

THE DENTON SITE

**A Middle Archaic Occupation
in the Northern Yazoo Basin, Mississippi**

by

John M. Connaway

with contributions by

Samuel O. Brookes

and

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**Mississippi Department of Archives and History
Jackson, Mississippi**

Archaeological Report No. 4

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Samuel O. Brookes
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Edited by

Priscilla M. Lowrey
and
Clarence H. Webb

Mississippi Department of Archives and History
Jackson, Mississippi
Elbert R. Hilliard, Director

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PREFACE

Recorded Archaic sites in the northern portion of the Yazoo Basin are scarce. Because until recently no archaeological investigations have taken place on such sites, there has been a prominent lack of knowledge and published data concerning Archaic cultures of the area. This report, consisting primarily of an assessment of the lithic technology at the Denton Site, is an effort to begin to remedy this situation. It is hoped that further studies will reveal more information about this and other aspects of life associated with the Middle Archaic Period of the northern Yazoo Basin floodplain.

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INTRODUCTION

The Denton Site is located on an old natural levee east of Opossum Bayou, near the town of Lambert in Quitman County, Mississippi. The site was first reported by Phillips, Ford, and Griffin in 1951, but no cultural data were recorded other than two "mounds" (Phillips, Ford, and Griffin 1951:54). It was revisited by the writers of this report in 1969 during a survey of sites in Quitman, Coahoma, and Tunica counties.

The 6-to-8-acre site has been in cultivation for many years. In recent years the two "mounds," formerly situated on two still-existing high knolls at the crest of the natural levee, were leveled, along with a portion of the knolls themselves. The "mounds" are referred to here with some reservation because their exact nature is unknown. In 1972, Mississippi State University excavated a 12-foot-deep backhoe trench across the southernmost knoll. Stratigraphic layers of sterile sand and thin midden deposits indicated that the site had been occupied intermittently between natural levee buildups, apparently for a long period of time. It is thus possible that the "mounds" could have been built at a later time by the occupants or that they could have been a continuation of this intermittent levee and midden accumulation. The relative chronological data obtained from the excavation and surface collections, as well as the physiographic and stratigraphic evidence, indicate that the site was situated on the east bank of an old Ohio-Mississippi River meander and that at least some of the natural levee accumulation took place during its occupation.

The light tan levee soil upon which occupational debris is found on the site is known as Dundee fine sandy loam (USDA 1958). A very dark black midden soil is evident within this area, on the east side of the southernmost knoll. In contrast, lower areas to the west and to the east down the backslope of the levee consist of a heavier soil known as Dowling clay or silty clay. No midden debris is found in these areas other than those artifacts carried in by erosion or cultivation.

A low ridge extends from the southernmost knoll east-northeast across a cultivated field. Toward the opposite end of this ridge, about 300 yards out, a mound of Dundee soil approximately 4 feet high has scattered lithic debris and artifacts on the surface. The internal nature of the mound has not yet been investigated, and it is slowly dwindling under constant cultivation. Designated "Denton Site B," this mound will be referred to again in the discussion of the lapidary industry.

Occupational debris is scattered along the natural levee from the southernmost knoll to a shallow gully approximately 300 yards to the north. From here, a slight ridge extends northeast about 100 yards, culminating in a low knoll of Dundee soil. Scattered lithic debris and projectile points have been found here, but as yet no lapidary items. Surface collections from this area have been included in the general site collection, since there is no real break in debris scatter.

EXCAVATION

During the winter of 1969, when the author and Sam McGahey, archaeologists with the Mississippi Department of Archives and History, were engaged in a survey of sites endangered by land leveling, interested amateurs reported that the Denton Site was being bulldozed. Portions of the site had indeed been leveled, but only to the extent that the highest areas, including the "mounds," had been pushed into surrounding low spots. Although the extent of destruction could not be fully ascertained, considerable damage had obviously taken place. Subsoiling and regular cultivation of the entire site were destroying the remaining midden deposits.

The Denton Site is unusual in that it has a Middle Archaic cultural affiliation. Since little is known about this culture in the Yazoo Basin and because of the urgency of the situation, plans were formulated for a limited test excavation with the following objectives:

1. To determine the vertical extent of any undisturbed midden at selected higher elevations where the potential for such midden areas seemed greatest;
2. To determine the age and cultural affiliations of the buried midden;
3. To determine the relationship between cultural remains in the midden and those found on the surface;
4. To obtain cultural data by stratigraphic levels for chronological comparisons;
5. To obtain some insight into the economic patterns of the community;
6. To obtain cultural data for comparisons with other sites of the same time period.

Investigations began April 8, 1969, with the establishment of excavation reference markers. The primary datum point was a large metal pipe at the intersection of the east bank of Opossum Bayou and the south line of Section 5, in which the site lies. A secondary datum point, designated O-CL, was arbitrarily placed on the site near the dark midden on the southernmost knoll. Its location from the primary datum is east 123 feet, 9 inches, then north 13 degrees west at a distance of 1,810 feet. Centerline (CL) is the north-south reference line from which all excavation grid squares were subsequently measured, including those set up later by the Mississippi State University crew.

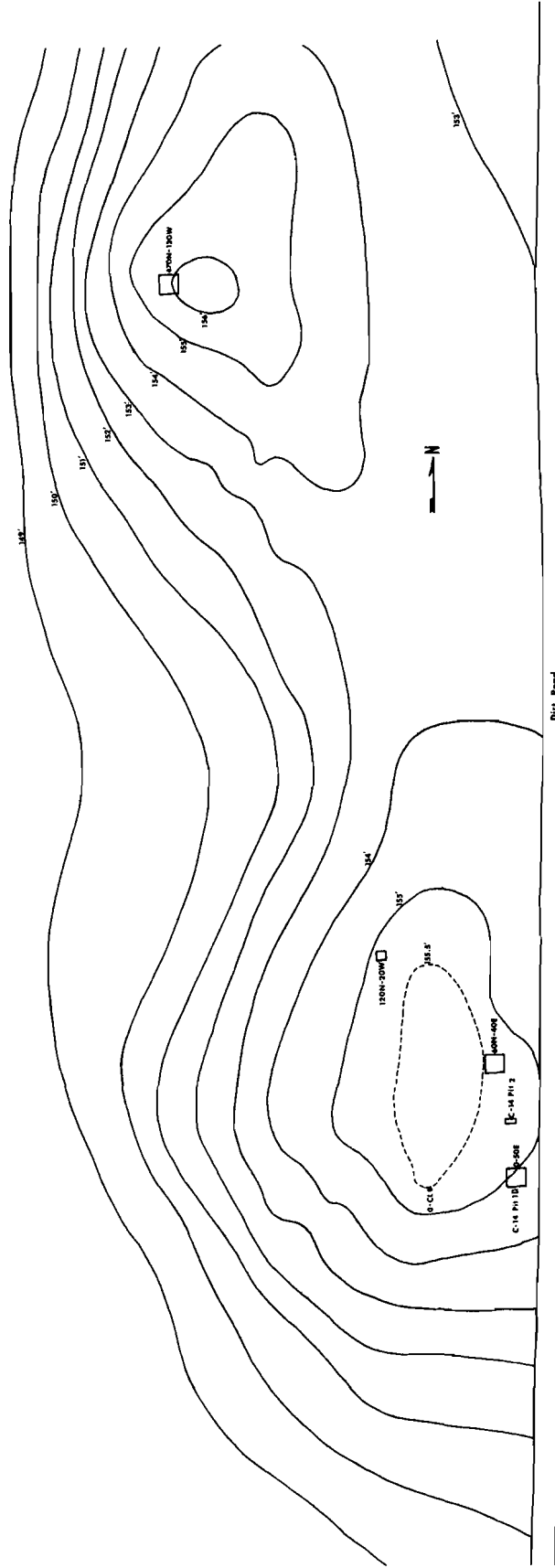
Four test squares were placed where midden concentrations appeared heaviest and most promising. Two 10-foot test squares, designated O-50E and 60N-40E, were staked off in the midden area on the east side of the southernmost knoll. A 5-foot square, 120N-20W, was placed on the crest of the knoll in order to ascertain whether any of the mound still remained there. A third 10-foot square, 470N-120W, was staked out to the north on the second knoll. Figure 1 shows the site contours and the relative positions of the excavation units mentioned above.

All excavation units were dug in arbitrary levels of 0.2 foot, except for the plow zone portion, which was removed in one unit to a depth of 0.8 foot. One set of parallel subsoiler furrows about 2.8 feet apart, noted below the plow zone in otherwise undisturbed soil, varied up to 1.4 feet in depth from surface. Disturbed material from these furrows was kept separate and treated as plow zone debris. Time did not allow screening, but the midden soil was shaved very thinly with a shovel and, where necessary, with a trowel. In this way most of the midden debris was observed. Excavation unit numbers were determined from the southeast corner of each square.

Features

Features at the site were mostly confined to shallow pits or depressions appearing at the bottom of the midden in yellowish to tan sandy soil. Some of these were very dark and contained many amorphous fired clay lumps, which in some cases were more heavily concentrated in the feature than in the midden covering or surrounding it. Thus the impression was given of a deliberately dug pit rather than an extension of the midden itself into a natural depression.

One large pit of this type, measuring approximately 5 feet x 3 feet x 1.2 feet deep, was first observed at a depth of 1.6 feet below surface in square O-50E. Surrounded by yellowish sandy soil, it tapered sharply into an almost conical shape, with the deepest point in the center. Also noted at 1.6 feet in this square were smaller circular dark areas ranging in diameter from about 0.4 foot to 2.1 feet. These contained very little cultural debris, and most of them disappeared in the next 0.2-foot level. Whether these were remnants of postmolds, small pits, rodent burrows, or tree root molds is speculative, since no pattern was discernible. Small areas of dark midden soil, light gray clay, and yellow sand were found in the upper levels of the square, but quickly disappeared, defying interpretation.



SCALE : 1" = 20' FEET
 CONTOUR INTERVAL : 1 FOOT

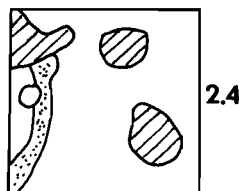
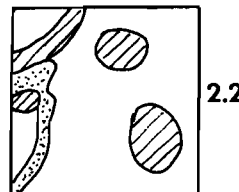
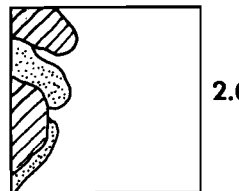
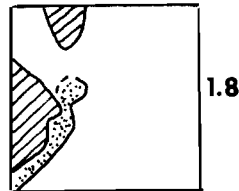
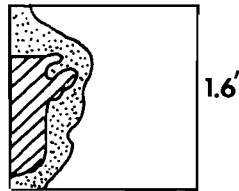
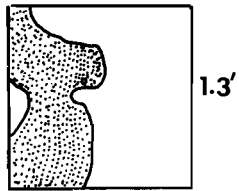
FIG. 1 CONTOUR MAP OF THE DENTON SITE

In square 470N-120W, the shallow, light colored midden contained very little cultural debris. Two small possible pits measured 1.8 feet in diameter by about 0.2 foot in depth, and 1.8 feet x 0.9 foot x 0.2 foot deep. Brown soil mixed with small pieces of burned clay was found in both pits, which may have been tree root holes filled in by midden material.

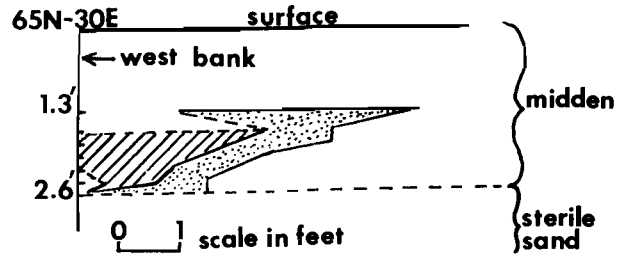
Except for four small, shallow pits, ranging in depth from 0.2 foot to 0.4 foot, square 120N-20W appeared to be sterile. These four areas of dark soil, 1-2 feet in diameter, contained very little cultural debris and were of no apparent consequence. One possible postmold or tree root mold, 0.4 foot in diameter and 0.6 foot deep, appeared in the northwest corner.

In square 60N-40E, very dark, pitlike areas containing heavy concentrations of fired clay lumps and tiny bits of burned bone and charcoal again appeared. One of these pits, recorded between 1.8 feet and 2.2 feet in depth in the northwest portion of the square (Fig. 2), varies considerably in size and position and may be associated in some way with the possible dwelling discussed below. Two other possible pits noted in the eastern half of the square between the 2.2-foot and 2.6-foot levels varied from 2.5 feet to 3 feet in diameter and were approximately 0.4 foot deep. Very dark in color, they contained heavy concentrations of cultural debris.

The outstanding feature was located in the west half of square 60N-40E, beginning at a depth of 1.3 feet and noted to varying degrees in succeeding levels to the termination of the midden at a depth of 2.6 feet, a total vertical extent of 1.3 feet (Fig. 2). Here a section of tan sand, containing very little cultural debris, enclosed an area of very dark midden with a heavy concentration of debris. The feature is surrounded by a dark midden deposit ranging in depth from the surface down to about 2.6 feet. It was thought possibly to be the remnant of what was a semi-subterranean house, with the tan sand representing the wall area and the very dark, heavy midden representing an extensive accumulation of habitation debris inside the structure. It is interesting that the tan sand area gradually slopes toward the inside as it gets deeper, between 1.6 feet and 2.6 feet. As shown in Figure 2, the feature becomes horizontally smaller by about 2 feet between these two levels. At the same time, at the 2.2-foot level, the very dark midden diminishes to something resembling a large postmold and the interior midden becomes equivalent in content and color to that outside the feature. Eventually the "postmold" is completely surrounded by sterile tan sand at the 2.6-foot level, with only traces of midden remaining in the square. The "postmold," if that is what it was, could have been some type of roof support. Time did not allow further investigation of this feature in adjoining squares, so no conclusive interpretation could be made.



**EAST-WEST VERTICAL PROFILE
OF FEATURE BETWEEN
65N-30E AND 65N-40E**



**SEQUENCE OF HORIZONTAL PROFILES
FOR SQUARE 60N-40E**

0 5 scale in feet

 very dark black midden
heavy concentration of debris

 tan sand
little or no debris

 dark midden
varying amounts of debris

**FIG. 2. VERTICAL AND HORIZONTAL PROFILES OF FEATURE IN
SQUARE 60N-40E.**

FLORAL-FAUNAL ANALYSIS

Large quantities of minute, burned bone fragments were found throughout the dark midden areas of the excavation. Most of these white or bluish-colored fragments were no larger than 2-3 mm in length; many were much smaller. Since much of this material was too small for identification, no flotation or screening was done. However, about 200 fragments were large enough to identify as mammalian. No bird, reptile, or fish was observed and no genus of any type was recognizable in the sample. Without more conclusive data one can only speculate about the significance of the faunal remains.

Similarly, no large quantity of floral materials was collected, although that which was recovered was identifiable. Charred seed and nutshell fragments made up the entire sample, most of which was recovered by spoon in square 60N-40E. No flotation was attempted. Cutler and Blake (1973:38) list hickory nut, black walnut, persimmon, acorn, and butternut from the site, probably representative of the various types of wild nuts and fruits gathered for food in the fall of the year. The collection could indicate seasonal occupation and gathering at the site, but the data are inconclusive. Another problem raised here is the presence of black walnut (Juglans nigra) and butternut (Juglans cinerea) on the site. According to Fowells (1965, maps, pp. 203, 208), these two trees do not presently grow wild in Quitman County, so either the nuts were brought from some other area with upland vegetation such as the hills about 14 miles to the east, or the trees grew wild in the area at the time of occupation.

Data recovery at the site was not substantial enough to warrant testing of any hypotheses regarding food procurement and subsistence strategies or to attempt environmental reconstruction. Almost nothing is known of these segments of Middle Archaic life in the area, and it is unfortunate that time and funds did not allow a more expanded investigation of these aspects of the occupation.

ARTIFACTS AND RAW MATERIALS

Cores

One hundred two tabular cores from the surface were recorded. The majority of these show polymorphic flaking (two or more adjacent striking platforms) and appear to fall into the following three general categories: (A) flake sources, (B) biface preforms, and (C) lamellar cores. Most are yellow tan chert, and a few are of quartzite; only seven (6.86%) show any evidence of heat treating. Thirty-one cores were recovered from the excavation, all falling into category A. Of these, thirteen were from the plow zone, two from the midden in square 470N-120W, three from square 0-50E, and thirteen from square 60N-40E. Only five were heat treated, two of which came from the plow zone. The stratigraphic position of these cores yielded no significant data.

Category A (Plate 1 A-C) consists of pebbles or small cobbles used primarily as flake sources or tested discards, as indicated by their comparatively random flake scarring. Although some show slight edge wear, an evidence of occasional secondary use, they in no way resemble the usual bifacial tool form. Maximum size ranges of the fifty-one surface specimens are: length 35-99 mm, width 28-80 mm, and thickness 13-35 mm.

Category B (Plate 1 D-F) consists of cores which exhibit deliberate patterned flaking, but have not taken on the more definite form of bifacial tools. These might be considered the second stage of a reduction sequence from crude core to finished biface. The sorting of categories A and B was sometimes difficult, almost arbitrary. On many of these pieces, as on those in category A, occasional use as a tool is indicated by wear on some of the sharp edges left by flake removal. Maximum size ranges of the forty-four surface specimens are: length 40-95 mm, width 20-80 mm, and thickness 12-35 mm, all basically similar to the measurements listed for category A.

Category C (Plate 2 A-G) consists of seven lamellar cores from the surface collection. These cores exhibit long, narrow, parallel flake scars originating from a single striking platform. They also show some lateral flaking and often have more than one striking platform. There are no true polyhedral blade cores from the site, but a few blades to

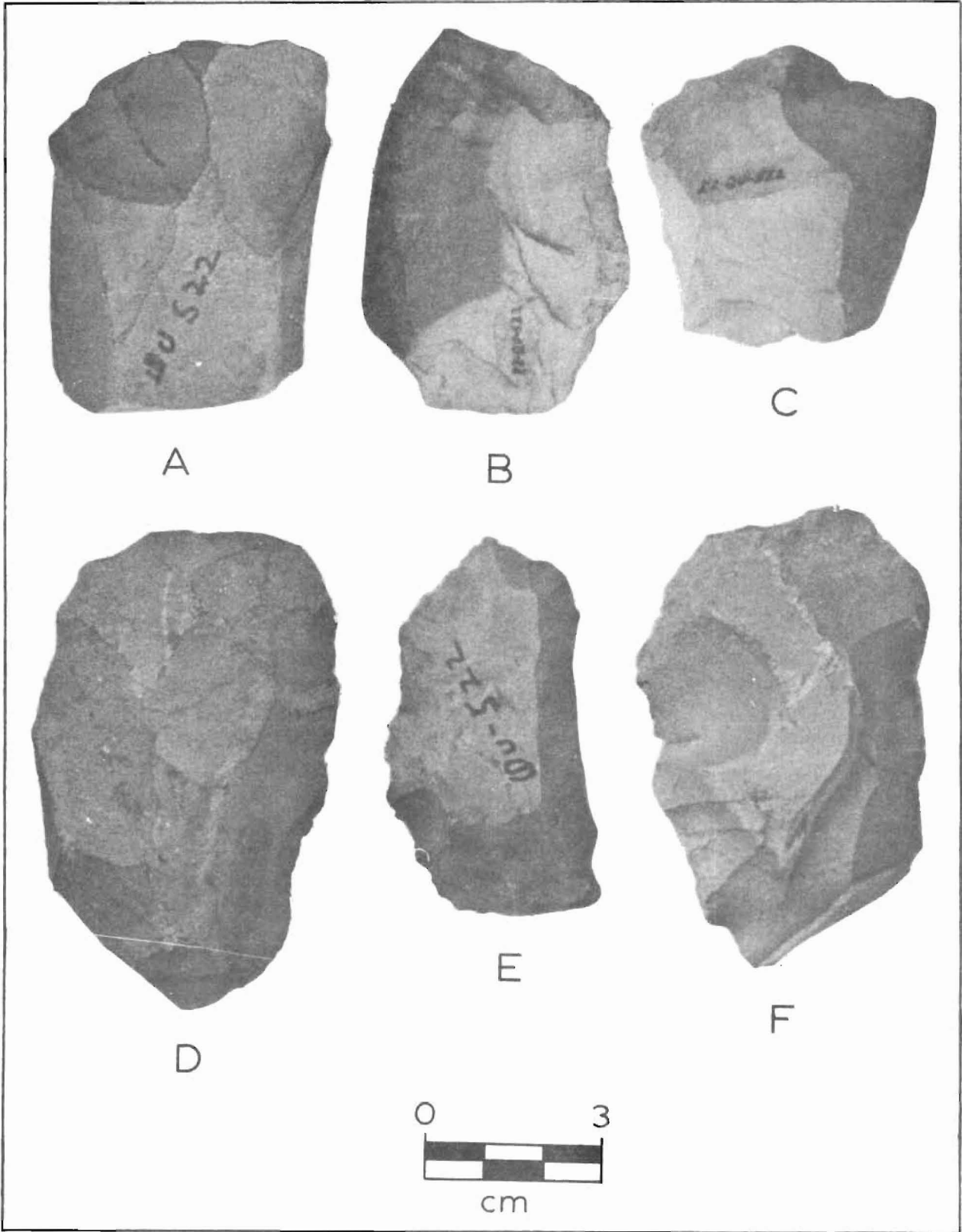


PLATE 1. CORES. A-C, type A; D-F, type B.

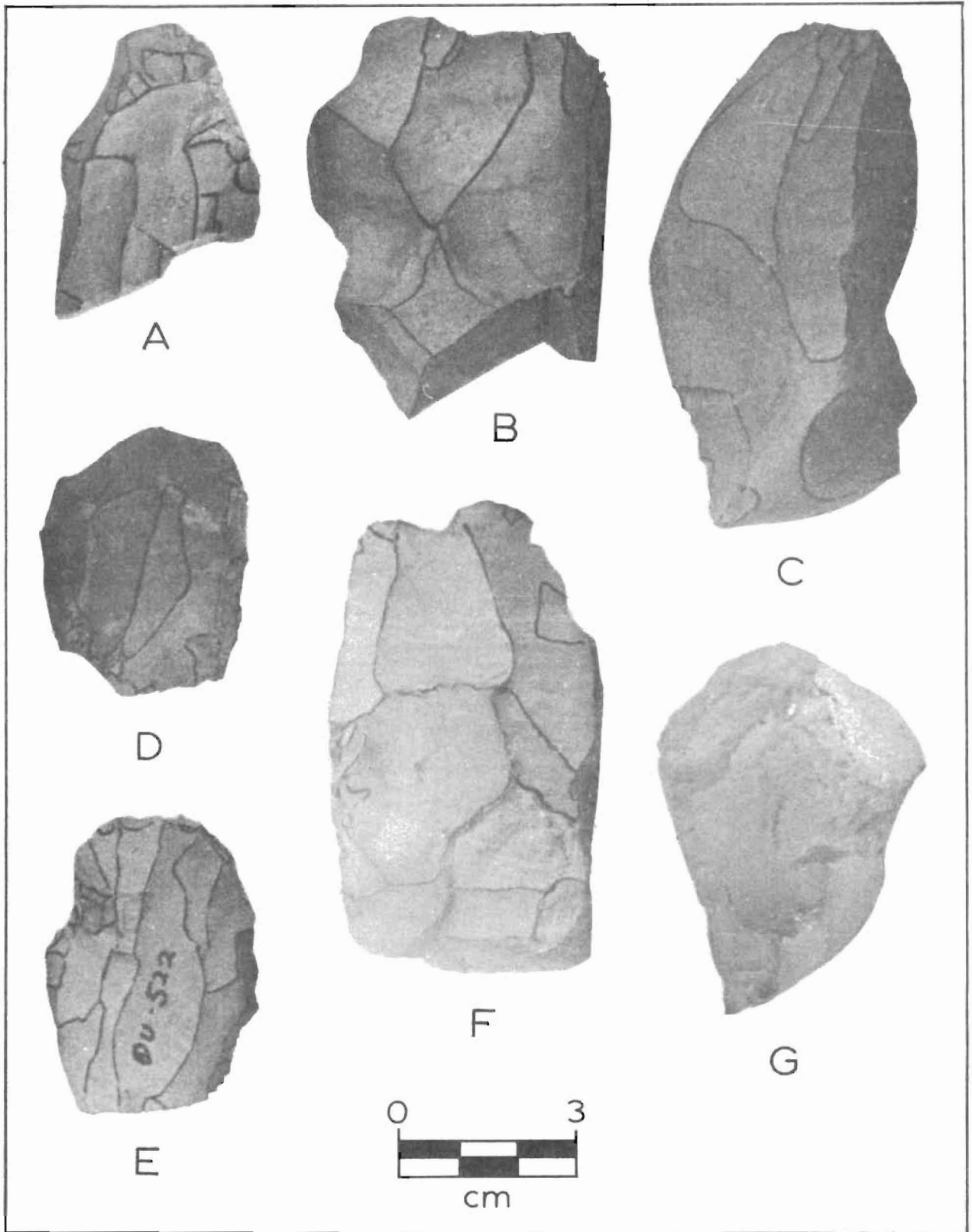


PLATE 2. CORES. A-G, type C.

be discussed in another section show lamellar blade scars. Five of these cores (Plate 2 A-E) appear technologically related to those in category B in that they were evidently being thinned down into bifacial tools. Plate 5 A-E, shows five choppers with such lamellar flaking scars. Lamellar flaking, then, may have been primarily a method of thinning bifaces and not necessarily of producing blades or bladelike flakes. This theory is supported by the larger number of blades in comparison to the very few lamellar cores on the site. Moreover, the lamellar scars exhibited on adzes, choppers, points, and other bifaces are similar in length and width to those on the group under discussion here. The maximum size ranges for the seven surface specimens, generally somewhat shorter and narrower than for categories A and B, are: length 44-79 mm, width 35-51 mm, and thickness 14-35 mm.

Bifaces

Adzes

Sixty-three adzes were recorded in the surface collection, but none in the excavation. All bifacially flaked objects with unifacially beveled bits except those with concave bits have been designated here as adzes. They are "randomly flaked" (Cambron and Hulse 1964:Fig. 74) pebbles, primarily of yellow tan chert, with most of the cortex removed.

In a few cases, it was difficult to distinguish adzes from objects in the chopper category which follows because the position of the cutting edge varies. The triangle formed by a cross section of the bit varies from a right-angled triangle (as in the ideal adze) through various forms of scalene triangles with one face shorter than the other, to an isosceles triangle on which the bit faces are of equal length. The position of the cutting edge was the only macroscopically discernible sorting criterion used to separate adzes from choppers. A comparison of the bit bevels of adzes and choppers may be seen in the lateral view in Plate 3 G. Six typical examples are shown in Plate 3 A-F.

