Celts		1	5	7	13
Adzes				1	1
Abraders					
Subtotal		12	5	23	40
SLATE TOOLS/ORNAM.					
Knives/Discs		2		6	8
Celts			3	2	5
Pendants			1		1
Gorgets			8	1	9
Banners/Atlatl Wgts.		5			5
Birdstones					
Bar Amulets					
Subtotal		7	12	9	28
POTSHERDS			37	84	121
Grand Total	50	517	425	666	1,658

TABLE 1

SUGAR CREEK SITE COMPOSITE

ARTIFACT DESCRIPTION

FLINT & CHERT PROJ. POINTS & TOOLS	Paleo	Archaic	Woodland	Unknown	Total
Fluted/Unfluted	1				1
Hi-Lo	14				14
Kirk's Serrated		16			16
Bifurcate		35			35
Beveled		17			17
Side Notch		53	82	4	139
Corner Notch		19	14	2	35
Corner Removed		3	11		14
Basal Notch		2	1		3
Stemmed		30	41	1	72
Triangular			63		63
Knives		16	10	61	87
Preforms/Blades			21	28	49
Scrapers	1	11	7	178	197
Drills		2		12	14
Awls	2			12	14
Subtotal	18	204	250	298	770
STONE TOOLS					
3/4 Groove Hammers		22			22
Pitted Hammers				7	7
Ungrooved Hammers				7	7
3/4 Groove Axes		4		1	5
Celts			5	9	14
Adzes					
Abraders					
Subtotal		26	5	24	55
SLATE TOOLS/ORNAM.					
Knives/Discs				8	8
Celts				3	3
Pendants					
Gorgets			4		4
Banners/Atlatl Wgts.					
Birdstones					
Bar Amulets					
Subtotal			4	11	15
POTSHERDS			77	83	160
Grand Total	18	230	336	416	1,000

TABLE 2

TONTOGANY AND SUGAR CREEK SYSTEMS COMPOSITE

ARTIFACT DESCRIPTION

FLINT & CHERT PROJ. POINTS & TOOLS	Paleo	Archaic	Woodland	Unknown	Total
Fluted/Unfluted	5				5
Hi-Lo	53				53
Kirk's Serrated		38			38
Bifurcate		117			117
Beveled		54			54
Side Notch		139	221	6	366
Corner Notch		59	40	4	103
Corner Removed		12	27		39
Basal Notch		9	1		10
Stemmed		140	106	1	247
Triangular			154		154
Knives	3	40	19	160	222
Preforms/Blades		32	23	97	152
Scrapers	4	50	27	508	589
Drills		9	3	35	47
Awls	3	3		37	43
Subtotal	68	702	621	848	2,239
STONE TOOLS					
3/4 Groove Hammers		27			27
Pitted Hammers				13	13
Ungrooved Hammers				14	14
3/4 Groove Axes		9		3	12
Celts		2	10	16	28
Adzes				1	1
Abraders					
Subtotal		38	10	47	95
SLATE TOOLS/ORNAM.					
Knives/Discs		2		14	16
Celts			3	5	8
Pendants			1		1
Gorgets			12	1	13
Banners/Atlatl Wgts.		5			5
Birdstones					
Bar Amulets					
Subtotal		7	16	20	43
POTSHERDS			114	167	281
Grand Total	68	747	761	1,082	2,658

TABLE 3

EASTERN OHIO A.S.O. MEMBERS MAKING A MOVE

by
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One could easily argue that the Golden-Age of archaeological activity in Eastern Ohio had been in the 1960's. A.S.O. members were riding a string of successes at the Mattie Stewart, Bedway, Five Point Ridge, and the Big Elm sites while numerous local enthusiasts were to amass collections from a seemingly endless supply of prehistoric encampments. However, recent events in Eastern Ohio may be showing that the best is yet to come.

During the early part of 1992, a small group of A.S.O. members joined the Upper Ohio Valley Chapter, West Virginia Archeological Society, Inc. and began to play an important part in that organization.

John M. Mocic, an A.S.O. member from Dilles Bottom, was chosen to that Board of Directors and was on a committee with Harry Heckman of McMechen, W.Va. and Bob Kersten of Moundsville, W.Va. The purpose of this committee was to sort through the archives at the Delf Norona Museum for relics that were to be shown at the First Native Indian Artifact Exhibit held at the Grave Creek Mound State Park in Moundsville, W.Va.

The idea for this exhibit originated from Bob Kersten. Kersten said "It was just an idea that I didn't expect to fly. . . I mentioned it to Susan Yoho (curator of the museum) and she was all for it. . . Kersten said most of the pieces to be displayed for the event have not been seen by the public. Many are pieces that society members themselves have unearthed. Others have been stored at the museum." (*The Intelligencer* August 17, 1992:9). After searching through numerous boxes, many of the better pieces were selected that dated from 500-1600 A.D. to nearly 8000 B.C.

In addition to utilizing the Delf Norona Museum's collection, Upper Ohio Valley Chapter, West Virginia Archeological Society, Inc. members, local A.S.O. members, and regional collectors were invited to participate in a family oriented event. In all, 25 exhibitors, including 8 A.S.O. members displayed collections rarely seen by the public. With an estimated 1500 visitors to the 6 hour artifact show, it was apparent that interest in archaeology had not dwindled in the last 20 years in the Upper Ohio Valley. With improved strategies to enhance public involvement by a new breed of socially conscious collectors and community oriented establishments, such as Grave Creek Mound State Park, one would expect that this event will have a lasting effect on regional archaeology in our area.

Susan Yoho's response to the support shown by the public and the enthusiasm displayed by the exhibitors was clearly visible in her recommendation that there will be a Second Native Indian Artifact Exhibit. The artifact show will be held this August 7, 1993, from 10:00 AM to 4:30 PM inside the Delf Norona Museum at Grave Creek Mound State Park in Moundsville, W.Va. For further information call the Park at 304-843-1410 (personal communication Yoho March 15, 1993).

Grave Creek Mound State Park is an excellent facility for an event of this nature. This park "was the first declared National Park Historical Landmark in West Virginia. It was granted that status by the Department of the Interior in 1964" (personal communication Yoho March 15, 1993.) The Park contains "probably the most famous of the Adena burial mounds, and certainly one of the most impressive. Not only is it the largest Adena mound, but it is the largest conical type of any of the mound builder structures . . .In 1938, road engineers measured the height at 69 feet and the diameter at the base at 295 feet . . . Construction of the mound took place in successive stages from about 250-150 B.C., as indicated by the multiple burials at different levels within the structure . . . The total effort required the movement of over 60,000 tons of earth" (Grave Creek Mound State Park, Pamphlet by West Virginia Division of Tourism and Parks Dec., 1990:NP).

In Eastern Ohio and in the Upper Ohio Valley, in general, there seems to be a growing awareness of our rich prehistorical resources. This compounded with concerted efforts from various groups collectively acting as a whole has produced the ingredients necessary for a successful project such as this artifact exhibit. For example, it was well publicized throughout West Virginia and locally in both newspapers and television stations. Eastern Ohio A.S.O. members did their part by bringing their friends, relatives, etc. to the first local artifact show since Sally Buffalo in the early 1970's.

At first glance, it would be easy to assume that the ingredients for this joint effort were steadfast in philosophies that were always present. Quite to the contrary! It should be remembered that "we are faced with a dilemma in the Upper Ohio Valley. Sometimes a mere six to ten miles separates the three states of Ohio, West Virginia and Pennsylvania" (DaRe and Waters 1991:19). Perhaps as little as 10 years ago the barriers to such an event may have been too formidable. However, the cooperation developed from the annual joint shows of the Archaeological Society of Ohio and the West Virginia Archaeological Society, Inc. has started to pay dividends on a wider basis.

John M. Mocic, the president of the recently formed Dividing Ridges Archaeological Club, Chapter of the A.S.O. which meets at the Citizens Bank of Martins Ferry on the first Wednesday of each month at 7:00 PM, emphasized the new philosophy in Eastern Ohio and the rationale of A.S.O. members to participate in a West Virginia event. Mocic states that "we want to build a bridge between the two states so that we can share the archaeological knowledge of our valley" (personal communication Mocic March 15, 1993). Mocic's statement is directly in line with Yoho's perspective on regional archaeology who stated that she can justify the artifact show because "it emphasized the mission statement of the West Virginia Parks. That is, to preserve, protect and educate the people of West Virginia's past" (personal communication Yoho March 15, 1993). She continued the discussion with an insight into her philosophical approach. "It was gratifying to see the interest from both sides of the Ohio River. They were willing to educate each other . . . There is a lot of good work being done by amateurs and in one room, a visitor had the opportunity to visit three states at once" (personal communication Yoho March 15, 1993).

While it is true that this event generated a couple hundred dollars of additional book sales in the Museum's Gift Shop, the real value lies in its educational potential, not only for the school children and their teachers but also for the college archaeology and anthropology professor who has the opportunity to survey the relics of a localized area. As Yoho states, "we have a captured audience of amateurs who are willing to share their knowledge of the Upper Ohio Valley with anyone who will listen" (personal communication Yoho March 15, 1993).

In the opinion of this writer, Yoho's exemplary actions may reflect a growing tend by the professional archaeological community to utilize the talents of the avocation archaeologist in order to supplement the needs of their own mission statements. Yoho frankly states that "I could not have done this with a year of grant money . . . I would have had to rent these artifacts . . . and it might not have had the personal impact that these collectors gave to the exhibit" (personal communication Yoho March 15, 1993).

The world that we live in today is an extremely cost conscious one. When facilities such as Grave Creek Mound State Park have to initiate an Energy Management System in order to provide for a climate controlled environment to protect our prehistoric heritage and still remain within their budget, opportunities for expanding cooperation between the amateur and the professional will make themselves available. In the future, it will be up to the amateur, their chapters and the A.S.O., to seize the opportunities that may be present.

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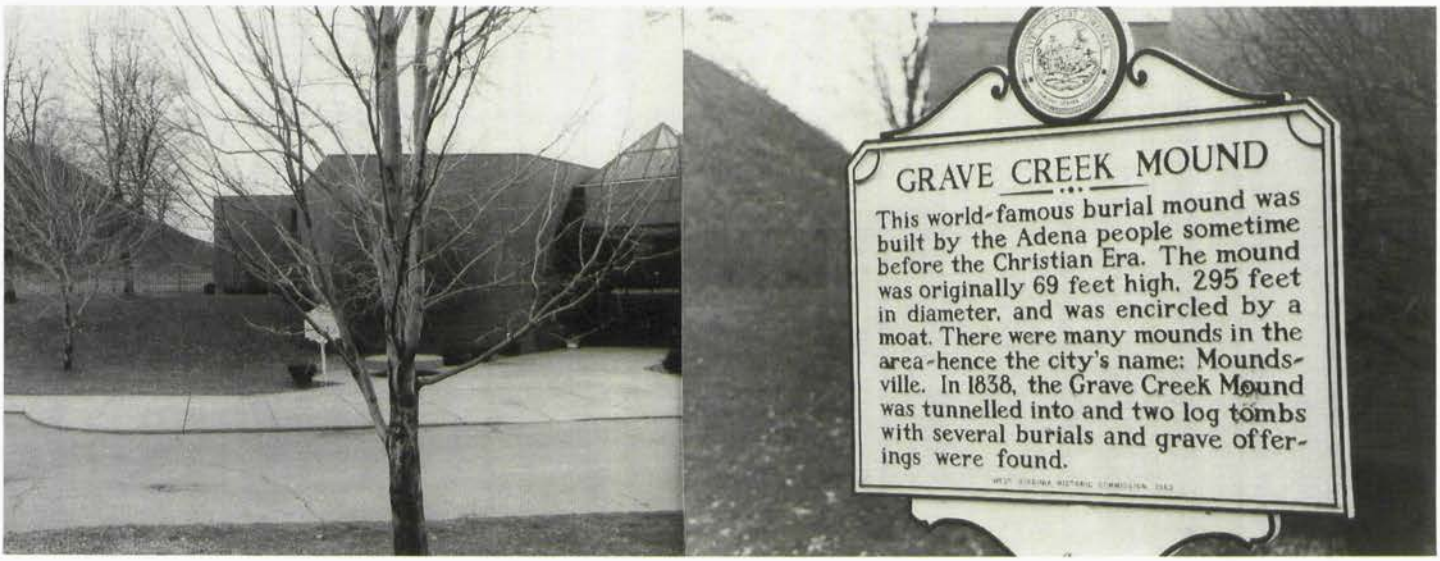

Fig. 1-2 (DaRe) Grave Creek Mound State Park.

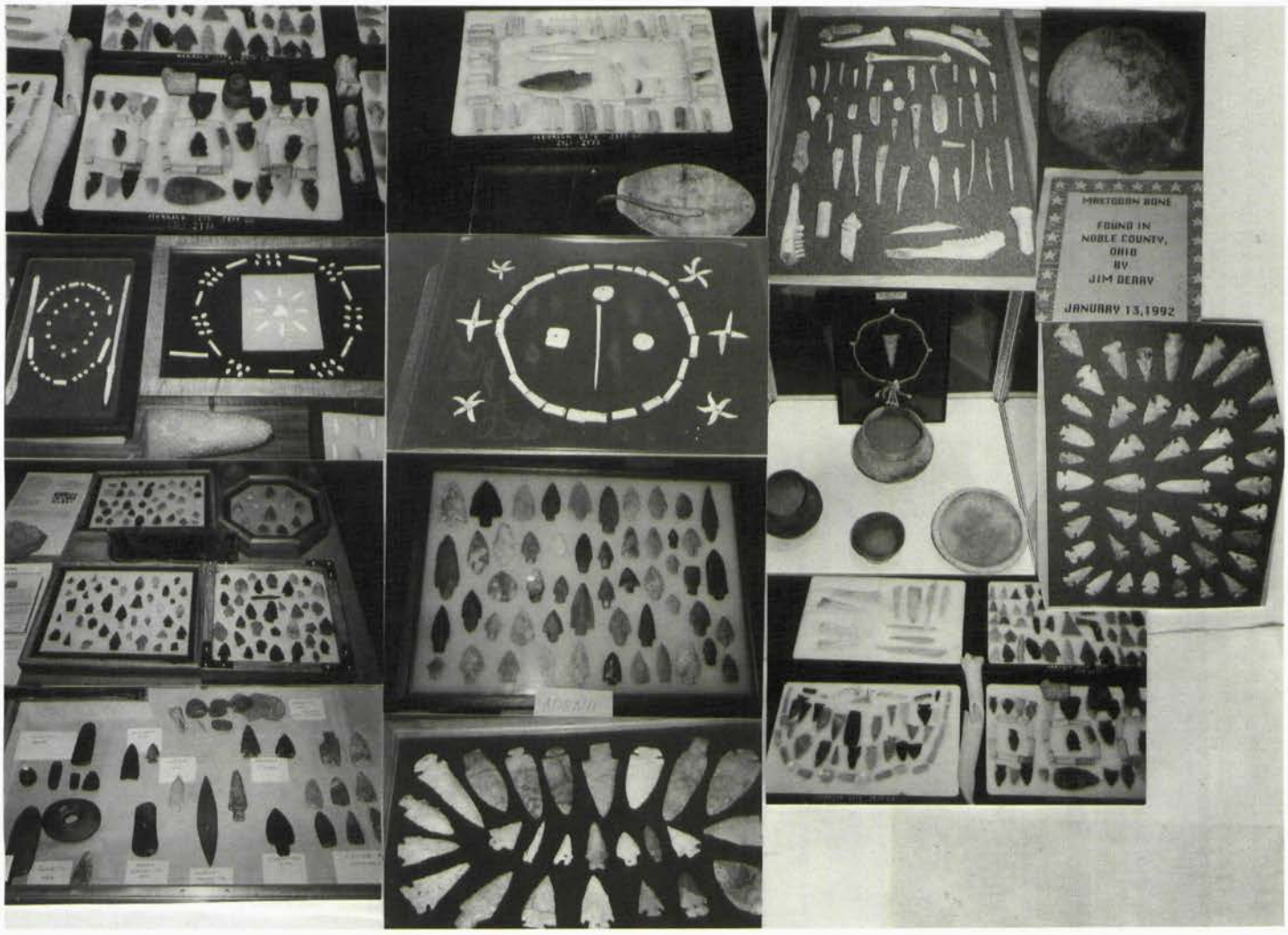

Fig. 3-16 (DeRe) Scenes from the First Native Indian Artifact Exhibit (After Kersten).

A LATE SIXTEENTH CENTURY RECYCLED POTTERY VESSEL FROM THE LOWER RAPIDS OF THE SANDUSKY RIVER

by
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Recycling empty, broken, or worn out items is now widely practiced throughout most of North America. In Ohio many municipalities are now in the midst of instituting curbside recycling programs. While some recycling is based on breaking up discarded items (i.e. glass containers) in order to make new items of the same sort, objects may also be recycled through converting them to other uses after they are no longer serviceable. The dipper made from a broken pottery vessel described in this paper is an example of the latter form of recycling.

I found the dipper (Fig. 1) while excavating a fourteenth century Wolf phase midden at archaeological site 33SA8 during the summer of 1991. The village site on Sandusky Avenue (33SA8) in Fremont, Ohio, is located at the lower rapids of the Sandusky River. It was occupied intensively during at least two periods early in the Wolf phase (*ca.* A.D. 1250-1350), and again perhaps continuously during the Fort Meigs and Indian Hills phases, from about A.D. 1500 until as late as A.D. 1640 (see Bowen n.d.).

Although found about 20 centimeters deep within the Wolf phase midden, the dipper dates to a later period. While not terribly diagnostic, the shell-tempered vessel from which it was made exhibits attributes of the terminal Fort Meigs phase and the subsequent Indian Hills phase, from as early as A.D. 1575 until as late as A.D. 1640. I think that the dipper was probably manufactured during the earlier portion of that time span. Cylindrical storage pits of both the terminal Fort Meigs phase and the Indian Hills phase are located within four meters of the spot at which the dipper was recovered.

The dipper was found near the head of a neonate who was buried head to the west, feet to the east, and covered with a layer of fist-size cobbles. The remains are currently being studied by Paul Sciulli, physical anthropologist at The Ohio State University. The purposeful placement of the vessel beneath the layer of cobbles, and its otherwise complete condition strongly suggests to me that it was indeed recycled into a dipper after it was originally damaged. Also, it works well and conveniently as a dipper experimentally. Flotation of the soil within the dipper revealed nothing. While the original, complete vessel had a capacity of about 600 milliliters, the dipper has a capacity of about 200 milliliters.

Both the archaeological and the ethnographic records show abundant examples of damaged pottery vessels being recycled for various other uses. In Ohio, the example that comes to mind are the numerous Fort Ancient gaming discs made from potsherds. This is, however, the first example of a damaged vessel which was recycled into a dipper that I am aware of in the greater Ohio region.

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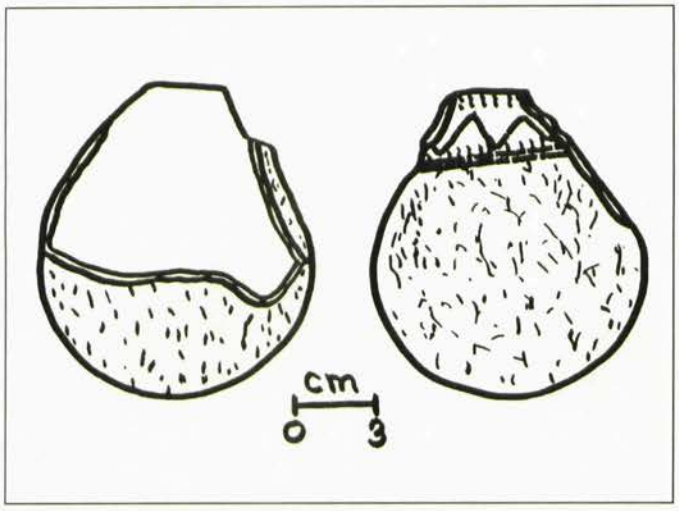

Fig. 1 Front and rear views of dipper made from damaged pottery vessel from 33SA8.

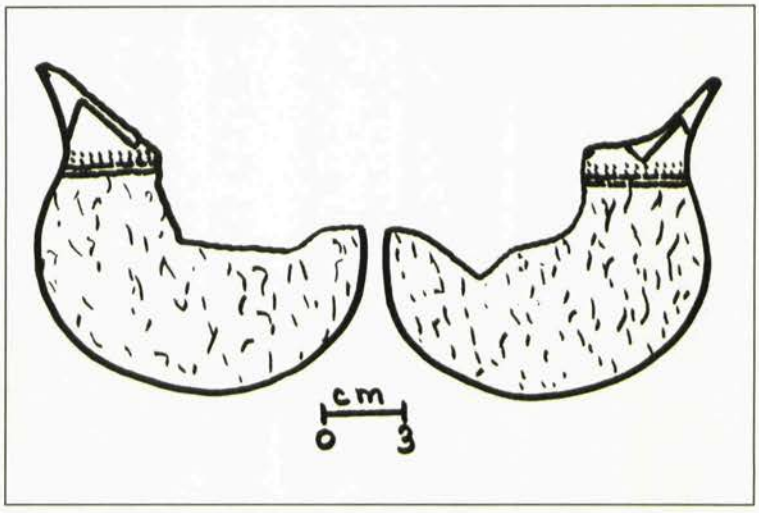

Fig. 2 Side views of dipper made from broken pottery vessel from 33SA8.

CURRENT DATA ON EARLY USE OF THE BOW AND ARROW IN SOUTHERN NORTH AMERICA

by
Leland W. Patterson

Abstract

Data are summarized on the present state of knowledge regarding the initial use of the bow and arrow in southern North America. Although not widely accepted, there is increasing evidence for introduction of the bow and arrow in the Archaic time period, at least as early as 2000 B.C.

Introduction

In a previous study (Patterson 1982), it was noted that the introduction of the bow and arrow to southern North America is commonly stated to begin at approximately A.D. 500, with the start of the general use of small standardized types of bifacial projectile points. Evidence for much earlier use of the bow and arrow in southern North America was then presented in that study. Additional data on early use of the bow and arrow has been obtained since the previous study (ibid.), and it is now appropriate to give a current summary of information on this subject.

Introduction of the bow and arrow to southern North America at a much earlier date than is generally assumed would negate some of the cultural impacts that have been attributed to introduction of this technology. For example, Ford (1974:402) states for sometime around A.D. 400 that "One new technological change that could have been used to disrupt trade arteries was the replacement of the atlatl by the bow and arrow, introduced from Asian and Arctic sources into the Midwest at this time". Fiedel (1987:243) concludes that the Hopewell decline in the Midwest at about A.D. 400-600 coincides with the replacement of the spear thrower by the bow and arrow. Cultural impacts from early use of the bow and arrow are discussed in this paper in terms of demographic evidence. If there was a gradual replacement of the atlatl by the bow and arrow, as discussed by Cressman (1977:106) for the Great Basin, many popular interpretations for the initial use of the bow and arrow are doubtful. In some geographic regions, such as the Southeast Woodlands (Hudson 1976:76, 116) and Southeast Texas (Patterson 1980; Aten 1983:306), the bow and arrow never completely replaced the atlatl.