There were several minor percentage differences between adzes and choppers in regard to other types of treatment, but these were not readily apparent as sorting criteria, considering the small sample of each tool category collected. Of the adzes, two have clearly visible use polish on the bit and adjacent areas of both faces. Numerous small hinge fractures along the bit of 78% of the adzes indicate considerable battering activity, probably a result of heavy use. Fifty-five percent of the total, which show a slight gloss or polish, have some slightly smoothed or ground areas along parts of the bit, approximately 1-2 mm down both faces from the bit edge. Visible only upon microscopic inspection, this smoothing or grinding is probably the dulling effect of use. There are no striations to indicate the direction of grinding. All further references to edge smoothing will refer to these characteristics unless otherwise stated. There are, therefore, four bit characteristics which may be correlated with function, three of which are probably the results of use. These are, in summary, bit angle, bit battering, bit polish, and bit grinding or smoothing.

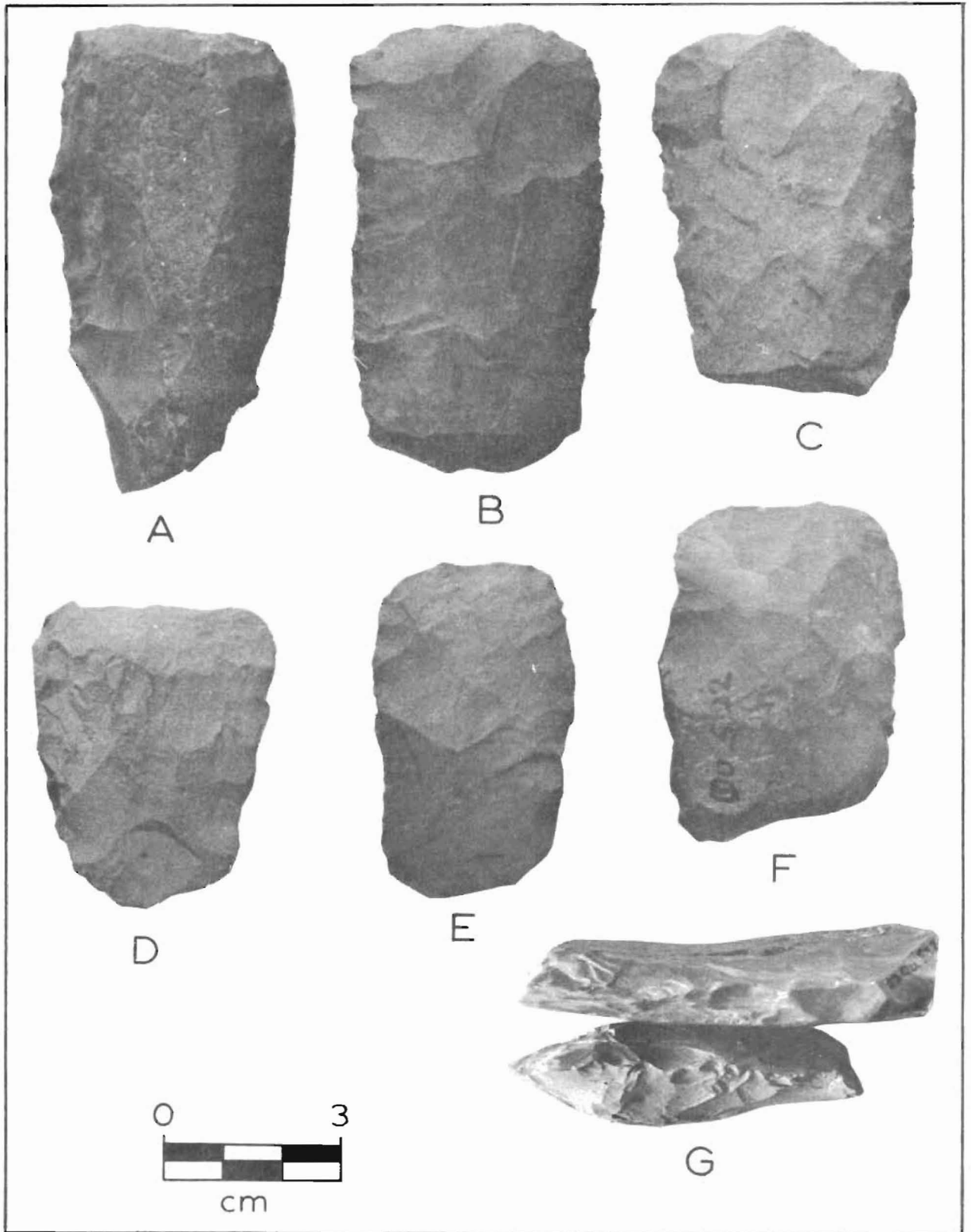


PLATE 3. BIFACES. A-F, adzes; G, adze-chopper bits.

Although a functional difference is implied by the use of the two terms "adze" and "chopper," use of these categories in this report is based primarily on bit bevel characteristics and represents a somewhat arbitrary division. It is possible that the unifacial beveling is simply a result of the resharpening of choppers and that there is no actual functional "adze" category. One might wonder, however, why such a tool, which was originally sharpened bifacially, would be resharpened unifacially. A great many of the adzes show no evidence at all of primary bifacial flaking on the bits and have very steep unifacial bit angles.

Adzes are commonly regarded as hafted woodworking tools. A more thorough microscopic examination of the two tool types from Denton might show some differences in use polish or wear patterns on the bit, but judging from the evidence at hand, the differences appear to be very little. This implies little, if any, difference in function. Only two specimens of each category show apparent use polish.

The bit was not the only part of the tool being altered, for side edges are battered on 24% of all specimens and 42% have the above mentioned smoothing. Whether these treatments result from use as a tool or were deliberate dulling for hafting purposes is not known, but the latter seems logical.

Of the total, twenty (31.74%) are transversely broken, showing the resulting lateral hinge-fracture scar. There were no impact scars other than the tiny hinge fractures on the bits, mentioned earlier. No heat breakage was noted and only six specimens showed the discoloring effects of heat treating. Maximum dimensions for the Denton adzes are: length range 40-80 mm, average length 55 mm; width range 27-46 mm, average width 37.6 mm; thickness range 10-21 mm, average thickness 15.9 mm.

Choppers

One hundred seventy-four choppers were recorded from the surface collection. As with the term "adze," the term "chopper" is being used here not as a functional category, but rather as a morphological category separated primarily on the basis of bit bevel, which in this case is slight and bifacially equal. There is probably some functional difference, but again, no statistical proof of this has been attempted.

Like the adzes, the choppers are elongate, randomly flaked bifaces with most of the cortex removed (Plate 4 A-F). In a few cases, lamellar thinning scars can be seen on one or both faces (Plate 5 A-E). Impact fractures at one edge of the bit were observed on three specimens, two of which are illustrated in Plate 5 A and B. The choppers are primarily ovate and vary in thickness. The thin, almost triangular shape of some suggests that they may have been preforms for projectile points, but they still exhibit the same wear patterns on the bit as do the others. Only eighteen specimens (10.34%) were heat treated and none show transverse fracture due to heating. Of the total, sixty-eight (39.08%) are transversely broken, with the resulting lateral hinge fracture about midway of the tool.

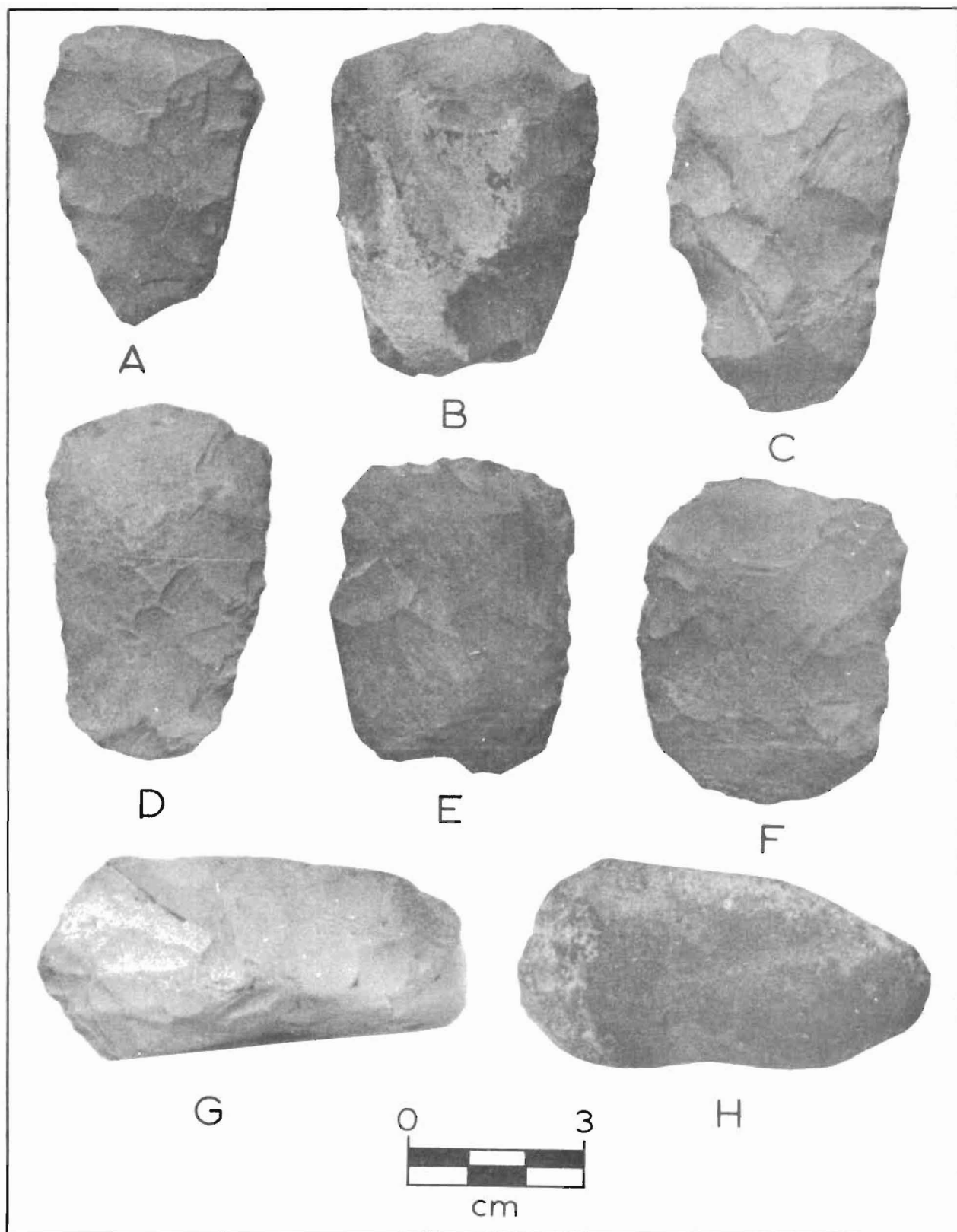


PLATE 4. BIFACES. A-F, choppers; G-H, Baytown choppers.

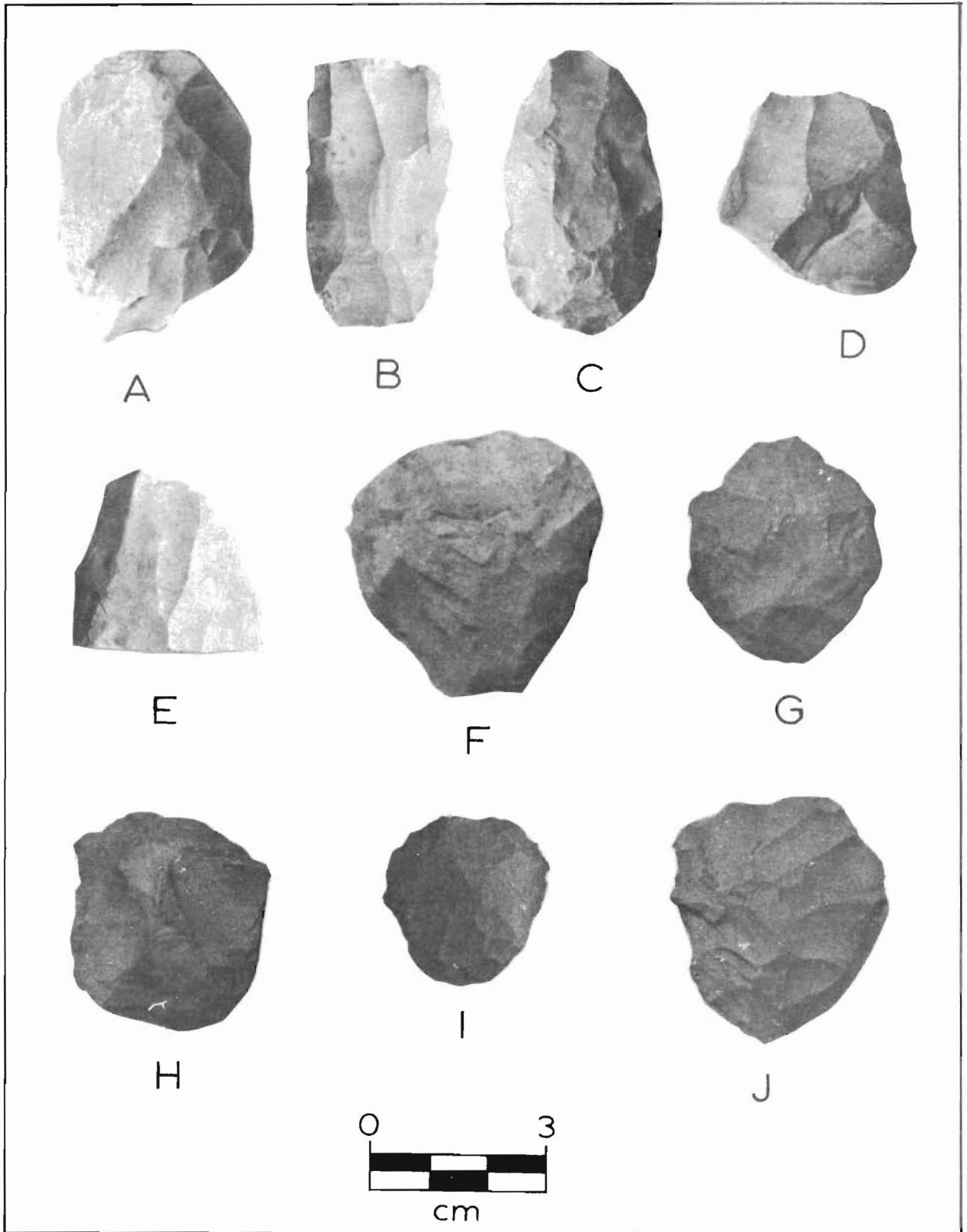


PLATE 5. BIFACES. A-E, choppers with lamellar flaking; F-J, circular specimens.

The choppers also show the other treatments described for adzes, but in slightly different percentages. Of the total, 43.10% exhibit battered bits, a sharp decrease from the adze category, and 18.35% show battered side edges, only a slightly lower percentage than for adzes. Also, 43.67% have smoothed areas along the side edges, almost the same percentage as for adzes, and 40.80% on the bit, somewhat lower than among adzes. As on the adzes, this smoothing shows a slight polish and is discernible only under magnification. Only four specimens (2.29%) exhibit bifacial use polish readily apparent to the naked eye. Maximum dimensions for the choppers are: length range 40.6-78.7 mm, average 54.7 mm; width range 27.3-50.0 mm, average 37.5 mm; thickness range 10.0-29.0 mm, average 16.0 mm.

Only four choppers were found in the excavation, one of them in the plow zone. All conform morphologically to the general description above. Because they were so few in number and came from three different squares, they were not considered stratigraphically or statistically important.

Baytown Period Choppers

Two Baytown Period choppers were found on the surface. These tools differ from those in the "chopper" category in that they are proportionately longer and thicker, with most of the bifacial flaking restricted to the bit end. Specimens are generally oblong pebbles with much pecking along the sides and cortex remaining on much of the body portion. Large numbers, generally associated with Coahoma Phase ceramics, have been found on Baytown Period sites in the northern Yazoo Basin. The Denton specimens probably belong to a very minor component represented on the site by a few sherds of clay-tempered pottery.

In Plate 4, Specimen G is light tan chert, the material from which such choppers are most commonly made. It does not have the pronounced pecking along the sides found in most examples, but both edges show considerable battering and smoothing, with many tiny hinge fractures. The entire tool is slightly patinated and cortex remains over portions of the body. Bifacially flaked, the bit has pronounced use polish on both faces, and shows the microscopic smoothing mentioned previously. Measurements are: length 73.2 mm, width 36.0 mm, and thickness 21.0 mm.

In Plate 4, Specimen H is a pebble of yellow quartzite, a material not commonly used for such choppers. Bifacial flaking is evident only on the bit. Side edges show very fine pecking, but the tool primarily retains its original, naturally formed shape, with cortex remaining over most of the body. Slight use polish and grinding are seen on both faces of the bit, as well as microscopic smoothing on the bit edge. Measurements are: length 69.8 mm, width 37.1 mm, and thickness 20.0 mm.

Choppers of this Baytown Period type have usually been mistakenly referred to as "Deasonville choppers," as mentioned by Phillips (1970:268), who noted an association between them and the Deasonville ceramic complex in the southern part of the Yazoo Basin. The illustrations given by Phillips (1970:Fig. 79 j; Fig. 130 e-g; Fig. 151 h-l; and Fig. 217 j-k), however, suggest bifacial flaking over the entire body surface, more like the Denton Site choppers previously discussed. Phillips gives no morphological description of his choppers, but mentions one that is similar to those described in the Jaketown Site report (Phillips, Ford, and Haag

1955:Fig. 46 D-E). This description does not clarify the situation, so comparison is difficult. Even Phillips admits it is difficult "to distinguish between chipped celts (or adzes) and 'choppers'" (1970:356). He also states that two examples from the Ely Site differ from the usual Deasonville type because they are "more carefully shaped" and show "considerable use polish on the bit ends" (1970:486). In contrast, use polish on the bit is very common on the choppers found in the northern Yazoo Basin, and they appear to be carefully shaped by the large amount of pecking found on the body portion of so many.

The examples from Denton are thus being differentiated here from those called "Deasonville choppers" and have been designated "Baytown Period choppers" for their cultural association and for the above reasons. No specific function has been implied by the term "chopper," but they were apparently shaped and somewhat smoothed for hafting, as a celt. The heavy, bifacial use polish on many, somewhat reminiscent of the high polish found on Mill Creek chert hoes of the Mississippi Period, implies contact with an abrasive material.

Circular Bifaces

Fourteen roughly circular bifaces were found on the surface. These items, common on Archaic sites in the area, are crudely percussion flaked (Plate 5 F-J). Four have short, smoothed areas on the edge, while six exhibit battered areas along the edge that could possibly result from use or from platform preparation for subsequent flaking. They appear functionally related to the chopper category, but no specific function is suggested here. Maximum dimensions are: diameter range 29-47 mm, average 39.5 mm; thickness range 10-17 mm, average 13.9 mm.

Elongated Bifaces

Eighty-two elongated biface specimens are included in the surface collection. Most of them are roughly triangular with crude percussion flaking (Plate 6 A-F). Varying considerably in crudeness and nearness to completion, they are apparently projectile point preforms which were not finished because of flaws in the material, premature breakage, or inability to reach the desired thinness because of hinge fractures. Many of them were evidently used at least briefly, since edges show isolated smoothing and battering, although this characteristic could indicate platform preparation for subsequent flaking. Maximum dimensions are: length range 46-82 mm, average 51.2 mm; width range 20-41 mm, average 30.2 mm; and thickness range 8-21 mm, average 13.4 mm. Only two specimens were found in the midden during excavation and they are not, therefore, considered stratigraphically or statistically useful.

Bifaces With Concave Bits

There were three bifaces with concave bits recorded in the surface collection and none in the excavation. Each of these crudely percussion-flaked items would have been classified with the adze group except for

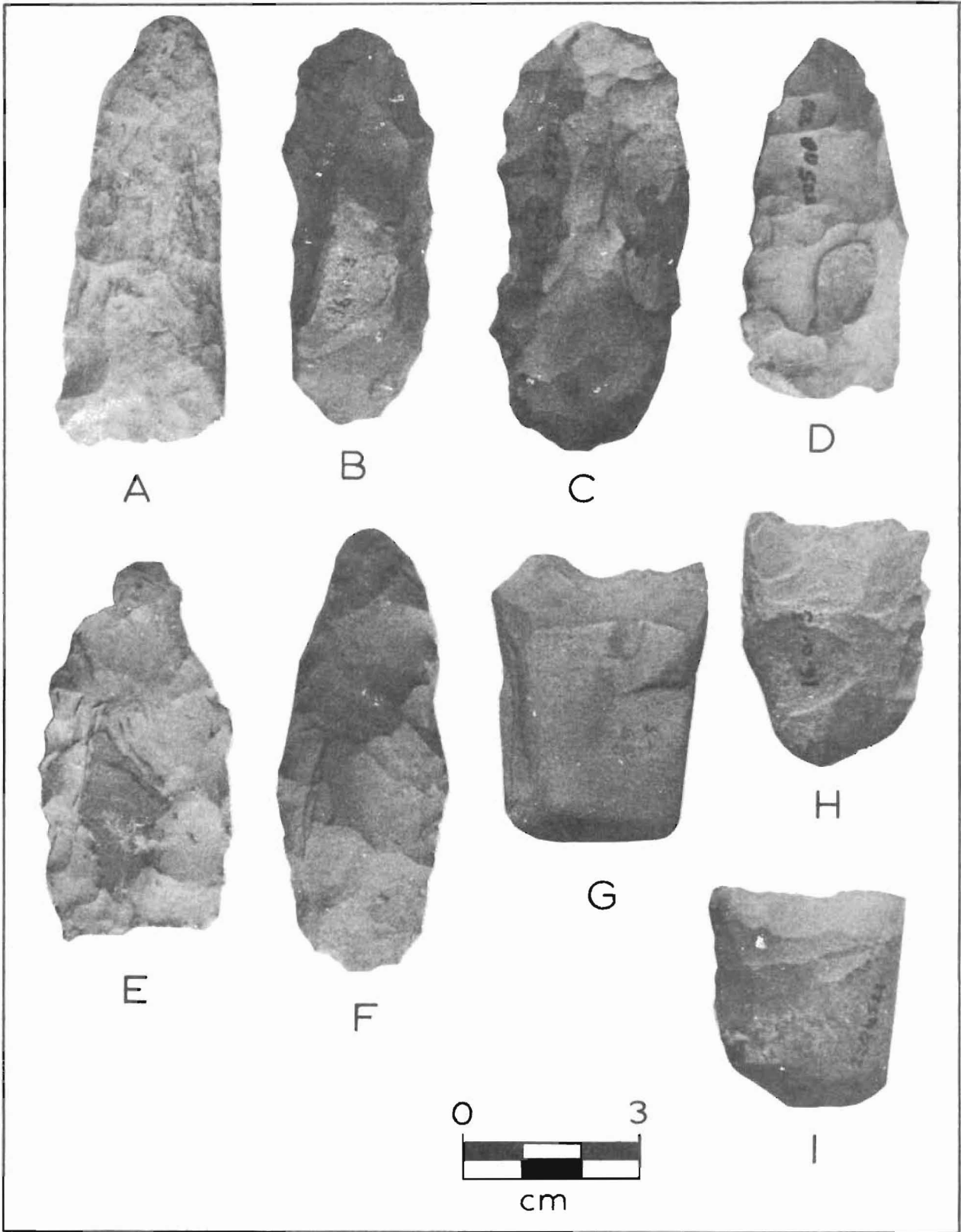


PLATE 6. BIFACES. A-F, elongated; G-I, with concave bits.

the method of flaking the bit. In this case, instead of the straight or convex bit found on all the adzes, the central portion of the bit has been chipped to the point of concavity (Plate 6 G-I). All are unifacially beveled like an adze and have battered bits. On each example, cortex remains on much of one face.

Specimen G (Plate 6) shows most of the body flaking on only one face, as well as a bifacially flaked bit with a unifacial bevel. The bit has a battered edge with microscopic smoothing, while one side edge shows battering and both have smoothing. Maximum measurements for this example are: length 50.9 mm, width 38.4 mm, and thickness 14.8 mm.

Specimen H (Plate 6) exhibits the same body and bit flaking as described above, but it has no bit or side edge smoothing and only the bit is battered. An impact fracture can be seen at the left edge of the bit. Maximum measurements for this example are: length 45.2 mm, width 32.7 mm, and thickness 14.7 mm.

Specimen I (Plate 6) shows some bifacial body flaking and has two unifacially beveled bits, one concave, the other convex. The bit is battered and smoothed, but the side edges are only battered. Maximum measurements for this example are: length 38.7 mm, width 34.0 mm, and thickness 14.0 mm.

The bevel of the bits suggests that the function of these objects was something similar to that of the adzes. It is possible that the bits were incurved in order to be used on a tubular object, probably wood, in the fashion of spokeshave.

Beaks

Twelve beak specimens were collected on the surface, none in the excavation. They occur on a variety of tool forms, from large, heavy cores to small bifaces, broken adzes, and projectile points. Examples are shown in Plate 7 A-L. To produce a beak, two flakes were removed from a unifacial striking platform, leaving a graverlike projection between the two flake scars. As shown in the front view in Plate 7 M, the beak is somewhat three-cornered in cross section and unifacial on one side, with two steep-angled sides opposite. The prominence of the beak itself varies from obvious, as in the graverlike points shown in Plate 7 C-E, to recognizable only upon close inspection, as in Specimen J, Plate 7. They appear to be deliberately fashioned and exhibit use wear, implying a possible graver-type function.

A similar if not identical technology can be seen in the manufacture of "noses" on the so-called "Alabama pebble tools," as described by Lively and Josselyn (1965). Although the two industries are not particularly similar, the simple technique used in flaking a "nose" is apparently the same as that used in creating the Denton "beak." Lively states, "The term 'nose' is used to designate a protuberance in the center of the blade edge (Fig. 3) which is worked on a section of the pebble (or fragment) perimeter . . ." (1965:4). He adds that "in keeping with this crude technology these noses are quite unprecise and varied" (1965:4), as are the Denton "beaks." In discussing the various technological noses in his Plate 10, Josselyn describes a "nose" as being "fashioned by the ridge between two intersecting removal scars" (1965:1).