There is an increasing body of evidence for use of the bow and arrow in southern North America at a much earlier date than is accepted by the common archaeological dogma. Many investigators reject early dates for the bow and arrow without giving any consideration to the time that might be required for diffusion and adaptation of a new technology by local cultures. It apparently seems to some archaeologists that bow and arrow technology suddenly appeared and was immediately adopted by all cultural groups that were exposed to this new technology. As previously noted (Patterson 1982:19), the literature gives the impression that there is a "magic line" at about the 50th parallel which impeded southward diffusion of the bow and arrow for a considerable time period of several thousand years.

The possibility of diffusion of the bow and arrow from Asia into the North American Arctic and then southward is widely recognized (Ford 1974; Fiedel 1987:146; Patterson 1982:19). There is considerable controversy, however, on the timing of this diffusion pattern. As discussed here, there are basic problems in recognizing the earliest forms of bow and arrow technology. The early use of unifacial arrow points, with later standardization of bifacial arrow point types, is supported by currently available data.

Identification of Bow and Arrow Technology

Unfortunately, wood components of bow and arrow systems are seldom preserved in the prehistoric record. There are only a few examples of arrow shafts at prehistoric sites in southern North America, with preservation of wood artifacts being more common in dry caves in the west. Some examples of preserved arrow shafts are dated much earlier than A.D. 500. Aikens (1970:Figure 113) recovered arrow shafts at Hogup Cave in Utah with earliest dates of 650 B.C. for Stratum 10 and 2660-1250 B.C. for Stratum 8 (ibid., Table 2). Lewis and Kneberg (1957:32,48) recovered a cane arrow shaft at an Early Woodland site in Tennessee dated to 100 B.C.

At most prehistoric sites, use of the bow and arrow must be determined by the morphologies of projectile points. There are two general problems associated with this type of analysis. These problems are: (1) distinguishing between arrow points and small dart points, and (2) identifying all forms of arrow points, including unifacial forms.

Distinguishing between arrow points and small dart points seems best done on a regional basis (Patterson 1985:88), due to possible local variations in technology. In general, however, arrow points are smaller than dart points, because good balance is needed for arrows. A study for Southeast Texas (Patterson 1985) shows that most arrow points in this region have thicknesses less than 5 mm, stem widths under 9 mm, and weights under 2.3 grams. Thomas (1978) has shown that a distinction between arrow points and small dart points can be made using some ethnographic data. Thomas (1978:469) gives a mean weight of 2.07 grams for arrow points with a standard deviation of 0.28 grams. Most regions of southern North America have not had this type of study, so that in most regions there are not good analytical criteria established for distinguishing between arrow points and small dart points. There is a study of this type available for the Northwestern Plains (Knight and Keyser 1983). Without good analytical criteria it is possible to overlook early arrow point specimens. Although there are ethnographic examples of use of heavy arrow points (some over 4 grams), these seem to be specialized cases where long-range arrow trajectory is not important. Dennis Stanford (personal communication) notes from his experience in Alaska that Eskimos used heavy arrow points when firing on caribou herds at very short range.

Projectile point weight is a good attribute to consider on a regional basis. Studies by Patterson (1985) and Thomas (1978) indicate that most projectile points with weights under 2.3 grams are good candidates for use as arrow points. Many archaeologists seem to use time rather than technical attributes of projectile points in judging whether a specimen is an arrow or a dart point. For example, there is little justification in classifying a projectile point that weighs under 2 grams as a dart point, rather than an arrow point, simply because the specimen dates earlier than A.D. 500.

A major problem in identifying early use of the bow and arrow is in the identification of all forms of arrow points, including unifacial forms which are often simply pointed marginally retouched flakes. Data from excavations and surface collections in Southeast Texas show that unifacial arrow points are fairly common in this region (Patterson 1989). Some examples of unifacial arrow points from site 41HR315 (Patterson 1980) are shown in Figure 1. One small pointed flake from site 41HR210 (Patterson 1975: Figure 1) had asphalt on the basal end, which could be evidence of hafting on an arrow shaft. Unifacial arrow points in Southeast Texas are made from flakes and small prismatic blades, using fairly steep marginal retouch. This type of point can be quickly replicated using a chert flake as a pressure flaking tool (Patterson and Sollberger 1980). All of the examples of unifacial arrow points in Southeast Texas fall within the upper dimensional limits established for bifacial arrow points (Patterson 1985) of 5 mm thickness and 2.3 grams weight.

Wenke (1950:568) has noted that a study by Odell (1988) indicates that archaeologists have often looked at the wrong stone tools in trying to reconstruct

ancient hunting. Odell's study identifies a class of arrow points as being small retouched flakes that exhibit impact fractures of the same types as obtained in experimental use of the bow and arrow (Odell and Cowan 1086). The use of unifacial arrow points (retouched flakes) is thus supported by use damage patterns as well as artifact form. Odell's (ibid.) study of a large number of retouched flakes from the Lower Illinois Valley seems to agree with Patterson's (1982) study of unifacial arrow points from Southeast Texas.

It would seem that most archaeologists overlook unifacial arrow points simply because they are not looking for this type of artifact. It is easy to overlook unifacial arrow points in a lithic flake collection. Often, close examination with a magnifier is required to determine if a pointed flake is fortuitous or the product of purposeful retouch. More often, however, the analytical problem is psychological. Many investigators are not prepared to recognize retouched flakes as arrow points. It is not clear why this psychological barrier exists in southern North America, since unifacial arrow points have been used throughout the world, with especially well-known examples in the Eurasian Mesolithic period. There are even ethnographic examples of unifacial arrow points in the New World, such as the Lacandon Maya (Gibson 1976; Patterson and Sollberger 1980).

Chronologies of Bifacial Arrow Points

There is increasing evidence that bifacial arrow points in some regions of southern North America did not start as late as the common assumption of A.D. 500-700. In the Great Basin several sites have indications of early use of the bow and arrow. There are small points weighing under 2 grams at least as early as Stratum 8 (2200-1250 B.C.) at Hogup Cave in Utah (Aikens 1970). Dalley (1976:71) shows the use of the bow and arrow as early as 650 B.C. at Swallow Shelter in Utah. Webster (1980:65) has reported dates for the bow and arrow as early as 3300 B.P. in western Idaho at the northern end of the Great Basin. Grosscup (1960:32) has given a date of 500 B.C. for the first use of the bow and arrow at Lovelock Cave in Nevada. Hester and Heizer (1973:8) see the introduction of the bow and arrow in the Great Basin at about A.D. 500. Their conclusion seems to be based on not being willing to accept that the bow and arrow and atlatl were in concurrent use in the Great Basin for a long time period, as discussed by Cressman (1977:106). As noted above, concurrent use of the bow and arrow and the atlatl is known from some regions of the United States, such as Southeast Texas (Patterson 1980; Aten 1983: 306) and the Southeast Woodlands (Hudson 1976:76,116).

Aikens (1970:35-41) shows several bifacial projectile point types at Hogup Cave that have wide ranges in weight, such as Elko Corner-Notched (1.9-6.1 grams), Elko Side-notched (1.9-5.6 grams), Pinto Barbed (1.1-4.1 grams), and Residual Side-Notched (1.2-4.2 grams). There is a possibility that some of the lighter specimens were being used as arrow points at the same time that heavier specimens were being used as dart points. Another possibility would be that the range of weights represents a developmental sequence from heavier dart points to lighter arrow points.

Hughes and Willey (1978:185) give a radiocarbon date of A.D. 120 for bifacial arrow points in the Texas Panhandle, about 500 years earlier than other dates given in Texas for the beginning use of the bow and arrow. In Central Oklahoma, an even earlier radiocarbon date of 840 B.C. has been given by Taylor (1987:9) for a bifacial arrow point.

There are a number of locations in the midwestern and eastern United States where diminutive projectile points occur in the Late Archaic period, well before A.D. 0. Examples include the Riverton culture in Illinois and Indiana (Winters 1969:41), New York (Ritchie 1969:Plate 29-10-11), and Wisconsin (Wittry 1959). Further investigations should be conducted to determine if these diminutive point types are related to the bow and arrow. Diminutive projectile points are also known from the Archaic period in southern Ontario, Canada (Wright 1978:Table 1). Swanson (1972:210) proposed that start of a new distinctive small projectile point series may indicate possible use of the bow and arrow as early as 6000 B.C. in Idaho.

Data from the Riverton culture in Illinois and Indiana give a good example of possible early use of the bow and arrow. The Terminal Archaic Riverton culture dates from about 1600 to 1000 B.C. (Winters 1969). Merom and Trimble Side-Notched projectile point types from the Riverton culture (Justice 1987:130) are diminutive types that could easily be classified as arrow points. Many specimens of these point types from a site in Bartholomew County, Indiana have thicknesses under 5 mm and neck widths under 9 mm (Bergman, Rue and Doershuk 1991). Merom and Trimble Side-Notched points from this site have a weight range of 1.5 to 3.8 grams, with 70 percent of 30 specimens weighing less than 2.3 grams (C.A. Bergman, personal communication). Many Merom and Trimble Side-Notched points would be classified as Scallorn-like arrow points if found in Texas. This site also has somewhat larger Lamoka-like points with characteristics similar to Merom and Trimble Side-Notched points. This is a situation similar to some sites in the Great Basin, with the possibility that different size points of similar shapes were being used as arrow and dart points.

Two untyped, stemless bifacial arrow points were found in the Archaic period strata at site 41HR315 in Southeast Texas (Patterson 1980:Figure 7G, Figure 10I). These specimens may be early examples of development of bifacial arrow points from initial unifacial point technology.

Even farther south in Mesoamerica, Tolstoy (1971:Table 2) shows Bassett, Fresno and Perdiz arrow point types in the Middle Preclassic at 850 to 400 B.C. If diffusion of the bow and arrow was from the north, the bow and arrow should start even earlier than this time period in southern North America.

Diffusion of the Bow and Arrow

I have previously proposed that the bow and arrow diffused from the Arctic southward through North America with an industry to produce small prismatic blades (Patterson 1973,1982). Earliest use of the bow and arrow in the New World seems to derive from Asiatic technology. Chard (1969:129) feels that the bow and arrow may represent a single invention with subsequent rapid worldwide diffusion. Unifacial arrow points and inset blades have been found in Siberia at about 9000 B.C. (Aksenov 1969:Figure 1). Even earlier examples of stemmed arrow points have been found in Kamchatka dating to 12,000 B.C. (Chard 1974:37). Earliest use of the bow and arrow in the New World appears to be with the use of bone points with inset segments of microblades. Barbed arrow points dating to approximately 8000 B.C. have been found at the Trail Creek site in Alaska (Larsen 1968:54). Inset blades of the early Akmak phase of the Onion Portage site in Alaska may have had use for the barbed arrow points (Anderson 1970:58) similar to Trail Creek in time.

Southern diffusion of the bow and arrow was relatively rapid. Small bifacial points associated with the bow and arrow are found in the Maritime Archaic of Labrador as early as 5000 B.C. (Fitzhugh 1972, 1978). This probably represents an already standardized technology, compared to initial diffusion of the bow and arrow with use of unifacial points. One of the earliest examples of use of the bow and arrow in southern North America is in Colorado at the Magic Mountain site. Irwin-Williams and Irwin (1966:Figure 42) show small unifacial points made from small prismatic blades that could easily have functioned as arrow points, dated at approximately 3500 B.C. After about 2000 B.C., examples of prismatic blade industries with possible unifacial arrow points are found throughout the Southeast United States.

Chronologies of Unifacial Arrow Points

Industries for the manufacture of small prismatic blades occur throughout the Southeast United States in the Late Archaic period, with unifacial points that seem to be associated with the bow and arrow. For the Poverty Point culture (1500-500 B.C.), Gibson (1976) has made a functional comparison of "Jaketown perforators" and ethnographic examples

of unifacial arrow points of the Lacandon Maya Indians. A number of microtools associated with the Poverty Point microblade industry (Webb and Gibson 1981:Figure 3) could easily have functioned as arrow points. Some of the unifacial artifacts referred to as "perforators" in the Archaic period at other locations in the Southeast states could have been used as arrow points, such as those illustrated by Watson (1974:Figure 4) for Florida. In California, Singer (1979) reports microblades in use over a long time span that could have been used as inset blades for arrow points. David T. Hughes (personal communication) has noted examples of small unifacial and bifacial points from site 34JN28 in Johnston County, Oklahoma, with many specimens coming from the Early Ceramic level and some possibly coming from as early as the Middle Archaic at several thousand years B.C.

It is now known that unifacial arrow points are fairly common in Southeast Texas, as shown in Table 1 for published sites in the regional data base (Patterson 1989). Many specimens are from multicomponent surface collections with undetermined time periods for the unifacial points. Several time periods could be represented for unifacial points, since many of these sites start in the Late Paleo-Indian or Early Archaic and continue through the Late Prehistoric. Specimens of unifacial arrow points from single component surface collections represent the Late Prehistoric (A.D. 600-1500), Early Ceramic (A.D. 100-600), and Late Archaic (1500 B.C.-A.D. 100) time periods. The Late Prehistoric time period is represented by excavated specimens of unifacial points from 41HR273 (Ensor and Carlson 1991: Figure 42), 41PK88 (McClurken 1968:Figure 48), 41WH19 (Patterson et al, 1987:Figure 4), and 41WH12 (Patterson and Hudgins 1989). At site 41HR315 in Harris County (Patterson 1980:Table 6), there are excavated specimens of unifacial arrow points from the Late Prehistoric, Early Ceramic, Late Archaic and Middle Archaic time periods. A good example of a unifacial arrow point (Figure 2) was excavated from the Early Ceramic level at site 41WH73, deeper than Late Prehistoric strata that contained conventional bifacial arrow points (to be published in Houston Archeological Society site report).This specimen has a small area of bifacial retouch at the tip and marginal retouch on both lateral edges, Unifacial arrow points continue to be overlooked by many investigators in Southeast Texas. Based on excavations at 41HR315, the bow and arrow started sometime in the Middle Archaic (3000-1500 B.C.), with prismatic blades and unifacial arrow points both starting in this time period.

Similar conclusions on the use of unifacial arrow points (marginally retouched pointed flakes) have been made by Odell (1988) for the Lower Illinois Valley, compared to data from Southeast Texas. Odell (ibid.:350) notes that unifacial points begin to increase about 4,000 years ago, and rose dramatically in Middle Woodland and Mississippian times. Odell's conclusions are based on a study of several thousand specimens.

Another candidate for early use of the bow and arrow is the Hopewell culture of Illinois and Ohio. As previously noted (Patterson 1987), the Ohio Hopewell culture had a significant prismatic blade industry, but investigators have not determined the functional uses of prismatic blades here. Small prismatic blades could have been used as elements for arrow points by the Hopewell (100 B.C.-A.D. 400), especially since the bow and arrow appears to have been in use during the same time period farther south in Tennessee (Lewis and Kneberg 1957).

Cultural Impacts of Early Use of the Bow and Arrow

As noted above, if the bow and arrow started in southern North America much earlier than generally recognized, then proposed cultural impacts of the start of the bow and arrow at about A.D. 500 are not valid. Wenke (1990:565) has noted a sharp increase in population in eastern North America from about 800 B.C. to A.D. 800. This covers the Early and Middle Woodland periods in the East and the Late Archaic and Early Ceramic periods in Southeast Texas. Wenke (ibid.:568) then notes, based on Odell's (1988) study for unifacial arrow points, that "The use of such projectile points seems to have increased dramatically after about four thousand years ago, and by the first few centuries A.D. the bow and arrow may have been adding enough extra production to some economics that significantly higher population densities were possible." This concept fits well with the Late Archaic Poverty Point culture and the Early Woodland Hopewell culture. These cultures were able to develop complex societies, with extensive trade and monumental earthworks, without much subsistence support from agriculture. More efficient hunting by use of the bow and arrow would have given significant subsistence support. Hunter-gatherer bands in Southeast Texas also increased dramatically in population during the Late Archaic (1500 B.C.-A.D. 100) and early Ceramic (A.D. 100-600) periods (Patterson 1991:Figure 1).

SUMMARY

The following is a summary of conclusions that can be made on initial use of the bow and arrow in southern North America:

1. The bow and arrow diffused southward in North America from the Arctic, arriving in southern North America about 4,000-5,000 years ago.
2. Initial diffusion of the bow and arrow was with unifacial points, with later standardization of bifacial arrow points.
3. Initial diffusion of th bow and arrow was related to technology for small prismatic blades.
4. The bow and arrow did not diffuse through southern North America at an even rate.
5. In many areas of southern North America, the bow and arrow did not immediately replace the spearthrower weapon system.
6. The bow and arrow made important economic contributions to cultures of the Late Archaic and Early Ceramic/Early Woodland time periods.

Table 1. Unifacial Arrow Points from Southeast Texas.

Site	Work (A)	Time Period(s) (B)	No. of Points
41AU7	S	Mixed LA, EC, LP	1
41HR182	S	Mixed LA, EC, LP	2
41HR183	S	Mixed EC, LP	4
41HR185	S	Mixed LA, EC, LP	7
41HR206	S	Mixed LA, EC, LP	24
41HR208	S	LP	1
41HR209	S	Mixed LA, EC, LP	8
41HR210	S	Mixed LA, EC, LP	14
41HR215	S	Mixed EC, LP	1
41HR223	S	Mixed LA, EC	8
41HR244	S	Mixed LA, EC, LP	13
41HR245	S	Mixed EC, LP	2
41HR248	S	LP	3
41HR250	S	LA	2
41HR255	S	LP	7
41HR267	S	EC	1
41HR273	E	LP	2
41HR293	S	LP	3
41HR315	E	MA, LA, EC, LP	54
41HR525	S	Mixed LA, EC, LP	1
41PK88	E	LP	7
41WH12	E	LP	1
41WH19	E	LP	2
41WH37	S	Mixed LA, EC, LP	1
41WH73	E	EC	1
TOTAL			170

(A) S = surface collection
E = excavated

(B) LP = Late Prehistoric (A.D. 600-1500)
EC = Early Ceramic (A.D. 100-600)
LA = Late Archaic (1500 B.C.-A.D. 100)
MA = Middle Archaic (3000-1500 B.C.)

7. Initial use of the bow and arrow is not recognized in many regions of southern North America simply because appropriate research has not been done.

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PALEO PROJECTILE POINTS

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Shown in Figure 1 is a Paleo Indian projectile point which possesses attributes of both Agate Basin and Beaver Lake forms. It is made of a high grade of yellowish-brown flint with irregular pinkish- red stripes—perhaps a variety of Carter Cave Flint. The point displays distinctive basal flaring and exhibits a small amount of grinding on each side of the base but none on the straight-edged base itself. This relic was found by Bill Workman on the Licking River in Bath County, Kentucky. It measures 3½ inches in length and is 1 1/16 inches at its widest point.

Figures 2 and 3 show the obverse and reverse sides of a fluted point found in recent years by Jamie Wolfe in Bourbon County, Kentucky. It measures 2½ inches in length and is 1 inch at its widest point. This relic is crafted from Boyle Chert, a high quality material the source of which is found in eastern Kentucky. It exhibits heavy grinding on the basal sides as well as in the basal concavity and also displays resharpening.

In Figure 4 can be seen an Agate Basin projectile point found many years ago near the village of Seaman, Adams County, Ohio. This relic" is 3⅜ inches long by 1 3/16 inches in width. It is made of Brassfield Flint and exhibits heavy grinding on the basal edges and on the base which is slightly concave. Evidence of resharpening is present. Mr. Russell Webb of Seaman found this point on his boyhood farm which is located about a mile southeast of the village off of Burnt Cabin Road.

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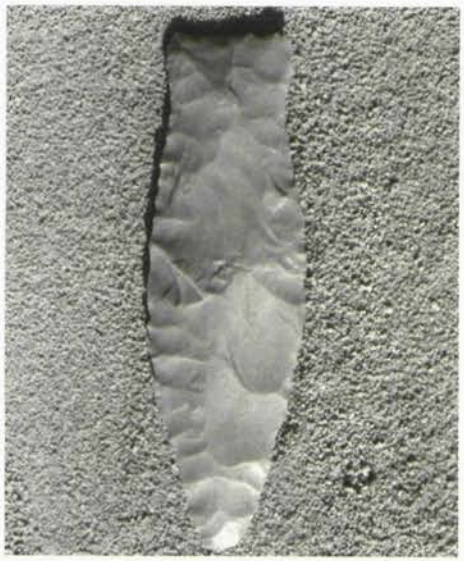

Fig. 1 (Kelley) Paleo point from Bath County, Kentucky.

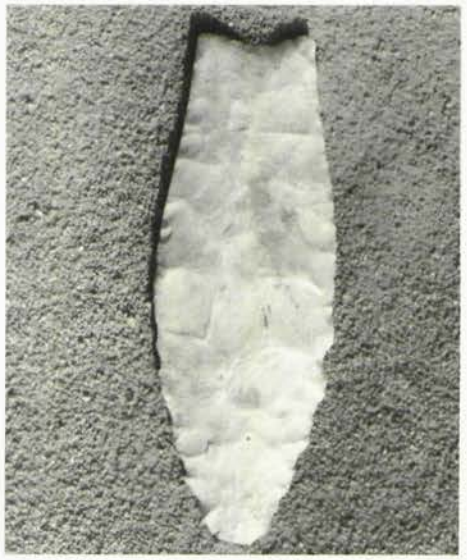

Fig. 4 (Kelley) Agate Basin type point found near Seaman, Ohio.

Fig. 2 (Kelley) obverse side fluted point found in Bourbon County, Kentucky.

Fig. 3 (Kelley) Reverse side fluted point found in Bourbon County, Kentucky exhibiting an off-center flute.

DIFFERENT TYPES . . . OR ARE THEY VARIETIES?

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In a recent article entitled "Three Different Types", Converse (1993) provides photographs and descriptions of three Archaic projectile points: "so-called Thebes," "Archaic bevel," and "expanded notch" points. He then proceeds to chastise "professional archaeologists" for referring them all to the same type, which he represents as an "unscientific practice" that "smacks of an unscholarly approach."

Whether due to coincidence or not, all of Converse's criticisms apply precisely to our treatment of the "types" in question in a recent paper that we presented (Vickery and Litfin, 1992), mimeographed copies of which were distributed. We wish to clarify some of the issues in that presentation as they relate to Converse's criticisms. Our comments are mainly directed at typological concepts and the use of particular names for types.

Scientists, researchers and collectors have struggled with the meaning of the categories of classifications ever since the Linnaean taxonomic system was proposed and put into practice nearly 200 years ago. The concept of a "type" has great antiquity in archaeology, having been applied extensively to collections of pottery in various parts of the Old and New Worlds. As it was used initially, the pottery type was intended to isolate a grouping of vessels and sherds of an easily recognizable style that differed from other, similarly grouped, vessels and sherds. Following closely on the heels of early definitions of pottery types was the concept of a "variety," which accommodated stylistic variation *within* a single defined *type*. Thus, a single type could have several varieties, each one differing from the others to some degree that was presumed to be more subtle than the differences *between* types.

The type-variety distinction also has been applied to projectile points, but seemingly not with the degree of forethought, precision or consistency that one commonly finds in many ceramic classifications. We believe this to be at least partially responsible for Converse's dismay with archaeologists subsuming his three different "types" under the single type name "Thebes." We regard them as varieties rather than distinct types.

The matter of how projectile points are classified is even more complex. While the use of the term "variety" is not uncommon as applied to projectile points (see, for example, Broyles' [1971: 62-65, 72-75] division of Kirk Corner Notched and St. Albans Side Notched point types into Small and Large and "A" and "B" varieties, respectively), one occasionally encounters the term or concept of "subvariety" (see, for example, Didier's [1967] division of Fulton, Harrison and Hebron *varieties* of the Turkey-tail *type*). To these three classificatory "levels," we have added a fourth—form. In an effort to clarify what we meant by these terms, the following definitions are provided from our paper:

TYPE: a grouping of projectile points that differs significantly from other, similarly grouped, points in at least basic morphology;

VARIETY: a grouping of points referable to a particular type but differing from it in more subtle morphological ways than the differences evident between and among types. Some types have a modal form as well as varieties while other types consist only of varieties;

SUBVARIETY: a variety of a variety, based on morphological differences;

FORM: generally not differing morphologically from the types or varieties to which they are referred; rather, the differences are primarily in size and technique of manufacture.

From these definitions, it should be clear that points classified as separate varieties, even if they are all referred to the same *type*, are indeed recognized as differing one from another. Such was our treatment of Converse's "three different types." We define one more term before presenting, for the readership's approval or disapproval, the exact way in which we classified these, and related, points in our paper.

We use the term "synonymous" to refer to named types we believe are identical to types, varieties, subvarieties or forms that have been given different names. The practice of listing previous names given to a particular species is a common one in biology, and the list is called a "synonymy." The synonymy comes into existence when a researcher decides that one particular species name among several that refer to the same species is the proper one to use henceforth.

Our classification of "Thebes" points is given below, followed by the bibliographic reference of what we consider the earliest adequate definition of each:

THEBES [type] (Perino, 1971:96, Plate 48)
Synonymy:
ARCHAIC BEVEL (Converse, 1963:96)
CACHE DIAGONAL NOTCHED [variety] (Holland, 1970:85, Plate 15m). This type was originally named by Winters (1963:20, Fig. 3A, B), presumably for specimens from the Cache River Valley, but the type was not then described. He referred them to the "Thebes Type Cluster" (Winters, 1963:20).
GREENVILLE CREEK SIDE NOTCHED [subvariety] (DeRegnau court, 1991:40-41, Plate 6)
EXPANDED NOTCH [variety] (Converse, 1966:102)
KEY NOTCH [form] (Perino, 1971:96, Plate 48)
Synonymy:
E-NOTCH (Winsch, 1974)
(OHIO VARIETY) THEBES [variety] (Perino, 1985:378)

While it is apparent that only one type—Thebes—is recognized by us, the fact that our classification has three varieties, one subvariety and one form demonstrates that we recognize that they differ in some respects. In essence, classifying points such as these as different *types* emphasizes their *differences*. Classifying them as varieties of a single type emphasizes their *similarities*. In our opinion, Converse's "three different types" do share some features in common. Indeed, this is only our opinion, and we recognize that others either may not see the similarities that we do or choose to express another opinion that emphasizes, from a classificatory standpoint, what they perceive as the differences between them. It is just these various perceptions of projectile points and other artifacts that make their classification a challenging, and somewhat subjective, undertaking.

Another criticism leveled by Converse is the use of "proper" (i.e., cultural) names for projectile points as opposed to the more traditional practice of referring to them by descriptive labels. We appreciate this view and hasten to acknowledge the advantage that using descriptive labels for point types has in creating a mental image of the type's basic shape as an aid to identifying it. However, we wish to call attention to some potential pitfalls in doing this, which are, unfortunately, often beyond the control of the researcher who assigns descriptive names to projectile point types.

In essence, the trick is to come up with a descriptive name that uniquely and unambiguously corresponds with a projectile point type. we believe that in a few instances, this has been achieved. As far as we are concerned at present, the descriptive labels "Dovetail" and "Turkey-tail" conjure up mental images of two distinctive point types and do not lead to confusion with any other types. This is not true of some other descriptive labels. For example, "leaf shaped" is nonspecific as to what kind of leaf the person naming the point has in mind. A sassafras leaf looks very different from the leaf of a chinquapin oak. "Expanded notch" and "Archaic Bevel" seem not to apply to only one point type; the notches of Normanskill points (Ritchie, 1971:37-38, Plate 18), for example, are expanded, and Hardin Stemmed points (Scully, 1951:3) are both Archaic and beveled. Even if one were to give very

thoughtful consideration to the matter of exactly what descriptive label should be applied to a particular projectile point type, there is no assurance that a type would not be discovered and/or defined at some future date that has the same shape while perhaps differing in other characteristics. It is for these reasons that we advocated using cultural labels instead, over which the researcher can exercise a degree of control in the sense that he or she can, with the effort of undertaking a literature search, avoid duplicating type names. Using cultural labels, however, may pose another problem that is addressed by Converse—that of using "foreign names for Ohio types which often have no validity in time or space" (Converse, 1993).

While we acknowledge a degree of serendipity in the particular cultural names that have been given to certain projectile point types, it strikes us as a much more common practice for archaeologists to assign names based on sites that yielded the collections inspiring new type definitions, or on some nearby feature of the landscape, etc. St. Albans, Hardaway Side-Notched, Graham Cave Notched and Modoc Notched are all examples, and such a list could be extended to dozens more. In another recent paper, for example, Litfin, Jackson and Vickery (1993) defined ten Fort Ancient triangular arrowpoints, the names of seven of which derived from sites with known occurrences of the types while another was named after an archaeological phase in which the type occurs, another after the name of the archaeologist who excavated the site where specimens of the type were found, and yet another after a physiographic province in which found, and yet another after a physiographic province in which sites with examples of the type are located.

Types must be defined somewhere in space; i.e., a type definition is created based on a collection of like points that is usually found in a certain area of limited geographic extent. Admittedly, there is no assurance that the area yielding the specimens upon which the type definition is based is the "heartland" of the people who made them. However, it is at least one area with known occurrences. Given ethnographic and archaeological examples of far-ranging hunting territories (e.g., Seeman and Munson, 1980:62) and migrations—seasonal or otherwise—it is likely wise not to consider a particular point type as geographically restricted, or to define it in such a way as to exclude its occurrence outside the area within which it was first recognized.

A final comment is prompted by Converse's specification of "designs, chipping style and materials [being] the very essence of typology." If by "designs," Converse means the basic shapes and sizes of points, we are heartily in agreement. We are firmly of the conviction that morphology should be the most basic criterion upon which to base type definitions, followed by size and, of course, taking into account that points represented as related to one another in a classificatory way must also be related temporally and culturally. While we recognize that chipping style may have diagnostic value with respect to classifying and identifying projectile points, it seems more often to pertain to *several* "types" of points, all or most of which may belong to one culture period, for example. Horizontal transverse, oblique transverse and collateral pressure flaking are virtual hallmarks of Paleoindian chipping, but are hardly restricted to one particular Paleoindian point type. By the same token, we generally disfavor associating one kind of raw material with just one particular point type. While most Turkey-tail points are made of Harrison County flint, this raw material was used to make other types of points and the techniques of manufacture that were used to produce one type of point in flint can, often with only slight adjustments, be applied to other raw materials with similar fracture properties.

We acknowledge that the classification of projectile points in Ohio and throughout the Midwest has become quite messy due to the indiscriminate naming of types without regard for whether or not the same types had been previously named, thereby duplicating type definitions. As expressed by Creighton (1993);

You will find types, both localized and of wide dispersion, which meet the same list of features but bear diverse names.

Furthermore, types have been named without sufficient descriptions and/or illustrations of them, and a host of other omissions and commissions have led to considerable confusion and ambiguity. Obviously, there is a problem here of major proportions. Importantly, it pertains to a data base that is used to identify various prehistoric cultures in this part of the Midwest.

Approaches to overhauling this data base include purging duplicated and inadequately defined types so that we may henceforth operate with a much reduced list of agreed-upon types. Many of the "types" defined in the literature are, we believe, more appropriately treated as varieties, and some even as subvarieties or forms. These need to be identified as such as a step toward a better understanding of the relationships among projectile points that takes into account temporal placement and cultural affinities in addition to morphometric characteristics.

Our intent in this paper has not been to criticize Converse; such would be counterproductive. Furthermore, he is not alone in expressing disenchantment with existing projectile point classifications. Creighton (1993), for example, has observed that:Apparently point typology was never planned as a precise science, it just grew. Therein lies the basis of confusion .... How wonderful it would be to have a universal and accurate way to type points!

We acknowledge Converse's (1963) pioneering efforts to introduce some order into the complexity of projectile point styles by means of a classification system that was gratefully received by those with an interest in studying this fascinating class of prehistoric artifacts. We believe that his contributions along this line exemplify a commonality of purpose among avocational and professional archaeologists alike, and that significant strides toward resolving some of the problems Converse, Creighton and others have aptly identified can be made. As Creighton (1993) queries: "The problem has been postulated. Who has the definitive answer?" Although we have committed thought and research attention to the matter, we would hardly represent our viewpoints as "the definitive answer." There is a job to be done here, and it seems to us that it is best approached in the spirit of cooperation. We invite the readership of this magazine to join with us in the pursuit of this challenging but potentially rewarding endeavor.

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THE HART COLLECTION

THE SABRE FARMS SITE (33Ro 385)

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In 1988, Archaeological Service Consultants, Inc. conducted data recovery of the portion of the Sabre Farms site to be impacted by the construction of an AT & T fiber optics cable. The site is situated atop a rise at about the 623 ft (192 m) contour in the floodplain, approximately 762 meters east of the present channel of the Scioto River in Ross County, Ohio (Figure 1). The dimensions of the site, based on the distribution of surface debris, are roughly 100 meters east-west by 500 meters north-south or roughly 4.99 hectares (12.5 acres) [Figure 2]. Data recovery was restricted to the excavation of a series of contiguous 4 meter x 5 meter blocks (Plates 1 and 2). Manual removal of the plowzone and hand excavation of the underlying midden horizon identified a total of 30 pit features and 18 fire-cracked rock (FCR) features (Figure 3).

A midden deposit was encountered at the base of the plowzone across the entire excavated area (Figure 4). The midden was dense with FCR and ranged from 5 cm to 20 cm in thickness. Excavation of the midden revealed that discrete FCR concentrations, possibly from hot rock cooking (Plate 3) and recognizable feature orifices, occurred at various depths (Figure 4). A total of 7,190 lithic items, 228 ceramic sherds, and 1,001.60 kg (2,208.10 lbs) of FCR were recovered from the excavation of approximately 53.60 cubic meters of midden. Ceramic sherds from the midden represent four types of temper: angular grit and small, rounded pebbles (71); crushed angular limestone (141); grit/limestone (2); and chert/limestone (3). Fifteen Merom and four Trimble projectile points were recovered from the midden excavation. However, other tool forms were also recovered, indicating a multicomponent nature of the midden horizon. Except for a thin, sealed level or lens, no other visible stratification was evident, suggesting that limited alluviation occurred at the site between episodes of occupation. The consequence of little alluviation resulted in a midden of mixed temporal affiliation which was further complicated and disturbed by plowing. Unfortunately, only one radiocarbon date was secured from a sample taken from the midden. The sample was submitted from charcoal and returned a corrected radiocarbon date of 3290 $\pm$ 140 B.P. (1340 B.C.), with a two sigma calibrated range of 1930 to 1270 B.C.

Features included FCR concentration such as rock piles (12) and rock scatters (4). FCR piles are small, tight clusters of FCR and thermally-altered granite, limestone, quartzite, and other igneous rocks. The features contain few artifacts and appear to be the discarded rocks associated with hot stone boiling, roasting, and cooking. FCR scatters are larger than FCR piles and may represent stones flung away from their point of usage for cooling purposes (Plate 3).

A total of 29 pit features were excavated at Sabre Farms (Figure 3). All of these features except Features 8, 11, 12, 13E, and 33 were defined at the base of the midden. The first two exceptions were within the midden, while the remaining exceptions were located at the base of the plowzone. Pit features were sorted into four shape classes: basin shaped (BS); shallow flat bottom (SFB); deep flat bottom (DFB); and irregular shaped (IRR) [Figure 5]. A total of three post holes were excavated (Figure 4). Spatially, these post holes were located in the central part of the site.

Twelve features could be assigned to temporal period and indicated that Late Archaic, Early Woodland, and Late Woodland components were present at the site.

LATE ARCHAIC: The Late Archaic component is represented by a series of small, expanding stem, corner-notched points and small, trianguloid, side-notched points (Plate 4) similar in size and shape to Merom Expanding Stem and Trimble Side Notched points (Winters 1969). All 19 specimens were manufactured from flakes. These tools were found in the midden as well as in features associated with other later cultural components.

Only Feature 19, a deep inslanting, flat bottom pit (DFB) can be assigned to the Late Archaic occupation. Although a total of 43.70 kg of thermally broken igneous sandstone and limestone rock was removed, there was no evidence of internal burning. The feature also contained 15 pieces of shatter, 37 flakes, 2 bifaces, and 4 retouched flakes. The carbonized plant remains consisted of nutshell (probably hickory nut). Faunal elements consisted of deer, unknown mammal, and turtle. Microwear analysis was conducted on six tools from Feature 19. The results indicated that four retouched flakes were used for antler/bone scraping/planing while one flake was used for wood whittling and one flake was used as a meat knife. Although the assemblage was small, it reveals a number of activities including butchering, woodworking, and bone or antler working.

EARLY WOODLAND: The Early Woodland component at Sabre Farms is represented by both projectile points and thick, plain surface, grit-tempered ceramics. The projectile points are Meadowood, diagnostic of Early Woodland sites in the Northeast (Ritchie and Funk 1973), and two Adena stemmed projectile points (Plate 5F & G). Thick grit-tempered ceramic sherds were recovered from both the midden and Features 4 and 13. Analysis of pottery characteristics indicates that it may be a regional variant of Fayette Thick. Although the pottery assemblage was small, it did exhibit most of the traits of that type.

Six features (F2, F4, F6E, F10/37, F13W, and F34) can be assigned to the Early Woodland occupation. Four of these are refuse pits, one is a burial pit, and one is an irregularly-shaped pit filled with red ochre associated with the burial pit. Feature 13W is a large pit feature containing a tightly flexed adult. The interment was situated on its left side, oriented in a north-northwest direction. Age of the individual was placed at 23 years. A lithic cache covered in red ochre was placed stratigraphically beneath the burial (Plate 6). The cache consisted of two drills, two bifaces, a lamellar flake, and two smaller flakes, all manufactured of Flint Ridge and Upper Mercer flint, which appeared to have been carefully stacked within the ochre-stained soil and then covered by a mixture of soil and ochre. Charcoal obtained from the burial yielded a corrected radiocarbon date of 3540 $\pm$ 130 B.P. (1880 B.C.), with a two sigma calibrated range of 2279 to 1520 B.C. In spite of the early date, this feature was considered to belong to the Early Woodland occupation based on comparable features reported for other Early Woodland Meadowood phase sites and the lack of such features at Late Archaic Riverton phase sites. Microwear analysis was conducted on four tools from the Early Woodland features. Two tools showed no wear, one retouched flake indicated wood planing, and one retouched flake indicated antler/bone scraping. Although bone fragments were present in many features, the only identifiable animal was deer. The paleobotanical remains in the features consisted of wood charcoal and hickory nut or general Juglandaceae.

LATE WOODLAND: The Late Woodland component is represented by the presence of Chesser Notched (1), Raccoon Notched (3), and Jack's Reef (7) projectile points (Plate 5 J-N) and by cordmarked, limestone and chert tempered pottery.

Eleven features were associated with the Late Woodland component. Two of

these features (Features 8 and 33) contained badly disturbed human remains, while the rest were trash filled pits. Both burial pits were found within the midden. Other feature types included irregularly-shaped pits (F23); basin-shaped pits (FI, FII, F12, F13E, F36E, and F36W); and deep flat bottom pits (F6W and F35). Feature 35 is particularly interesting because of the immense size and depth of the feature. The maximum depth of the feature was 1.5 meters and the maximum width at the top was 208 cm (Plate 7). Artifact inclusions consisted of bone, lithic debris, FCR, and pottery. A single radiocarbon date was obtained using charcoal and nutshell from Stratum B and C. When corrected for fractionation, a radiocarbon date of 1560 ± 70 B.P. (A.D. 390) was obtained with a two sigma calibrated range of A.D. 339 to A.D. 639.

Twelve tools were subjected to microwear analysis from the Late Woodland features. Four flakes showed evidence of use as a meat knife, hide scraping, cutting hide, and a knife on plant material. Retouched flakes showed evidence of use as wood scrapers, sawing on wood, bone and antler scrapers, and cutting hide.

One bone tool, a split deer bone awl, was recovered from Feature 35. The piercing surface has been worn and abraded from usage. Cut marks are visible at the head portion of the awl and along the split edges of the bone.

Subsistence data from the Late Woodland pit features indicates both animal and carbonized plant remains. Most of the animal bone could not be identified, but the small sample that was present represented three classes of vertebrates consisting of white-tailed deer, turtle, unknown bird, and mussel bivalves. Carbonized botanical remains consist of walnut and hickory nutshell, chenopodium seeds, grass seeds, and unidentified seed fragments. The Late Woodland pottery is limestone-tempered and cordmarked with S-twist cordage. It is very similar to ceramics from Peters and Chesser caves. As such, the pottery has been assigned to the Peters phase, making Sabre Farms the first open air habitation site associated with this component.

Eleven features lacked diagnostic inclusions. This category included two irregularly-shaped pits (F9/39 and F15); seven basin-shaped pits (F3, F5, F22, F38, F44, F45, and F46); two shallow flat bottom pits (F24 and F47); and one deep flat bottom pit (F40).

SUMMARY

Data recovery at Sabre Farms succeeded in obtaining a valuable data set on the utilization of this portion of the Scioto Valley by Late Archaic, Early Woodland, and Late Woodland populations. Specifically, excavation of the midden and Feature 19 indicated that the Late Archaic period was represented by a series of Merom and Trimble projectile points dating to a period of approximately 3879-3219 B.P. The activities at the site included butchering, wood working, and bone or antler working. Foods present at the site presumably for consumption included hickory nut, deer, unknown mammals, and turtle. Although no hearths were present, the presence of FCR in Feature 19 indicates cooking activities.

The Early Woodland people who occupied the Sabre Farms site were present at the site circa 1880 B.C. This early Early Woodland date is supported by the presence of a variant of Fayette Thick pottery. A variety of features associated with this temporal period indicate domestic activities such as cooking, as well as ceremonial activities such as burial. Foodstuffs present at the site indicate the procurement of hickory shell, Juglandaceae, and deer. Other activities at the site represented by tool use include woodworking and bone scraping.

The Late Woodland occupation is associated with the Peters phase. The single radiocarbon date indicates occupation within a range of A.D. 339 to A.D. 639. The tool assemblage indicates that a variety of activities were being undertaken at the site including butchering, hide working, woodworking, plant cutting, and bone working. The presence of a variety of feature types including deep storage pits, cooking pits, and burials indicates more than just a temporary occupation at the site; and the site is certainly the first open air (non-rockshelter) site associated with the Late Woodland Peters phase.

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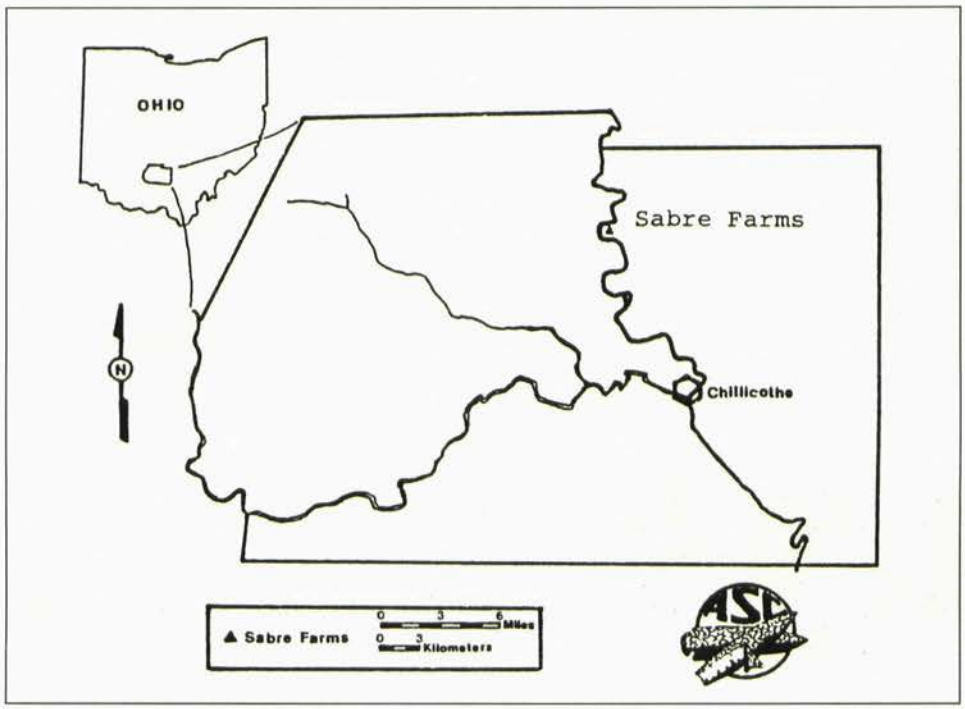

Fig.1 Location of the Sabre Farms site, 33 Ro 385.

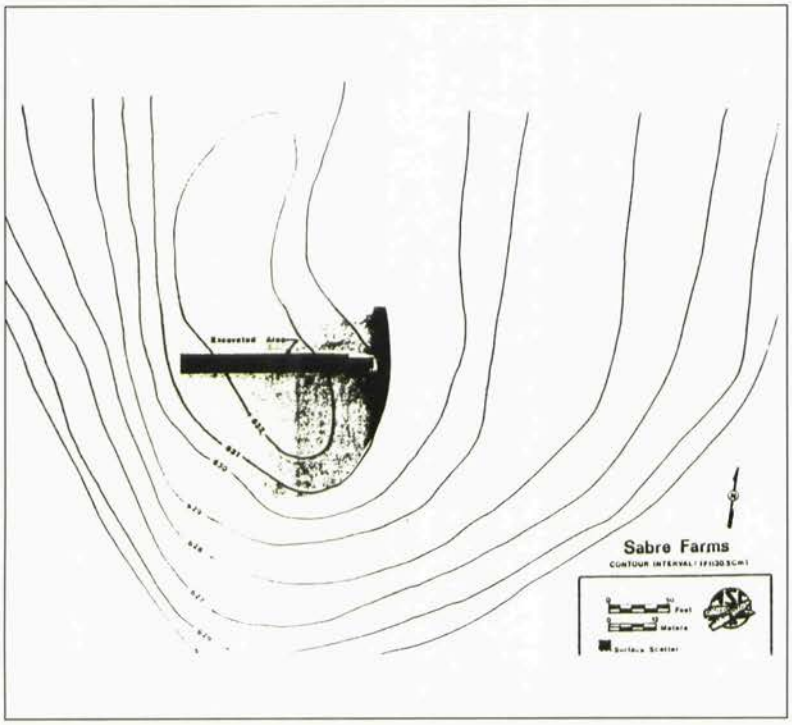

Fig. 2 Excavated portion of the Sabre Farms site.