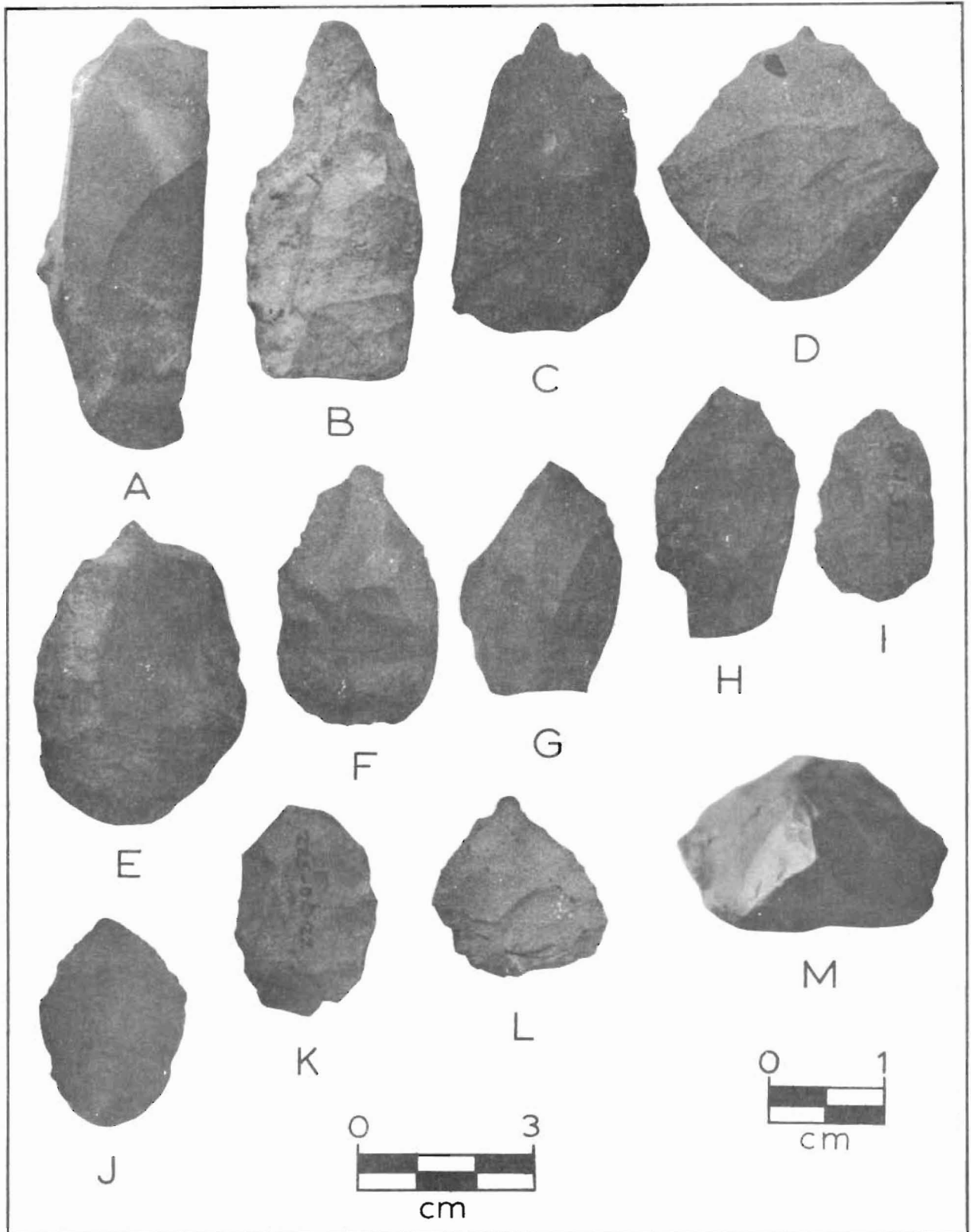


PLATE 7. BEAKS. A-L, lateral view; M, anterior view.

"Directly opposite on the reverse face . . . a larger removal scar represents the typical prepared striking platform" (1965:1) from which the two previously mentioned flakes were struck. These three flake scars constitute the basic technology of both the Lively Complex "noses" and the Denton Site "beaks."

Broken Bifaces

One hundred fifty-three broken bifaces are included in the surface collection, along with seven from the excavation, two of which were from the midden. This category is composed of fragments from the various other biface categories. Individual specimens are broken to the extent that inclusion in any of the other groups would be impossible. Of those in the surface collection, none showed breakage due to heating, but twenty-five (16.33%) showed evidence of heat treating. All were broken transversely with resulting lateral hinge fracture.

Hafted End Scrapers

Five hafted end scrapers of yellow, brown, and gray chert are included in the surface collection. This category is comprised of the basal halves of reworked, broken, crudely flaked projectile points with square stems (Plate 8 A-E), probably of the Denton type. All have convex, bifacially flaked bits except Specimen B, which has a concave bit in the fashion of a spokeshave or the bifaces previously discussed. The bits of Specimens B and D show much battering, probably a result of percussion flaking. Specimens B and E have impact fractures on the right edge of the bit. Specimen C has a small, graverlike protrusion in the center of the bit, but it shows no discernible wear. Only Specimen D shows microscopic smoothing on the bit edge. None show signs of heat treating. Maximum measurements are: length range 36.1-43.2 mm, width range at shoulders 27.4-33.6 mm, and thickness range 9.5-14.2 mm.

Drills

A total of 103 long, narrow bifacial tools from the surface collection conforming to the basic morphology of "drills" were collected. Materials used in their manufacture include yellow, brown, tan, and black chert, all locally available river gravels. In form, the vast majority are stemless and range from very long and narrow to almost triangular. Most are crudely chipped and thick, while a few exhibit a more refined technique and greater care in retouch. The crudity of flaking is not out of keeping with that found on the early projectile point types from the site. The specimens shown in Plate 9 A-N exemplify the range of styles and techniques. Measurements are: length range 31.0-77.8 mm, average 50.93 mm; width range 8.8-30.5 mm, average 16.65 mm; thickness range 5.9-19.0 mm, average 10.46 mm.

Of the total, fifty-three (51.45%) displayed a hinge fracture resulting from transverse breakage or snapping off, which could have occurred either during the manufacturing process or in use. Only two specimens were broken longitudinally, a possible result of impact. Nineteen, or

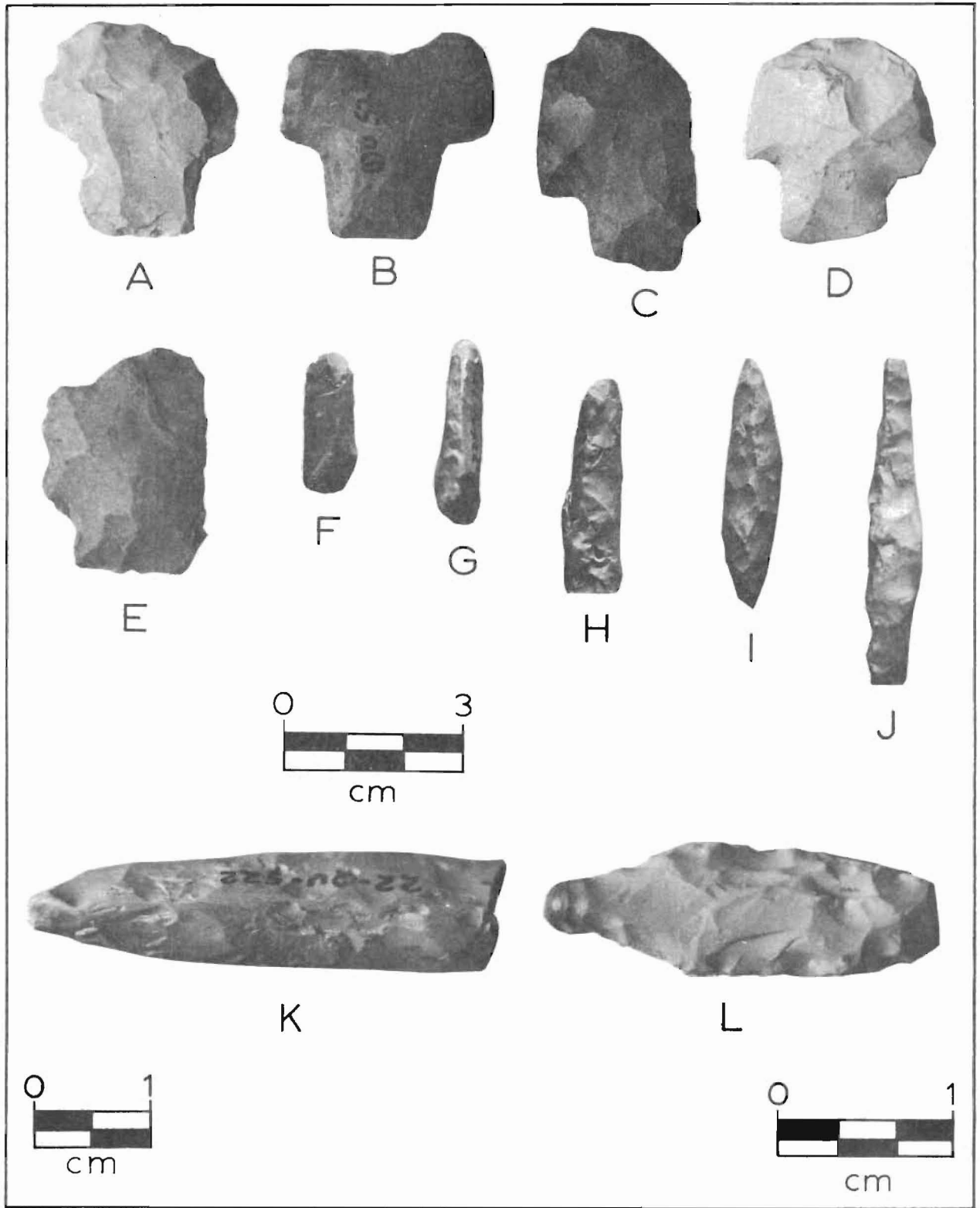


PLATE 8. SCRAPERS AND DRILLS. A-E, hafted end scrapers; F-J, polished drills; K, drill with heavy wear; L, experimental drill with heavy wear.

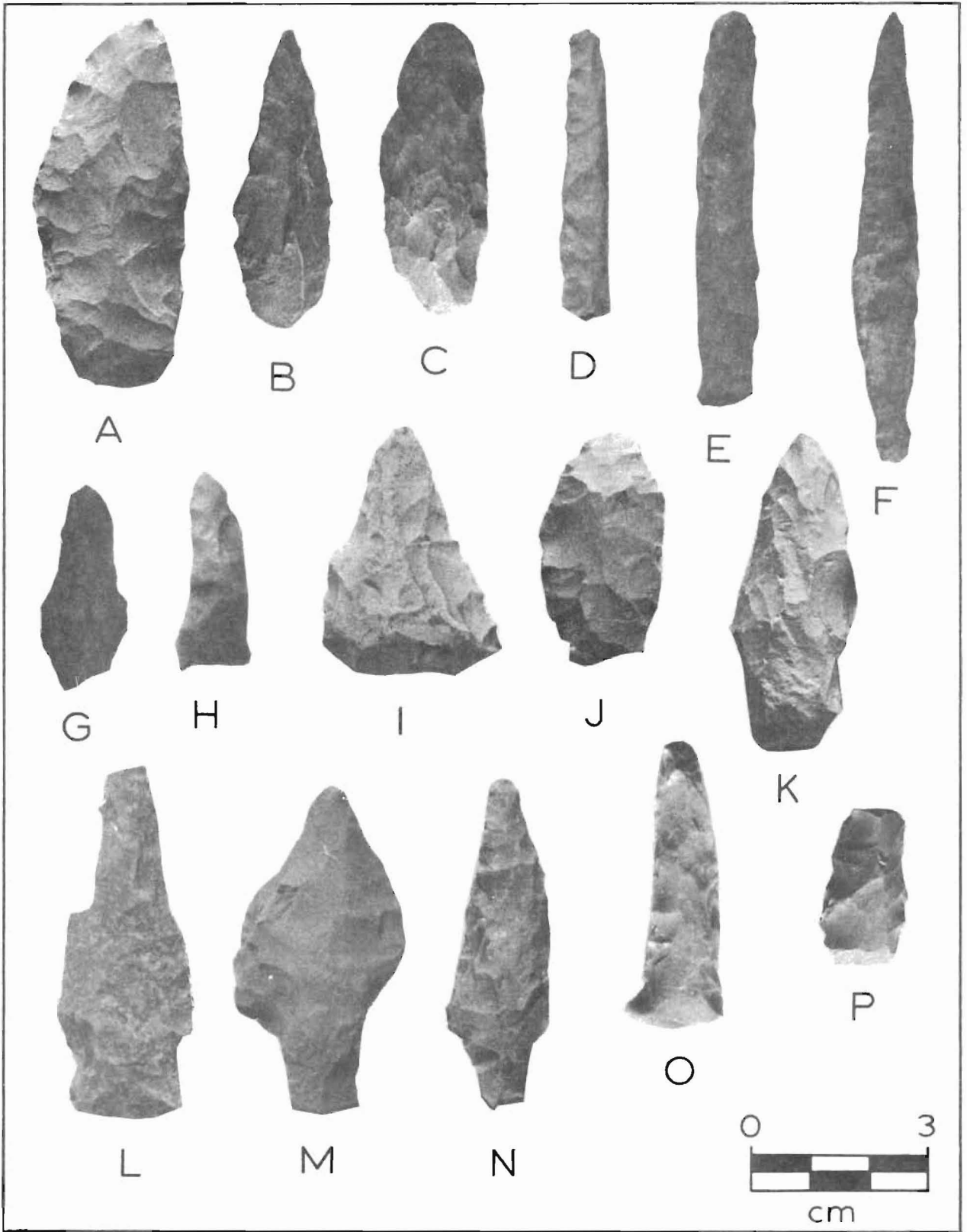


PLATE 9. DRILLS. A-N, types from surface collection; O-P, excavated specimens.

18.44%, were heat treated, a percentage consistent with other bifaces showing lateral snap. Heat treating of these artifacts may indeed have contributed to the high amount of breakage through weakening of the artifact structure. This weakening effect is discussed in more detail in the section on heat treating.

Only thirty-three of these artifacts exhibited no apparent use wear. One had evidently been reworked to exhaustion. The remainder showed varying amounts of wear, including edge polish and striations indicative of rotary motion. These were divided into four categories: those with heavy wear and red discoloration (14/103 or 13.59%), those with slight wear and red discoloration (6/103 or 5.82%), those with heavy wear and no discoloration (19/103 or 18.44%), and those with slight wear and no discoloration (31/103 or 30.09%). Examples of heavy edge wear are shown in Plate 8 F-J.

The red discoloration is on the edges and facial ridges of the tools, where contact with the material being drilled resulted in polish and heat. As with heat treating, the frictional heat produced in drilling resulted in a change of color. This effect was reproduced experimentally by making drills of tan chert, placing them in a variable-speed electric drill, and drilling three rocks similar to the perforated ones from the site. The results were essentially the same: heavy wear, rotary striations, and red discoloration on areas of contact. Plate 8 shows a comparison between a prehistoric drill bit with heavy wear and red discoloration (K) and one of the experimentally produced bits with heavy wear and discoloration (L). The major difference seen is in the location of the wear. On the prehistoric specimen, the wear is primarily along the edges, indicating that the tool was used as a reamer and that contact with the drilled object was along the sides of the drill. On the experimental specimen, the wear is mostly on the end since it was used to start a hole in a previously undrilled rock.

Those specimens which showed no wear can probably be explained as unused drills or preforms, resharpened drills, rejects, or some other functional category. They, as well as the used ones, show various stages of reduction from thick, elongated, biface preforms to finished or technically refined "drills." Some have unremovable "humps" surrounded by tiny hinge fractures, but some of the specimens showing use wear also have these, so evidently the "humps" made little difference here, in contrast to those found on projectile points.

Many of the drills exhibit resharpening or use breakage at the end of the bit. Two have cortex at the very tip of the bit, but both of these have heavy edge wear (one with red discoloration) indicating exclusive use as reamers. Of the total, twelve were made from unifacial flakes, as the remaining flake scars indicate. Others may have been made this way, but bifacial retouch has obliterated any evidence. Also of the total, only three appear to have been made from resharpened, stemmed projectile points (Plate 9 L-N).

Two chert drills were found in the excavation in square 60N-40E. One, a gray basal half showing a lateral snap, came from a depth of 1.4 feet in the midden (Plate 9 P). The other, a complete drill, tan in color, came from a depth of 1.3 feet (Plate 9 O). The latter shows only slight wear on the edges and no red discoloration. It is 52 mm

long, with an expanded, excurvate base and a slight overall patination. Both of these specimens are long, narrow, thick, and stemless, conforming to the basic morphology of most of the drills from the collection. The similarity among them suggests that most could easily fall into the Middle Archaic chronological placement of the Denton midden.

Projectile Points

The projectile point collection from Denton consists of 176 classified whole and broken points, including the single excavated specimen, and 112 unidentifiable whole and broken examples. The individual types are listed below, with variations from the original type descriptions discussed where they occur. Primary reference is given after the name of each point type.

Denton Points (this report)

Specimens A-Z (Plates 10, 11, 12) have been classified as "Denton points" because the group does not generally conform to the descriptions of any previously named types of which the writer is aware. The Denton points are thick and crudely percussion flaked with a minimum of secondary chipping. Blade edges are sometimes straight, but usually slightly convex. Generally long, straight, and squared, or slightly expanded, the stem ranges from about one-fourth to one-third the length of the point, the latter proportion being quite common. Bases are straight or slightly rounded and occasionally thinned. Shoulders vary from sloping to slightly barbed, but most examples slope somewhat. Measurements for ninety-six Denton Site specimens are: length range 43-89 mm, average 67.5 mm; width range at shoulder 24-50 mm, average 33.4 mm; thickness range 9-17 mm, average 11.4 mm; width range of stem 16-30 mm, average 21.0 mm. Most are made of local yellow, tan, or brown chert, but one is of novaculite, six are of Fort Payne chert, and three are of a material similar to Fort Payne. Most of this material was obtainable in local river gravels.

The primary use of these points, whether as spear or dart points or as some other type of tool, is unclear. They show a variety of technological alterations. Of those specimens not transversely broken, about two-thirds have obtuse or broad distal ends, such as seen on Specimens B and E (Plate 10), and P, Q, and W (Plate 12). The ends have been subjected to various treatments. Most are simply rounded and show a variable amount of use smoothing, while others, such as Specimens L (Plate 11) and Q (Plate 12), exhibit beveled ends as do those objects classified as adzes. Many of the beveled ends appear to be reworked impact fractures.

The blades likewise show evidence of considerable use. A large majority have some edge smoothing and many of the narrower specimens, such as D, E, and F (Plate 10), have been resharpened. Specimen D appears to have been used briefly as a drill, since it has smoothing and striations near the distal end, indicating rotary motion, and the reddish discoloration mentioned in connection with the drills. Almost a third of the group have been transversely broken at various places between shoulders and distal ends. Some of these breaks apparently

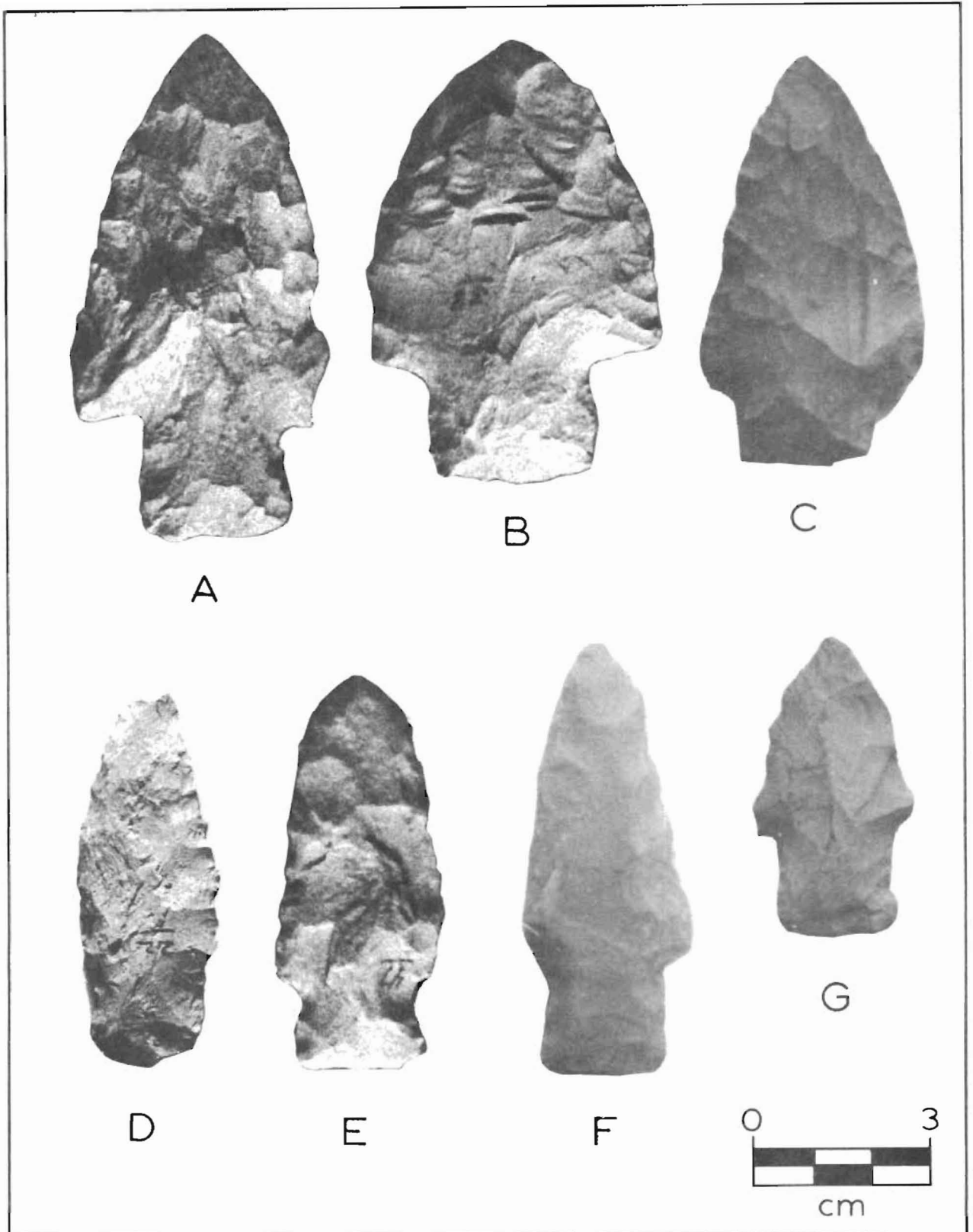


PLATE 10. PROJECTILE POINTS. A-G, Denton.

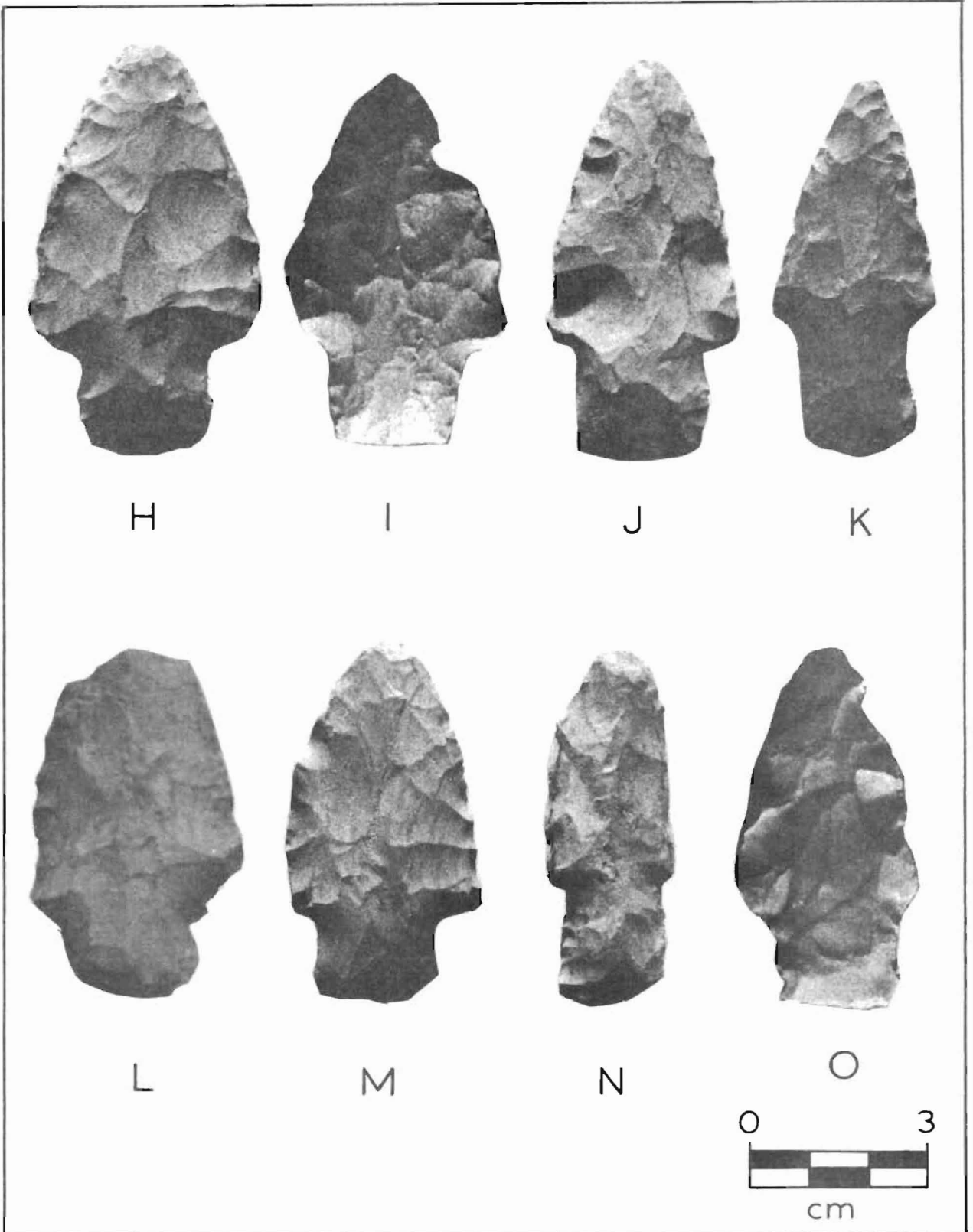


PLATE 11. PROJECTILE POINTS. H-O, Denton.