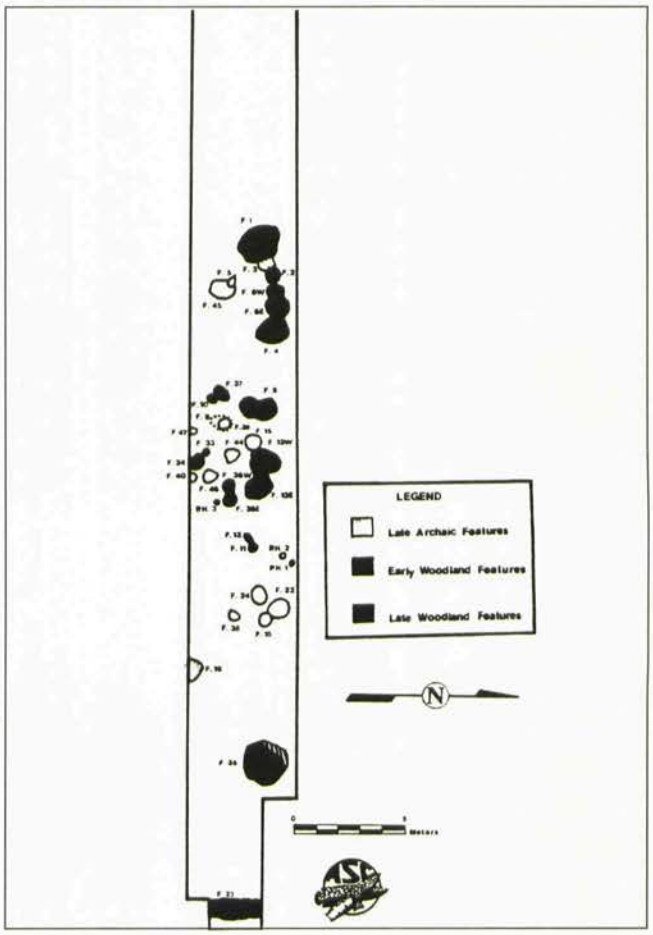

Fig. 3 Block excavation showing location of pit features, burials, and post holes.

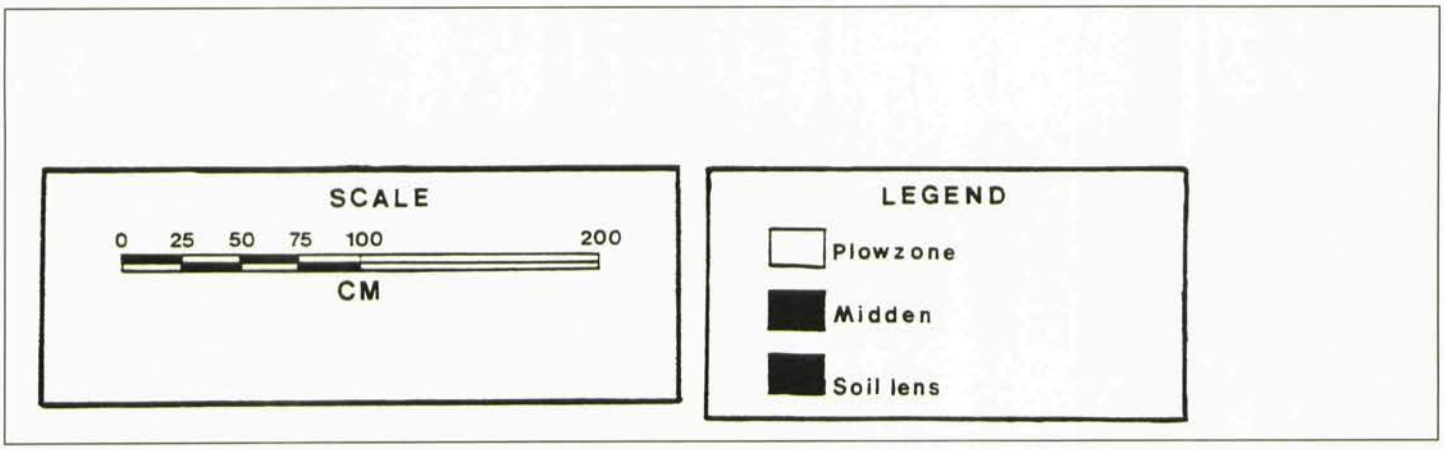

Fig.4 Cross-section of a portion of the site showing midden deposit and feature depth.

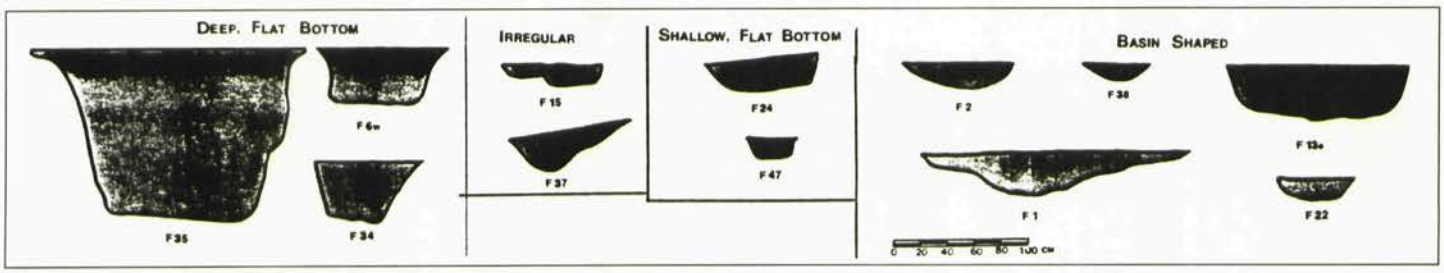

Fig. 5 Cross-sectional profiles of selected pit features.

Plate 1 Aerial view of excavations at the Sabre Farms site.

Plate 2 Block excavation of portions of the Sabre Farms site.

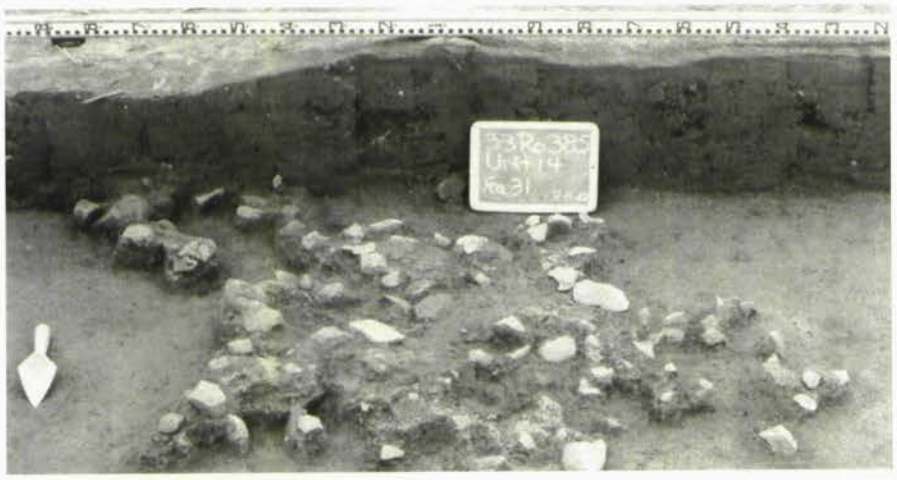

Plate 3 Fire-cracked rock concentration common at the site.

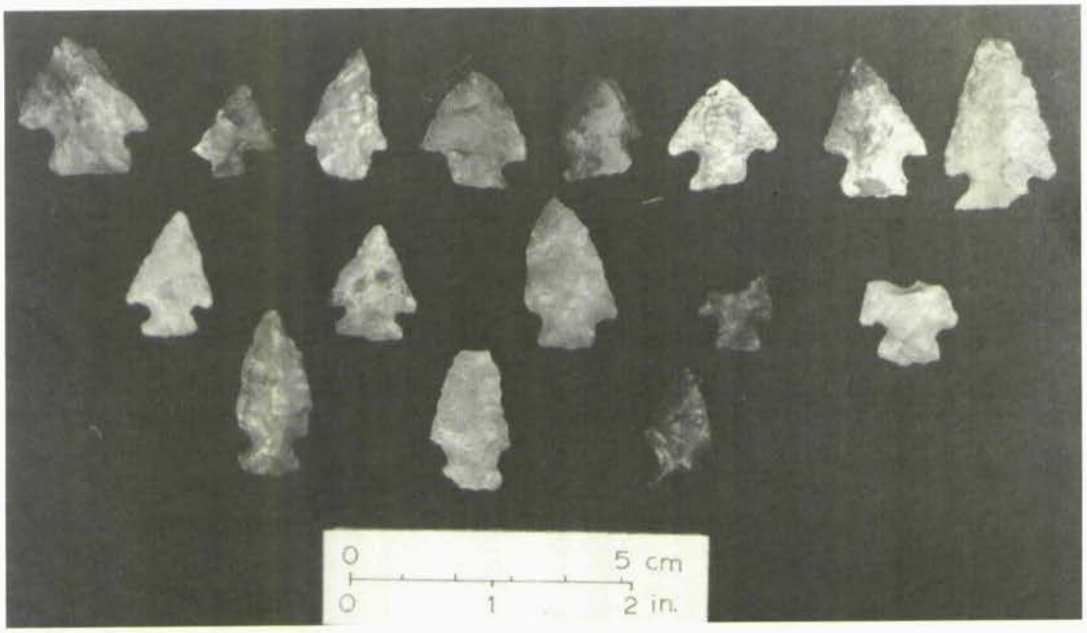

Plate 4 Merom and Trimble points.

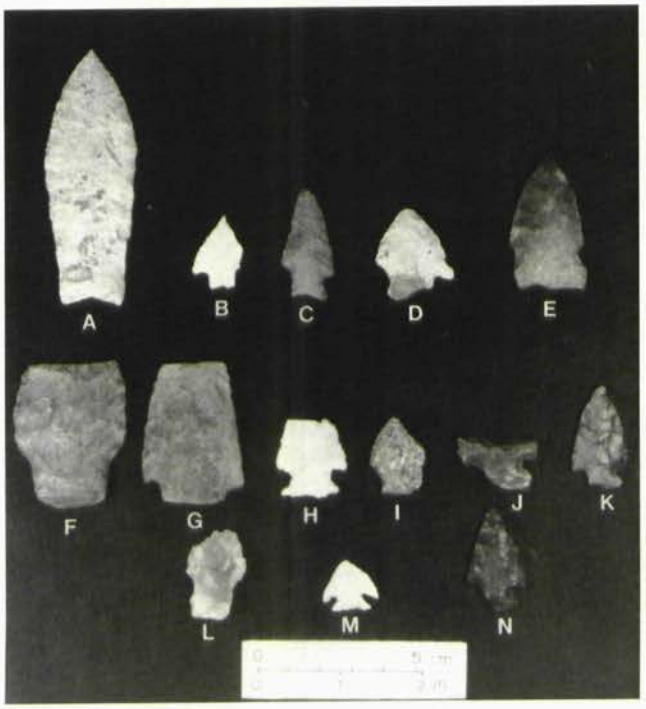

Plate 5 Various point styles.

Plate 6 Lithic items found in cache with burial.

Plate 7 Early excavations in Feature 35.

ANOTHER "PROBLEMATICAL"

by
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Shown is a fascinating artifact which appears to be prehistoric in origin. This human foot effigy is presently owned by Ernest R. Liming of Georgetown, Ohio. who has had it in his possession for about twenty years. He obtained it from an elderly gentleman who claimed to have found it on a sandbar in the Ohio River at Manchester in Adams County, Ohio. The relic is nothing more than a slightly modified natural cobble. It is made of a very dense black stone obviously worn smooth by the forces of nature. Viewed at a certain angle, the naturally shaped stone resembles the general outline of a human right foot. Someone, presumably a prehistoric citizen of the mid Ohio Valley, has carved distinctive toes on the stone completing the illusion of a human foot. It measures 4⅛ inches in length by 1⅝ inches wide.

Whether or not this relic is prehistoric will probably never be fully ascertained but it is interesting to note that there are several Fort Ancient village sites in the area including one just above Manchester and the human foot was depicted in a variety of ways by the Fort Ancient Culture. Smoking pipes carved in the likeness of the foot as well as petroglyphs carefully pecked and ground into slabs of stone have been attributed to the Fort Ancient people. Two well known foot petroglyphs are located about twelve miles upriver from Manchester.

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Fig. 1 (Kelley) Human foot effigy from Manchester, Ohio.

MAN AND HIS SYMBOLS: ORNAMENTS FROM THE LATE PREHISTORIC MONONGAHELA BROKAW VILLAGE SITE AND BEYOND

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ABSTRACT

The Brokaw site (33BL-6) is a temporary seasonal Archaic hunting camp (7000-700 B.C.) and Late Prehistoric (A.D. 1350-1450) Monongahela village site located in the uplands of east-central Ohio in the Unglaciated Allegheny Plateau physiographic province. In this paper the ornaments from Brokaw Village are identified and described and comparisons are made with the ornaments from other Monongahela and – secondarily – Fort Ancient village sites in the Middle and Upper Ohio Valley area. A functional symbolic interpretation of the beads and pendants from these sites is proffered, which suggests the ornaments are the key to identifying the structure of social status in Monongahela society, the model on which their power system is based, and the order of the Monongahela universe.

INTRODUCTION

Early in the 11th century A.D. the native Late Woodland societies inhabiting the territory of the Monongahela in the Upper Ohio Valley underwent a considerable transformation as a result of influences from the Mississippianized Fort Ancient culture to the south and west (Figure 1). Aspects of the culture which are known to have undergone change are projectile point and ceramic styles, the location and plan of the villages, and a shift in the food economy which incorporated maize agriculture. In addition to these several changes, which have been the subject of much research and discussion over the years, the Monongahela also borrowed the ornament complex of the Fort Ancients. Thus, the pendants and beads recovered from Monongahela sites are essentially not recovered from the antecedent Late Woodland sites of the area, although a few of the ornament types are known to date as early as classical Adena and Hopewellian times of the eastern United States.

The Brokaw site (33BL-6), a multicomponent archaeological site with Archaic, Middle or early Late Woodland, and Late Prehistoric Monongahela cultural affiliations, is located in the uplands of the Unglaciated Allegheny Plateau physiographic province of east-central Ohio (Belmont County). Of the various cultural manifestations present at Brokaw, it is the Monongahela which is considered here. Thus, around the 15th century A.D. the Brokaw site was occupied and abandoned on at least two and perhaps three occasions. Consequently, relatively extensive archaeological remains and numerous subplow level features appear at the site.

As is typical of the Monongahela culture, the Brokaw site is characterized by shell-tempered ceramics, triangular and small, notched chert projectile points, maize agriculture in combination with hunting and gathering, and an oval-shaped village plan composed of an open central plaza surrounded by houses which were, in turn, enclosed by a palisade. Research specific to the Brokaw site, however, indicates the Monongahela Cordmarked and Monongahela Plain pottery recovered is related to the Johnston Phase of the Monongahela culture. In addition, the sources of chert were the adjacent Ohio River Valley to the east of Brokaw and the more distant Flint Ridge and Upper Mercer quarries located to the west and northwest of the site (in Licking and Coshocton counties, respectively). And, finally, subsistence economics was based primarily on Northern Flints maize agriculture, the gathering of black walnut and hickory nuts, and the hunting of such game animals as white-tailed deer, elk, black bear, squirrel, cotton-tail rabbit, turkey, and ruffed grouse.

From Brokaw Village, a total of three hundred and fifty-one ornaments and ornament fragments have been recovered. Accordingly, in this report an identification, frequency of occurrence, site context, and a brief description of the pendants and beads found at Brokaw is provided. In addition, where a bead or pendant is obviously part of an ornament cluster, the identity of the cluster is determined by the excavation unit designations from which the ornaments were recovered (Figure 2). In this regard, in order to insure a maximum recovery of ornaments, all soil matrix, both plow zone and below, has been put through either ⅛" or ¼" hardware cloth mesh screens. The plow zone was removed by round-faced shovels, and the midden and features in ten centimeter increments by 45-5 Marshalltown trowels. The soil matrix was hand-carried in plastic buckets to the screens. Excavation unit size was five-foot squares.

In addition to the above, an examination of the Monongahela – and secondarily Fort Ancient – archaeological site report literature is undertaken in order to compare the Brokaw Village ornaments with ornaments from other village sites in the Monongahela and Fort Ancient territories, thereby permitting the determination of the general frequency of appearance of a pendant or bead type, the probable distribution of an ornament type, the variations of form of an ornament type in the two territories, and whether the various pendant and bead types are found with burials or not. And if they are, are they: (1) part of a necklace, bracelet, or headgear, or were they sewn onto an item of clothing, and (2) what is the sex and age of the burials.

THE ORNAMENTS

Bear Canine Pendants (Figure 3, A-B)

Two "modern" black bear *(Ursus americanus)* canine pendants were recovered from plow zone excavation units at Brokaw Village. The larger specimen, from an exceptionally large mature adult male, is from unit 9-Q, and overlay part of a double-walled house structure located in units 7-Q, 7-R, 8-Q, 8-R, 9-Q, 9-R, I0-Q, and I0-R. Nearly the entire surface of this right mandibular cl canine evinces a moderate amount of polish, although the crown of the tooth is damaged. The differential in the amounts of polish found on this part of the tooth indicate the canine was already damaged prior to being worked, and again more recently by foliation. The maximum metric data are: length: 18.3 mm, and width: 12.5 mm. The second, and much smaller pendant, from unit 2-M, is a left mandibular cl canine, and is also from a mature adult, but a female. Only the root remains, however, as nearly all of the enameled portion of the tooth was either broken off and polished over or was naturally worn down prior to removal from the jaw (A. K. Bahrensmeyer, Smithsonian Institution, personal communication) . The metric data are: length: + 14.2 mm, and width: 9.1 mm. Both specimens were double-drilled near the base of the root, with the holes tapering from an exterior 5.0 to 7.0 mm in diameter to an interior 3.5 mm. Each pendant was also associated with a cluster of ornaments recovered from its respective excavation unit area.

Regarding the specimen from unit 9-Q, as stated above, this mandibular canine is exceptionally large for a modern adult male black bear. The question therefore may be posed, is this tooth from a grizzly bear *(Ursus arctos)*, and it arrived through trade at Brokaw Village from the Plains west of the Mississippi, or is it from a black bear, and of local origins? As there is known sexual dimorphism in both of these forms of *Ursus*, including the dentition (Gordon, 1977:247; Gordon and Morejohn, 1975:40-44; see also Graham, 1991:240-244), twelve generally smaller grizzly bear mandibles, marked female, and twelve generally larger black bear mandibles, marked male, were selected from the Smithsonian Institution's mammalian collection for canine width measurements in

an effort to resolve this hypothetical dilemma (see Table 1). Using dial calipers, the canine width metrics were determined by measuring maximum tooth width at the base of the enamel. Accordingly, the biometric data indicate there is a slight overlap of approximately 0.8 mm in the size of the canines of the two bear types. Such a conclusion is in marked contrast to similar research undertaken by Kurten (1960:4-5) and Russell Graham (Illinois State Museum, personal communication), however, who report a decided non-overlapping differential in the size of the canines of these two modern *Ursus forms.* This discrepancy in research results is presumably real, though, and may well be explained by the deliberate skewed selection process employed by the author. Nevertheless, as a generalization, it is clear that grizzly bear canines are considerably larger than their black bear counterparts. This observation may also be considered valid for the past 2500 years, and would therefore be applicable to classical Hopewell and Late Woodland times as well. Thus, on the basis of biometric data in general, and the more pronounced curvature of black bear mandible canines in comparison to grizzles, the Brokaw specimen is identified as being black bear.

Bear teeth pendants are recorded for the vast majority of Monongahela and Fort Ancient village sites reported. Frequencies vary from site to site, nevertheless, greater numbers are usually found at Fort Ancient villages than Monongahela – for examples, see Hardin Village (Hanson, 1966:145) and the Bonnie Brook site (Herbstritt, 1981:33). Pendant forms occur as canines (George, 1983:56), molars (Carskadden, 1977:44; Guilday, 1955:142), and premolars (Baker, 1981:22-23), with canines occurring in by far the greatest numbers – followed by molars. Regarding the canines, the roots were either "cut" (Augustine (1938a:8) or were perforated (Robson, 1958:120) for purposes of suspension. The favored mode was clearly perforation by drilling. Interestingly, with the exception of a greater number of bear tooth pendants being recovered from Fort Ancient sites than Monongahela, no other clear cut patterns are discernible. Bear canines, however, may have been more frequently associated with Fort Ancient burials (see Hanson, 1975:78; Moxley and Bloemker, 1985:9, 17) than Monongahela (see Boyce-Ballweber, 1987:50).

Gray Wolf Teeth Pentants (Figure 3, C-F)

A total of five gray wolf *(Canis lupus)* molar, premolar, and canine pendants have been found in plow zone excavation units. Two molar pendants are from contiguous squares overlying part of a house structure in units 8-R and 9-R (see above), and are made from the same section of the large left mandibular ml molar. Their proximity, in fact, indicates they were part of the same item of adornment. One specimen is moderately polished over its root surface and the other exhibits no polish at all. A third pendant, the smaller left mandibular m3 molar, is from unit 5-Q. Although speculative, the relative proximity of this specimen to the others may suggest they were associated. A moderate amount of polish appears over the root surface of this object. All three teeth were double-drilled near the base of the root, with orifice size ranging from 2.8 to 3.5 mm in diameter. A fourth specimen, recovered from the wall of units I-P and P-I, was manufactured by breaking away a segment of the mandibular p4 premolar, full-grooving the retained portion near the base of the root for suspension, and then moderately polishing much of the remaining root surface as high as the crown. The artificial surface created by fracturing the tooth remained both unmodified and unpolished. This pendant was also associated with a cluster of ornaments recovered from the contiguous excavation units. A final example is a male mandible canine split lengthwise through the middle from unit L-3. This specimen was probably manufactured by drilling through either side of the tooth for suspension, removing the base of the root 1 centimeter below the enamel portion of the tooth, and then polishing the remaining surface. This pendant like the others, was associated with a cluster of ornaments from the adjacent excavation squares.

Wolf teeth pendants manufactured primarily from canines and secondarily from molars are reported relatively frequently at Monongahela and Fort Ancient village sites. Also reported are worked wolf incisor and canine teeth of an unknown function (Buker, 1970:42; George, Babish, and Davis, 1990:61), and a wolf mandible, grooved for suspension, with the ramus removed (Carskadden, 1977:46). The number of perforated wolf teeth pendants found at the sites ranges from one to six specimens (see Buker, 1968: 42; Butler, 1939:43; Augustine, 1940:54) . Of course, one of the problems in comparing site materials is that some authors do not identify the *Canis* dentition to the species level, therefore it is not clear whether the wolf and dog are both represented, or only one of them (see the Boyle, Blain, and Man site reports of Nale, 1963:177; Prufer and Shane, 1970:137; Moxley and Bloemker, 1985:11). Perforated wolf teeth are only infrequently recorded as associated with burials at Monongahela (Butler, 1939:43) and Fort Ancient sites (Hanson, 1966:145).