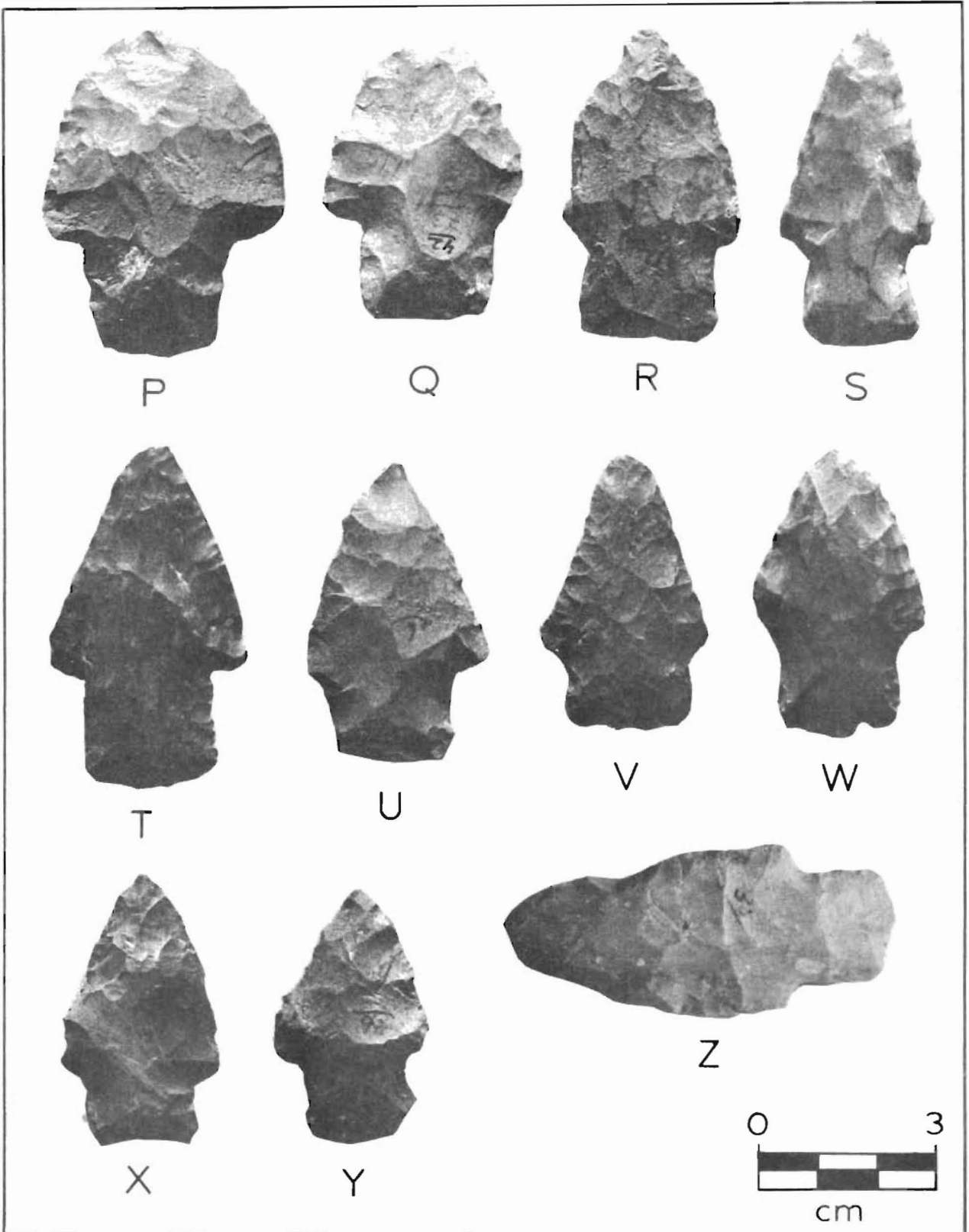


PLATE 12. PROJECTILE POINTS. P-Z, Denton.

are impact fractures, but others occurred when part of the blade was snapped off, leaving a lateral hinge fracture scar. Different functions are thus indicated.

Unfortunately for purposes of chronological placement, only one specimen (Plate 12 Z) was excavated in 1969. It was found in square 60N-40E at a depth of 2 feet. The two radiocarbon dates of 3280 B.C. and 3125 B.C. were obtained nearby and slightly nearer the surface, so unless the point was intrusive, this gives an idea of its age. The time span of the Denton points evidently included an undetermined number of years prior to 3000 B.C., since a 1972 Mississippi State University crew excavated a typical specimen under the southernmost "mound" from a very deep midden. The depth of the specimen was between 9.35 feet and 9.47 feet below surface at a location of 60N-10W (Gerald Berry, personal communication). Of possible use in determining a minimum age is the apparent restriction of this type to the older land surfaces in the Yazoo Basin. In the northern portion of the basin, examples have been reported from the Longstreet and Parrot sites in Quitman County and the Gates and Curtis Station sites in Panola County. Farther south, they are reported from various sites on the braided stream surfaces of Bolivar and Washington counties. Brain (1971:Fig. 6 G,H,I) shows specimens from the latter area. They do not occur on Poverty Point or later sites in the Yazoo Basin, as far as is presently known.

Some of the Denton points bear a resemblance to many Middle to Late Archaic types. Some similar types, to name a few, are Carrollton (Crook and Harris 1954; Suhm and Krieger 1954; Bell 1958:12), Lange (Suhm and Krieger 1954:436; Bell 1958:36), Morhiss (Suhm and Krieger 1954:454; Bell 1958:58), Nolan (Kelley 1947; Suhm and Krieger 1954; Bell 1958:66), Travis (Suhm and Krieger 1954:484; Bell 1958:94), Kent (Suhm and Krieger 1954:432; Bell 1960:60), Yarbrough (Newell and Krieger 1949:168; Suhm and Krieger 1954; Bell 1960:98), and Kays (Kneberg 1956; Cambron and Hulse 1964:59). With the exception of Kays, which is an Alabama-Tennessee type, the known distributions of these types are mainly to the west, extending into Oklahoma and Texas. Of the groups named above, two types seem closer to certain parts of the Denton range of variation than the others. Specimens K (Plate 11), and R, S, and T (Plate 12) strongly resemble the Carrollton type, all falling into the upper end of its length range and having stems approximately one-third the length of the point. Others resemble the Morhiss point, except that the Denton examples have a more squared stem.

Opossum Bayou Points (this report)

Specimens A-F (Plate 13) are classified as Opossum Bayou points. Like the Denton type described above, they are thick and crudely percussion flaked. They are corner or side notched, and have convex bases which may be thinned and shoulders that are slightly barbed, straight, or slightly contracting. Treatment of the distal end and blade is similar to that given the Denton points, with beveled and rounded distal ends represented and with all but one specimen exhibiting some smoothing of blade edges, which are usually convex. Measurements for the fifteen specimens from the site are: length range 38-70 mm, average 58.8 mm; width range 25-38 mm, average 32.7 mm; thickness range 6-13 mm, average 10.5 mm; range of stem width at construction 16-26 mm, average 20.6 mm. They are made of tan, yellow, gray, and brown local chert.

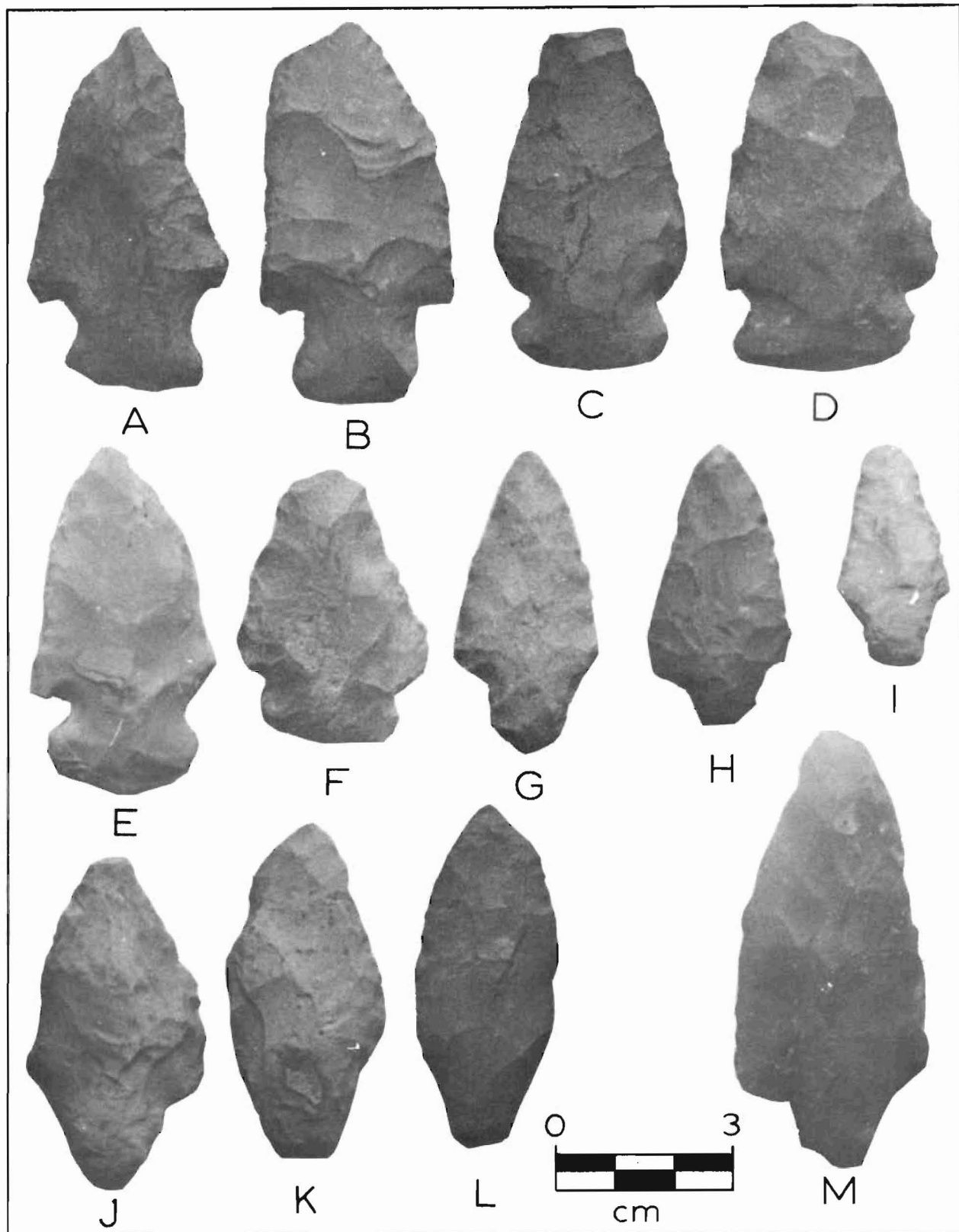


PLATE 13. PROJECTILE POINTS. A-F, Opossum Bayou; G-M, Gary.

The date range of the Opossum Bayou point is thought to be roughly the same as that of the Denton point, since they seem to have basically the same technology of manufacture, the same uses as evidenced by their various modifications, and similar distributions in the Yazoo Basin. Opossum Bayou points have been found in the northern portion at the Longstreet and Parrot sites in Quitman County, as well as the Gates and Curtis Station sites in Panola County. Potts (1976:1-7) reported one from the Richland Creek Site in Rankin County and Brookes and Inmon (1973:30, 36, 47) reported specimens from the Steves Site One, the Cessna House Site, and the Vaughn Site in Claiborne County. The latter two counties are in the hills to the southeast and south of the Yazoo Basin. Similar forms have been noted in private collections from Holmes and Hinds counties in the hill sections east of the basin, but no distributional analysis has been done.

To the best of the author's knowledge, the Williams point (Suhm and Krieger 1954:490; Bell 1960:96) is the only type that resembles the Opossum Bayou. It, however, is corner notched, while the Opossum Bayou, although occasionally corner notched, is usually notched from the side. The Williams point is known from central Texas, eastern Oklahoma, northern Louisiana and other parts of the Mississippi Valley. Its suggested time range is from 4000 B.C. to A.D. 1000, a much wider scope than is attributed to Opossum Bayou.

Gary Points (Newell and Krieger 1949:164-65)

Specimens G-M (Plate 13) represent the unbroken portions of the nine Gary point examples from the surface collection. Again, the lack of stratigraphic control creates a problem concerning chronology. On the basis of crudeness and apparent degree of alteration from use, six of these points appear to belong with the earlier material on the site. Two specimens are transversely broken and Specimens I-M show evidence of considerable use alteration on the distal ends. Measurements for the Denton examples are: length range 45-82 mm, average 59.8 mm; width range 21-36 mm, average 28.9 mm; thickness range 7-11 mm, average 9.0 mm. All but one are made of tan or brown chert from local gravels. One of the broken examples is made of pink novaculite.

Pontchartrain Points (Ford and Webb 1956:54)

Specimens A-E (Plate 14) have been classified as Pontchartrain points. The sixteen points in this group from the surface have little resemblance to the types discussed above. They are thinner and more carefully made, with narrower stems, sharp, acute distal ends, and serrated blade edges. Seven of the group do exhibit some light smoothing of blade edges, primarily along the portion of the blade near the shoulders. Five display transverse breakage, in one case apparently a hinged impact fracture. Four show the red discoloration of heat treating. One is made of dark gray chert, possibly Fort Payne, and the rest are light gray, tan, yellow, or brown local chert. About one-half exhibit cortex on the stem base, a trait common to the type. Measurements for these examples are: length range 49.4-76.9 mm, average 62.08 mm; width range 20.8-32.4 mm, average 25.85 mm; thickness range 8.0-13.8 mm, average 10.07 mm.

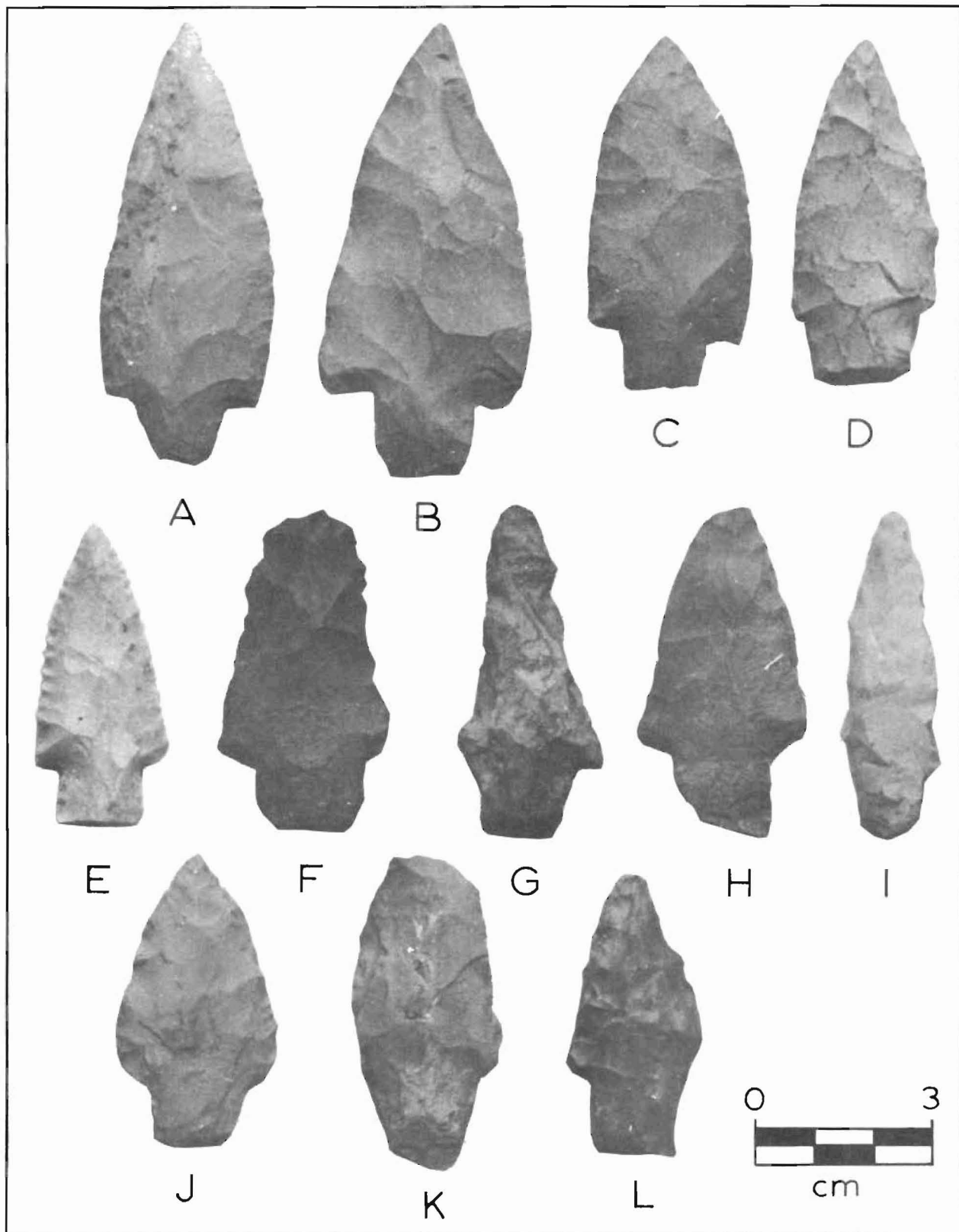


PLATE 14. PROJECTILE POINTS. A-E, Pontchartrain; F-L, Kent.

Ford and Webb (1956) have suggested that Pontchartrain points have a date range of from 1300 B.C. to 200 B.C. Surface associations in the northern part of the Yazoo Basin, however, indicate that they may be somewhat older. They have been recorded at the Longstreet and Parrot sites in Quitman County and the Gates site in Panola County, along with Denton and Opossum Bayou types. However, inclusion in the Denton collection of other artifacts, such as effigy beads, thought by some to be of Poverty Point or Late Archaic age, make an undated Late Archaic component a distinct possibility. Several of the broad-stemmed points of other types have been reworked after their original manufacture, and reveal considerable patination on the older surface as compared with the more recently reworked surfaces. This difference is especially noticeable on one of the Pontchartrain points, where the ripple pressure flaking scars are cream colored, while the central part of each face with no ripple flakes is white. Since several feet of the midden were removed and spread over a portion of the site prior to excavation, it is impossible to identify the context of many of the later artifacts, including the Pontchartrain points. None were found below surface and their relationship to the two radiocarbon dates and the rest of the artifact assemblage remains uncertain.

Kent Points (Suhm and Krieger 1954:432)

The sixteen points from the surface collection are represented by Specimens F-L (Plate 14). They are much like the Denton and Opossum Bayou points in their crudeness of flaking and apparent degree of wear on the blades. Three are transversely broken. One of these (Specimen K), on which the break appears to be an impact fracture resulting in a slight bevel, was used after it was broken. Specimens F and G appear to have been deliberately rounded at the distal end. Specimen G is chipped to a bevel, and Specimen F has been bifacially chipped at the distal end. One of the Kent points is made of Fort Payne chert; the rest are of local gray, tan, yellow, and brown chert. Measurements for these points are: length range 46.1-71.8 mm, average 57.6 mm; width range 20.8-30.8 mm, average 26.17 mm; thickness range 8.6-13.0 mm, average 10.92 mm; stem width range 8.4-21.2 mm, average 15.96 mm. These averages are almost identical to those for Kent points from the Poverty Point Site (Webb, Ford, and Gagliano 1970).

Suhm and Krieger (1954) have suggested that Kent points have a date range of from ca. 1000 B.C. to A.D. 1000. Webb now suggests a time range of from 2000 B.C. to A.D. 300 (Clarence H. Webb, personal communication). The excavation of several such points at the Teoc Creek Site in Carroll County, Mississippi, in levels with dates ranging from over 1600 B.C. to ca. 1100 B.C., apparently indicates a revision of the earlier part of the time span (Connaway, McGahey, and Webb 1977). The technology of their manufacture at the Denton Site would seem to place them with the earlier Denton and Opossum Bayou types, but they are generally associated with Late Archaic cultures.

Miscellaneous Points

A number of identifiable and unidentifiable projectile points from the Denton Site surface collection should be mentioned. Some are individual specimens and some appear in groups of up to five. They are discussed below in a very rough chronological sequence, beginning with four examples that are thought to be Early Archaic types brought in by later people, since the deepest midden encountered in 1972 appeared to be Middle Archaic.

Specimen A (Plate 15) is the only example of a Greenbriar point (Lewis and Kneberg 1958; Cambron and Hulse 1964; Bell 1960) from the Denton Site, and is unusual in that it is one of only four artifacts in the assemblage possibly dating from the Early Archaic Period. Made from a greenish yellow chert locally obtainable from river gravels, it has undergone heat treating, which produced a glossy appearance and a color change to mottled red-yellow-green. The basal end is a very deep reddish color.

Basal edges have been thinned and ground smooth. The shallow side notches have also been ground, and the edges are serrated but show use in the form of crushing. Morse (1971) has suggested that such crushing on resharpened Dalton points could be the result either of use or of the retouching process. This retouching-resharpening process, as observed on Greenbriar points (Brookes, Gray, Inmon, and Rodrigue 1974), has been interpreted to indicate use as projectile point-knives. Certain other modifications on Greenbriar points--acute-angled endscrapers, graters, and certain types of fractures--are thought to be part of a bone working industry.

The Greenbriar point from Denton has been resharpened several times, leaving the blade short and narrow, while the base is just as broad as on initial stage points of this type. Blade attrition has reached such a degree, however, that it has cut into the notches. That the point is practically worn out is shown by the working of the distal end into a beveled end scraper. One sharp, protruding corner may have been intended for a graver. Bone or woodworking is indicated by the fact that the scraper is acute angled, a trait that has been observed on Greenbriar points from Monroe County, Mississippi (Brookes, Gray, Inmon, and Rodrigue 1974). Maximum dimensions of this specimen are: length 33.1 mm, width 22.6 mm, and thickness 5.9 mm.

Brain (1970) does not illustrate or mention Greenbriar points from the Yazoo Basin, but two examples are known from the Holly Grove Site in Panola County and others from the hill areas to the east. Examples recovered from the Hester Site in Monroe County were in association with Big Sandy and Jude points (Brookes n.d.). Rucker (1974) has noted Greenbriar points in association with Big Sandy in surface collections from Lowndes County. An estimated age for this type would be ca. 10,000 B.P.

Specimen B (Plate 15), recovered from the surface at Denton, has been classified as a Big Sandy (Kneberg 1956; Bell 1960; Cambron and Hulse 1964). Side-notched, with a slightly incurvate, ground base, it is made from tan chert obtainable in local gravels. While evidence of heat treating is not readily apparent, a small red area near the midsection could be the result of light heat treating similar to that occurring on

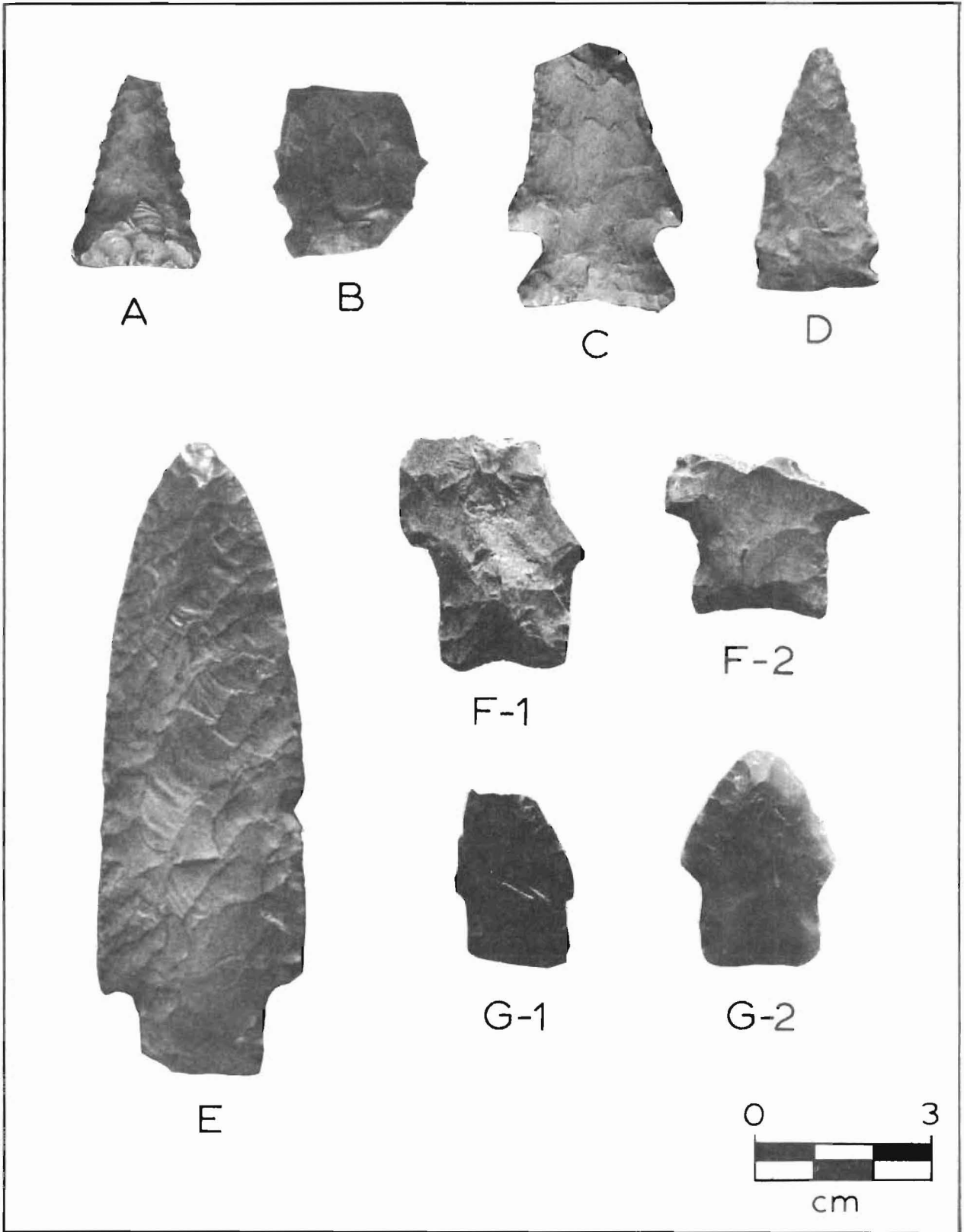


PLATE 15. PROJECTILE POINTS. A-G2, miscellaneous.

most Dalton points in the state. Because of its fragmentary condition, only the thickness (6.5 mm) of the point could be measured.

Though badly broken (the entire distal end and one tang are missing), the point is especially interesting because of indications of heavy use along the blade edges. Numerous hinge fractures along the blade indicate either heavy cutting or possibly resharpening subsequent to wear produced by heavy cutting. Resharpening probably would have been accomplished by percussion methods and might have caused the lateral snap which removed the distal end.

That the point was modified for further use after this took place is evident from two tools which have been chipped onto the opposing blade edges, again probably using a percussion technique. On the right edge is a graver tip formed by the removal of several short, deep flakes. Very little use wear is present on this graver. On the opposite face of the point, on the left edge (not clearly shown in the photograph) near the lateral fracture, is a "spokeshave" formed by removal of one or more flakes, the exact number of which cannot be determined because of many small pressure crushes indicating heavy use of this modification. The combination of graver spur and spokeshave, noted elsewhere in the Southeast (Goodyear 1973, 1974; Brookes n.d.), primarily occurs on Early Archaic sites, though Goodyear (1974) believes it can go back as far as the Paleo-Indian Period.

Big Sandy points from the Southeast have yet to be securely dated by radiocarbon means. At the Stanfield-Worley Bluff Shelter (DeJarnette, Kurjack, and Cambron 1962), the type was reported to be in association with Dalton. At the Hester Site in northeast Mississippi, it was demonstrated that Dalton points underlay Big Sandy (Brookes n.d.). This clear separation should help to dispel some of the confusion over the age of the point and its relationship to Dalton.

In the northern Yazoo Basin, Big Sandy specimens have been found at the Curtis Station Site in Panola County and, farther to the south, a Cache River point was found at the Choctaw Poverty Point Site in Bolivar County. Big Sandy points, as well as Cache River and other side-notched points, have been found in the lower Yazoo Basin, according to Brain (1971). The Big Sandy type is thought to date from ca. 8000 B.C.

Specimen C (Plate 15) is a corner-notched point of banded cream-yellow-tan chert. Characteristics indicative of an Early Archaic chronological position are the thinned base and the stem edges ground up into the notches. The blade edges, which show fine retouch flaking, are slightly incurved, apparently from resharpening. The distal end is broken off and several small flakes have been struck from the resulting platform, perhaps a beginning attempt to resharpen. The overall glossy appearance of the point may be a patina or the result of light heat treating. It is slightly flattened in cross section. Maximum dimensions are: shoulder width 29.7 mm, thickness 7.5 mm, stem width 26.5 mm, stem length 13.2 mm. A similar form has been noted from the Curtis Station Site in Panola County, about 20 miles to the northeast of Denton, in the Yazoo Basin.