Bobcat Canine Pendants (Figure 3, G-H)

Two bobcat *(Lynx rufus)* canine pendants were reported from plow zone contexts of squares 9-Q and 19-T. The pendant from 9-Q is assumed to be associated with part of the double-walled house structure noted above. The canine from 19-T displays no signs of damage, while the specimen from 9-Q is lacking a base as a result of a fracture occurring at the point of suspension. Both pendants were double-drilled through the base of the root and subsequently polished. The holes taper from an exterior 4 mm in diameter to an interior 2.6 mm. Both Specimens are associated with clusters of pendants and beads recovered from their respective excavation unit areas.

The archaeological literature suggests bobcat canine pendants are particularly rare at Monongahela and Fort Ancient sites. A single grooved bobcat upper canine tooth is reported for the Monongahela Ryan site (George, 1978:31-32) in Westmoreland County in southwestern Pennsylvania, but no other references are noted. Their presence at Brokaw and Ryan, however, indicates this pendant type is under reported.

Raccoon Canine Pendants (Figure 3, I-K)

One left and one right maxillary c1, and three left and one right mandibular c1 raccoon *(Procyon lotor;* Frederick Grady, Smithsonian Institution, personal communication) canine pendants have been found at Brokaw Village. All six specimens are from the plow zone: excavation units 4-N, 5-L, 1-P, 7-P, 10-P, and M-2. Double-drilling appears near the base of the root of five specimens, whereas the pendant from 10-P is three-quarter grooved. Exterior hole size ranges from 3.3 to 4.5 mm, and the interior from 2.0 to 2.9 mm.Concerning the condition of the pendants, one is split longitudinally and three exhibit minor to moderate damage to the enameled portion of the teeth. Five specimens are associated with ornament clusters, while the canine from unit M-2 is unclear. The pendants from 4-N and 5-L are part of one cluster, and the pendants from 7-P and 10-P are part of a cluster associated with the double-walled house structure reported above.

Raccoon canine pendants are found at Monongahela and Fort Ancient sites, but are reported infrequently at both. In Ohio they are reported at such Fort Ancient villages as Richards (Carskadden, 1977:44) and Blain (Prufer and Shane, 1970:137, 139), and in Pennsylvania at Gnagey (George, 1983:56) and Scarem (Mayer-Oakes, 1954b:47, 53, 56), Monongahela village sites. The geographical distances between these sites lead the author to believe that raccoon canine pendants occur at a greater number of sites than those from which they are reported, but for various reasons they are not found or identified.

Gray Fox Molar Pendant (Figure 3, L)

A single gray fox *(Urocyon cinereoargenteus;* Frederick Grady, Smithsonian Institution, personal communication) molar pendant was recovered from the plow zone wall of excavation units P-1 and Q-1. This undamaged right mandibular m1 molar tooth pendant was made by shallowly half-to-three-quarter grooving the two roots 3 to 5 mm above the root bases for purposes of suspension. The root surface

below the crown was then moderately polished over. This specimen is also part of a cluster of ornaments which was found in the contiguous excavation units.

Gray fox molar pendants are apparently quite rare at Monongahela and Fort Ancient sites, as no other direct references to this pendant type have been noted in the archaeological literature. Conversely, gray fox canine pendants are reported sporadically at both Monongahela and Fort Ancient sites (Prufer and Shane, 1970:- 137; Brown, 1981:68; George, 1983:56; Baker, 1981:23; McMichael, 1963:18), and gray fox ilia, inominate, and worked jaws are found on Fort Ancient and Monongahela sites in eastern Ohio (Carskadden, 1977:45-46; Brown, 1981:65; Grubb and Allen, 1980a:15), but do not seem to be reported east of this area in the Monongahela territory. Only the gray fox ilia is reported in association with a burial (Carskadden, 1977:45).

Shale Pendant (Figure 4, A)

A single micaceous indurated shale (Francis M. Hueber, Smithsonian Institution, personal communication) pendant was recovered from a large, partially stone-lined storage/refuse pit 18" below the soil surface in excavation unit 20-W. In outline, the specimen is triangular in shape. The maximum metric measurements are: length:43.2 mm, width: 24.7 mm, and thickness: 3.8 mm. The quality of the workmanship is mediocre, as no great effort was expended to create a smooth, polished surface. Two double-drilled holes for suspension appear near the broad base. The holes measure 5.5 mm on the flat faces and contract to 2.5 mm halfway through the specimen.

Shale pendants, in general, are not a frequently occurring material/artifact type at Monongahela and Fort Ancient sites. In Ohio their record is one of marked absence, since with the exception of the Brokaw site, none seem to be recorded. In Pennsylvania, however, their appearance – in several object forms – is more frequent. Shale pendants are accordingly reported at the Reckner site (Augustine, 1938a:8), Powell No. 1 (Augustine, 1938c:62), Montague (Butler, 1939:39-40), McKees Rocks (Buker, 1968:36, 38), Drew Buker, 1970:31-33), and Gnagey (George, 1983: 52-53). As four of these sites are in Somerset County, where shale is readily available (Augustine, 1938a:7; 1938b:45; Butler, 1939:39; George, 1983:53), shale is perhaps a substitute material for slate, used at the Fort Ancient Blain Village site (Prufer and Shane, 1970,:115, 120) and the Monongahela Wylie (Eisert, 1981:35), Henderson Rocks (Baker, 1981:12, 14), and Hunt sites (Grubb and Allen, 1979:21, 24). Where reported, both materials tend to be black, and secondarily gray.

Cannel Coal Pendants (Figure 4, B-F)

Eight cannel coal specimens have been found. Seven are from the plow zone of excavated units and one is from the surface of the site. One damaged pendant from the plow zone of unit 8-S, and another specimen from the plow zone of unit 10-P, which exhibits tip and basal damage, are associated with the double-walled house structure underlying units 7-Q, 7-R, 8-Q, 8-R, 9-Q, 9-R, 10-Q, and 10-R, and the ornaments associated with this area. Also, a specimen in perfect condition from the plow zone in unit 4-M is associated with a cluster of ornaments in that unit area. Morphologically, one specimen is diamond of coffin-shaped (Figure 3, F) and four others appear to resemble canine teeth (Figure 3, B-E). The remaining three are tip fragments. Diagonal cutting or rasp marks on two of the latter suggest the objects were broken at the site during the process of manufacture. Metric measurements of the only complete pendant are: length: 32.7 mm, width: 8.1 mm, and thickness: 3.4 mm. Three additional specimens exhibit minor to moderate tip and/or basal damage. The metrics range from: length: +14.6 mm to +32.6 mm, width 5.3 mm to 11.3 mm, and thickness: 3.2 to 6.8 mm. Five pendants are double-drilled.

Cannel coal pendants are found on the majority of the Monongahela and Fort Ancient sites excavated. The Fort Ancient sites in eastern Ohio and the Monongahela sites in general produce primarily diamond, coffin, tear-drop and canine-shaped pendants (see Brown, 1976: 24, 27; 1981: 52-53; Grubb and Allen, 1979: 21, 24; Carskadden, 1977:87, 95; Dunnell, 1980:16, 20, 23; Nale, 1963: 171, 184; Buker, 1968: 37-38; Weslager, 1939:61; Boyce, 1985:31, 42; Herbstritt, 1981:33-34; Baker, 1981:12, 14). The diamond, coffin, canine, and tear-drop forms are believed by the author to be stylized variations on the general theme of carnivore canine teeth. Five-sided (Buker, 1970:33) and discoidal (Dragoo, 1955:110) forms are rare in this region. The Fort Ancient sites in Kentucky and West Virginia clearly exhibit a broader range of artifact shapes than their northern neighbors, namely, diamond, bi-pointed, and claw-shaped pendants, plus beads, and oval disks (Hanson, 1966:132, 139; 1975:79, 82; McMichael, 1963:20, Moxley and Bloemker, 1985:15, 17,19). In fact, in the Kentucky-West Virginia area, the cannel coal claw appears at more archaeological sites than cannel coal imitation teeth. Cannel coal is of course black in color.

Sandstone Pendant (Figure 4, G)

One carbonaceous argillaceous sandstone (Francis M Hueber, Smithsonian Institution, personal communication) pendant was recorded from the plow zone of excavation square J-4. Although the base is missing as a result of a break occurring at the point of the double-drilled hole, in outline the specimen imitates the shape of a carnivore canine tooth. In that regard the artifact resembles several of the cannel coal pendants described above, although it is longer and thinner by comparison. The maximum metric data are as follows: +36.2 mm, width: 14.5 mm, thickness: 4.7 mm. The quality of the workmanship is good. As the manufacturing raw material came from close proximity to a coal bed, the material is assumed to be of local origin. The color is black. This pendant is part of a cluster recovered from J-4 and the surrounding excavation units.

The canine-shaped sandstone pendant at present appears to be unique to Brokaw Village, for there are no reports of its recovery in the Monongahela and Fort Ancient archaeological literature. In fact, examination of the site reports for these two cultures indicates that sandstone pendants in any form are apparently quite rare. A single specimen, tending towards oval in outline, is reported from the McKees Rocks site in southwestern Pennsylvania (Buker, 1968: 36, 38), while another, triangular-shaped, was recovered from Henderson Rocks in northern West Virginia (Baker, 1981: 12, 14). Both sites are of Monongahela affiliation.

Freshwater Shell Pendants (Figure 5, A-C)

Four freshwater bivalve unionid (Myroslaw Harasewych, Smithsonian Institution, personal communication) shell pendants, which are most likely made from *Elliptio dilatus* or *Pieurobema coccineum,* have been found at Brokaw. Two are from the plow zone of excavation units 2-Q and 8-Q, one was recovered from the context of a sandstone hearth at the 8.5"-11" level of unit 4-M, and the last was recovered from the living floor of a house in unit 5-L, 8"-8.5" below the soil surface. All four specimens, unfortunately, are broken–three through the perforations and one is a basal fragment. The pendant from 4-M is tear-drop in form, while the specimens from 2-Q is a stylized canine. Both are bifacially drilled. The maximum metric data are: +18 and +20 mm in length, width: 9.0 and 9.7 mm, and thickness: 4.6 and 6.4 mm. The specimen from 8-Q is essentially tooth-shaped in outline (+12.5 mm in length and 7.5 mm wide). And, unlike the two other pendants from Brokaw, was drilled through only one face. This variation, however, may conceivably be explained by the thinness of the object (3.3 mm). The recovery location of the artifact suggest it was associated with the house structure in the 7-10-Q-R area of the site, and with other ornaments from this location. Regarding the origin of the molluskan shell fauna, freshwater unionids would have been readily available in nearby Wheeling and McMahon creeks. The Brokaw specimens have a pearly white, or nacreous, appearance.

Freshwater mollusk shell pendants are reported in limited numbers relatively frequently at Monongahela village excavations, particularly in the eastern portion of their territory (Augustine, 1938b:45; 1938d:86; 1940:54). At Fort Ancient sites, in contrast, freshwater mollusk pendants

are reported very infrequently. The most commonly occurring form among the Monongahela is the imitation elk canine tooth (see Butler, 1939:46; Dragoo, 1955:96; Dunnell, 1962:16; 1980:23; Mayer-Oakes, 1954a:13; Buker, 1968:37; Brown, 1981:58-59), although other forms, such as bear tooth (Augustine, 1938a:8) and claw, are known. To this may be added, at Johnston and Montague, freshwater mollusk pendants are reported with infant burials. At Johnston, they appear to have been part of a necklace (Dragoo, 1955:96). The freshwater mollusk pendants recovered from the Buffalo and Richards sites, the only Fort Ancient sites where they are clearly identified, take the form of a stylized tooth and a claw (Hanson, 1975:78; Carskadden and Morton, 1983:35), an alternate form to the tooth. Freshwater shell pendants were also found with burials at Buffalo.

Marginella Apicina Shell Beads (Genus *Prunum Apicinum*) Figure 5, D-F)

Marginella apicina (Menke, 1828:46) is a very common, shallow-water shell species found from North Carolina to Florida, throughout the West Indes, and along the Gulf States of the U.S. (Abbott, 1974:250) and the Yucatan of Mexico. Andrews (1977:155) and Ode (1986:101), however, indicate this species does not occur along the northern two-thirds of the coast of Texas. And Coovert (1988:29; personal communication, 1991) would contend it is probably either absent of quite rare along the entire Gulf Coast between South Texas and Florida. Nevertheless, its greatest frequency of occurrence is along the coasts of Florida (Rehder, 1981:599-600). Regarding the northern range of *Marginella apicina*, research and discussions of the author with Raye N. Germon (Smithsonian Institution) indicte this warm-water species is all but absent from the more northern, cooler waters of the Chesapeake Bay off the coast of Virginia. Thus, it would appear that the numerous *Marinella apicina* shell beads recovered from the archaeological sites of North America came from the eastern seaboard states of the southeast, but south of the state of Virginia. Parenthetically, archaeologists should note that prior to bleaching and fossilization, this shell species is quite glossy and rather colorful.

A total of twenty-nine marine univalve *Marginella apicina*–or Common Atlantic Marginella–shell beads have been recorded from Brokaw Village. One bead appeared in excavation unit 2-K, 18" below the soil surface in a refuse pit. A second specimen was recovered from below the plow zone at a depth of 9.5" in unit 6-M, and may have been associated with a refuse pit in the northwest quadrant. A third, fourth, and fifth beads, from the plow zone in units 8-S, 10-R, and 10-Q, were associated with part of a house and a cluster of ornaments in units 10-R and 10-Q, and the immediately adjacent excavation units. And a sixth, seventh, and eighth, from the plow zone and level 2 of units J-3 and L-4 were associated with a house in those and the adjacent excavation units in that area. The remaining twenty-one *Marginella* beads are from the plow zone of excavated units, although more than several are associated with ornament clusters in the K-101 through K-110 unit series. All twenty-nine specimens were modified for use by obliquely grinding through the surface near the top left of the univalve at a point approximately ninety degrees from the natural opening. The damage observed to several of the shells may have occurred while being worn on a necklace or garment of clothing, although farm machinery cannot be ruled out.

Marginella apicina shell beads are frequently recovered in varying numbers from the Monongahela and Fort Ancient sites examined. *Marginella* beads are reported sporadically in plow zone, midden, refuse pit, and other feature contexts as well. However, in strong contrast to the non-shell type ornaments recovered, *Marginella* shell beads are most frequently found in association with human burials, where bead numbers range from one to four hundred and forty-four (see Boyce, 1985:42; George, Babish, and Davis, 1990:64; Nale, 1963:174; Butler, 1939:46; Augustine, 1938a:10; Hanson, 1975:78; 1966:157; Moxley and Bloemker, 1985:17; Coovert, 1988:30). In addition, where reported, the beads are found in the vicinity of the neck, thus suggesting they were parts of necklaces (Patterson, 1977:136; Carskadden and Morton, 1983:34-35; Brown, 1981:16; Dragoo, 1955:95). The evidence also suggests the Monongahela village sites in Maryland (Pousson, 1981:123; Boyce-Ballweber, 1987:49), West Virginia (Mayer-Oakes, 1954a:25; Dunnell, 1962:4, 33; Baker, 1981:24), and Pennsylvania (Herbstritt, 1981:33; Michael, 1983:7; Augustine, 1940:54; George, 1983:58, 60) produce fewer *Marginella* beads than their Ohio Monongahela (Brown, 1981:58; Grubb and Allen, 1980a:16) and Fort Ancient counterparts (Patterson, 1977:136; Hanson, 1975:78; 1966:157; Coovert, 1988:29). Interestingly, the Fort Ancient Blain Village site does not record the Common Atlantic Marginella bead (Prufer and Shane, 1970).

Shell Disk Beads (Figure 5, G-H)

A total of eleven shell disk beads manufactured from an unknown marine or freshwater shell type have been recovered from Brokaw Village. It is possible, however, that the manufacturing material may be the columella of a marine spiral univalve. Two beads are from the general site surface and nine from excavated plow zone units. A single specimen was found in units K-2 and K-5, which are assumed to be part of an ornament cluster from these and the adjoining excavation units. In addition, two shell disk beads were found in units 8-Q and 9-Q, and are presumed to be associated with part of a house structure and a large cluster of ornaments recovered from those and the more immediately adjacent excavation units. Finally, a single shell disk bead was found in units K-106, K-107, and K-109, where they are, again, believed to be parts of ornament clusters. The maximum/minimum metric data range for the eleven cylinder-shaped disk beads are: thickness: 2.2 to 4.5 mm; diameter: 4.8 to 6.9 mm; interior hole diameters: 2.1 to 3.2 mm.

Small shell disk beads are found with considerable frequency at Monongahela and Fort Ancient archaeological villages. Their actual number counts, however, are generally considerably lesser at Monongahela sites. A clear exception to this, though, is the Phillips site in Fayette County in southwestern Pennsylvania, where over 4000 small disks comprised a group of shell bead necklaces discovered with a child burial (Cresson, 1942:19). Indeed, where the context is reported, small shell disk beads are usually found with burials, whether at Monongahela sites (Mayer-Oakes, 1954a:15; Dunnell, 1962:3; Grubb and Allen, 1980a:16; George, Babish, and Davis, 1990:63; Augustine, 1938b:45), or Fort Ancient (Prufer and Shane, 1970:145; McMichael, 1963:20; Hanson, 1966:157; 1975:69, 78; Coovert, 1988:30-31). At both site types, too, the locations of the beads within the burials indicate they were bracelets, necklaces, or possibly parts of headdresses. As a matter of interest, no positive correlation is readily apparent between age and sex, and the location of the ornament types. Two possible exceptions however may be that headdress beads were associated with adult males – at least among the Monongahela, and, among the Fort Ancient, the beads may have been sewn onto a garment. More secondarily, small shell disk beads are reported in plow zone (Pousson, 1983:123), midden (Applegarth, Adovasio, and Donahue, 1978:41), and refuse pit (Carskadden and Morton, 1983:35) contexts.

As a general tendency, small shell disk beads are found on Ohio Fort Ancient and Monongahela sites (Prufer and Shane, 1970:145; Coovert, 1988:30-31; Carskadden and Morton, 1983:35; Brown, 1976:26; 1981:58: Grubb and Allen, 1980a:16), and on sites in the central part of the Monongahela territory (Dunnell, 1962:3; Cresson, 1942:19). Small shell disk beads, in combination with larger shell disk beads, are found in the middle to eastern part of the Monongahela area and Fort Ancient sites south of the Ohio River (Mayer-Oakes, 1954a:15; George, Babish, and Davis, 1990:63; Boyce, 1985:42-43; Hanson, 1966:157; 1975: 69, 78). Finally, larger shell disk beads are found on Monongahela sites in the northeastern and eastern parts of their territory (Herbstritt, 1981:33; Michael, 1983:7; Dragoo, 1955:111; Butler, 1939:46).

Elk Teeth Pendants (Figure 5, I)

Three elk *(Cervus elaphus)* teeth pendants have been recovered from Brokaw Village. Two are incisors and one is a premolar. The larger incisor, a lower left i1, was recovered from the surface of the site, while the other, a lower right i3, was found in the plow zone of excavation unit 2-K. This latter tooth is assumed to be from the truncated part of the large underlying refuse pit which extended into the adjoining squares surrounding it. Unfortunately, the tooth is broken through the middle of the perforation near the base of the root, although the remaining portion of the root exhibits a moderate amount of polish and was double-drilled. The perforation contracts from an exterior 3.5 mm to an interior 2.5 mm. Finally, the large elk lower left p4 premolar pendant was recovered from a depth of 16" below the soil surface in a small refuse deposit in excavation unit 8-Q. This ornament was manufactured by breaking off a portion of a premolar tooth, three-quarter grooving the single remaining root 8 mm above the base, and then highly polishing the original crown and root surfaces as far down as the grooving. This pendant is part of an ornament cluster recovered from 8-Q and the surrounding squares.

Elk incisor tooth pendants are apparently quite rare, since only at the Monongahela Johnston site in southwestern Pennsylvania is this tooth type specifically identified (Dragoo, 1955:96). Clearly, elk molars, canines, and mollusk shell imitation elk canines are reported much more frequently. The canine forms – both real and imitation shell – appear to be principally associated with the Monongahela (Butler, 1939:46; Dragoo, 1955:96, 111; Dunnell, 1962:16; 1980:23; Grubb and Allen, 1980a:15; George, 1983:56; Boyce, 1985:42, 45). And the molars with the Fort Ancient (Carskadden, 1977:44; Moxley and Bloemker, 1985:6). Where elk canine forms are recorded with burials and the relative age of the skeletons is known, elk canine pendants among the Monongahela appear to be associated with infants (Butler, 1939:16; Dragoo, 1955:96; Boyce, 1985:45). Pendant locations are around the neck and behind the base of the skull. Elk tooth pendants are also reported by Augustine at the Reckner site, Fort Hill No. 1, Fort Hill No. 2, and Peck No. 2 sites, but, unfortunately, they are not further identified to type (1938a:8; 1938d:86; 1940:54, 57). Among the Fort Ancient, burial age identification and elk tooth form association is less clear (Hanson, 1966:145; 1975:78). Elk tooth pendants are occasionally found in refuse pit and other pit types (Augustine, 1938d:86; Moxley and Bloemker, 1985:6).

Deer Molar Pendants (Figure 5, J-M)

One premolar and four deer *(Odocoileus virginianus;* W. Chris Wozencraft, Smithsonian Institution, personal communication) molar pendants have been noted at Brokaw. One deer molar pendant was recovered from what is believed to be the living floor of a house in excavation unit 4-M, level 2 (9"-13"). The root of the tooth has been altered from its original configuration and then polished and double-drilled for suspension. The tooth crown is heavily worn and an unusual wear pattern appears on one of its lateral surfaces. A break occurs at the base of the root thus damaging the small perforation - approximately 3.0 mm in maximum diameter on the exterior surfaces and contracting to 2.3 mm in the interior. Two additional deer molar pendants are from a refuse deposit 20 to 30 cm below the soil surface in unit K-3. The roots of both the m1 and m2 mandibular specimens were grooved 3 to 6 mm above the base of the roots in order to facilitate suspension, but no other modifications were undertaken. Both are from mature adult deer, with the crown surfaces indicating minimal to moderate wear. Finally, a right mandible p2 premolar tooth pendant, modified so that only the cheek-side surface and one root remained for grooving and suspension, and a left maxilla molar, modified so that only the palate-side surface and one root remained for grooving, were recovered from the plow zone of 7-Q and 10-Q, respectively. All of the above pendants are associated with clusters of ornaments. The specimens from 7-Q and 10-Q are part of a cluster of ornaments associated with a double-walled house structure found underlying these and other units in the immediate area.

Deer molar pendants are apparently rarely found at Monongahela and Fort Ancient sites, since only one other direct reference to this pendant type has been noted in the archaeological literature (Mayer-Oakes, 1954a:6). Weslager (1939:62) and Grubb and Allen (1980a:15) record the presence of perforated deer teeth at the Monongahela Windy Hill and Hunt sites in southwestern Pennsylvania and east-central Ohio, respectively, but do not further identify the teeth to type. Still, the examination of Figure 11 - row 2, number 2 (Grubb and Allen, 1980a:15) - suggests this tooth may be a deer molar pendant. The specimen from the Speidel site in the northern panhandle of West Virginia reported by Mayer-Oakes had both roots grooved for suspension and was found near the chest of an aged adult male burial.