Specimen D (Plate 15), a small point with shallow side notches, has been classified as a Damron point (Cambron and Hulse 1964). Alternate beveling of the blade edges gives it a flattened, rhomboid shape in cross section. There is fine retouch flaking along the blade edges, which

appear to have been resharpened, and the base is thinned, lightly ground, and straight. Made of tan chert, the point has a slight patina. Maximum measurements are: length 42.2 mm, shoulder width 21.2 mm, thickness 4.5 mm, stem width 20.6 mm, stem length 6.0 mm. These dimensions are slightly below the average for the type, but fall within the range, except for the shoulder width, which is below the minimum by 2.8 mm. No distribution is known for this type in the Yazoo Basin at present. The suggested age is Archaic, possibly Early Archaic in this case.

Specimen E (Plate 15) is the only point from Denton classified as Elk River (DeJarnette, Kurjack, and Cambron 1962). A large specimen of Fort Payne chert, it exhibits the oblique-parallel flaking on the blade that is characteristic of the type. The blade is flattened in cross section and has a slight twist when viewed from the distal end. Blade edges show fine retouch flaking. The stem is squared, and the base is thinned and straight. Maximum dimensions are: length 110.6 mm, shoulder width 35.1 mm, thickness 9.2 mm, stem width 21.2 mm, stem length 16.3 mm. The type is not presently known by the author to have been found elsewhere in the Yazoo Basin.

Specimens F-1 and F-2 (Plate 15) appear to be the basal portions of Benton points (Kneberg 1956), both made of gray chert, possibly Fort Payne. One tang is missing from the larger specimen, F-1, which is transversely broken, and the remaining blade edge shows heavy grinding. The transverse fracture is chipped, possibly from an attempt to make an end scraper. The squared stem has light grinding along the edges and a straight base, from which a large flake has been chipped. The specimen is biconvex in cross section. Specimen F-2 is also transversely broken, with almost all the blade missing. The stem is squared, with unground, bevelled edges, and the base is slightly incurved. It is flattened in cross section. Dimensions for F-1 are: thickness 11.0 mm, stem width 22.9 mm, stem length 21.8 mm. Those for F-2 are: thickness 8.6 mm, stem width 23.7 mm, stem length 17.3 mm. Cambron and Hulse (1964) suggest an Archaic time span of from 4000 to 2000 B.C. The type is common in the hill sections of northeast Mississippi.

Specimens G-1 and G-2 (Plate 15) have been classified as Carrollton points (Crook and Harris 1954). Specimen G-1 is made of black chert, and G-2 is made of red and gray novaculite, both materials common to the Ozark regions of Arkansas and Missouri. Both G-1 and G-2 show random flaking, with some retouch along the blade edges, and biconvex cross sections. The straight stems are almost half the length of the points and have straight bases. On each specimen, a large flake has been removed from both faces of the base in an attempt to thin it. These points are similar in some respects to the Denton points, but are smaller and have more carefully controlled flaking. Specimen G-1 is transversely broken near the distal end. Maximum dimensions for G-1 are: shoulder width 22.0 mm, thickness 8.7 mm, stem width 18.5 mm, stem length 12.0 mm. For G-2, they are: length 37.3 mm, shoulder width 25.9 mm, thickness 8.0 mm, stem width 20.5 mm, stem length 14.5 mm. Bell (1958) suggests a time span of from 2000 B.C. to 1000 B.C. for the type.

Specimens H-1, H-2, and H-3 (Plate 16) are large, unclassified points found on the small mound referred to as "Denton Site B." These appear to be rather large for use as projectile points and may have been either

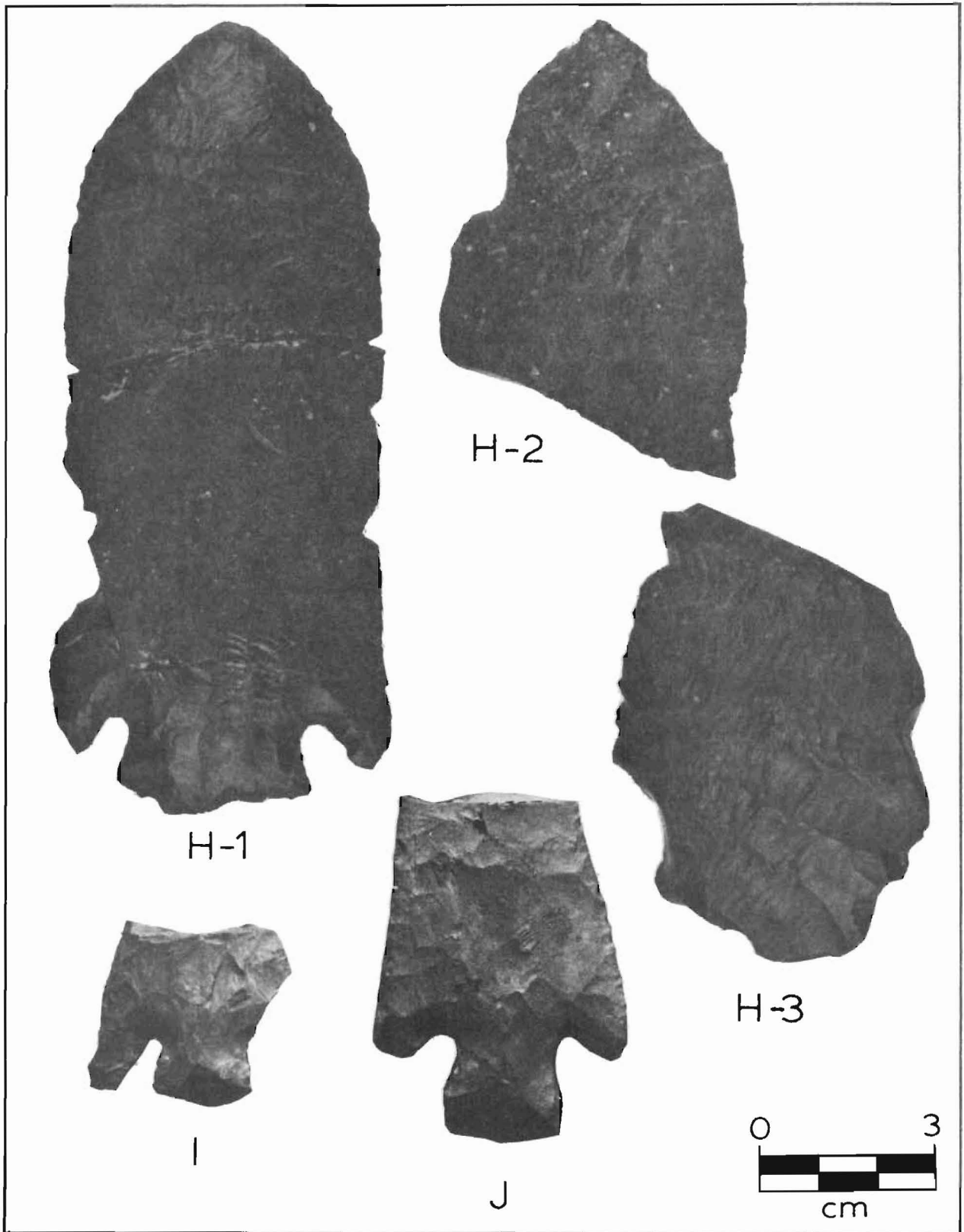


PLATE 16. PROJECTILE POINTS. H1-J, miscellaneous.

knives or objects used for some ceremonial purpose. The finely retouched edges do not show use wear. All have been badly broken--apparently by farming equipment, since the breaks are obviously recent. Specimen H-1 consists of four fragments now glued together, all found on different occasions. The other two represent separate artifacts, H-2 being the distal half of one and H-3 being the basal portion of another. All are made from a heat-treated flint or chert that is dark red, almost maroon, in color and which does not appear to be any known local material. All have some random flaking, but mostly well-controlled, parallel flaking. Specimen H-3 shows some oblique scars, while H-2 shows some collateral flaking. All have fine, pressure-flaked retouch along the edges. The entire periphery of all specimens is thinned by well-controlled, parallel flaking. Specimen H-1 has deep corner notches which approach basal notching. These specimens are unlike any other artifacts from the Denton Site. They were associated with the beads shown in Plate 31 V-X and the bannerstone fragments shown in Plate 27 D-F, on a portion of the site where Denton points have also been found. The suggested chronological placement is thus Middle Archaic. Maximum dimensions for Specimens H-1 are: length 136.8 mm, shoulder width 57.5 mm, thickness 13.0 mm, stem width 32.6 mm, stem length 15.3 mm, blade width 53.8 mm. For H-2, they are: thickness 12.0 mm and blade width 53.7 mm. For H-3, the maximum thickness is 13.0 mm.

Specimen I (Plate 16) is the basal half of a transversely broken point of brown local chert with deep corner notches. Although unclassified, it strongly resembles the types Castroville (Kelley 1947), Shumla (Suhm and Krieger 1954), and Marshall (Suhm and Krieger 1954). One barb is missing; the other one is long, and the tip is in line with the stem base. The blade is flattened in cross section and shows random flaking. Blade edges show very fine pressure flaking retouch, which also extends around the barb. The thick stem is slightly expanded and the base shows cortex remnant. Maximum dimensions are: thickness 7.7 mm, stem width 17.1 mm, stem length 11.5 mm. Suggested temporal placement is Middle to Late Archaic.

Specimen J (Plate 16) is a corner-notched point of tan local chert which strongly resembles the Motley point (Ford, Phillips, and Haag 1955). At its narrowest point, however, the stem measures 16.4 mm, which is 0.4 mm wider than the maximum on Motley points from the Poverty Point Site (Webb, Ford, and Gagliano 1970:33). Large random flake scars and fine retouch on the edges, both common to Motley, are seen on this example. The pressure flaking scars along the blade edge extend up to about 8 mm in several places. Wear on the blade edges and faces suggests possible use as a knife. The expanded stem has a slightly excurved base, which is thinned. The notches are deep, with pronounced barbs. The distal end of the blade is missing. Maximum measurements are: shoulder width 43.9 mm, thickness 10.5 mm, stem width 20.8 mm, stem length 17.7 mm. Suggested temporal placement is late Middle through Late Archaic.

Specimens K-1 through K-4 (Plate 17) somewhat resemble the McIntire point (Cambron and Hulse 1964) in outline. Specimen K-1 seems closest to this description. Made of heat-treated chert, it is red. The straight blade edges show some fine retouch, the shoulders are slightly barbed, and the stem is expanded and thinned. The specimen is randomly flaked and shows impact fractures at the distal end. Some beginning attempt at

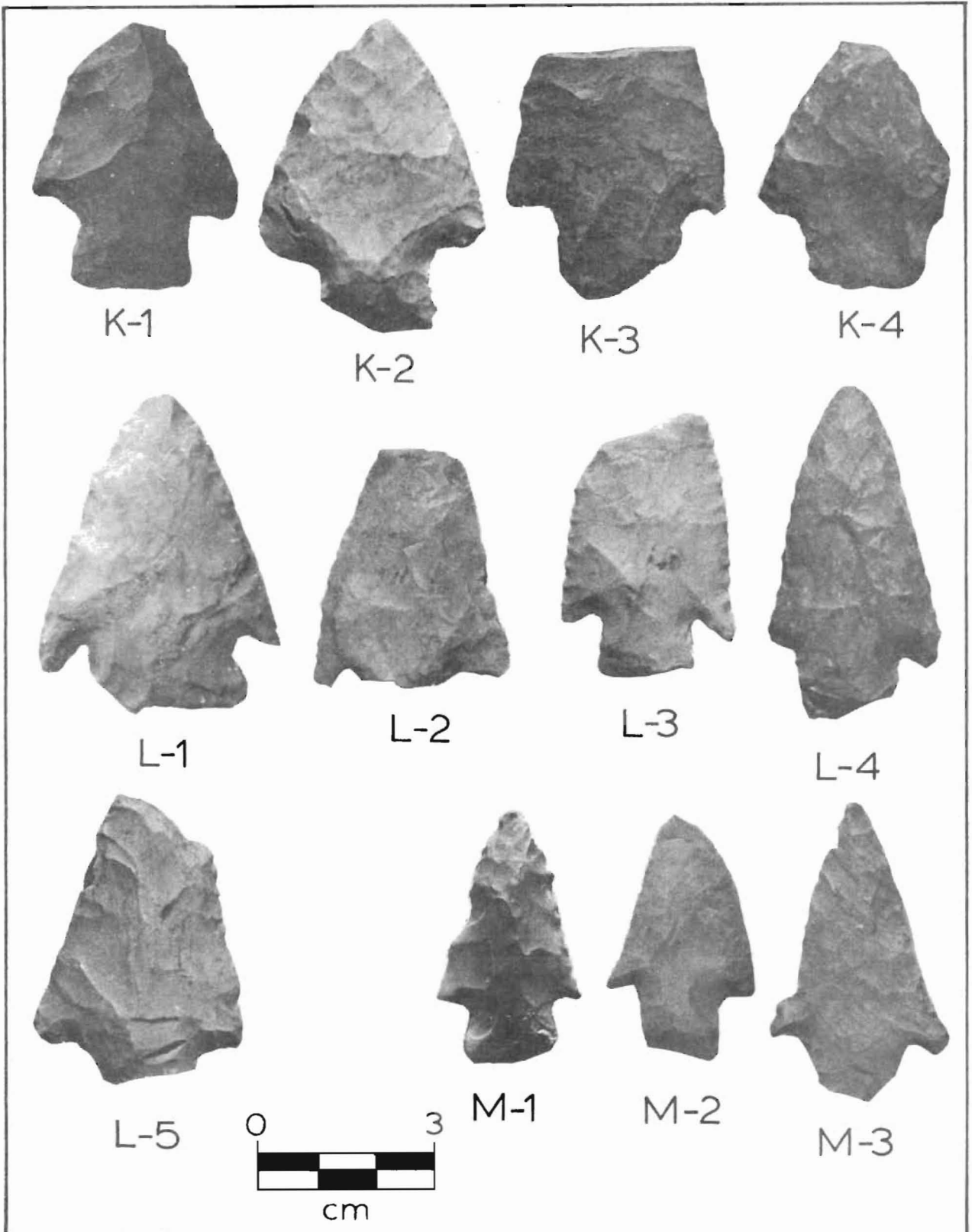


PLATE 17. PROJECTILE POINTS. K1-M3, miscellaneous.

resharpening is evident. Specimen K-2 is made of cream chert mottled with orange and also appears to be heat treated. It is randomly flaked and has slightly excurved and retouched blade edges, slightly rounded shoulders, and a thick, expanded stem. Specimen K-3, made of light gray chert, has slightly excurvate, retouched blade edges, slightly barbed shoulders, and a straight, but broken, thick stem. It is transversely broken near the distal end. Specimen K-4, made of tan chert, has excurved and retouched edges that show heavy use wear, slightly rounded shoulders, and a slightly contracted stem. One shoulder and the extreme distal end are broken off. This example was apparently used as a knife. Maximum measurements for these specimens are: (K-1) shoulder width 35.5 mm, thickness 10.4 mm, stem width 20.4 mm, stem length 12.4 mm; (K-2) length 53.6 mm, shoulder width 38.3 mm, thickness 11.1 mm, stem width 20.2 mm, stem length 13.5 mm; (K-3) shoulder width 37.6 mm, thickness 11.4 mm, stem width 21.3 mm, stem length 16.5 mm; (K-4) thickness 10.8 mm, stem width 21.0 mm, stem length 11.9 mm. A Middle to Late Archaic temporal placement is indicated.

Specimen L-1 (Plate 17) is a broad, barbed point bearing some resemblance to Castrovilla (Kelley 1947) and Marcos (Suhm and Krieger 1954) points, as well as to the Marshall point (Suhm and Krieger 1954). It is deeply corner notched, and the barbs extend about half the length of the stem, which is expanded, appearing much like the Marcos point in outline. Random flaking and some retouch appear on the blade edges. Points of this general form, as well as other more slightly barbed forms such as specimen groups K, L, M, and T, are common at the nearby Longstreet Site, which has been dated in the Middle Archaic Period. Measurements for this example are: length 55.0 mm, shoulder width 41.0 mm, and thickness 10.0 mm.

Specimens L-2 through L-5 (Plate 17) are similar to L-1 in their barbed appearance, but are narrower and exhibit fine secondary retouch flaking along the blade edges. They more closely resemble the Hamilton Stemmed point (Cambron and Hulse 1964). Specimen L-3, with its retouched blade edges, short barbs, and thinned base, bears the closest resemblance to that point type. Made of chert varying from yellow to brown or gray, these examples are all slightly barbed, are corner notched, and have random blade flaking. L-2, L-3, and L-5 are transversely broken near the distal end, with subsequent resharpening on L-5. All but L-3 have transversely broken stems. L-3 has a cortex remnant on the base. Maximum dimensions for these items are: (L-2) shoulder width 33.1 mm, thickness 8.8 mm; (L-3) shoulder width 30.0 mm, thickness 7.8 mm, stem width 16.6 mm, stem length 10.8 mm; (L-4) shoulder width 30.0 mm, thickness 9.0 mm; (L-5) shoulder width 36.3 mm, thickness 12.0 mm. Similarities to other points from Denton and sites of similar context indicate a late Middle through Late Archaic temporal span. The Hamilton Stemmed is a late Woodland type (Cambron and Hulse 1964).

Specimens M-1 through M-3 (Plate 17) are small, barbed points with acute distal ends and fine retouch flaking along the blade edges. Made of red, heat-treated local chert, M-1 is plano-convex in cross section.

Slightly serrated blade edges probably result from resharpening which left slightly expanded barbs. A cortex remnant remains on the slightly expanded stem. The slightly excurvate base is thinned. M-2 is made of yellow tan chert and has very finely retouched blade edges, one slightly expanded barb, and a straight, thick stem. The distal end is broken off. M-3 is made of gray, banded chert. It shows resharpening and has expanded barbs and a thick, contracting stem. Maximum measurements for these specimens are: (M-1) length 43.6 mm, shoulder width 25.7 mm, thickness 9.0 mm, stem width 16.2 mm, stem length 11.2 mm; (M-2) shoulder width 26.1 mm, thickness 8.5 mm, stem width 13.8 mm, stem length 11.7 mm; (M-3) length 53.0 mm, shoulder width 31.3 mm, thickness 8.9 mm, stem width 17.2 mm, stem length 11.5 mm. The serrated or finely retouched blade edges may suggest a Late Archaic temporal placement.

Specimen N-1 and N-2 (Plate 18) are unclassified corner-notched, straight-shouldered points made of brown and tan local chert. The straight to slightly excurved blades show some edge retouching. The expanded stems are plano-convex in cross section and the bases are straight. Specimen N-1 is transversely broken near the distal end. Maximum dimensions for N-1 are: shoulder width 30.2 mm, thickness 9.7 mm, stem width 19.7 mm, stem length 14.0 mm. For N-2, they are: length 60.2 mm, shoulder width 30.0 mm, thickness 8.0 mm, stem width 22.0 mm, stem length 14.3 mm. Again, the edge retouch and form may indicate a Late Archaic age.

Specimen O (Plate 18) is a large unclassified point of heat-treated red-tan-brown chert. It is corner notched, with straight shoulders, and has a slightly expanded stem. The blade shows random flaking, with some fine retouch along the edges at the distal end, and is slightly recurved. Maximum measurements for the specimen are: length 85.9 mm, shoulder width 35.5 mm, thickness 13.6 mm, stem width 22.0 mm.

Specimen P (Plate 18), which has been classified as a Little Bear Creek point (DeJarnette, Kurjack, and Cambron 1962), fits all aspects of the description except that the stem base is slightly excurved and unground. It is made of gray chert which may have been heat treated, and it has large, random percussion flaking scars on the blade, slightly tapered shoulders, and a straight stem. Maximum measurements are: length 83.1 mm, shoulder width 24.9 mm, thickness 13.1 mm, stem width 13.1 mm, stem length 17.9 mm. Cambron and Hulse (1964) suggest a temporal span of 4000 to 1500 B.P. for this type.

Specimen Q (Plate 18), an unclassified, narrow point with acute distal end, is made of a nonlocal, cream-colored chert that may have been heat treated. Biconvex in cross section, the blade shows random flaking on the faces and fine retouch along the edges, which are slightly excurvate. The shallow corner notches form slight, tapered shoulders. The expanded stem has a straight base. Maximum measurements are: length 66.2 mm, shoulder width 20.2 mm, thickness 8.8 mm, stem width 15.0 mm, stem length 12.0 mm. Chronological placement is uncertain.

Specimen R (Plate 18) generally conforms to the Swan Lake description given in Cambron and Hulse (1960; 1964), except that it is somewhat longer. It is made from the same cream-colored chert as Specimen Q and has similar flaking characteristics. However, like the Swan Lake point, it has shallow side notches which leave a pronounced expanded stem. The base is transversely broken, apparently from a deliberate attempt to create a striking platform or simply a flat, straight, thick base.

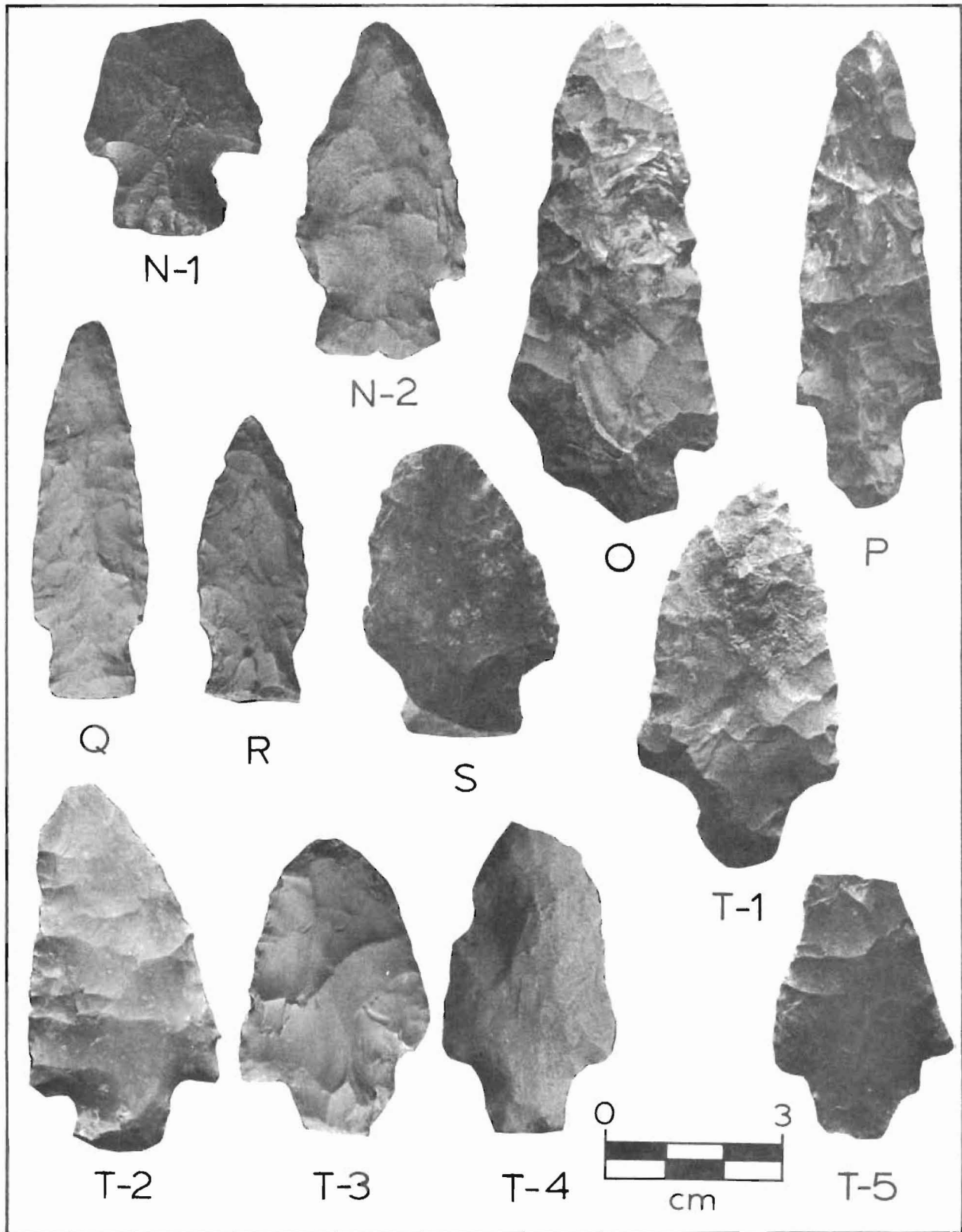


PLATE 18. PROJECTILE POINTS. N1-T5, miscellaneous.

Maximum dimensions for this example are: length 50.2 mm, shoulder width 19.0 mm, thickness 8.2 mm, stem width 16.5 mm, stem length 12.0 mm. Cambron and Hulse (1964) suggest an Archaic beginning, with an extension into the Woodland Period, for Swan Lake. Chronological placement for this specimen is uncertain.

Specimen S (Plate 18) is an unclassified, heat-treated, red and tan chert point. Broad and thin, it is corner notched, with rounded, sloping shoulders and a wide, slightly expanded stem and slightly excurvate base. Large, random flake scars appear on the excurvate blade, and there is some secondary retouch flaking along the edges. Maximum measurements are: length 52.9 mm, shoulder width 33.7 mm, thickness 8.1 mm, stem width 21.2 mm, stem length 11.7 mm. Chronological placement is uncertain.

Specimens T-1 through T-5 (Plate 18) appear to be a broad variety of Kent (Suhm and Krieger 1954), all of them except T-1 falling within the width range of Kent given by Webb, Ford, and Gagliano (1970). They are similar to Specimen Group K in outline, but the stems are contracting. Biconvex or plano-convex in cross section, all show random flaking, with very little secondary edge retouch. Raw materials used are tan chert, reddish tan (heat-treated) chert, greenish cream chert, milky quartzite, and black chert respectively. The base of T-1 has cortex remnant, and the base of T-4 is thinned and straight. T-4 and T-5 have broken distal ends and T-5 has a broken stem. Maximum dimensions for these specimens are: (T-1) length 67.0 mm, shoulder width 35.8 mm, thickness 11.4 mm, stem width 16.9 mm, stem length 13.4 mm; (T-2) length 63.5 mm, shoulder width 33.5 mm, thickness 11.1 mm, stem width 17.2 mm, stem length 11.0 mm; (T-3) length 51.2 mm, shoulder width 33.4 mm, thickness 10.2 mm, stem width 18.1 mm, stem length 11.8 mm; (T-4) shoulder width 29.9 mm, thickness 9.8 mm, stem width 14.0 mm, stem length 12.0 mm; (T-5) shoulder width 31.0 mm, thickness 11.8 mm. Suggested chronological placement is Late Archaic.

Specimens U-1 and U-2 (Plate 19) probably should have been included in the original grouping of Gary points listed previously. Since these were more recent finds, however, they were not included. They are small but fit the Gary specifications well. U-1 is made of gray chert, while U-2 is of white novaculite. They have randomly flaked blades, sloping shoulders, and contracting stems. Maximum dimensions are: (U-1) length 51.7 mm, shoulder width 23.2 mm, thickness 8.8 mm; (U-2) length 45.2 mm, shoulder width 18.8 mm, thickness 8.5 mm.

Specimen V (Plate 19) is a small, unclassified point made of mottled gray and white chert. It has an acute distal end, random blade flaking with some edge retouch, narrow sloping shoulders, a wide, thick stem, and a straight base. Maximum dimensions are: length 38.3 mm, shoulder width 19.3 mm, thickness 8.8 mm, stem width 14.8 mm, stem length 9.2 mm. Chronological placement is uncertain.

Specimens W-1 and W-2 (Plate 19) are narrow, thick points made from tan local chert. They both have expanded stems and are almost side notched. Crudely percussion flaked, they display very little secondary retouch. Both have thick ridges in the center, the removal of which was unsuccessfully attempted. W-1 shows slight use wear on the blade edges. The distal tip of W-2 is broken off. Their crudeness suggests that they are rejects, probably not used as projectiles. Maximum dimensions are: (W-1) length 51.2 mm, shoulder width 20.9 mm, thickness 13.0 mm, stem width 13.9 mm,

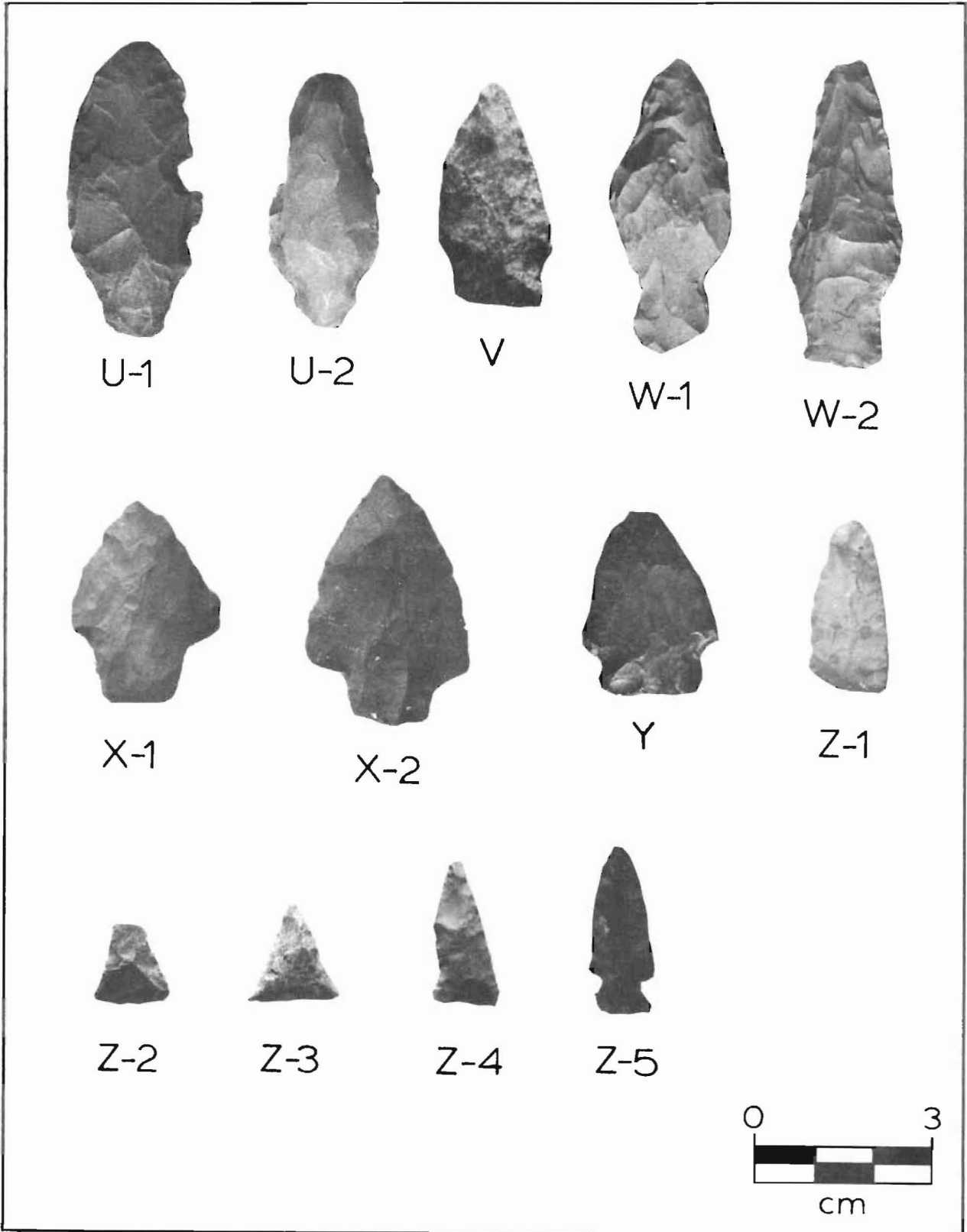


PLATE 19. PROJECTILE POINTS. U1-Z5, miscellaneous.

stem length 13.2 mm; (W-2) shoulder width 21.0 mm, thickness 12.8 mm, stem width 14.0 mm, stem length 12.5 mm. Chronological placement is uncertain.

Specimens X-1 and X-2 (Plate 19) are small unclassified points having short, wide, triangular blades with random flaking. The straight-based stems are straight or slightly contracting. Corner notches have left narrow, slightly rounded shoulders. Both are made of local chert, and X-1 is heat treated and red in color. Small points such as these are often found on Poverty Point or Woodland sites in the northern Yazoo Basin. Maximum dimensions for these examples are: (X-1) length 36.0 mm, shoulder width 25.6 mm, thickness 8.1 mm, stem width 14.8 mm, stem length 12.4 mm; (X-2) length 43.0 mm, shoulder width 27.0 mm, thickness 8.0 mm.

Specimen Y (Plate 19) is an unclassified, short, broad-stemmed point with a rounded distal end. It is plano-convex in cross section. The stem is thick and cortex remains on the base. Very small, delicate ripple flaking covers one face and most of the other. This fine secondary flaking, common on Pontchartrain points, suggests that Specimen Y may be of Late Archaic origin. Maximum dimensions are: length 33.0 mm, shoulder width 22.8 mm, thickness 9.5 mm, stem width 17.6 mm, stem length 8.6 mm.

Specimens Z-1 through Z-3 (Plate 19) have been classified as Madison points (Scully 1951). Small, triangular points made on flakes, they are of tan and white, red (heat-treated), and light gray chert respectively. Specimen Z-2 is transversely broken at the distal end. These three points, along with Specimens Z-4 and Z-5, are probably of Mississippian age and were brought to the site by the bearers of the few shell-tempered potsherds to be discussed in the section on ceramics. Maximum dimensions for these three specimens are: (Z-1) length 29.1 mm, shoulder width 13.7 mm, thickness 3.2 mm; (Z-2) shoulder width 13.8 mm, thickness 3.4 mm; (Z-3) length 17.2 mm, shoulder width 15.9 mm, thickness 4.0 mm.

Specimen Z-4 (Plate 19) is also a small, triangular point like those above, but it has slight side notches, similar to the Collins points pictured by Brain (1971:Fig. 12 A-E). Whether these were intended as an attribute or whether the point is a resharpened Madison is uncertain. It is made of heat-treated red and tan local chert. Maximum dimensions are: length 24.6 mm, shoulder width or basal width 11.8 mm, thickness 4.5 mm. Both Madison and distinctly side-notched Collins points are common at the Barner Site in Coahoma County, about 12 miles to the west of Denton. This site is late Baytown, early Mississippi in chronological placement.

Specimen Z-5 (Plate 19) is classified as a Reed point (Baerreis 1954). The only known example of this type from Denton, it is made of black chert and exhibits the characteristic wide stem and deep side notches. Maximum dimensions are: length 29.3 mm, shoulder width 11.3 mm, thickness 4.3 mm. It is of Mississippi Period origin.

One hundred seventy-five additional point fragments in the Denton surface collection could not be classified. The majority seem assignable to the Denton complex on the basis of chipping and use patterns. Most are crudely flaked and thick, and most stem fragments appear to be as wide as those of the Opossum Bayou and Denton types. Distal ends and blade edges exhibit a variety of use wear such as that seen on those two types.

Flake and Blade Tools

Spalls from the Denton Site were divided into three categories according to the various techniques of detachment from cores. These are flakes, bladelike flakes, and blades. The term "spalls" is used here to designate the entire assemblage of such objects. Simply defined, flakes are spalls with random dorsal flake scars. Bladelike flakes are spalls with two or more parallel dorsal scars not originating from the same platform as the bulb of the flake, and sometimes having other random flaking visible dorsally along with the parallel scars. Blades are spalls with two or more parallel dorsal flake scars originating from the same platform as the bulb of percussion. The length of the blade is generally, but not always, more than twice its width, and the side edges are generally parallel.

The various types of spalls studied were further subdivided into primary decortication, secondary decortication, and thinning flakes (Table 1). They were also subdivided into the two categories of utilized (Table 2) and unutilized specimens. Except in certain categories to be discussed, no distinction was made between those with edge flaking due to use and those which were purposely retouched along the edges. In most cases, it was not possible to be certain of the difference.

A combined total of 828 flakes, bladelike flakes, and blades were collected from the surface and 1,050 from the excavated areas, including the plow zone. The surface total can be broken down into 684 flakes, 96 bladelike flakes, and 48 blades. The excavated collection can be divided into 626 flakes, 12 bladelike flakes, and no blades from the plow zone, and 397 flakes, 11 bladelike flakes, and 4 blades from the midden.

Concerning excavated material, the figures given in Tables 1 and 2 for bladelike flakes and blades are incomplete because of the small size of the collection. The fact that the numbers of specimens of these two categories are relatively small in both the surface and excavated collections may point out the lack of any true blade or near-blade industry at the site, an aspect of the Denton lithic technique discussed in more detail in the sections on microlithic tools and lamellar blades.

Of the surface spalls, 67.27% show evidence of utilization, while only 19.80% of those from the excavation are utilized. This is most likely a result of the selective collection of spalls on the surface, in contrast to the retrieval of all spalls during the excavation. It is unfortunate that the surface collection was partially selective, because that factor tends to negate or at least bring into question some of the percentages for the group. If nothing else, however, the surface collection gives some insight into the various technologies and possibly the functions involved in the manufacture and use of flake and blade tools at Denton.

In the breakdown of the three types of detachments collected from the surface, it should be noted that the percentages are identical for bladelike flakes and blades in the secondary and thinning categories, and the percentages for flakes in the same categories are very similar. To revive some confidence in the surface percentage figures, it should also be noted that the percentages for excavated flakes in the secondary and

		EXCAVATION																
		PLOW ZONE						MIDDEN										
		Primary decortication		Secondary decortication		Thinning		Total	Percentage of total plow zone spalls	Primary decortication		Secondary decortication		Thinning		Total	Percentage of total midden spalls	
		#	%	#	%	#	%			#	%	#	%	#	%			#
Flakes		52	8.30	329	52.55	257	41.05	626	98.11	35	8.81	244	61.46	118	29.72	397	96.35	
Bladelike Flakes								12	1.88							11	2.66	
Blades								0	0							4	0.97	
		Plow zone total						638			Midden total						412	
		SURFACE																
		Primary decortication		Secondary decortication		Thinning		Total	Percentage of total surface spalls	Primary decortication		Secondary decortication		Thinning		Total		
#	%	#	%	#	%	#	%			#	%	#	%	#	%		#	%
Flakes		36	5.26	477	69.73	171	25.00	684	82.60									
Bladelike Flakes				60	62.50	36	37.50	96	11.59									
Blades				30	62.50	18	37.50	48	5.79									
		Surface total						828			Surface total						828	

TABLE 1. REDUCTION STAGES OF SPALLS

EXCAVATION (1,050 spalls)																
	PLOW ZONE						MIDDEN									
	Utilized side		Utilized end		Utilized side and end		Total Utilized	% of utilized and unutilized	Utilized side		Utilized end		Utilized side and end		Total Utilized	% of utilized and unutilized
	#	%	#	%	#	%			#	%	#	%	#	%		
Flakes	33	5.27	50	7.98	20	3.19	103	16.45	39	9.82	35	8.81	24	6.04	98	24.68
Bladelike flakes									4	36.36	3	27.27	0	0	7	63.63
Blades							103								0	0
	Plow Zone total						Midden total						105			
SURFACE (828 spalls)																
	Utilized side		Utilized end		Utilized side and end		Total Utilized	% of total utilized surface spalls	Total Utilized	% of total utilized surface spalls	Utilized side		Utilized end		Total Utilized	% of utilized and unutilized spalls
	#	%	#	%	#	%					#	%	#	%		
Flakes	175	38.88	43	9.55	232	51.55	450	80.78	54.34							
Bladelike flakes	42	59.15	2	2.81	27	38.02	71	12.74	8.57							
Blades	14	38.88	4	11.11	18	50.00	36	6.46	4.34							
	Surface total						Surface total						557			

TABLE 2. UTILIZATION OF SPALLS

thinning categories are very similar to those from the surface. In all cases, as well, the number of primary flakes is either very small or lacking. Secondary decortication flakes are the most numerous everywhere.

There are twelve times as many bifaces in the surface collection as there are cores. There are also twelve times as many secondary decortication and thinning spalls in the excavated collection as there are primary decortication flakes. In the surface collection, there are twenty-three times as many secondary and thinning types as there are primary, possibly another indication of selectivity. These facts may indicate core selection and primary decortication flaking at the core source. At any rate, there appears to have been extensive use of spalls as tools after they were detached in the process of reducing bifaces. The use of cores as sources of flakes for tools appears to have been somewhat negligible, and may have been only secondary and incidental to the manufacture of bifaces from them, and the production of useful flake and blade tools may have been only secondary to the production of bifaces.

The production of bladelike flakes, with their parallel flake scars, may be simply the result of the lamellar thinning technique described for bifaces. Examples of this were shown in Plate 5. Bladelike flakes could easily have been removed as secondary or thinning flakes in the biface reduction process. If it were not for the presence of parallel flake scars on these bladelike flakes, most of them would have the morphological characteristics of all the other flakes. It is believed, therefore, that the manufacture of bladelike flakes was not an intentional attempt at a specific flake or blade technology, but rather the result of certain thinning techniques applied to bifaces only when necessary to create the desired form. In this respect, the bladelike flakes from Denton could probably be lumped with the flakes in one technological category.

There is a similar problem with the so-called "blades" from the site. Three aspects of the blade collection make their classification as a "blade industry" somewhat dubious. First, they are so few in number, both in the surface and excavated collections (forty-eight and four respectively). Second, as will be pointed out in the discussion of perforators and microlithic tools, no lamellar polyhedral blade cores were found, and the number of cores exhibiting lamellar scars is very small. Third, the morphology of the Denton blades does not always conform to the commonly used definition (for example, in the consideration of width-length index). All this points to, at best, an insignificant blade production.

To bring this into better focus, it should be pointed out that although the average width-length index for Denton blades is 0.41, of the forty-eight surface specimens, only eleven (22.91%) fall below the 0.50 width-length index necessary for them to be called true blades in the strictest sense. By comparison, the average index for blades from the Jaketown Site is 0.33 (Ford, Phillips, and Haag 1955:139), and all of them were prismatic and part of a well-defined, prolific industry. Of the forty-eight Denton surface blades, thirty-one (64.75%) are prismatic (trapezoidal in cross section with three dorsal scars or two scars and cortex forming the third dorsal facet). Many of these are transversely broken and thus could not be measured. In fact, fourteen (29.16%)

of the total surface blade collection showed this lateral hinge fracture. Of the thirty-one prismatic blades, eight were transversely broken. The two best examples of prismatic blades are shown in Plate 21 N-O. Another distinguishing aspect of the Denton blade manufacturing technique is the angle of detachment from the core. The angle of the blade platform ranges from 65° to 90°, with an average of 78.91°. By comparison, the Jaketown average is 55° (Ford, Phillips, and Haag 1955:137).

Measurements for the Denton blades are: length range 21.5-57.4 mm, average length 40.35 mm; width range 10.4-41.0 mm, average width 23.70 mm. By comparison, measurements for the Jaketown blades are: length range 20-50 mm and width range 8-23 mm (Ford, Phillips, and Haag 1955:139). Although the length ranges are quite similar, the Denton blades tend to be much wider, hence the difference in width-length index previously mentioned.

The four true blades from the midden were located at a depth of between 0.8 foot and 1 foot, just beneath the plow zone. One example came from square 0-50E and three from square 60N-40E. Although their situation in the same midden level may be indicative of something, their insignificant number makes any analytical or stratigraphic conclusions merely speculative. The entire blade collection from the site may represent only a step toward local development of a true blade industry such as that found on the later Poverty Point sites. Certain other aspects of the Denton artifact inventory, such as the apparent use of clay objects for cooking and the development of a highly skilled lapidary craft, might add to the impression that the Denton technologies constitute a step toward those of the Poverty Point culture.

In essence, it appears that the production of various types of biface tools was of major importance in Denton lithic technology. The production of spalls in several forms seems to have been primarily a technological by-product of the biface industry. Although the presence of useful spalls among Denton lithic resources led to their utilization as small tools, they were not necessarily intentionally produced as specific tool forms. Many of the flake and blade tools can be placed in several functional categories, as well as in some minor morphological categories.

One of the few apparently functional categories in the spall collection includes twenty-six specimens of what might be called saws. Most of these occur on flakes (Plate 20 G-H), but a few have been noted on bladelike flakes. They have jagged edges, and chips are broken from each face at acute angles. According to experiments conducted (Samuel O. McGahey, personal communication), such an effect can be achieved on a spall by a few minutes of sawing on a green antler.

Denticulates comprise one morphological category. Only three specimens, all flakes (Plate 20 I-K) from the surface collection, fall into this group. No evidence of use was seen on any of the three, but it might be assumed that they were designed to be cutting or sawing instruments. This is one of the few spall categories in which the edges were obviously prepared before use.

Notches make up another morphological category, of which there were forty-four specimens recorded from the surface collection. Most are on flakes (Plate 21 A-F), but a few are on bladelike flakes and one is on

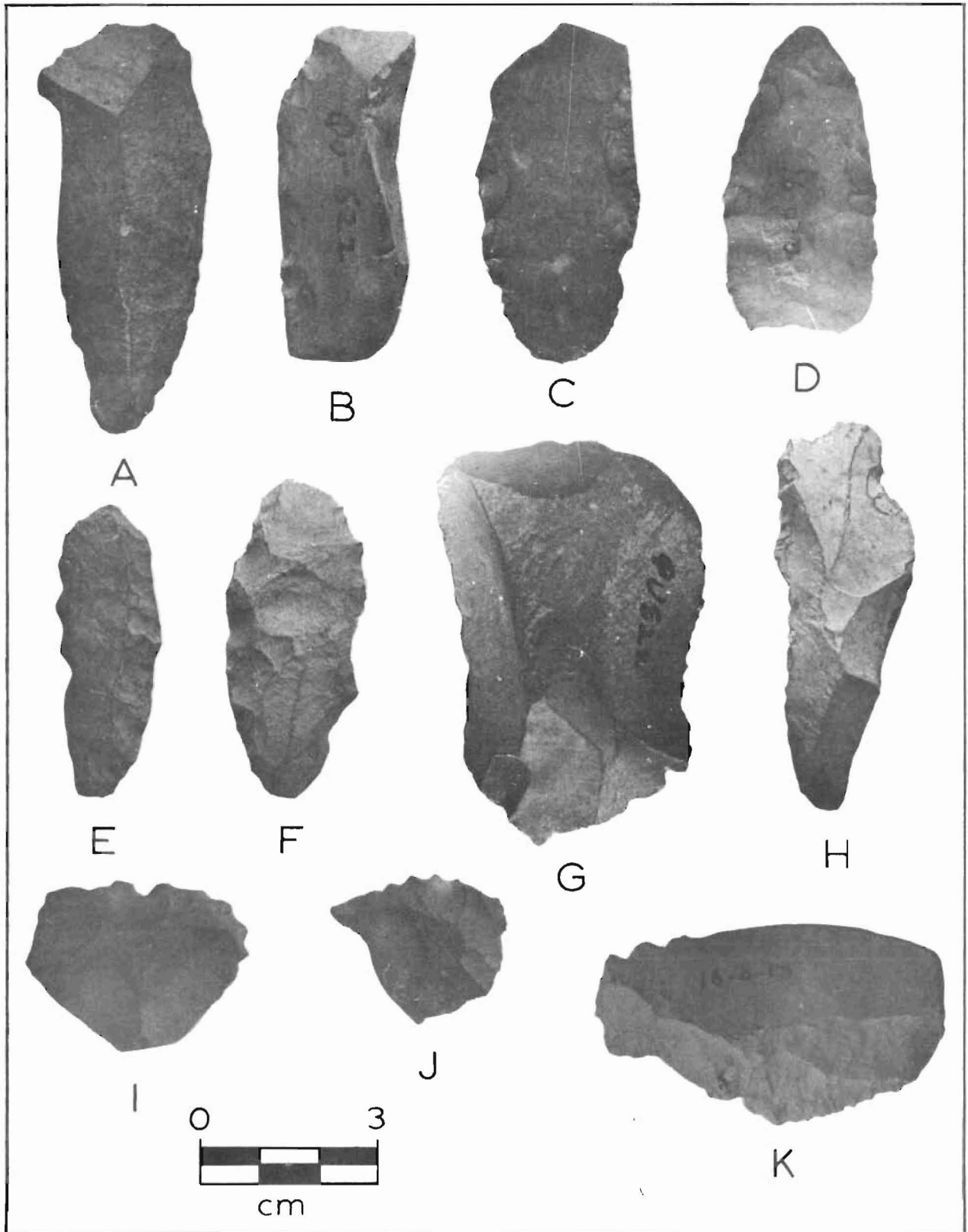


PLATE 20. FLAKE TOOLS. A-F, bifacially worked flakes; G-H, saws; I-K, denticulates.

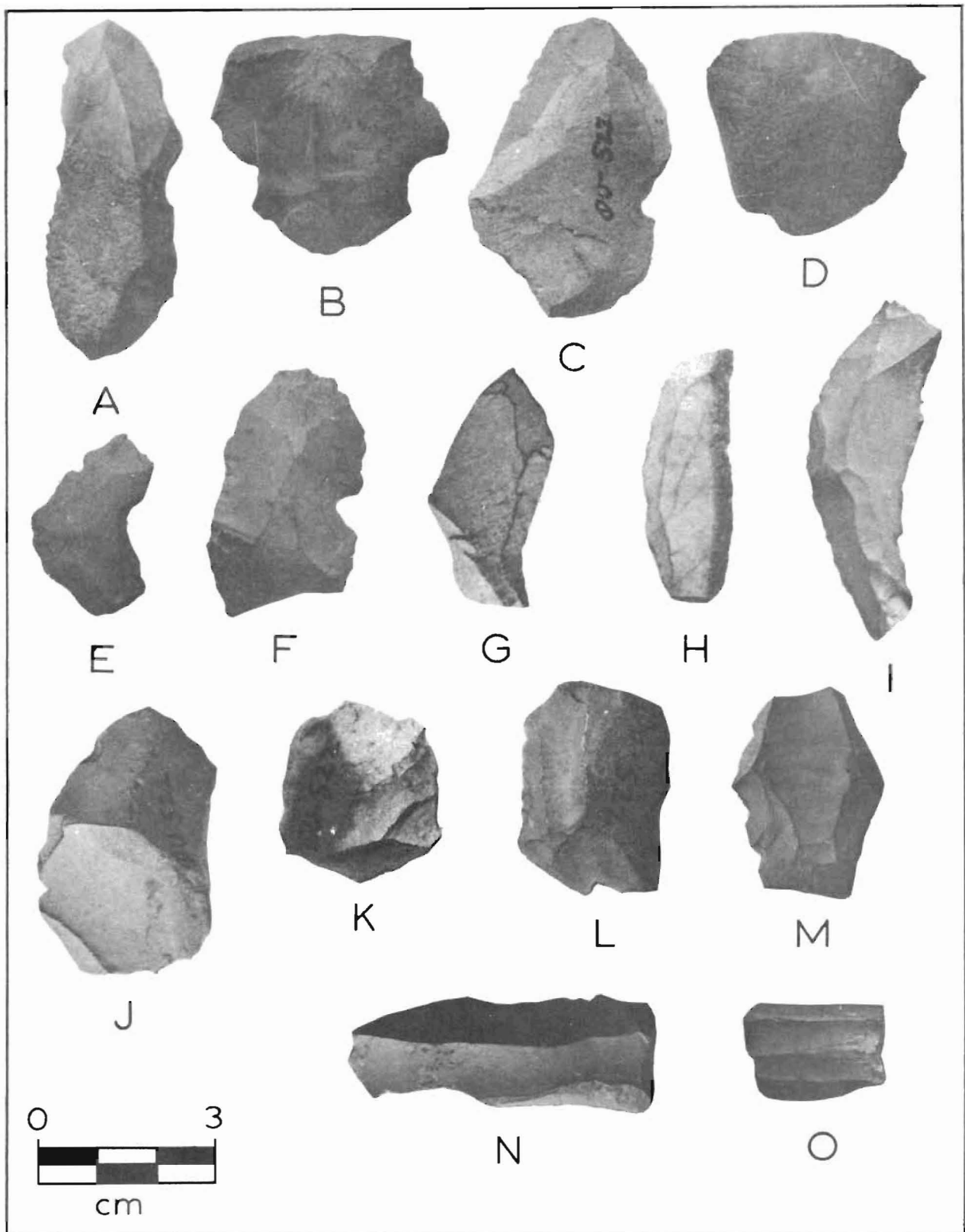


PLATE 21. FLAKE AND BLADE TOOLS. A-F, notches; G-M, flakes with utilized side and end; N-O, lamellar blades.

an elongated biface. Of these, nine specimens have two notches; the rest have only one per specimen. Ten of the notches on spalls are dorsally flaked, the rest are flaked from the ventral surface. Only two items of this group had been used enough to dull the edges, and these exhibited light polish in the notched areas. These tools, which are often functionally termed "spokeshaves," constitute another of the categories which were deliberately prepared prior to use.

Aside from any assignment to the tool types mentioned above, most of the utilized items might be functionally considered scrapers, since the secondary flaking is primarily unifacial. Three categories were set up: side scrapers, end scrapers, and combination side and end scrapers (see Table 2). When the specimens were first analyzed, it was felt that a separation could also be made between spalls that were deliberately prepared prior to use and those that were chipped as the result of use. A sample of twenty prepared combination side and end scrapers showed that approximately 20% exhibited some edge smoothing. Such combination tools are shown in Plate 21 G-M. Specimen H is a blade, Specimens I and M are bladelike flakes, and the rest are flakes.

Of a sample of fifteen specimens of prepared end scrapers, approximately 40% showed slight smoothing of the scraping edge. Examples of these, all flakes, are shown in Plate 22 A-C. Another sample of fifty-eight prepared side scrapers showed approximately 40% with some scraper edge smoothing. Examples of side scrapers are shown in Plate 22 D-L. Specimen D is a blade, Specimen L is a bladelike flake, and the rest are flakes. It should be emphasized that dividing such tools into "prepared" and "utilized" categories is very difficult with most specimens and that the term "prepared," as used above, was applied only in the first analysis as an educated guess based primarily on the uniformity of the secondary retouch edge flaking. In the subsequent analysis, the data from which is presented in Tables 1 and 2, all such items discussed above are classed simply as "utilized" spalls.