Dog Teeth Pendants (Figure 5, N-O)

One canine, one incisor, one molar and two dog *(Canis familiaris)* premolar pendants have been identified (Frederick Grady, Smithsonian Institution, personal communication). One P4 premolar is from the plow zone of excavation unit 1-M, a second P4 premolar is from the 40-50 cm level of a fire pit in unit K-3, and the third, an m1 molar, is from the plow zone of unit 2-P. The two maxilla P4 pendants were manufactured by first breaking away one of the two adjacent smaller roots of the teeth, and then halfgrooving the two remaining roots for suspension. Both premolars exhibit a moderate amount of polish over the root surfaces. The third molar pendant, a mandible m1, has both roots three-quarter grooved, but the enamel portion of the tooth is missing. The fourth specimen, a c1 canine, is from the plow zone of the northeast quadrant of unit K-102. This tooth is in relatively poor condition and lacks a base as a result of a fracture occurring at the point of the double-drilled hole. Orifice size was approximately 2.5 mm. The fifth specimen, an incisor, also from the plow zone of unit K-102, is too fragmentary to further identify. All five specimens are associated with clusters of ornaments. The two from unit K-102 are assumed to be part of the same cluster.

Dog teeth pendants are not very commonly reported at Fort Ancient and Monongahela sites. In addition, they are frequently not distinguished from wolf teeth (see Hanson, 1966:145; Prufer and Shane, 1970:137; Moxley and Bloemker, 1985:11; Nale, 1963:177). Dog canine pendants appear to occur throughout the region, while the notched root premolar form (Brown, 1981:68-69; Grubb and Allen, 1980a:20) may be restricted to sites west of Maryland, Pennsylvania, and West Virginia. Dog teeth pendants have been reported in association with burials at the Monongahela Friendsville site (Boyce-Ballweber, 1987:50-51) and with some frequency at the Fort Ancient Hardin Village site (Hanson, 1966:145).

Bird Bone Beads (Figure 5, P-R)

A total of one hundred and forty tubular, two barrel-shaped, and one hundred and twelve bead fragments have been recovered from plow zone, midden, and feature contexts at Brokaw Village. Virtually several length/diameter ratios appear, but the majority may be categorized as relatively short, tubular beads with larger diameters, and therefore ascribable to the Monongahela Johnston Phase (Dragoo, 1955:110), although the Brokaw specimens are a little longer and a little thinner. The mean length of one hundred complete specimens is 27.9 mm, while the range is 12.5 to 73.5 mm (the latter bead was recovered from the plow zone of unit 8-P, and was part of a large ornament cluster). The mean diameter is 7.5 mm and the range 3.9 to 11.3 mm. The process for manufacturing beads consisted of scoring the selected bone at the desired length, snapping off the ends, modifying the specimen to the desired shape, and polishing. Nearly all of the beads exhibit moderate to extensive polishing, except on the ends, which were frequently left uneven. The Brokaw specimens are assumed to be manufactured primarily from turkey, with a few made from hawk, eagle, or swan-sized birds. Unfortunately, the necessary diagnostic attributes required for identification are not present on the finished ornaments (Richard Zusi, Smithsonian Institution, personal communication).

Bird bone beads are nearly a ubiquitous ornament type at Monongahela and Fort Ancient village sites. At Monongahela villages bird bone beads are also the most frequently occurring of the various ornament types recovered. Beads manufactured from bird bones are found in plow zone, midden, refuse pit, house, burial, and other feature types as well. However, the feature context they are most often reported in is burials (see Brown, 1981:15-16; Grubb and Allen 1980b:27; Dunnell, 1962:3; Herbstritt, 1981:33-34, 42; Augustine, 1938b:45; Hanson, 1966:143-145). In this context, the beads appear to have been parts of necklaces (Carskadden, 1977:43; Butler, 1939:16), functional hair ornaments (Nale, 1963:175) et cetera, or were perhaps sewn onto a garment, such as a skirt (Carskadden and Morton, 1983:34; Mayer-Oakes, 1954a:26; Herbstritt, 1981:42, 58; Dragoo, 1955:95, 110; Augustine, 1940:57; Hanson, 1975:31, 78; Moxley and Bloemker, 1985:17). In the few examples identified, the sex of the skeletons was female, or a child, whose sex could not be identified. Only one was male - a Fort Ancient interment.

A comparison of Monongahela and Fort Ancient bone bead information suggests the Monongahela beads are, overall, a little smaller in length and diameter, and a lesser number of beads occurs per site. The apparent smaller size of the Monongahela beads may perhaps be explained by the observation that the Monongahela utilized birds and smaller mammals more frequently in the manufacture of their ornaments than their Fort Ancient counterparts, who had a more marked preference for deer (see Hanson, 1966:145; 1975:78). Bird and mammal types for which there appears to be some evidence of Monongahela usage in the making of beads are turkey (see Brown, 1981:65; Nale, 1963:186; Drew, 1970:40; Dragoo, 1955:111; Pousson, 1983:117; Baker, 1981:23), marsh duck (Pousson, 1983:117), grouse or crow-sized birds (George, 1983:56), swan (?) (Guilday, 1955:144), rabbit (Brown, 1981:65; George, 1983:56), and deer (Dragoo, 1955:111; Nale, 1963:175).

Pottery Disk Beads (Figure 6, A-B)

Two pottery disk beads have been found in the plow zone of excavation units 3-Q and K-104. The moderately smooth but uneven edges of the disks and the abrupt shortness, depth and breadth of the moderately smoothed-over cord marks along the edge of the larger disk indicate the beads are modified pieces of objects manufactured for other purposes. Their thicknesses - 2.6 mm and 7.1 mm - suggest they are possibly from a small and medium-sized vessel, respectively. The maximum diameters are 13.1 mm and 30.7 mm. Both disks were drilled from both faces. The orifice in the smaller bead is elliptical in outline and contracts from an exterior 5.0 mm to an interior 3.0 mm; the hole in the larger specimen is evenly round and contracts from 13.0 mm and 10.0 mm on the outside surfaces to a diameter of 5.0 mm in the center. This latter pottery bead is part of a cluster of ornaments found in units P-1, Q-1, P, 1-Q, 1-R, 2-P, 2-Q, 2-R, 3-P, 3-Q, 3-R, and 4-R, while the former is associated with a cluster in units K-104, K-105, K-106, and K-107.

Pottery disk beads are reported sporadically throughout the Fort Ancient and Monongahela territories. In the latter area a single pottery disk bead per site is normally all that is recorded (Brown, 1981:38; Nale, 1963:176, 179; Mayer-Oakes, 1955:112; Boyce, 1985:41-42). In addition, at Hanna (Butler, 1939:56) and Moore Village (Pousson, 1983: 111-112), sites on the southeastern Monongahela periphery, the beads are possibly manufactured from pipe stem fragments. At Fort Ancient sites ceramic disk beads appear to occur with greater frequency (McMichael, 1963:19; Hanson, 1966:101-102; 1975:87-88), although Gartley (1977:19) cites only one disk bead at Richards.

Turkey Didget Pendants (Figure 6, C-D)

Four turkey digit *(Meleagris gallopavo)* pendants have been noted from the Brokaw site. Two pendants are a left phalanx 1, of digit 2, a wing bone, and two are a right phalanx 1, of digit 2 (Frederick Grady, Smithsonian Institution, personal communication). One left phalanx 1 is from a living floor or midden 10"-14" below the soil surface in excavation unit 4-L. The second specimen, also a left phalanx 1 of digit 2, but larger, is from the plow zone of unit K-3. The third pendant, a right phalanx 1, identical in size to the K-3 phalanx, was recovered from a rodent disturbed area at a depth of 9.5" in J-2. The fourth specimen, also a right phalanx 1, is from unit 19-R, 9' below the soil surface - and is the smallest of the four ornaments. The pendants were made by somewhat carefully boring an off-centered vertical hole (3 mm in diameter) through the broad anterior ends of the digits. A moderate amount of polish appears over the entire surface of the larger left and right phalanx 1 specimens, whereas the smaller left phalanx 1 pendant exhibits only wear polish. The small right phalanx 1 ornament from 19-R displays no wear or polish at all. The specimens from units 4-L, J-2, and K-3 are associated with ornament clusters. Indeed, the pendants from J-2 and K-3 are part of the same cluster.

One or two examples of this artifact type are recovered from Monongahela sites throughout their lands at both Johnston and Drew phase village settings (Brown, 1981:65; George, Babish, and Davis, 1990:61; Dragoo, 1955:112; Baker, 1981:23; Pousson, 1983:120). Less frequently are turkey digit pendants reported at Fort Ancient sites, for example, their presence is not recorded at such sites as Blain Village (Prufer and Shane, 1970), Hardin Village (Hanson, 1966), Buffalo (McMichael, 1963; Hanson, 1975), or the Brown Hilltop site (Brown, 1976). Where they do occur, however, their numbers appear with greater frequency (Carskadden, 1977:44; Moxley, 1985:44; Moxley and Bloemker, 1985:9-10, 17). Thus, six of the ten turkey digit pendants reported for the Richards site are from a necklace. And at Man, one hundred and sixty turkey digits occurred in combination with five hundred and fifteen barrel shaped bone beads, which were associated with a young adult burial of indeterminate sex and age. In another instance at Man, three hundred and forty-one digits were found in conjunction with three hundred and twenty-six barrel-shaped bone beads. These were associated with a sixteen year old female - burial numbers 15 and 6, respectively.

Snowshoe Hare Innominate Pendant (Figure 6, E)

A single snowshoe hare (*Lepus americanus;* W. Chris Wozencraft, Smithsonian Institution, personal communication) pendant was recovered from the 9"-12" level of excavation square 2-M. This specimen was manufactured from the innominate bone of a snowshoe hare by modifying the lateral flaring surface, reducing the overall length by cutting off part of the bone, and rather crudely boring a hole through one surface for purposes of suspension. The diameter of the perforation is approximately 4.0 mm. The maximum length is 35.6 mm, width: 13.5 mm, and thickness: 6.4 mm. A moderate amount of polish appears over a majority of the surface area of the pendant. This specimen is part of a cluster of ornaments found in unit 2-M and the surrounding excavation units.

Snowshoe hare innominate pendants are not reported at other archaeological sites *per se*. Brown (1981:66-67), however, does report cottontail rabbit *(Sylvilagus floridanus)* innominate pendants at the Monongahela Tower site to the west of Brokaw, and intimateS they also occurred at the Fort Ancient Richards site, located even further to the west. Examination of this latter report, though, indicates they are fox ilia (Carskadden, 1977:45) and not cottontail rabbit after all.

Rabbit Ilium Pendant (Figure 6, F)

One rabbit ilium *(Sylvilagus floridanus)*; Frederick Grady, Smithsonian Institution, personal communication) pendant was found in a refuse deposit in excavation unit D-14 at the 8"-12" level. The ornament was made by snapping off the proximal end of the left ilium, and neatly drilling a hole through one wall Surface for suspension. The hole diameter contracts from 3.2 to 2.3 mm. The maximum metric data are as follows: length: 33.9 mm, width: 14.7 mm, and thickness: 4.5 mm. Highly polished surfaces are visible on various parts of the pendant due to post manufacturing polish and wear.

The rabbit pelvis pendant recovered from Brokaw Village is unique to this site. With no other references appearing in the extant literature. Only at the nearby Tower site (Brown, 1981:66) is a cottontail rabbit pendant reported. In short, the utilization of rabbit remains to produce ornaments may be restricted to a limited geographical area in the western territory of the Monongahela.

Squirrel Ilium Pendant (Figure 8, E)

A single gray squirrel (*Sciurus carolinensis;* Frederick Grady, Smithsonian Institution, personal communication) pendant was recovered from the plow zone of unit L-3. This specimen, like the rabbit ilium above, was produced by breaking off the proximal end of the left ilium, and very neatly drilling a hole obliquely upward through one wall surface to meet the newly created proximal end. The diameter of the orifice is 2.0 mm. Maximum specimen length is 25.1 mm, width: 8.6 mm, and thickness: 3.9 mm. Much of the remaining surface exhibits a moderate amount of polish. This ornament is part of a cluster of pendants and beads found in L-3 and the contiguous excavation squares.

Again, as in the example of the rabbit pelvis already noted, the squirrel ilium pendant from Brokaw is not reported at other Monongahela and Fort Ancient sites. This may in part be explained by the small size of the ornament, but more likely the type is simply restricted to a limited geographical area. Only at the Fort Ancient Richards site to the west of Brokaw Village are squirrel pendants also found. These, however, take the form of jaws (Carskadden, 1977:46).

Turtle Shell Pendant (Figure 6, G)

One turtle shell carapace *(Terrapene carolina)* pendant has been noted. The context from which the specimen was recovered was a living floor 11"-14" below the soil surface in the northeast and northwest quadrants of unit 5-L. In outline the object is nearly T-shaped, with rounded notches in the narrow part of the "T" for suspension. The maximum measurements are: length: 33.7 mm, width: 36.2 mm, and thickness: 1.7-3.7 mm. The object was manufactured by simply breaking away a section of the shell which was comprised of the base of the carapace and part of the thin upper shell as well. This latter section was subsequently modified by breaking the material at several points so as to create an overall T-shape. Finally, notches were carefully cut into the thin part of the bone where it joined the thicker part of the shell base. The quality of the workmanship is poor. No post manufacturing polishing was undertaken. This specimen is part of a cluster of ornaments associated with unit 5-L and the contiguous excavation units.

Pendants manufactured from turtle are reported very infrequently at Monongahela and Fort Ancient sites, and none take the form of the Brokaw specimen. Thus, the Tower site example is generally rectangular, but pointed at one end (Brown, 1981:62); the Richards and Philo II specimens are manufactured from Snapping turtle coracoids (Carskadden, 1977:44); and the perforated humerus pendant from Henderson Rocks was made from a box turtle (Baker, 1981: 23). One of the Richards pendants is from a necklace. Finally, it isn't clear whether the three turtle leg bones associated with burial 10 - an approximately ten year old child - at the Montague site were perforated pendants or not (Butler, 1939: 16).

Pendant Fragments

Four tooth pendant fragments cannot be identified. The specimen from excavation unit 25-U (8"-12" level) may be a raccoon canine, the fragment from 3-K (8"-12" level) may be a gray fox canine, the fragment from 2-R (plow zone) may be a wolf or dog incisor, but the specimen from the plow zone of unit T-8 is far too fragmentary to hazard even a guess. The incisor from unit 2-R is assumed to be associated with the ornaments from P-1, Q-1, 1-P, 1-Q, 1-R, 2-P, 2-Q, 2-R, 3-P, 3-Q, 3-R, and 4-R. And the canine fragment from 25-U may be associated with three bird bone beads and three Marginella apicina shell beads recovered from the plow zone of excavation units 23-U, 24-U, and 26-U. All four specimens are double-drilled.

Conclusions

Analysis of the Monongahela Brokaw Village ornament complex indicates a total of twenty-one pendant and bead types have been recovered from the site surface, plow zone excavation units, and features (Table 2). The manufacturing raw materials are comprised of seven different types. Thus, the pendants were manufactured from teeth, bone, shell, cannel coal, shale, and sandstone, while the beads were made from bone, shell, and pottery. Animal types represented by the dentition and bone pendants are black bear, gray wolf, bobcat, raccoon, gray fox, elk, deer, hare, rabbit, squirrel, turtle, and dog. Turkey and, secondarily, swan, eagle, and hawk-sized bird bones represented the bone beads. Regarding the shell ornaments, pendants were manufactured from fresh water bivalve mollusks, and beads from marine univalve mollusks. With the exception of the marine shell beads, all of the other materials were locally available and the ornaments were presumably manufactured by the Brokaw inhabitants. Still, no cannel coal, shale, or sandstone manufacturing debitage has been found during the excavations. The most frequently occurring pendant type at Brokaw is manufactured from cannel coal, and the most frequently appearing bead type is made from bird bones.

A sample of the site report literature representing much of the Monongahela territory indicates the general frequency of appearance of the various ornament types. Hence, bird bone beads are recovered at more village sites than any other ornament type, followed in order of frequency by bear teeth pendants, tubular shell beads, *Marginella apicina* shell beads, shell disk beads, cannel coal pendants, wolf teeth pendants, fresh water shell pendants, etc. Bird bone beads, in addition to being recovered from more archaeological sites than any other ornament type, also appear in greater numbers than any other artifact type at the numerous sites examined. However, bear teeth pendants, although they are recovered at nearly as many sites as bird bone beads, are ordinarily found in quite limited numbers, with one or two being the norm, although three and more are occasionally found. It is hypothesized that the reason for this is that the phallic-shaped bear teeth pendants were the primary symbol of male power and authority and high social status and prestige in the male dominant Monongahela society, whereas the vagina-shaped bird bone beads were one of the symbols denoting the inferior social status of females in this society. Likewise, *Marginella apicina* and shell disk beads, were also female symbols, and wolf tooth and cannel coal pendants were male power symbols, although of a reduced scale in comparison to bear teeth pendants.

Viewed from a different perspective, examination of the Monongahela archaeological literature in which burials are reported and associated grave goods are identified indicates ornaments are more frequently found with infants and children, than adults. And, when found with adults, the individuals are generally females. In addition, the grave goods are usually bird bone beads, marine univalve shell beads, and fresh water bivalve shell pendants, (see Coovert, 1988:30; Brown, 1981:16; Grubb and Allen, 1980:16; Mayer-Oakes, 1954a:5, 7; Dunnell, 1962:3; Nale, 1963:170; Herbstritt, 1981:33-34, 42; George, Babish, and Davi5, 1990:63-64; Dragoo, 1955:95-96, 110-111; Boyce, 1985:45; Weslager, 1939:60-61; Butler, 1939:16, 43, 46; Augustine, 1938a:11; 1938b:45; 1940:53; Cresson, 1942:19). The marine shell bead types appear in greater abundance than their freshwater pendant counterparts. By way of contrast, black bear and gray wolf tooth pendants are very infrequently associated with burials, while bobcat, raccoon, gray fox, shale, cannel coal, sandstone, snowshoe hare, rabbit, and squirrel pendant types are not reported as associated with burials at all. Accordingly, burial ornaments are typically manufactured from bird bones, marine univalves, and fresh water bivalves, all of which, symbolically, are nonterrestrial animals. That is, they represent the air, marine, and fresh water components of the Monongahela universe. To this it may be added, bird bone beads and marine univalve beads are female symbols, and therefore represent low value power symbols and a low social status in the

male dominant Monongahela society. Thus, although the marine univalves are imported through trade from the Southeast and represent wealth items, they were not symbols of power and authority. As much as anything else, they were symbols used to identify the female, and her low social status in society in comparison to males. In addition, they also represented the marine component of the Monongahela universe. Whether or not they are related to the afterworld isn't clear. On the other hand, as noted, the various pendant types are generally noticeably absent in burial contexts. This is to be attributed to the fact that the pendants symbolized male power and authority, high social status of males relative to females, and, they were rank insignia in the everyday world of the Monongahela. Thus, no attempt was made by the Monongahela to take their worldly power with them to the afterworld. Several ornament cluster examples recovered from Brokaw Village will illustrate.

Some Proposed Evidence for Social Status and Religious-Political Leadership

A number of ornament clusters have been identified at Brokaw Village, but only three have been nearly completely excavated. In each of the latter instances, many of the ornaments are from the plow zone, but features indicating the ornaments were associated with houses appear immediately below the ornament cluster areas. Indeed, in two instances, the number of ornaments recovered has been sufficient to conclude that the pendants and beads comprised necklaces, with the largest pendant forming the center piece, and a number of paired, successively smaller pendant ornament types appearing on the lateral sides, which gave the necklaces a somewhat symmetrical appearance. A description and interpretation of each follows.

Ornament types comprising the first necklace are a black bear canine pendant, two large gray wolf molar pendants, an elk premolar pendant, a bobcat canine pendant, two raccoon canine pendants, two cannel coal canine pendants, a freshwater bivalve unionid shell canine tooth pendant, a deer molar and premolar pendants, three marine univalve *Marginella apicina* shell beads, a large, flattish bird bone bead, a long, thin bird bone bead, two shell disk beads of either fresh water or marine origins, seventeen small bird bone beads and sixteen bird bone bead fragments, and three double-drilled unidentifiable bone pendant fragments (Figure 7, A-N). The ornaments are from excavation units 7-P, 7-Q, 7-R, 8-P, 8-Q, 8-R, 8-S, 9-R, 9-Q, 10-P, and 10-Q (Figure 2). These objects are particularly interesting in view of the observations that (1) the bear canine is an exceptionally large specimen (Charles Handley, Smithsonian Institution, personal communication), (2) nearly all of the canines and molars are from the largest carnivores inhabiting the area, (3) the elk premolar pendant, the two wolf molar pendants, the deer molar and premolar pendants, the unionid shell canine tooth pendant, the large flattish, and the long, thin bird bone beads, and one of the three unidentifiable bone pendant fragments are unique discoveries at Brokaw Village, (4) only one other bobcat canine pendant, four raccoon canine pendants, six cannel coal pendants, nine small shell disk beads, and twenty-six *Marginella apicina* shell beads have been found at Brokaw, and (5) the various ornaments present symbolically represent land, freshwater, air, and marine animals, and bedrock. Although with only three or four exceptions the ornaments recovered are of a plow zone origin, they are all assumed to be associated with part of a double-walled house structure underlying the excavation units noted above. In addition, they are also believed to be contemporaneous and associated with three clusters of several multicolored rocks - a light gray limestone and orange-red hematite clast in a dark gray agate - located in the southeast quadrant of unit 9-R, to which a religious or ceremonial symbolic function has been ascribed (two additional specimens were recovered from the plow zone of units 10-R and 10-Q and are thought to have formed another cluster). Finally, one of two, of the two largest and most aesthetically appealing of the thermally altered Flint Ridge flint sidescrapers was recovered from the plow zone of excavation unit 8-Q (Figure 6, H). This sidescraper on a relatively large primary flake exhibits a dull, muted purple-gray surface on the initially prepared exterior core surface, whereas the interior surface and the retouched lateral edges, produced subsequent to thermal alteration, are quite lustrous and the colors are much brighter, but altered from their original hues. It is believed this Flint Ridge material was specifically selected because of the known unnatural dull/lustrous, dark/light effect that heat treating would produce. The owner thereby would be able to socially distinguish himself from the general village population by this tool with its unique characteristics. Combined together, these several observations have led the author to believe that this locale was that of the residence of the village shaman. An individual with very high social status within the community and the recognized religious leader of the village, and very likely a political leader as well.

A second example is of a minor social status position and is represented by a cluster of ornaments comprised of a wolf canine crown pendant, a sandstone canine pendant, paired left and right turkey digit pendants, paired left and right deer molar pendants, two dog premolar pendants, a squirrel pelvis pendant, three *Marginella apicina* shell beads, two shell disk beads, ten bird bone beads, and fifteen bird bone bead fragments (Figure 8, A-M). With one exception, the ornaments are from the plow zone and the first ten cm level of the features below the plow zone in excavation units J-2, K-2, L-2, J-3, K-3, L-3, J-4, K-4, L-4, K-5, and 1-M (Figure 2). As in the above two examples, these ornaments are of interest because: (1) the wolf canine crown pendant, the sandstone canine pendant, the squirrel pelvis pendant, and the two dog premolar pendants are unique finds at Brokaw Village, (2) only two other deer molar pendants, plus two turkey digit pendants have been recorded from the site, (3) in contrast to the two previous examples, although a modified wolf canine is present, the pendant types comprising this necklace are not manufactured from the teeth of carnivores such as bear, bobcat, raccoon, and fox, animals which are marked by their predatory behavior, (4) the ornaments comprising this necklace include squirrel, a small animal (plus the pendant is a pelvis, and not a jaw containing teeth), and turkey, a game bird, which is represented by a digit, and not a beak. The teeth and beak of the latter two, if present, would have symbolized the level of power of these two animals, and (5) the bead and pendant types recovered represent the air, land, marine, culture, and bedrock components of the Monongahela universe. The context from which the ornaments were recovered is presumed to be a house. It is not suggested the residence was that of a shaman or an important political leader - for as noted, no bear, bobcat, raccoon, or fox teeth pendants were recovered but an individual with at least a minimally recognized social status within the village, and perhaps a minimal amount of political power as well.