Another morphological category consists of spalls with secondary bifacial edge flaking. These constitute another of the few obviously prepared tool forms. Examples of the ten specimens recorded in the surface collection are shown in Plate 20 A-F. All are flakes except Specimen A, which is a bladelike flake. A variable number of large crude flakes have been removed from both sides of each face of these objects, but in no case are the flakes removed sufficient in number or size to obscure the original flake scars on the object. No wear or use marks are apparent, and it seems possible that these specimens are unfinished tools, although it is difficult to determine the nature of the intended finished product. They strongly resemble the saws shown in the same plate, which also exhibit bifacial flaking. They do not appear to be preforms, since most projectile points and other finished bifaces at the site are considerably larger than these items and are made from cores, not flakes.

One other category of flake and blade tools is quite different from the rest, both morphologically and functionally. These are the perforators, examples of which are shown in Plate 23 and 24. These again are all obviously tools prepared before use. The uniqueness of these objects in the spall inventory and their possible relationship

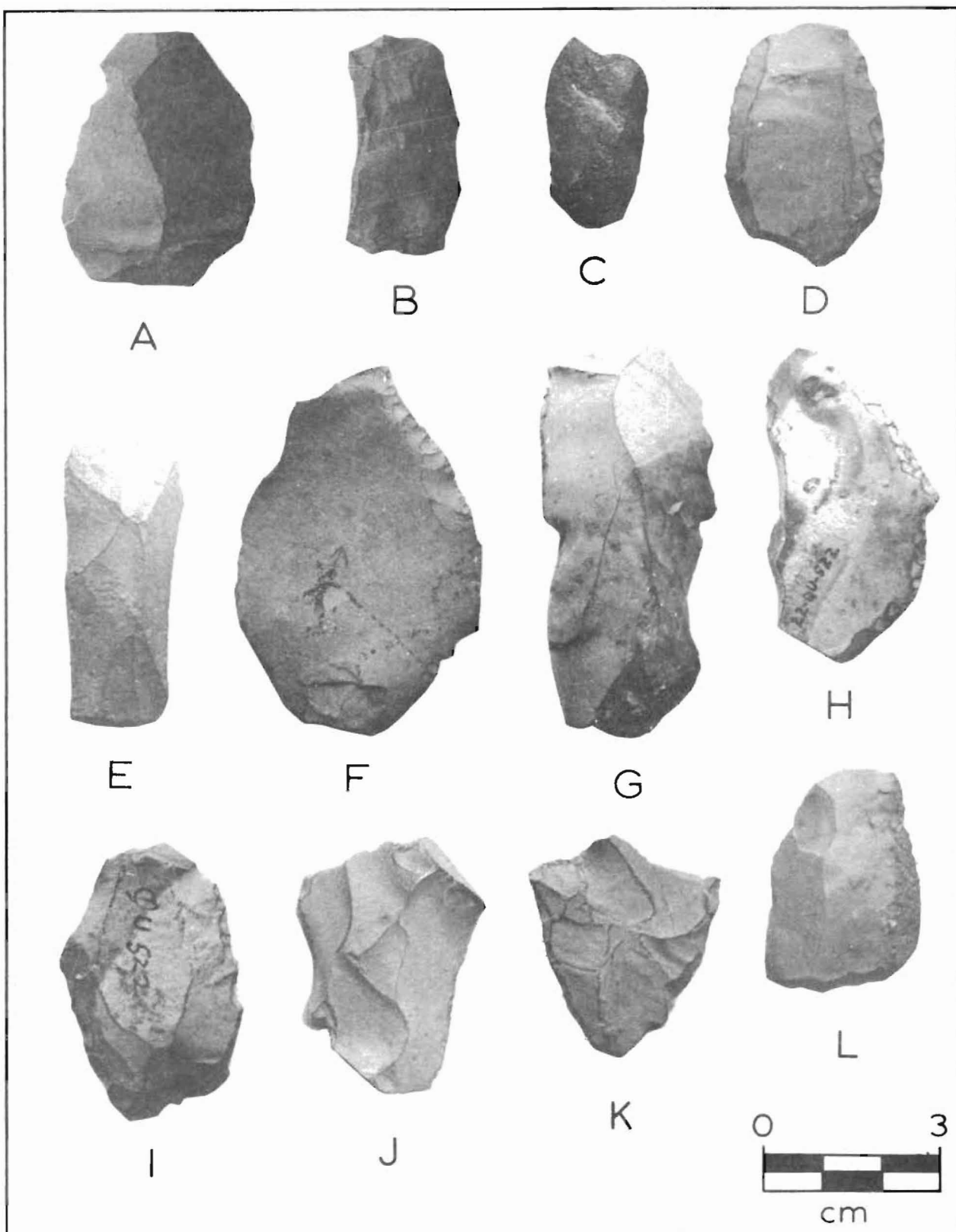


PLATE 22. FLAKE AND BLADE TOOLS. A-C, flakes with utilized end; D, blade with utilized side; E-K, flakes with utilized side; L, blade-like flake with utilized side.

to the Poverty Point Culture, with its more narrowly defined temporal placement, warrants more detailed discussion.

Perforators

A total of forty flake tools from the Denton Site could be termed "perforators" after the fashion of the Jaketown Site report (Ford, Phillips, and Haag 1955). As with the Jaketown "perforators," these tools showed no direct evidence of having actually been used as perforators, but in general morphology they conform somewhat to this "functional" category. Similarly, there is little evidence of any specific use, although it is speculated that these may have been some form of engraving tool.

Of the total, only seven (17.50%) were heat treated, a reflection of the insignificance of this process at Denton. In the case of the perforators, the flakes from which they were made were probably heat treated before detachment from the cores or bifaces and thus not necessarily intentionally heated for the purpose of creating perforators.

Two morphologically different types were noted. Type 1 consists of wide flakes or bladelike flakes with secondary retouch flaking on the point or tool end (Plate 23). The collection includes twenty-five of these items. The smaller examples of this type most closely resemble the Jaketown perforators except for the fact that none of these are true prismatic blades, and only sixteen fall within the length range of the Jaketown specimens. A comparison of the measurements of these and the Jaketown specimens is given in Table 3.

On the Jaketown specimens and at the Poverty Point Site the secondary retouch flaking is most often, but not always, found at the bulb or percussion end of the blade. Of the Type 1 items at Denton, the flaking on three is at the bulb end, on seven at the end opposite the bulb, on five on one side, and on ten at an undetermined position. According to Ford, Phillips, and Haag, the Jaketown specimens are unifacially chipped prismatic blades (1955:141). Webb, however, states that this is not the case at the Poverty Point Site, nor at Jaketown, since a small percentage of Jaketown perforators are made from flakes, not blades (personal communication). Of Type 1 at Denton, only eleven are unifacially chipped, while fourteen are bifacially chipped, usually in an alternating fashion, that is, having secondary retouch flaking on only one side of each face. Alternate bifacial chipping is also seen at the Poverty Point Site (Clarence H. Webb, personal communication). Within the Type 1 category, the flakes consisted of three primary decortication, ten secondary decortication, and eight thinning flakes, while the bladelike flakes consisted of two secondary decortication and two thinning flakes.

Type 2 consists of long, narrow, parallel-sided flakes, bladelike flakes, or blades with secondary retouch flaking along the entire length of both edges (Plate 24). These are somewhat similar to the so-called Jaketown "needles" (Ford, Phillips, and Haag 1955:141), a term that once again does not imply function. The collection includes fifteen of these items. All fall within the length range of the Jaketown "needles" with the exception of seven specimens, five of which are transversely broken and thus of undetermined original length. Only

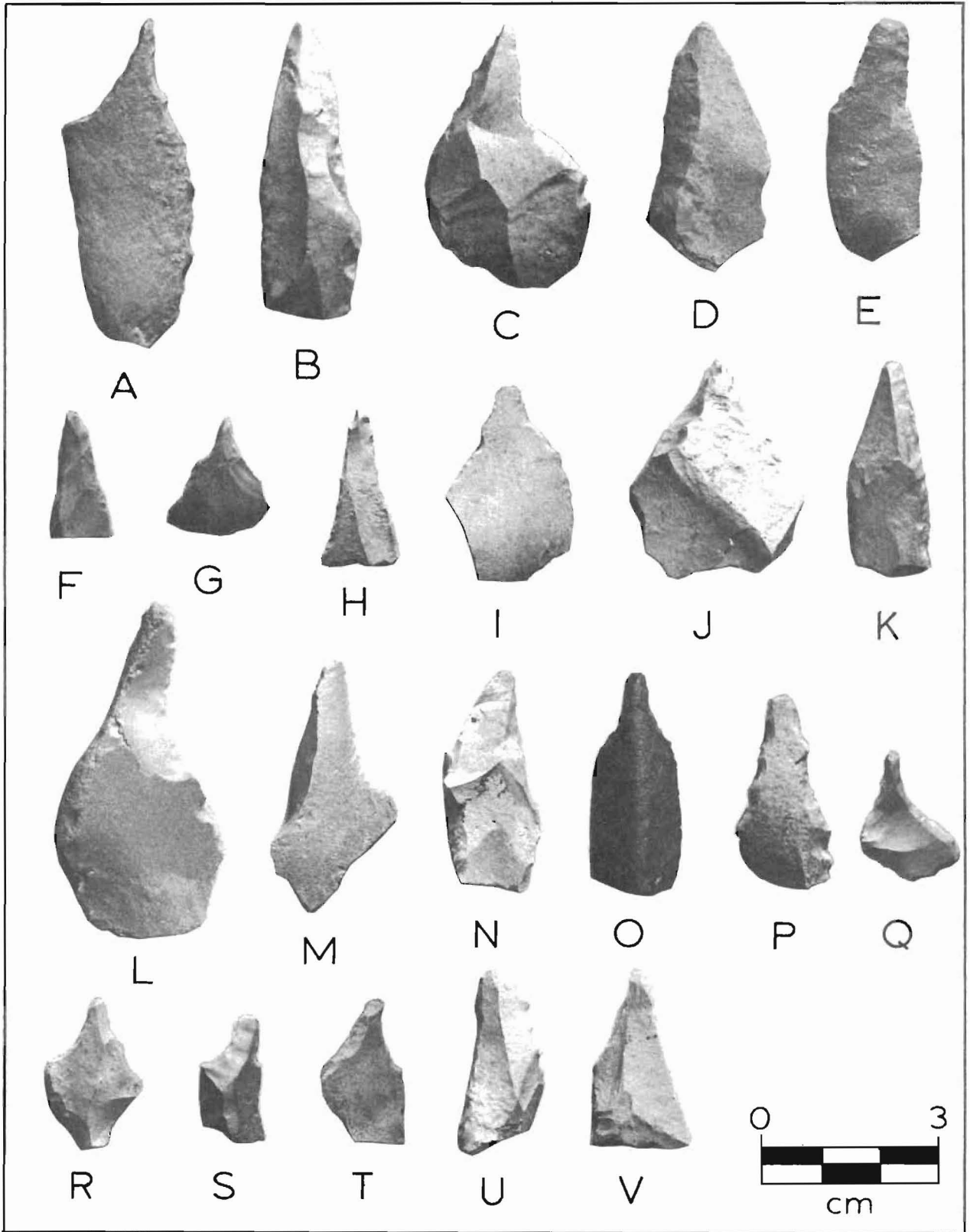


PLATE 23. TYPE 1 PERFORATORS. A-K, bifacial; L-V, unifacial.

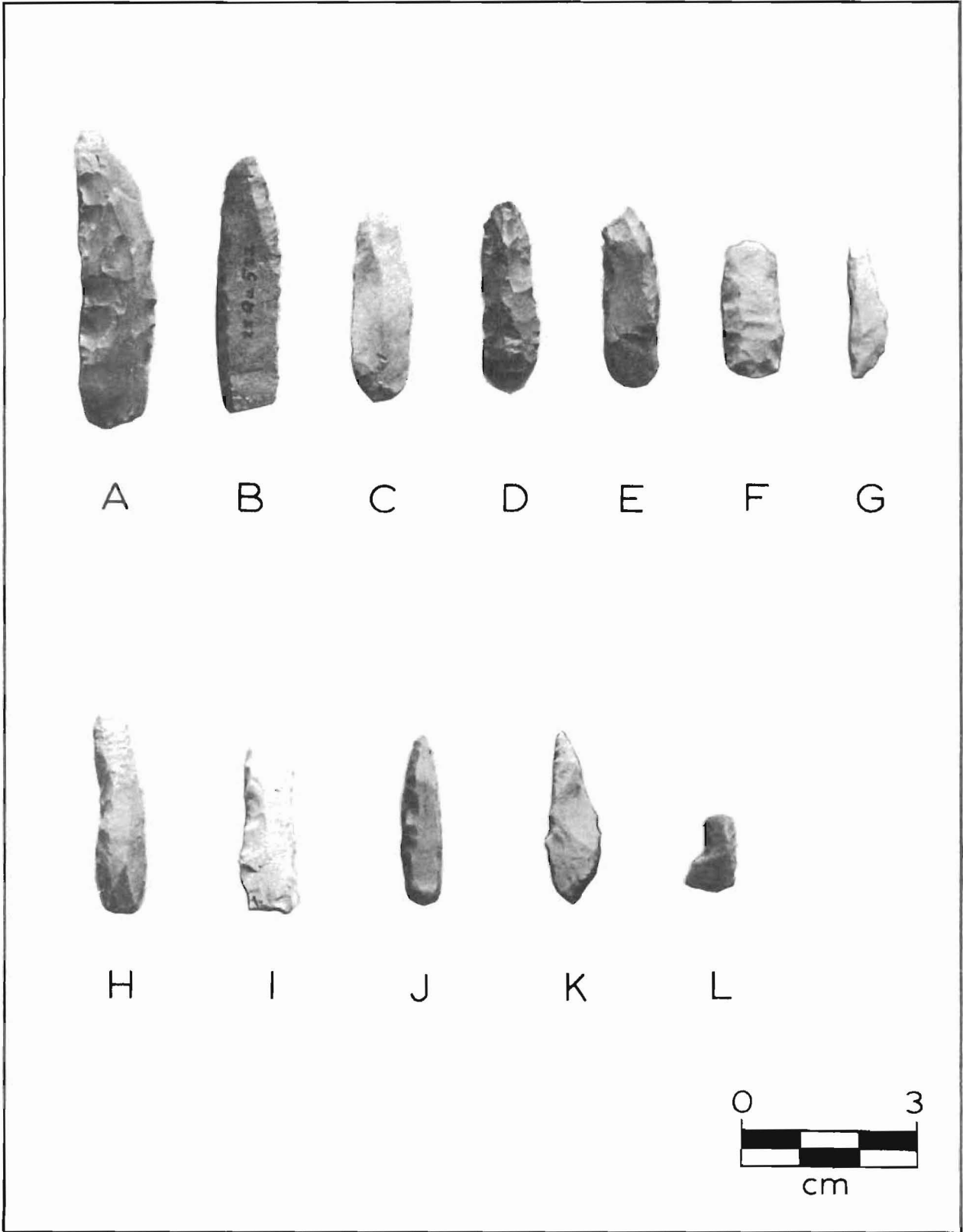


PLATE 24. TYPE 2 PERFORATORS. A-G, bifacial; H-L, unifacial.

	Length range	Average length	Width range	Average width
Denton perforators, Type 1	21.6-57.9 mm	38.48 mm	10.2-30.7 mm	18.33 mm
Denton perforators, Type 2	23.4-51.0 mm	33.70 mm	6.6-13.6 mm	9.38 mm
Jaketown perforators	13.0-41.0 mm	22.00 mm*	7.0-25.0 mm	12.70 mm*
Jaketown needles	20.0-38.0 mm	not given*	not given	not given

TABLE 3. COMPARISON OF PERFORATOR MEASUREMENTS
*Ford, Phillips, and Haag 1955:141

five of the total fifteen are true blades. Two of these are broken transversely, while the other three are all bifacially flaked at the point, unlike the Jaketown specimens. Eight of the fifteen are unifacially flaked and seven are bifacially flaked at the point. A comparison of these and the Jaketown specimens is given in Table 3. On Type 2, secondary retouch flaking is located along the length of the artifact, but considering only the tool end, retouch is located at the bulb end on two, the end opposite the bulb on four, and at an undetermined point on the remaining nine. Again, the Jaketown specimens were all blades (Ford, Phillips, and Haag 1955:141-42). Within the Type 2 category, flakes consisted of seven thinning flakes; bladelike flakes and blades consisted of two secondary and three thinning blades.

Of the total perforator collection, twenty-one (52.5%) show bifacial retouch flaking on the point end. Of these, thirteen (61.9%) have alternating retouch flaking. Of the total, nineteen (47.5%) show unifacial retouch flaking on the point. Altogether, there is not a single specimen in the Denton collection which completely fits the specifications of a unifacially chipped, prismatic blade Jaketown perforator. From this and the complete lack of true polyhedral cores at Denton, it can be concluded that there is no true Poverty Point micro-lithic industry at the site and no really significant micro-tool industry of any kind. Perhaps these items should more logically be suggested as a form of graver, or, considering the age of the site, a forerunner of the later Poverty Point style "perforator."

Measurements of the Denton artifacts were taken along the longitudinal and lateral axes according to secondary flaking patterns rather than along the axes of the flakes' detachment scars. Plate 23 shows Type 1 perforators divided into bifacial (A-K) and unifacial (L-V) categories. Plate 24 shows this division of bifacial (A-G) and unifacial (H-L) for Type 2 perforators.

Heat treating

The process of heat treating as an aspect of lithic technology does not appear to have been very important at the Denton Site during its early occupation. This is indicated by the consistently low percentages of heat-treated artifact types thought to be of Middle Archaic origin (Tables 4, 5, 6). With the exception of cores and Late Archaic projectile point types, the surface lithic assemblage heat treating effort is primarily confined to a range of between 10% and 20%, with a total average of 15.16%. The spalls excavated from the midden show a slight increase, the total of all types being 21.11% heat treated, compared with a total of 17.89% for flakes in the surface collection.

Although the percentage of heat-treated artifacts is low and the process apparently relatively unimportant at Denton, it is felt that the following data and discussion should be presented, since the technique of heat treating has only recently been realized as being widespread through time and space. Artifacts classified here as heat treated were placed in that category on the basis of the waxy, lustrous appearance of their surface. This was usually accompanied by a color change to some shade of red or orange.

Table 4 gives the percentage of various artifact types that were heat treated. Only the last entry in the table includes excavated materials. It is, of course, a mere assumption that much of this material was intentionally heat treated, especially with the apparent lack of importance attached to the practice. Because of this, no major analysis of heat treating has been attempted. A few thoughts on the subject will be presented and the reader may draw his own conclusions.

There is a much higher percentage of heat-treated broken projectile points than of whole points. One might suspect that the weakening of the points by heating contributed to a larger amount of breakage or that the process of heating itself caused the points to break. The former could well be true. As for the latter possibility, however, only 8/183 (4.37%) of the broken points showed transverse breakage resulting from heating. Most of these exhibited potlid fractures and lacked the smooth surface inside the break that is found on others broken by percussion. Purdy (1975:133-41) discusses this phenomenon in detail. In reference to the weakening of points by heating, Purdy states that thermal alteration experiments showed about a 45% reduction in strength. The likelihood of lateral snap is thus increased (1975:135). The higher percentages of heat-treated, transversely broken point fragments from Denton suggest this weakening and the subsequent breakage due to end shock or percussion during the reduction process.

A very small percentage of cores show heat treating, while a higher percentage of bifaces of various types give evidence of this process. This is more consistent with the other percentages in Table 4. There is some indication here that bifaces, many of which appear to have been preforms for various tool types, were heat treated rather than cores. The vast majority of spalls could easily have come from the reduction of bifaces and the surface spall percentages are reasonably consistent with the various biface categories. They are not consistent with the percentage for cores. Cores could have first been tested for usability by making preforms from them; the more usable resulting bifaces selected for further refinement would have then been heat treated. Most of the cores observed did not appear to be biface cores. Some may have been specifically for the removal of flakes, although there is no specific flake industry indicated at the site. For the purpose of flake removal there should not have been any great need for heat treating the core at the outset.

It should be noted that the percentage difference between whole and broken bifaces is very close to that between whole and broken points. Of 233 broken bifaces, including adzes and choppers, 99.14% were transversely snapped and none at all showed breakage resulting directly from heating. As shown in Table 4, 17.54% of the 171 unidentifiable broken bifaces were heat treated, very close to the percentage for the total number of broken points. As with the points, this suggests more breakage from end shock or percussion, either in use or in the reduction process. On the other hand, it should not be forgotten that only a relatively small percentage of both bifaces and points were heat treated initially, and a large percentage of both groups still exhibit lateral snap. Thus, the breakage may be more due to function or technology than to reduction of strength from heat treating.

	Number heat-treated specimens	Total number specimens	Percentage heat-treated
SURFACE			
Whole bifaces (all types)	57	524	10.87
Broken bifaces	30	171	17.54
Adzes and Choppers	24	237	10.12
Whole projectile points (all types)	31	263	11.78
Denton points	11	96	11.45
Denton points (large size)	6	60	10.00
Denton points (small size)	5	36	13.88
Opossum Bayou points	1	8	12.50
Pontchartrain points	4	16	25.00
Gary points	0	10	0.00
Kent points	1	16	6.25
Broken points (total)	37	183	20.21
stems	15	77	19.48
mid-sections	8	27	29.62
tips	14	79	17.59
Drills	19	103	18.44
Total bifaces (whole and broken, points, drills)	174	1,244	13.98
Cores	7	102	6.86
Perforators	7	40	17.50
Spalls (all types)	146	816	17.89
TOTAL (all surface lithics)	334	2,202	15.16
SURFACE AND EXCAVATION TOTAL	575	3,252	14.60

TABLE 4. HEAT TREATING OF SURFACE AND EXCAVATED LITHICS

At this point, the data base concerning the heat treating of specific projectile point types is insufficient for meaningful correlations with other sites. Also, the small number of the later point types and the lack of stratigraphic data on all Denton Site types would make conclusions somewhat speculative.

Table 5 gives the percentages of the various spall types that are heat treated, both from the excavation and the surface. Very few blade-like flakes or blades were found in the excavation and none of these were heat treated. They are included in the totals of 412 from the midden and 638 from the plow zone.

The percentages of heat-treated spalls from the excavation generally run somewhat higher than those from the surface. Excluding the plow zone collection, heat-treated spalls from the midden total run 3.22% higher than those from the surface. In the various divisions, primary spalls run 14.03% higher, secondary spalls run 0.91% higher, and thinning spalls run 11.57% higher. It is difficult to assess the meaning of this since of the thirty-one cores and seventeen bifaces of various types found in the excavation, including the plow zone, five cores (16.12%) and three bifaces (17.64%) were heat treated. This is a much higher percentage for cores in the excavation than in the surface collection, but about the same for bifaces. Preference for the heat treating of bifaces rather than cores, seen in the surface collection, is not necessarily indicated in the midden. On the other hand, the midden collection is much smaller and therefore not statistically as good a sample as the surface collection. Whatever the case, the percentages for this material are given primarily as a data base for future comparative studies.

Stratigraphically, the total number of spalls found in the midden generally tends to diminish in successively descending levels. Using the deepest excavation unit, square 60N-40E, as an example, this is also true of the number of heat-treated spalls (Table 6). There is, however, a large amount of variation and inconsistency in the percentages given. Perhaps this is again due to the small size of the sample.

One other product of heating that should be mentioned is fire-cracked rocks. House and Morse (House and Smith 1975:76) have proposed the following attributes to define such rocks, all of which fit the Denton specimens quite adequately.

- "1. Specimens must lack evidence of having been detached or otherwise reached their present form by a blow, i.e., they must lack a striking platform, bulb of percussion, and other core or percussion flake attributes.
2. Specimens must have very irregular fractured surfaces.
3. Specimens must be discolored, tending to red or black on cortex surfaces and usually red on interior surfaces. Some materials may actually discolor toward grey.
4. Specimens will frequently have pot-lid fractures."

The Denton Site contains a scattering of fire-cracked rocks which are primarily small pebbles of river gravel, including chert, quartzite, and jasper. Although no large sample was collected or studied, all those noted conform to at least the first three of the above attributes.

	EXCAVATION										SURFACE			EXCAV. & SURFACE		
	Excluding Plow zone			Plow Zone Only			Including Plow Zone			No. heat treated	Total no.	% heat treated	No. heat treated	Total no.	% heat treated	
Spalls	No. heat treated	Total no.	% heat treated	No. heat treated	Total no.	% heat treated	No. heat treated	Total no.	% heat treated	No. heat treated	Total no.	% heat treated	No. heat treated	Total no.	% heat treated	
Primary decortication	9	31	29.03	8	51	15.68	17	82	20.73	9	60	15.00				
Secondary decortication	46	237	19.40	75	324	23.14	121	561	21.56	91	492	18.49				
Thinning	32	110	29.09	71	248	28.62	103	358	27.37	46	264	17.42				
All types	87	412	21.11	154	638	24.13	241	1,050	22.95	146	828	17.89	387	1,878	20.61	

TABLE 5. HEAT TREATING OF SPALLS

LEVEL	Number heat treated	Total number	Percentage heat treated
Plow zone	145	579	25.04
0.8' - 1.3'	21	121	17.35
1.3' - 1.6'	16	95	16.84
1.6' - 1.8'	11	28	39.28
1.8' - 2.0'	14	34	41.17
2.0' - 2.2'	5	21	23.80
2.2' - 2.4'	7	25	28.00
2.4' - 2.6'	1	6	16.66

TABLE 6. HEAT-TREATED SPALLS BY LEVELS, SQUARE 60N-40E

They show the various types of firing fractures, but none appear to be part of any tool reduction sequence. Varying amounts of discoloration appear, especially in the banded cherts and jaspers.

A small sample was collected stratigraphically in the excavation. Squares 0-50E and 470N-120W yielded an insignificant combined total of 10 specimens, but square 60N-40E, at a depth of 2.8 feet, yielded a total of 154 specimens, including 27 from the plow zone. Beginning with the plow zone, these were found in vertically diminishing quantities, by levels, of 27, 60, 34, 15, 13, 1, 2, and 2. This diminishing frequency parallels that of other artifacts, especially spalls and spall tools.

Where a quantity of such rocks are found, it is usually supposed that they were associated in some way with cooking activities, such as baking or stone boiling. However, no direct or recognizable evidence of such cooking practices, such as hearths or fire-pits, was noted in the limited excavation at Denton. The presence of large quantities of amorphous, fired clay lumps in the midden, along with the fire-cracked rocks, lends support to the premise that some form of cooking activity was being carried on at the site. In contrast to the relatively small number of fire-cracked rocks from the excavation, there were 1,943 fired clay lumps, not including many hundreds more which were broken into tiny pieces. Further discussion of this clay can be found in the section on fired clay. Suffice it to say that the lack of an adequate sample of fire-cracked rocks in direct association with features resulting from cooking or any other fire-related activities precludes any useful analysis or conclusion.