A third proffered example of an individual with relatively high social status in the village community is represented by a cluster of ornaments from excavation units P-1, Q -1, P, 1-Q, 1R, 2-P, 2-Q, 2-R, 3-Q, 3-R, and 4-R. In this example a gray wolf p4 premolar pendant, a raccoon c1 canine pendant split longitudinally, a gray fox m1 molar pendant, a dog m1 molar pendant fragment, a wolf or dog incisor fragment, a freshwater mollusk imitation elk canine pendant, a pottery disk bead, a very large bird bone bead fragment, and five bird bone beads and eighteen bird bone bead fragments represent this cluster. All of the specimens are from the plow zone. Again, these artifacts are of particular interest in view of the fact that the grooved root wolf molar pendant, the gray fox molar pendant, the imitation elk canine pendant, and the large bird bone bead fragment are unique discoveries at Brokaw, (2) only one other pottery disk bead, one other Canis incisor pendant, two additional grooved root dog tooth pendants, and five other raccoon canine pendants have been found at the site. The materials of manufacture represent land, air, and freshwater animals, and culture; and hence, these components of the Monongahela universe. Also, as in the example of the evidence noted for a

shaman appearing above, the second of the two largest and most attractive of the thermally altered Flint Ridge flint side-scrapers was associated with this cluster of ornaments (Figure 6, I). This specimen was recovered from the plow zone of unit P-1. With the exception of the color (orange and black striped flint) and the form (an angular core chunk with lustrous wavy flake scars appearing over the entire pressure flaked plano surface and the adjacent working edge), all that was noted regarding the above specimen applies to this artifact as well. Although no bear canine was recovered, and no evidence of religious activity was noted, it is believed this cluster of ornaments represents evidence for a political leader and his high social status within the community.

The above examples accordingly indicate that differences in social status did exist in Monongahela society. Thus, males, represented primarily by carnivore teeth, held a "rank" according to the types of animal teeth and other ornaments they were entitled to wear. Females, on the other hand, had a lower social status than males, and wore ornaments from animals from the air, sea, and culture components of the universe. That is, the female components of the universe. The reason, of course, that males wore female ornaments in addition to their own was to show male dominance over females and the superior status of the male in society.

Finally, although preferences for ornament types may well have varied through time and space in the Monongahela territory, such a study is complicated by the observations that (1) ornament types found with burials are limited in number, (2) ornament clusters recovered in non-burial contexts may also be limited in types, because their function was to identify the status of the individuals entitled to wear them, and (3) ornaments appear to be frequently recovered from a plow zone context, and failure to use this source because of its disturbed nature precludes the recovery of many pendants and beads. Indeed, at Brokaw Village, approximately seventy percent of all the ornaments recovered are from the plow zone, and, excluding bird bone beads, eighty percent are from this context.

Supporting Ethnographic Data

Ethnographic data which may be cited to support the above interpretations comes from the indigenous peoples of the Cordillera Central Mountains of the Philippines. Thus, from 1934 to 1956, Eduardo Masferre, a Filipino photographer of Spanish-Northern Kankany descent, photorecorded the people, places, and lifeways of the indigenous Bontok, Northern Kankany, Kalinga, and Gaddang of northern Luzon. Peoples whose cultures still retained many of the elements of precolonial Philippine life. At a photographic exhibition of a selection of E. Masferre's works at the National Museum of Natural History, Smithsonian Institution, Masferre's photographs (see de Villa, Farr, and Jones, 1988) and the accompanying written documentation essentially depicted a dichotomy in the types of ornaments worn by the two sexes of these peoples - although several distinct regional cultures could be discerned.

Accordingly, with regard to females, from a very early age to full adulthood, females wear an increasing number of beads, of increasing value. To illustrate, a very young girl - from three to five years of age - may wear from one to three choker-length strands of small necklace beads. If she is wearing three, probably only one would be made of inexpensive glass; the other two strands would simply be made of Job's tears (bistakaw seeds). Girls from six to ten continue to wear only one to three strands of small necklace beads, but now the strands may be longer, and all of the beads are made of inexpensive glass. At adolescence, when girls become more aware of their female sex, additional strands of beads may be added to their necks as chokers and necklaces, and, for the first time, one or two strands of beads, made of larger bead types, is worn in the hair (Figure 9). The greatest number of beads a woman wears however, is at her wedding, and subsequently, when involved in ceremonial activities. The combination of everday and festive beads represents a conspicuous display of her family's wealth and social status. (Aspects of this synopsis may perhaps be more applicable to the Kalinga and Gaddang, among whom a greater number of beads are worn.)

Young and middle-aged boys, in contrast to their female counterparts, do not wear ornaments. In fact, males do not appear to utilize ornamentation until they approach a marriageable age at early adulthood, and then, not as personal adornment, but as decoration to their hats. Ornament types used are boar tusks, brass rings, and red and white beads. It is not until middle or older age that some males begin to actually wear ornaments. These take the form of ceremonial pendant necklaces, which are passed down from generation to generation to the most prestigious son of the family, and symbolize the political power and social status of the individual in his village ward (Figure 10). Ornament types comprising the necklaces are boar, crocodile, and dog teeth; the beadlike objects between the boar tusks are bamboo.

For clarification of questions on the above, the author is indebted to Patricia 0. Afable, Curator, Department of Anthropology, Smithsonian Institution. Dr. Afable is from Baguio, Philippines, and has done linguistic field work in the area south of the Northern Kankany, and undertook the necessary research for the Masferre photographic exhibition.

Acknowledgments

The identification process of the objects composing the ornaments from Brokaw Village was in large measure accomplished with the assistance of various individuals employed at the Natural History Building, Smithsonian Institution. Accordingly, all who participated in this undertaking are gratefully acknowledged. As the names of these individuals appear in the body of the text, they will not be referenced here. The photographs of the artifacts were commendably accomplished by Dr. Francis M. Hueber, Department of Paleobiology, Smithsonian Institution, while the photographs of the map depicting the Monongahela and Fort Ancient territories and the site map were ably undertaken by Victor Krantz, Photographic Division, Museum of Natural History, Smithsonian Institution. Finally, the author takes special pleasure in expressing his gratitude to Dr. James B. Griffin and Dr. James J. Krakker, Department of Anthropology, Smithsonian Institution, for graciously reading the manuscript, and for their comments and enthusiasm for the paper. The 1992 excavating field season was generously funded by the National Geographic Society, and the author thanks the Society for its support.

TABLE 1

Mandible Canine Width Measurements of Grizzly (Ursus arctos) and Black Bears (Ursus americanus) (all specimens from National Museum of Natural History, Department of Mammalogy)

Black Bear Male NMNH No.	Mandible Left C_1 MM	Mandible Right C_1 MM	From State	Locale
231356	9.3	9.3	NM	Monticello
251463	10.5	10.3	OR	Silver Lake
28890	10.6	10.6	VA	Rockingham County
250125	11.0	11.7	OR	Jack Creek
228259	11.0	11.5	NM	Mogollon
170869	11.5	11.5	NM	Black Canyon
303193	11.6	11.5	PA	Game Commission
235100	11.6	11.7	NM	Chloride
19897	12.0	11.5	SC	Sankee Swamp
232454	12.0	12.4	NM	Fairview
235102	12.4	12.4	NM	Pinos Altos
235096	12.5	12.6	NM	Pinos Altos

Grizzly Bear Female NMNH No.	Mandible Left C_1 MM	Mandible Right C_1 MM	From State	Locale
89531	12.0	11.8	AK	Chigagoff Sound
76579	12.2	12.2	AK	Sitka
89530	12.3	12.2	AK	Kruzoff Sound
76465	14.0	14.4	AK	Shaktolik River
91672	14.5	14.5	AK	Alaska Peninsula
91674	14.6	14.8	AK	Alaska Peninsula
91681	14.8	14.5	AK	Alaska Peninsula
82025	14.9	15.0	AK	Alaska Peninsula
91670	15.0	15.2	AK	Alaska Peninsula
91673	15.2	15.2	AK	Alaska Peninsula
130651	17.7	16.7	AK	Ugasik Lake
91671	18.4	19.0	AK	Alaska Peninsula

TABLE 2

ORNAMENT TYPES FROM BROKAW VILLAGE

PENDANTS:		No.
1.	Bear canine pendants	2
2.	Gray Wolf molar, premolar, and canine pendants	5
3.	Bobcat canine pendants	2
4.	Raccoon canine pendants	6
5.	Gray Fox molar pendants	1
6.	Elk molar and incisor pendants	3
7.	Deer molar and premolar pendants	5
8.	Dog premolar, canine, incisor, and molar pendants	5
9.	Shale pendants	1
10.	Cannel Coal canine pendants (including fragments)	8
11.	Sandstone canine pendants	1
12.	Freshwater Shell pendants (stylized canines)	4
	Fragments: carnivore tooth pendants	4
13.	Snowshoe Hare Innominate pendants	1
14.	Rabbit ilium pendants	1
15.	Squirrel ilium pendants	1
16.	Turtle Shell pendants	1
17.	Turkey Digit pendants	4
BEADS:		
18.	*Marginella apicina* shell beads	29
19.	Shell Disk beads	11
20.	Bird Bone beads	254
21.	Pottery Disk beads	2
	Total	351

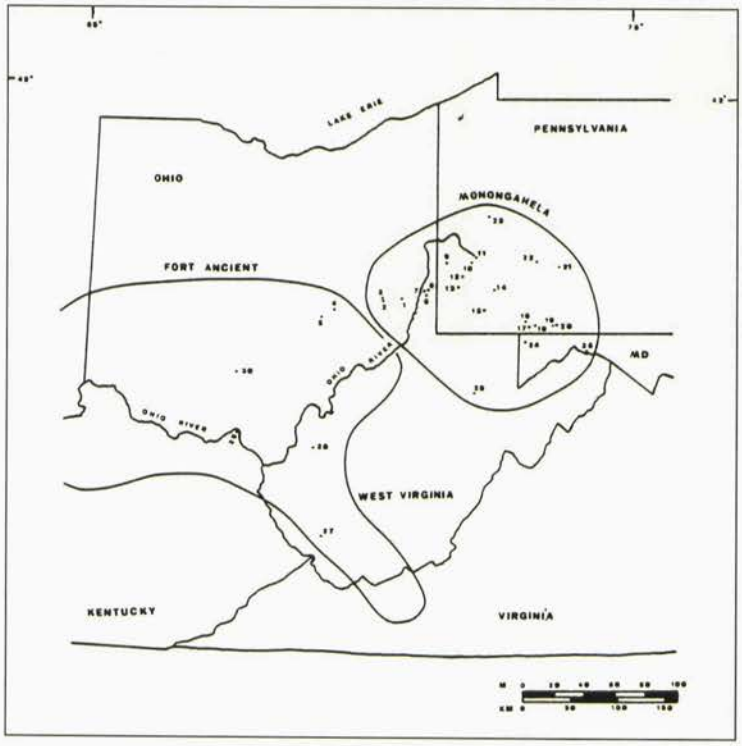

Figure 1. Map depicting Monongahela and Fort Ancient territories and location of sites: 1 Brokaw (33BL-6); 2 Tower (33BL-15); 3 Hunt (33BL:-16); 4 Brown Hilltop; 5 Richards (33MU-113); 6 Duvall (46OH-16); 7 Speidel (46OH-7); 8 Hughes Farm (46OH-9); 9 Scarem (36WH-22); 10 Drew (36AL-62); 11 McKees Rocks (36AL-16); 12 Boyle (36WH-19); 13 Wylie (36WH-274); 14 Household (36WM-61); 15 Novak (36FA-34); 16 Montague (36SO-4); 17 Reckner (36SO-7); 18 Fort Hill; 19 Peck No. 2 (36SO-8); 20 Gnagey (36SO-55); 21 Squirrel Hill (36 WM-35); 22 Johnston (36IN-2); 23 Bonnie Brook (36BT-43); 24 Firendsville (18GA-23); 25 Moore (18AG-43); 26 Henderson Rocks (46 TA-1); 27 Man (46LG-5); 28 Buffalo (46PU-31); 29 Hardin; 30 Blain (33RO-49).

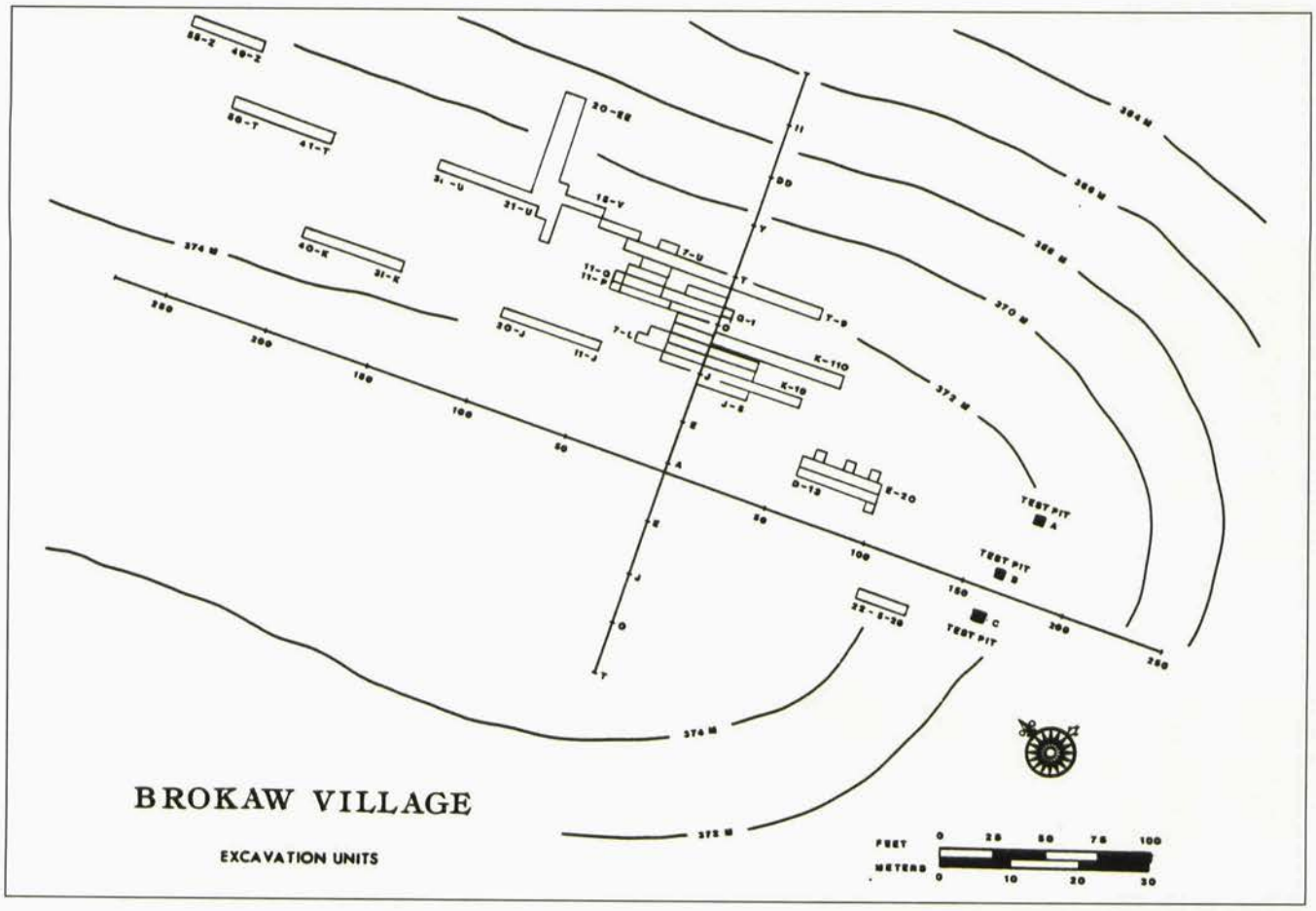

Fig. 2 Map depicting Brokaw Village and areas of completed excavations.

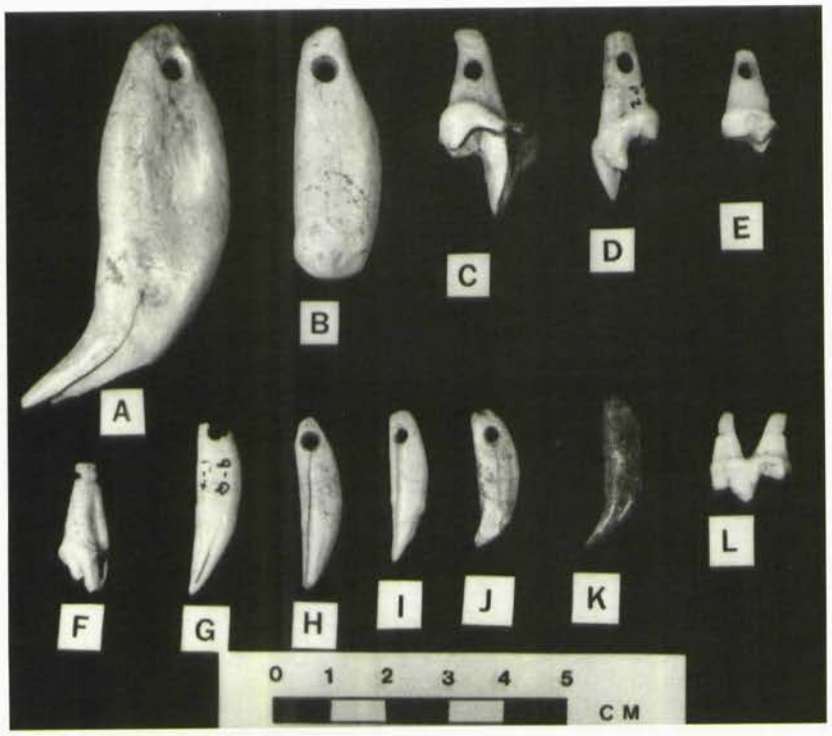

Fig. 3 Pendants, carnivore teeth. A-B black bear canines; C-F gray wolf molars and premolar; G-H bobcat canines; I-K raccoon canines; L gray fox molar.

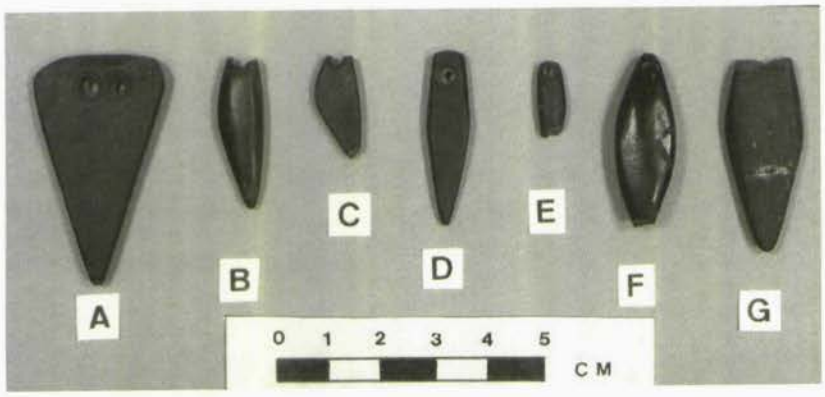

Fig. 4 Pendants. A shale; B-F cannel coal; G sandstone.

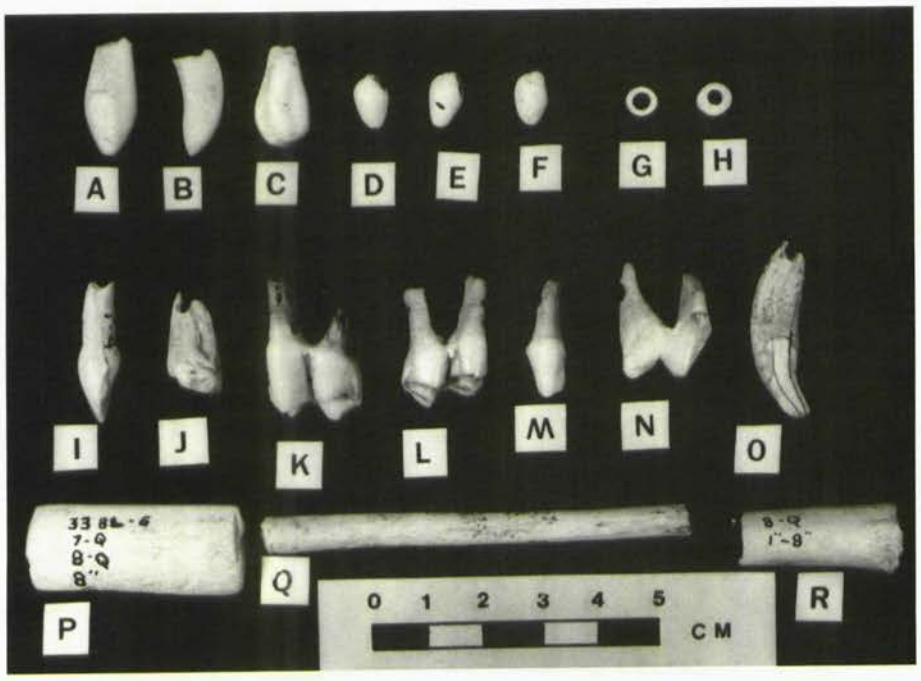

Fig. 5 Pendants and beads. A-C freshwater shell pendants; D-F Marginella apicina shell beads; G-H shell disk beads; I elk incisor pendant; J-M deer molar pendants; N-O dog teeth pendants; P-R bird bone beads.

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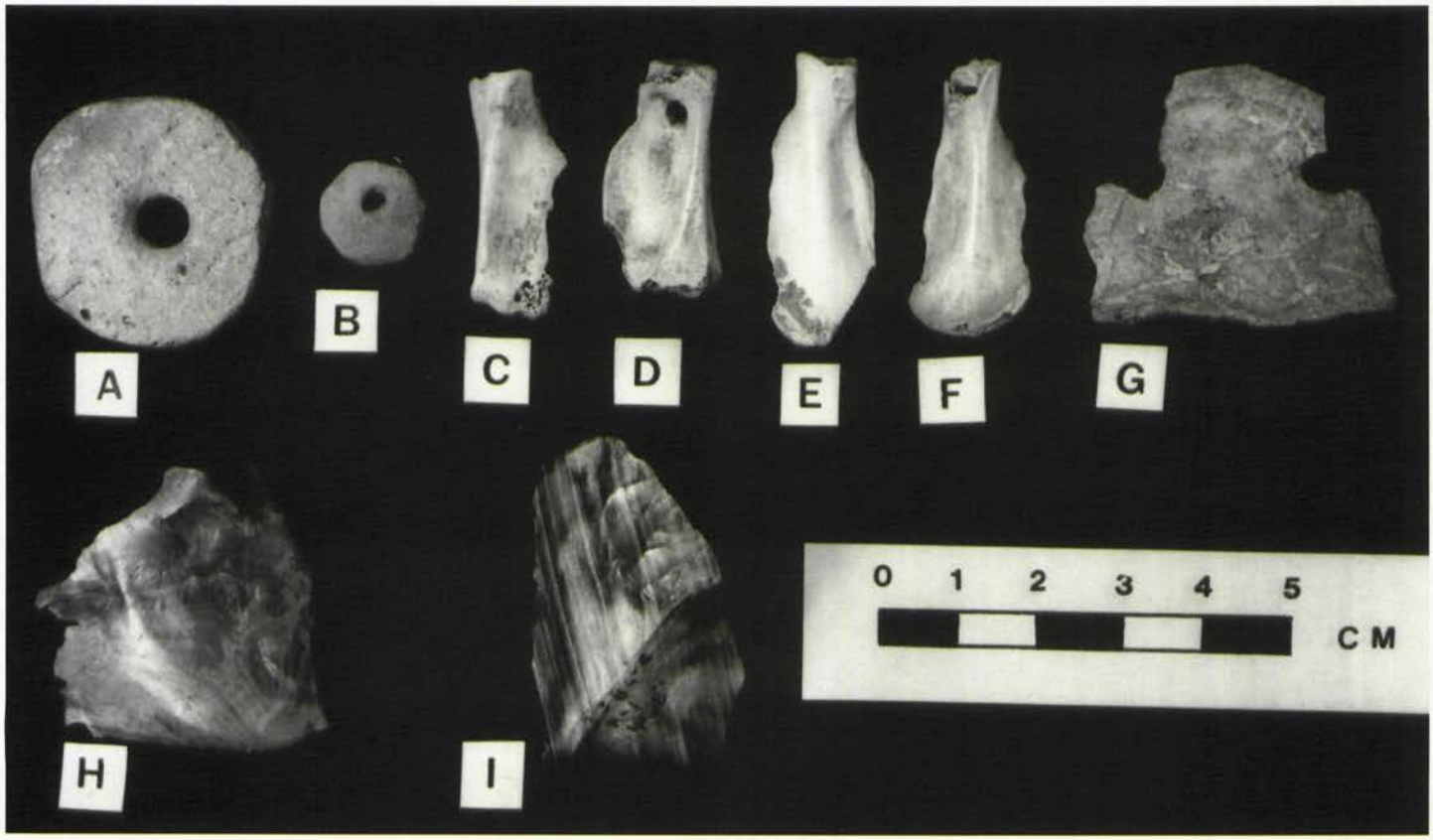

Fig. 6 Beads, pendants and chert scrapers. A-B pottery disk beads; C-D turkey digit pendants; E snowshoe hare innominate pendant; F rabbit ilium pendant; G turtle shell pendant; H-I thermally altered Flint Ridge flint sidescrapers.

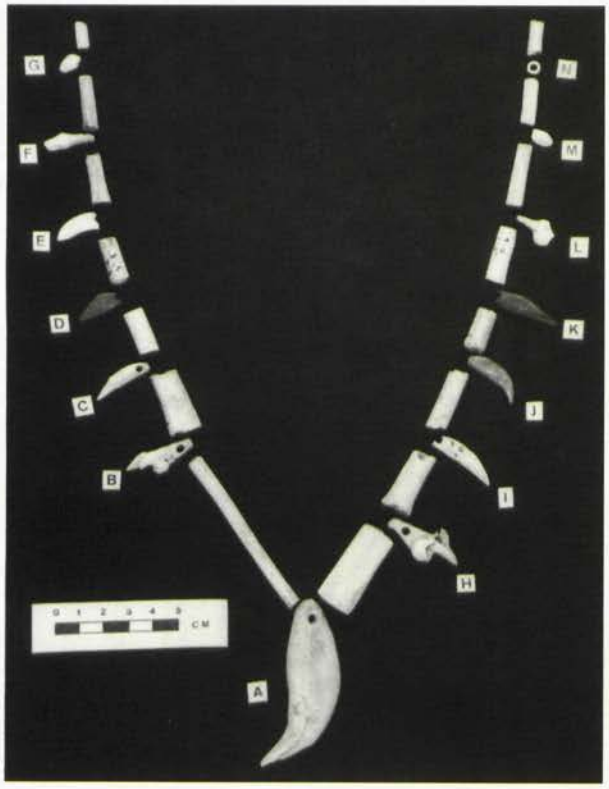

*Fig. 7 Shaman's necklace - a projected reconstruction, with pendants alternated with bird bone beads. A, black bear canine; B, gray wolf molar; C, raccoon canine; D, cannel coal canine; E, freshwater mollusk canine; F, deer molar; G, **Marginella apicina** shell; H, gray wolf molar; I, bobcat canine; J, raccoon canine; K, cannel coal canine; L, deer premolar; M, **Marginella apicina** shell; N, shell disk.*

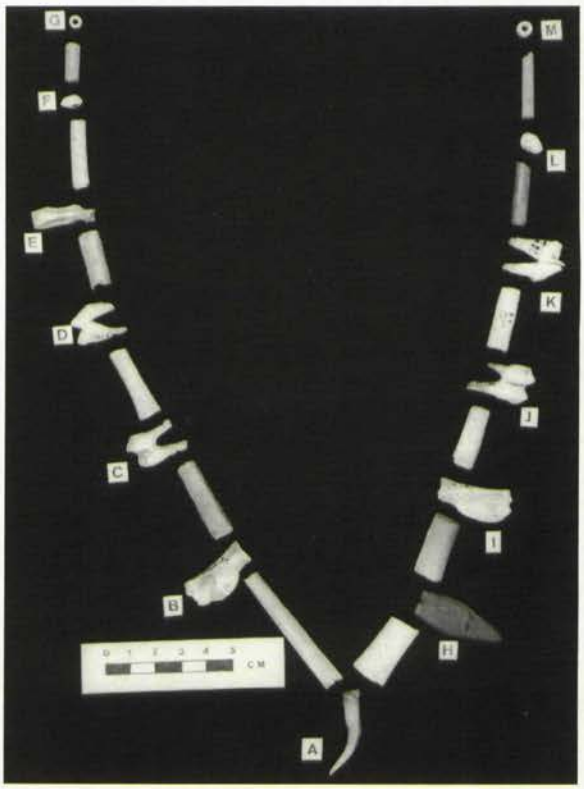

*Fig. 8 Necklace - a projected reconstruction, with pendants alternated with bird bone beads. A, gray wolf canine; B, turkey digit; C, deer molar; D, dog premolar; E, squirrel ilium; F, **Marginella apicina** shell; G, shell disk; H, sandstone canine; I, turkey digit; J, deer molar; K, dog premolar; L, **Marginella shell**; M, shell disk.*

Fig.9 As girls reach adolescense, they add more strands of beads to their necks and hair. (Southern Kalinga-Apayao Province - Luzon, Philippines)

Fig 10 Lakay Kabayo, respected elder of dap-ay Bilig, wearing his ceremonial necklace of crocodile, boar, and dog teeth in woven rattan. (Sagada, Mountain Provice - Luzon, Philippines)

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A QUARTZITE PESTLE

by
Charles West
New Richmond, Ohio

This pestle was found by Gladys Alsip twenty years ago on Kellog Avenue near U. S. Route 52 in a back yard flower bed. For years she used it as a door stop. Made of yellow quartzite, it is 7½" high and is symmetrically perfect.

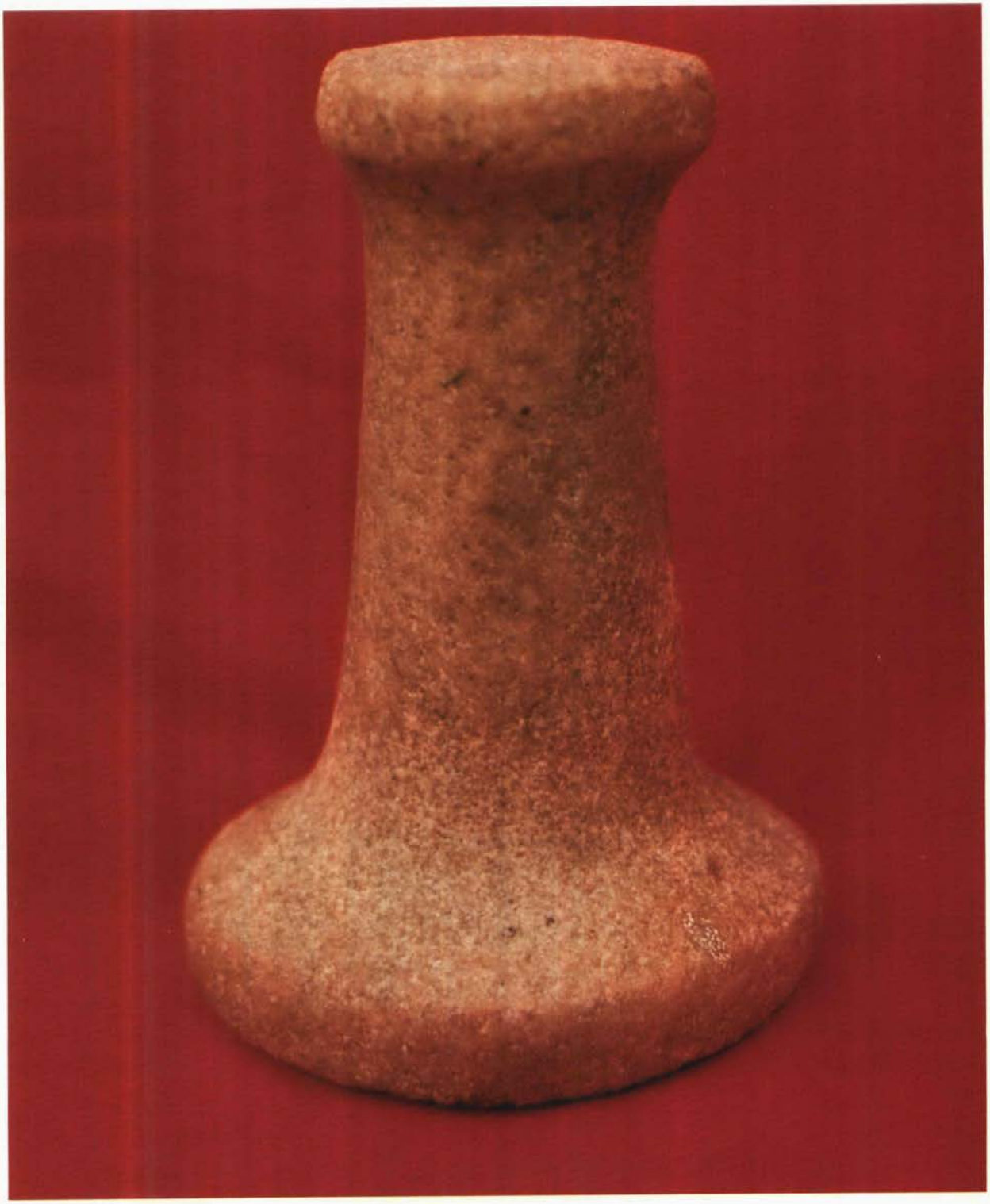

Fig. 1 (West) Quartzite pestle found near New Richmond, Ohio.

SOUTHEASTERN OHIO ARTIFACTS

by
Lamont Baudendistel
3813 Happy-Hollow Rd.
Bethel, Ohio 45106

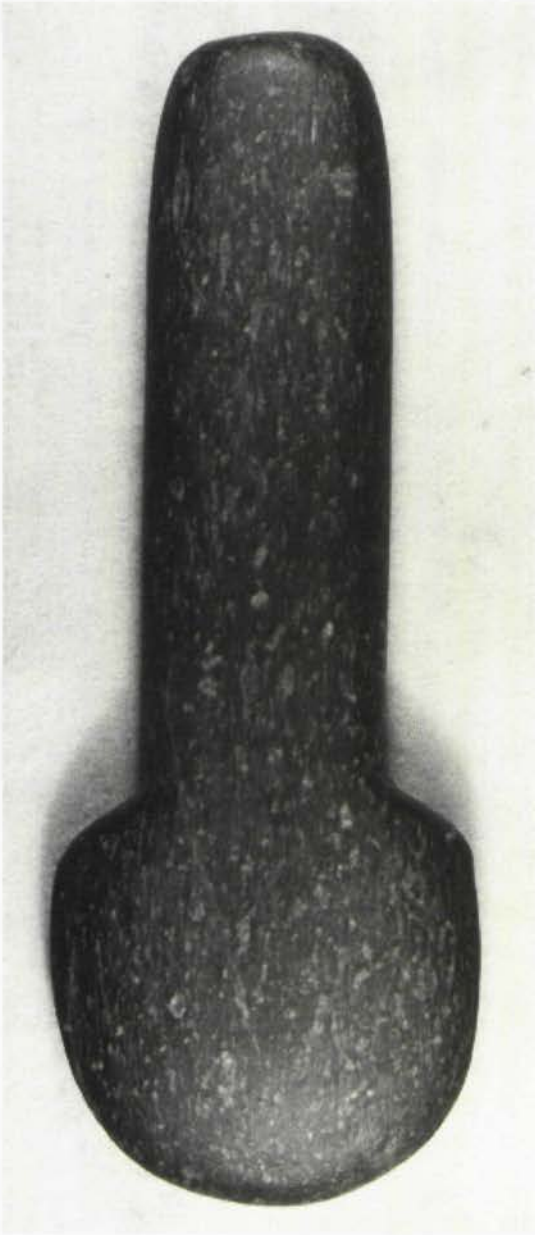

Fig. 1 ***HARDSTONE SPUD*** *(Baudenistel) This hardstone spud is made of a dense, black porphyry material and is 7 ⅜ inches in length and 2¾ inches in width across the bit. It was found by Butch Hargett in 1979 in a trash pit in northern Hamilton County, Ohio.*

Fig. 2 ***SANDSTONE SPOOL*** *(Baudenistel) This well engraved sandstone spool was found by Bill Collins on the State Line Site located in western Hamilton County, Ohio in 1953. It measures 2⅝ inches in length, 1⅝ inches through the center and 2 inches across the flared ends. The spool is drilled lengthwise through the center.*

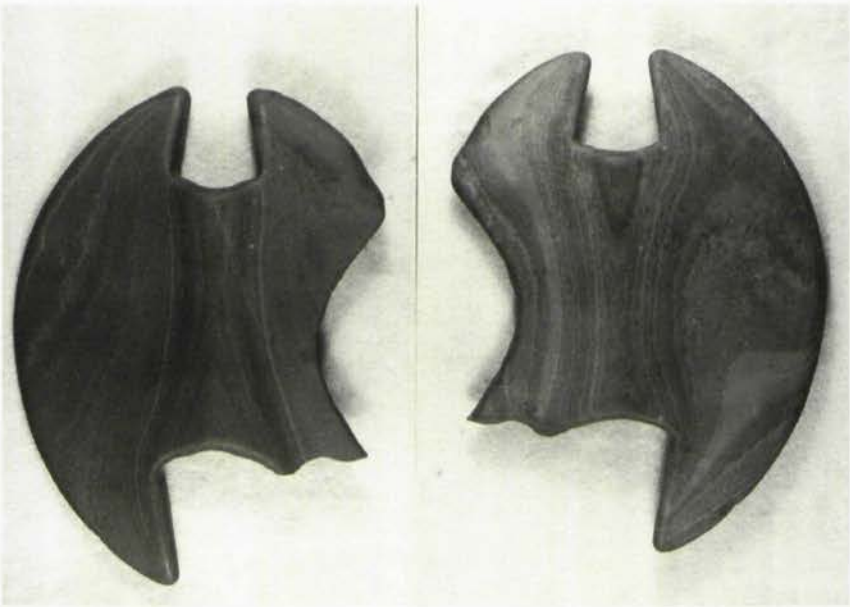

Fig. 3 ***NOTCHED OVATE*** *(Baudenistel) This notched ovate was found by Jay Frame in 1962 while looking for "skipping rocks" on a sand bar of the Ohio River in Bracken County, Kentucky. It is made of green-banded slate, measuring 5 inches in length, 4 inches in width at its widest point. The ovate demonstrates old salvage work on one wing.*

IN MEMORY

Danny Hesson

Son of Mr. and Mrs. John Hesson, died May 2, 1993, at the age of 11. He was a member of the Archaeological Society of Ohio and received a junior award ribbon at the March 21 meeting. He will be missed at the meetings, where his family displays prehistoric and historic artifacts. Services were held May 4 at Carey, Ohio.

Thomas C. Grubb

MOUNT VERNON — Thomas Christman Grubb, 85, of 1017 Newark Road, Mount Vernon, died on March 11, 1993, at the Centerburg Nursing Center following an extended illness.

He was born on Nov. 17, 1907, in Narberth, Pa., to Wallace B. and Mary (Christman) Grubb. He retired in 1972, after 28 years as research director for the Vicks Division of Richardson-Vick Inc. Grubb was responsible for the research and development of Vicks Formula 44 cough syrup for the Vicks Division. He was a graduate of Hamilton College in Clinton, N.Y., and received his doctorate from the University of Chicago. For several years, he served as a professor of microbiology in the schools of Dentistry and Pharmacy for the University of Maryland.

He was a member of the Gay Street United Methodist Church in Mount Vernon. He was a member of the Ohio Historical Society and the Ohio Archaeological Society; was past president of the American Society of Microbiology; and had served on the board of directors for the Mount Vernon Salvation Army. He had also served as a volunteer tutor for the Mount Vernon City Schools.

Surviving are his wife of 52 years, Louise (Sondermann) Grubb; two sons, Thomas C. Grubb Jr. of Marengo and Gary S. Grubb of Bridgewater, N.J.; a daughter, Mrs. Donald E. (Linda) Woodworth Jr. of Merrimack, N.H.; and six grandchildren.

Preliminary Conference Announcement and Call for Papers

A VIEW FROM THE CORE
A CONFERENCE SYNTHESIZING OHIO HOPEWELL ARCHAEOLOGY

Sponsored by the
Ohio Archaeological Council
November 19 and 20, 1993
The Comfort Inn
Chilicothe, Ohio

The primary objective of the Second Annual Ohio Archaeological Council (OAC) Conference is to synthesize archaeological research from the core area of Ohio Hopewell in order to expand our understanding of the Middle Woodland period (1500-2000 years B.P.) earthwork and mound builders of the central Ohio Valley. Papers are invited on all aspects of Ohio Hopewell including subsistence and environmental, settlement patterns, technology, ceremonial and mortuary behaviors, as well as origins and decline. A *Plenary Session* will focus on a broad synthesis of Ohio Hopewell archaeology which addresses the major themes of the conference. A panel discussion will follow. Papers which address more specific topics will be included in a *Contributed Papers Session.*

All interested parties are encouraged to submit a 200 word abstract to the Conference Coordinator by May 31, 1993. Please submit to:

Dr. Paul J. Pacheco,
OAC Conference Coordinator
124 West Maple Street
Granville, Ohio 43023
(614) 587-1686

The OAC will review the abstracts and selection of participants will be made by June 15, 1993. Selection will be based on adherence to conference theme and scholarly content. Additional conference details will be available after August 15. Proceedings of *A View From The Core Conference* will be published by the OAC.

The OAC is a private, non-profit corporation registered with the State of Ohio in 1975 as a charitable scientific and educational organization promoting the advancement of archaeology in Ohio.

MYSTERIES OF THE MOUNDS:
A SUMMER FESTIVAL IN CELEBRATION OF THE PAST

The Ohio Historical Society presents a series of programs on the magnificent mounds and earthworks of Ohio and the great civilization which built them. The programs will be held at Moundbuilders and Flint Ridge State Memorials in Licking County, Ohio. The Summer Festival will consist of informative and entertaining slide programs and an Archaeology Day which will include the annual Artifact and Fossil Indentification Workshop. Slide programs will be presented by experts on a variety of topics such as the Newark Earthworks, Serpent Mound, and a variety of Hopewell village sites. These slide programs will be held on Saturdays, from 1-2 PM, at Moundbuilders State Memorial between June 5th and September 4th.

The series of slide programs will be free to members of the Ohio Historical Society. For non-members there will be a fee of $2 per event or $15 for the entire series.

For further information contact Bradley Lepper at (614) 344-1920 or James Kingery at (614) 344-1919.

SCHEDULE

5 June	"Old Fort or Sacred Circle: changing interpretations of Newark's earthworks" Bradley Lepper. Ohio Historical Society.
12 June	"Textiles from Ohio's Mound sites: clues to the past" Lucy Sibley & Kathryn Jakes, Ohio State University.
19 June	"Serpent Mound: a new look at an old snake-in-the-grass" Robert Fletcher & Terry Cameron.
26 June	"The Alligator and Eagle: Licking County's effigy mounds" Bradley Lepper, Ohio Historical Society.
3 July	"The Holy Stones of Newark: who really discovered America?" Jeff Gill, Licking County Archaeology & Landmarks Society and Bradley Lepper, Ohio Historical Society
10 July	"The Hopewell Site" N'omi Greber, Cleveland Museum of Natural History.
17 July	"1992 Excavations at Newark's Great Circle" Dee Anne Wymer, Bloomsburg University
24 July	"Hopewell hamlets in the Racoon Creek Valley" Paul Pacheco, Ohio State University
31 July	"Beyond the Licking Valley: a Hopewell hamlet in Vinton County, Ohio" Flora Church, Archaeological Research Consultants, Inc.
7 August	"The Newark Expressway Project: a Hopewell hamlet at the Newark Earthworks" Bradley Lepper, Ohio Historical Society
14 August	"Moundbuilders and moonshine" Ray Hively and Robert Horn, Earlham College.
21 August	"Warren K. Moorehead at Wounded Knee" Jeff Gill, Licking County Archaeology and Landmarks Society.
28 August	"The Great Hopewell Road" Bradley Lepper, Ohio Historical Society
29 August	ARCHAEOLOGY DAY

Artifact and Fossil Identification Workshop
Flint Ridge State Memorial
Michael Hansen, Geologist, Ohio Department of Natural Resources
Jack Blosser, Archaeologist, Ohio Historical Society
Bradley Lepper, Archaeologist, Ohio HIstorical Society

Bring your artifact and fossil collections for identification!

4 September	"The Last Paleoindian: a view of the Dalton Culture from the Olive Branch site" William Pickard, Ohio State University

Back Cover: Dovetail Found in Delaware County by Dave Mercer, 7766 Worthington-Galena Road, Worthington, Ohio 43085.

I found the 5⅜ inch dovetail point in Delaware County in November of 1992. It was awarded best field find at the January 1993 meeting.

OBJECT OF THE SOCIETY

The Archaeological society of Ohio is organized to discover and conserve archaeological site and material within the State of Ohio, to seek and promote a better understanding among students and collectors of archaeological material, professional and non-professional, including individuals, museums, and institutions of learning, and to disseminate knowledge on the subject of archaeology. Membership in the society shall be open to any person of good character interested in archaeology or the collecting of American Indian artifacts, upon acceptance of written application and payment of dues.