Ground and Pecked Stones

The small number of ground and pecked stone tools collected came primarily from the surface. These may be considered a representative sample of the various types found at Denton. The following descriptions of these types present data bases into which most other specimens to be found on the site would be expected to fall. The artifacts indicate a variety of activities, including tool manufacture, food preparation, and wood-working. They are commonly found and have been discussed in numerous other publications.

Axes and Celts

Six celts were recorded in the surface collection and one grooved axe was taken from the midden. These artifacts, presumed to have been woodworking tools of various styles, are described individually below and are shown by letter in Plates 25 and 26, all full size.

Specimen A (Plate 25) is a triple-grooved axe made of reddish brown sandstone. Some pecking still shows on the ground surface. It was found by the 1972 Mississippi State University excavation crew at a depth of 0.8-1.0 foot in the plow zone in the southwest corner of square 50N-30E, and can thus be considered stratigraphically in the surface collection. It is the only grooved axe found on the site. The maximum measurements are: length 113.5 mm, width at poll 73.5 mm, width at bit 55.3 mm, and thickness 40.0 mm.

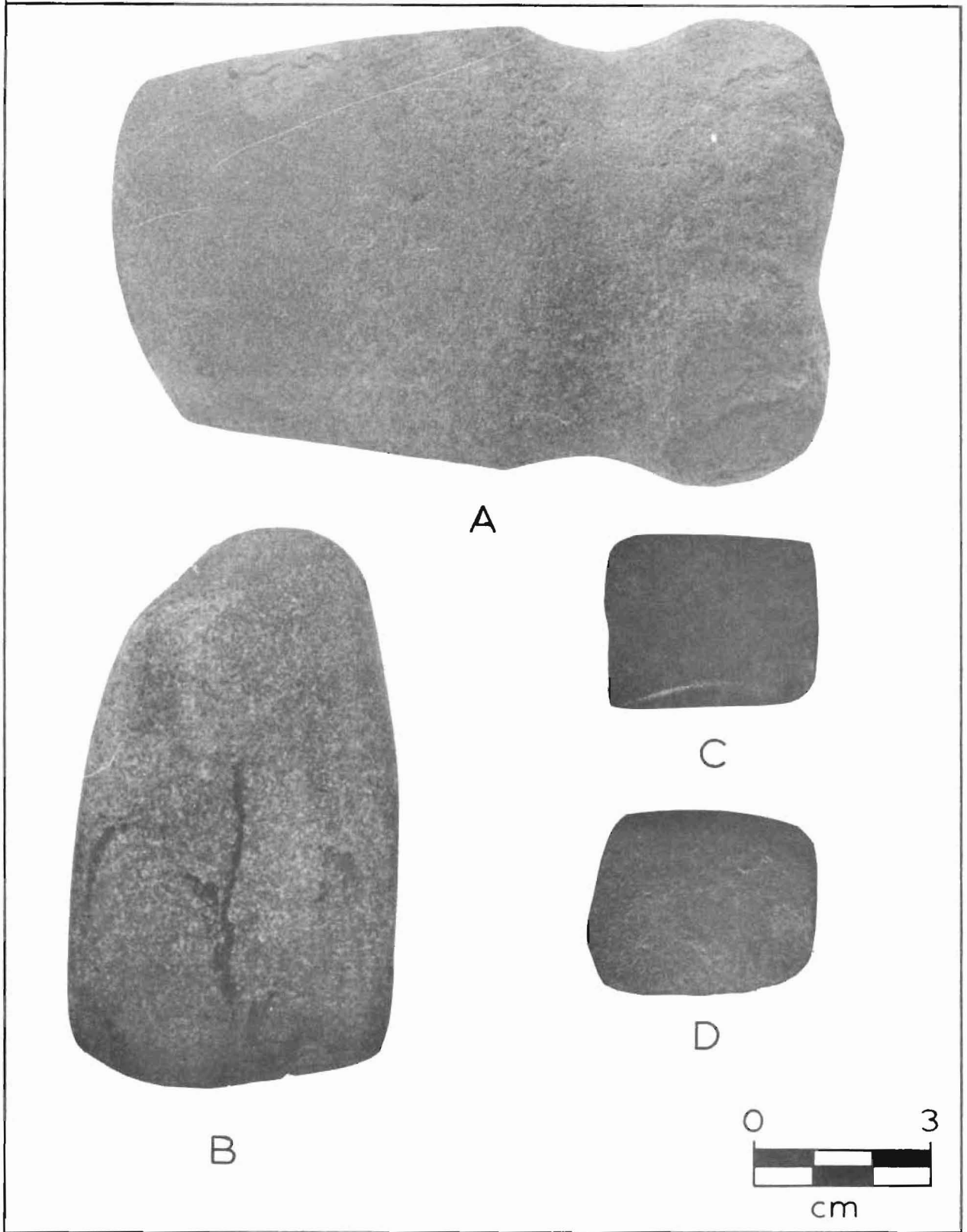


PLATE 25. GROUND AND PECKED STONE TOOLS. A, grooved axe; B-D, celts.

Grooved axes in eastern North America are thought to date from as far back as 5000 B.C. and are said to be a common element in the Late Archaic. A few occur at the Poverty Point Site (Ford 1969:49). So far as the writer is aware, the Denton specimen is the only recorded grooved axe from the Yazoo Basin. If this type of tool did persist into the Poverty Point Period locally, specimens would probably have been found at some of the many Poverty Point sites in the basin. That the Poverty Point Site has produced numerous artifacts of pre-Poverty-Point age, some of which are as old as Paleo Indian, is a well-known fact. Possibly, therefore, those grooved axes from the Poverty Point Site are not a part of the Poverty Point artifact complex but are earlier. It would seem that the Denton specimen was actually a part of the late Middle Archaic Denton complex and that other such axes will eventually be found on some of the older land surfaces in the Yazoo Basin.

Specimen B (Plate 25) is a ground and polished celt made of reddish brown quartzitic sandstone, a material having a fish egg appearance similar to a coarse-grained oolitic chert. This specimen, from the collection of Tom Davis of Clarksdale, has use polish on the bit, and the edges are ground flat. The maximum measurements are: length 97.60 mm, width at center 56.50 mm, width at bit 54.70 mm, and thickness 26.0 mm.

Specimen C (Plate 25) is a small, ground and polished celt made of a black material having an appearance similar to hematite. The edges and end are ground flat. Maximum measurements are: length 37.0 mm, width at bit 30.5 mm, and thickness 9.8 mm.

Specimen D (Plate 25) is a small gray celt made of fine-grained sandstone. It is ground but not polished, and the poll end is slightly flattened. The maximum measurements are: length 39.8 mm, width 30.2 mm, and thickness 13.0 mm.

Specimen E (Plate 26) is a polished, reddish quartzite celt fragment consisting of approximately half of the poll end. The poll end is pecked and the edge is ground smooth. The maximum thickness is 32.6 mm and the suggested length is approximately 160 mm.

Specimen F (Plate 26) is a small corner fragment of the poll end of a brown sandstone celt. It is ground and polished, the edge and poll end are flattened, and it is too small and fragmentary for measurement.

Specimen G (Plate 26) is a ground and polished celt of banded gray granite from the collection of Austin Adkins of Clarksdale. It is flattened on the edges and the poll end. Grinding or use striations are visible over the entire object, especially about 3.5 mm up the bit. The maximum measurements are: length 107.1 mm, width at poll 57.0 mm, width at bit 67.2 mm, overall width 71.2 mm, and thickness 32.5 mm.

Stone Discoidal

Included in the surface collection is a rounded limonite pebble ground into the general shape of a chunky stone, but unfinished. Three large flake scars show on one face. It could be an incomplete chunky stone associated with a late time period, although these are usually made of a harder material. On the other hand, it may be some form of mano or grinding stone. Maximum measurements are: diameter 106.6 mm and thickness 47.0 mm. It is shown half size in Plate 27 A.

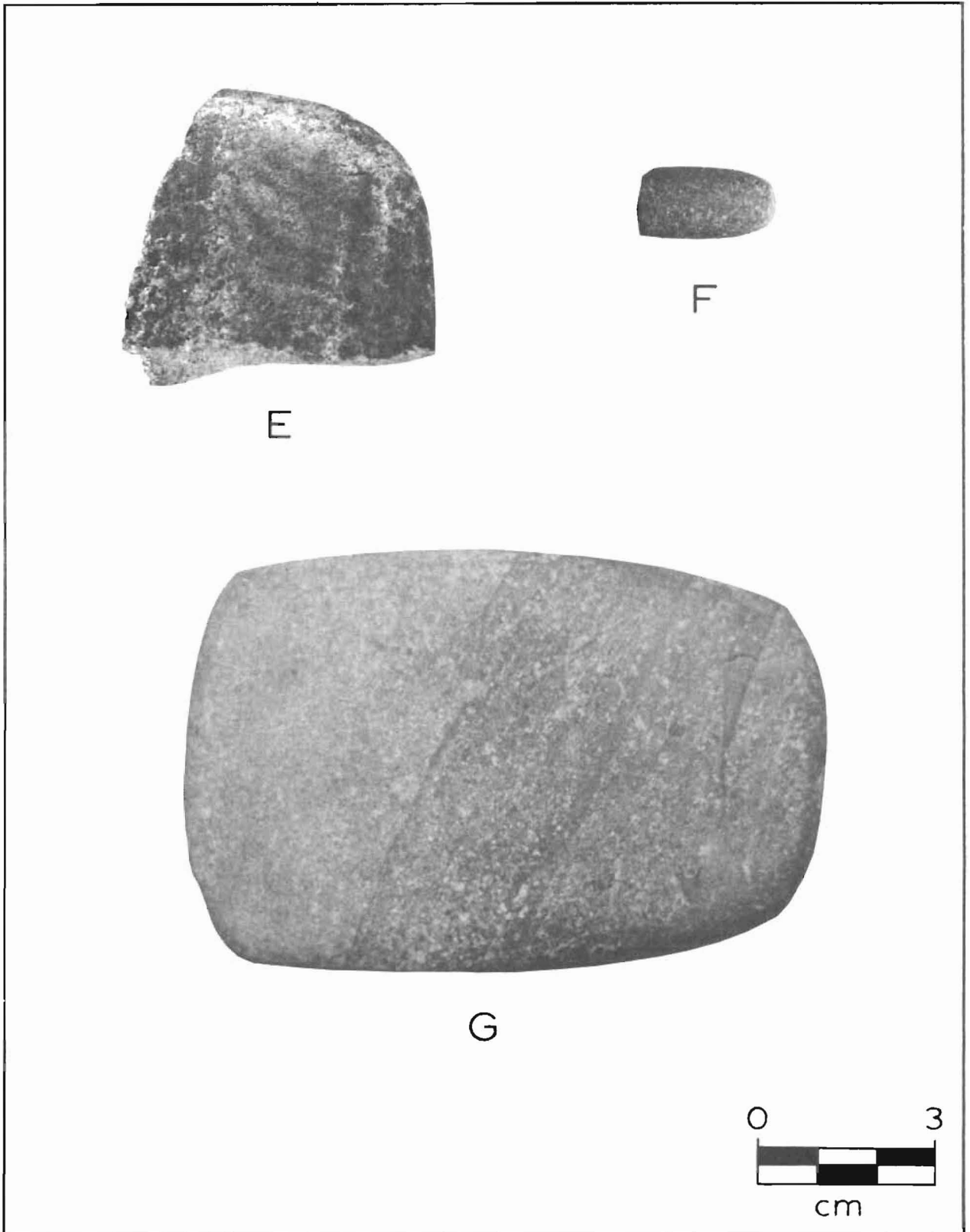


PLATE 26. GROUND AND PECKED STONE TOOLS. E-G, celts.

Gorget

One small fragment of an apparent gorget made of limonite was included in the surface collection. It is broken transversely and split longitudinally, has smoothing over its surface, but shows no evidence of having been drilled. It is shown full size in Plate 27 B. This is the only example of gorget manufacture recorded to date.

Bannerstones

Also in the surface collection were three bannerstone fragments and one apparent preform all of different styles, according to the various classifications proposed by Knoblock (1939). The single preform, in a shape suggestive of a bannerstone, is pictured full size in Plate 27 C. Although it may be simply a hammerstone or an unused mano, the quartzite from which it is made is very commonly used for bannerstones. It is also somewhat suggestive of Knoblock's "Southern Ovate" primary form #4 (1939:363-64, Plates 48, 171). This specimen is flattened on one face and pecked all over, has some cortex remaining at one end, and shows some grinding. The maximum measurements are: length 83.0 mm, width 78.2 mm, and thickness 38.0 mm.

One specimen, both sides of which are shown full size in Plate 27 D, E, was found on the surface of the small mound east of the main site. A third fragment was missing, but the two found fitted together gave a clear indication of the specimen's shape, which Knoblock calls the "Southern Humped Primary Form" type #1 (1939:231-38, Plates 44, 57, 110-12). This yellowish brown limonite object is smoothed and polished, and is unifacially convex in cross section. The hole, which is about 13.0 mm in diameter at both ends and shows circular striations inside, appears to be very slightly constricted at the center, an indication that it was probably drilled from both ends. Most bannerstones are drilled with a hollow instrument, and this specimen is probably no exception, since the taper of the hole is so slight. There is the possibility, however, that a solid drill was used and the hole reamed to give it a nearly uniform diameter. The object is 51.0 mm long and 32.0 mm thick. The missing fragment prevents a width measurement.

Also found on the small mound to the east was a small fragment of a white quartzite bannerstone, the curvature of which suggests it is Knoblock's "Southern Tubular, Class B" or "biface bottle form" type #29 (1939:533-36, Plates 55, 249-50). This fragment, pictured in Plate 27 F, includes a portion of the hole, with its circular striations, and a portion of the edge of one end. The exterior surface is highly smoothed and polished. The curve on the edge suggests an exterior end diameter of about 30 mm, with an expanded area at the center of greater diameter. The diameter of the hole, as suggested by its curvature, was approximately 12.8 mm. The material from which it was made was commonly used for the manufacture of bannerstones.

The remaining specimen, found near the excavation area, is made of a dull reddish colored, banded, fine-grained sandstone. It is small and has been ground smooth, but not polished. Both ends are flattened. It conforms to Knoblock's "Southern Tubular, Class B or C" or the "oval,

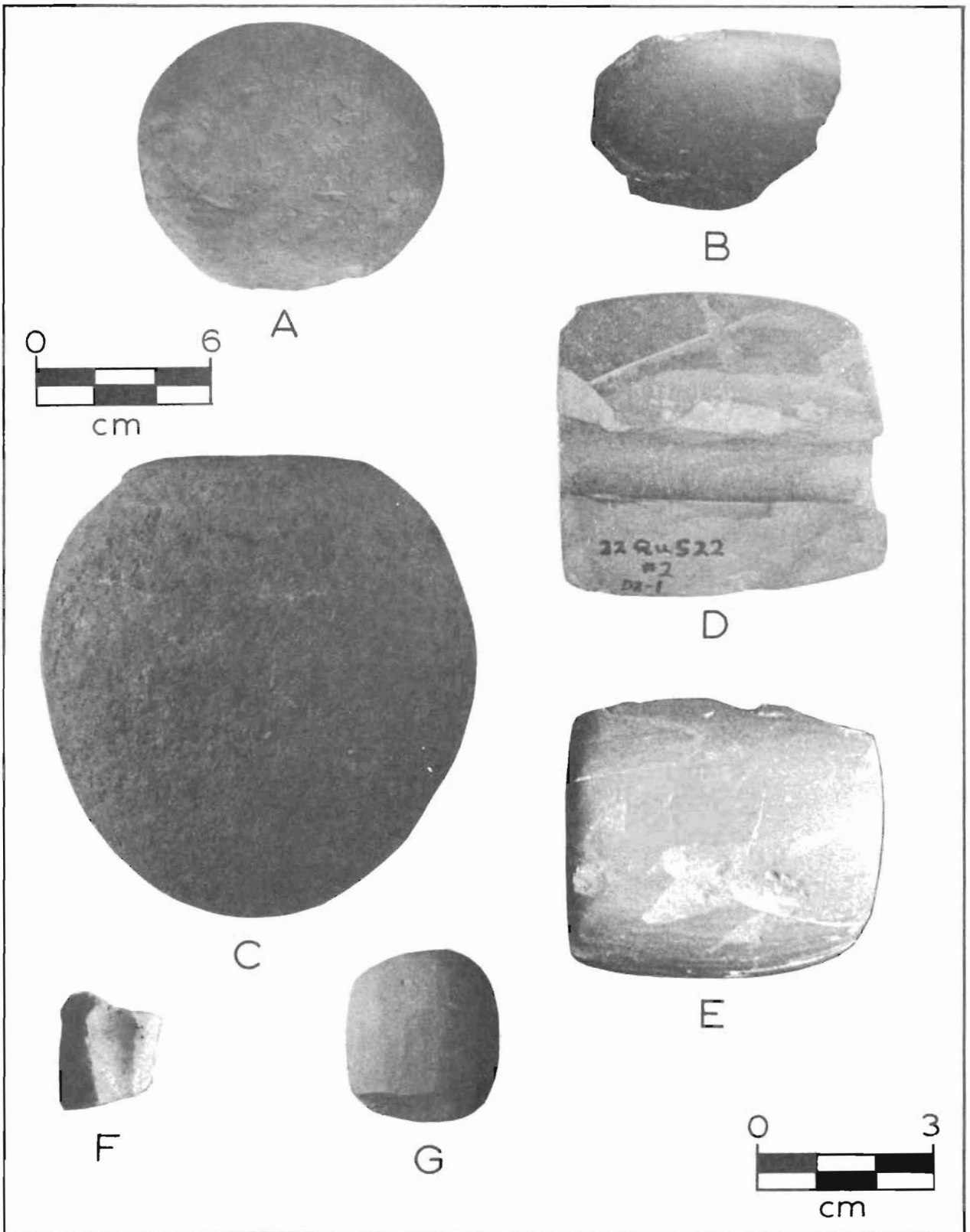


PLATE 27. GROUND AND PECKED STONE. A, discoidal; B, gorget; C, bannerstone preform; D-G, bannerstones.

tubular type" #31 (1939:540-41, Plates 55, 256-58), since it is oval in cross section and somewhat tubular in body form. Drilled in one end to a depth of 7 mm is a single conical hole, which has been tapered to a small, rounded point by a solid drill and shows very pronounced striations. The hole measures 13.5 mm in diameter at the mouth. The object itself measures 27.6 mm long, 27.1 mm wide, and 18.3 mm thick. The small size of the specimen raises some speculation as to whether it was actually intended for use as a bannerstone. It could have been a drill socket or even some type of bead preform, but there is very little wear inside the hole to indicate a drill socket function. The specimen is shown full size in Plate 27 G.

Two sites within a 40-mile radius to the north of Denton have yielded artifacts similar to the Denton Site bannerstones. At the Pitchford Site (22-Tu-511) in Tunica County two bannerstones have been found, along with the red jasper discoidal bead described here in the section on lapidary, in association with crudely flaked, large, stemmed projectile points with broad blades, much like those from the Middle Archaic component at Denton. One of the bannerstones (Plate 28 A), almost identical to the one from Denton shown in Plate 27 D-E, is a complete limonite specimen called by Knoblock the "Southern Humped Primary Form, Type No. 1" (1939:231-38, Plates 57, 110-12). It could be described exactly like the Denton specimen, its measurements being: length 59.8 mm, width 49.6 mm, thickness 32.5 mm. The diameter of the biconically drilled hole ranges from 12.2 mm to 13.8 mm. The other bannerstone (Plate 28 B) is a small, white quartzite discoidal object which has been partially drilled at one end with a hollow drill. It measures 17.3 mm in length and 32.2 mm in maximum diameter. Although it is extremely short, it might be classified among Knoblock's "Southern Tubular" forms (1939:537, Plate 55).

The other area from which similar bannerstones have come is the Campassi Site (22-Tu-526) in Tunica County. It too has yielded large, crudely flaked points like those from the Middle Archaic component at Denton, along with three bannerstone specimens, one of which is identical in style to the limonite humped varieties from Denton and Pitchford. This specimen (Plate 28 C) consists of the flattened half of a longitudinally broken limonite bannerstone of the type Knoblock calls "Southern Humped Primary Form, Type No. 1" (1939: 231-38, Plates 57, 110-12). It measures 50.4 mm in length and 42.0 mm in width, with a hole diameter of about 10.5 mm. A second specimen (Plate 28 D) is an undrilled white quartzite bannerstone of Knoblock's "Biface Bottle Type, Class B" (1939:533-36, Plates 55, 249-50). A large example, it measures 78.3 mm in length, 67.8 mm in maximum width, and 41.0 mm in thickness. The third specimen is a small corner fragment of a drilled white and reddish-colored bannerstone, also apparently of the "Southern Humped" form described above. The only measurement taken was the hole diameter, which is 13.2 mm. An end view is shown in Plate 28 E.

Pitted Stones

Fifteen pitted stones were recorded from the site, including two from the excavation. One of the stones was limonite, one was chert,

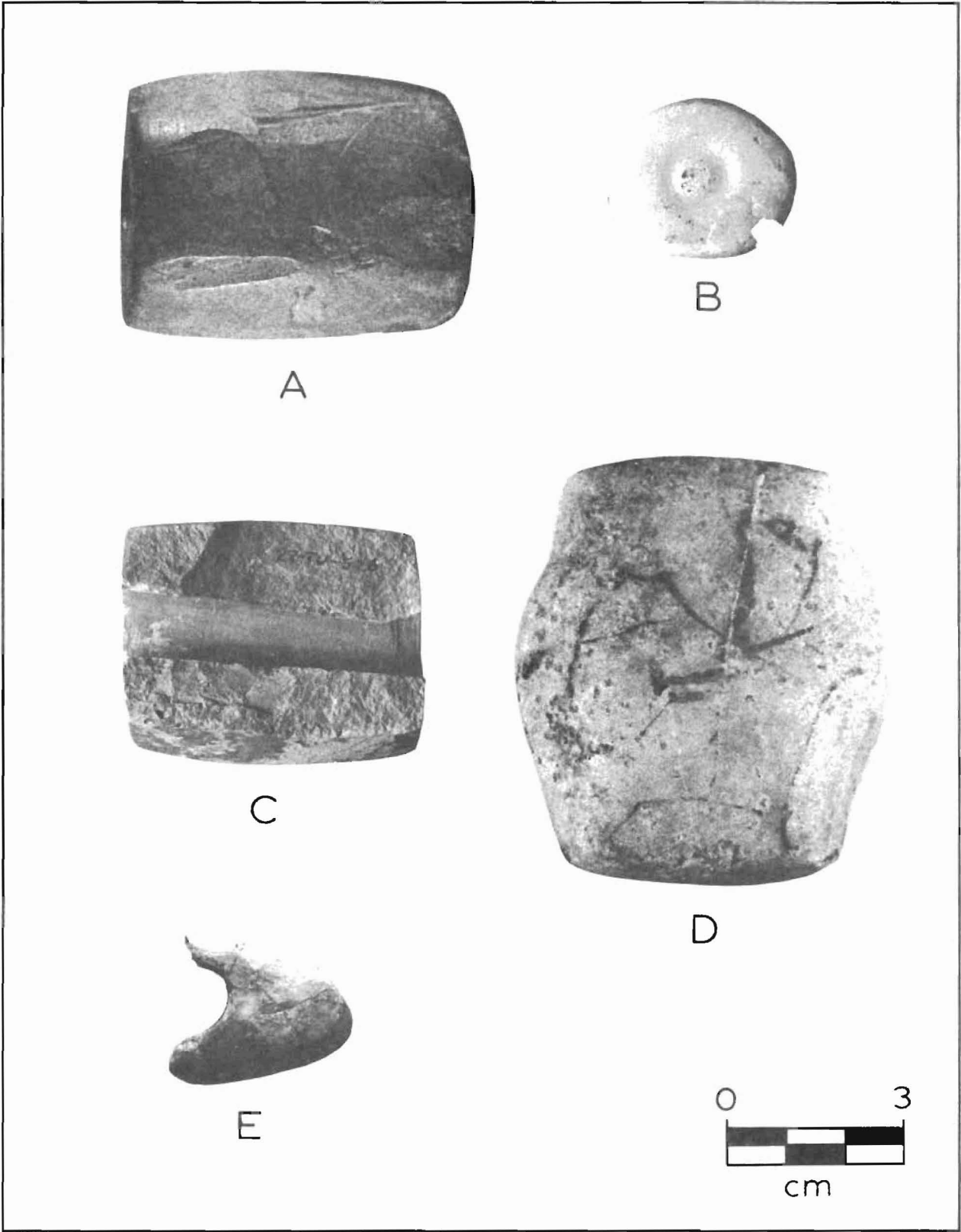


PLATE 28. BANNERSTONES. A-B, Pitchford Site; C-E, Campassi Site.

and thirteen were sandstone. Six specimens showed pecking on the sides, apparently an attempt at shaping the stone. Maximum measurements for the total sample are: length range 68.0-114.2 mm, width range 58.0-98.2 mm, and thickness range 30.0-62.8 mm.

Six specimens had a pit on only one side and no transverse breakage; eight specimens had pits on two sides, five of which were transversely broken, including the single limonite one; and one specimen had pits on four sides, this one also being transversely broken. Such breakage may have been a result of weakening of the stone caused by the presence of pits on opposite sides and the stress created by repeated blows to the surface of the stone. Two specimens show smoothing in the pit, while the rest show only pecking. Because none have drilling striations, the likelihood of their use as drill sockets is ruled out. The diameters of the pits range from approximately 20 mm to 34 mm, and the depth ranges from approximately 1.5 mm to 7.0 mm. Examples of these stones are shown half size in Plate 29 A-D.

Both pitted stones from the excavation came from a depth of 0.8-1.0 foot below surface in square 0-50E. One unbroken specimen of sandstone has a single pit on one side and no pecking on the sides, although both ends exhibit impact fractures, possibly from battering as a hammerstone. This specimen measures 114.2 mm in length, 58.0 mm in width, and 34.4 mm in thickness. The second specimen of fossiliferous chert is also unbroken and has a pit on each of two opposite faces. It shows no peripheral pecking. It measures 113.2 mm in length, 98.2 mm in width, and 62.8 mm in thickness.

Large Metates

Eight large metates were included in the surface collection, four of sandstone, three of limonite, and one of quartzite. Of the total, four (three sandstone, one limonite) show a transverse break, three (all sandstone) are ground on two opposite faces, and two (one limonite, one quartzite) have a pit in the grinding area. The maximum size ranges for these examples are: length 107-180 mm and thickness 43-85 mm. They were probably used in food preparation. Plate 29 E shows an example, half size, of one specimen with a pit in the grinding surface.

Small Metates

Ten small sandstone metates in the collection, including one from the excavation, are fragmentary rocks with varying amounts of grinding showing on only one face. The thinnest one, of fine-grained sandstone, is almost polished on its grinding surface. Maximum size ranges for these are: length 48-110 mm and thickness 13-47 mm. The single specimen from the excavation, found at a depth of 1.3 feet in square 60N-40E, measures 110 mm long and 39 mm thick. The use of these objects is a matter of speculation, but was probably some aspect of food preparation or tool manufacture. None are pictured here.

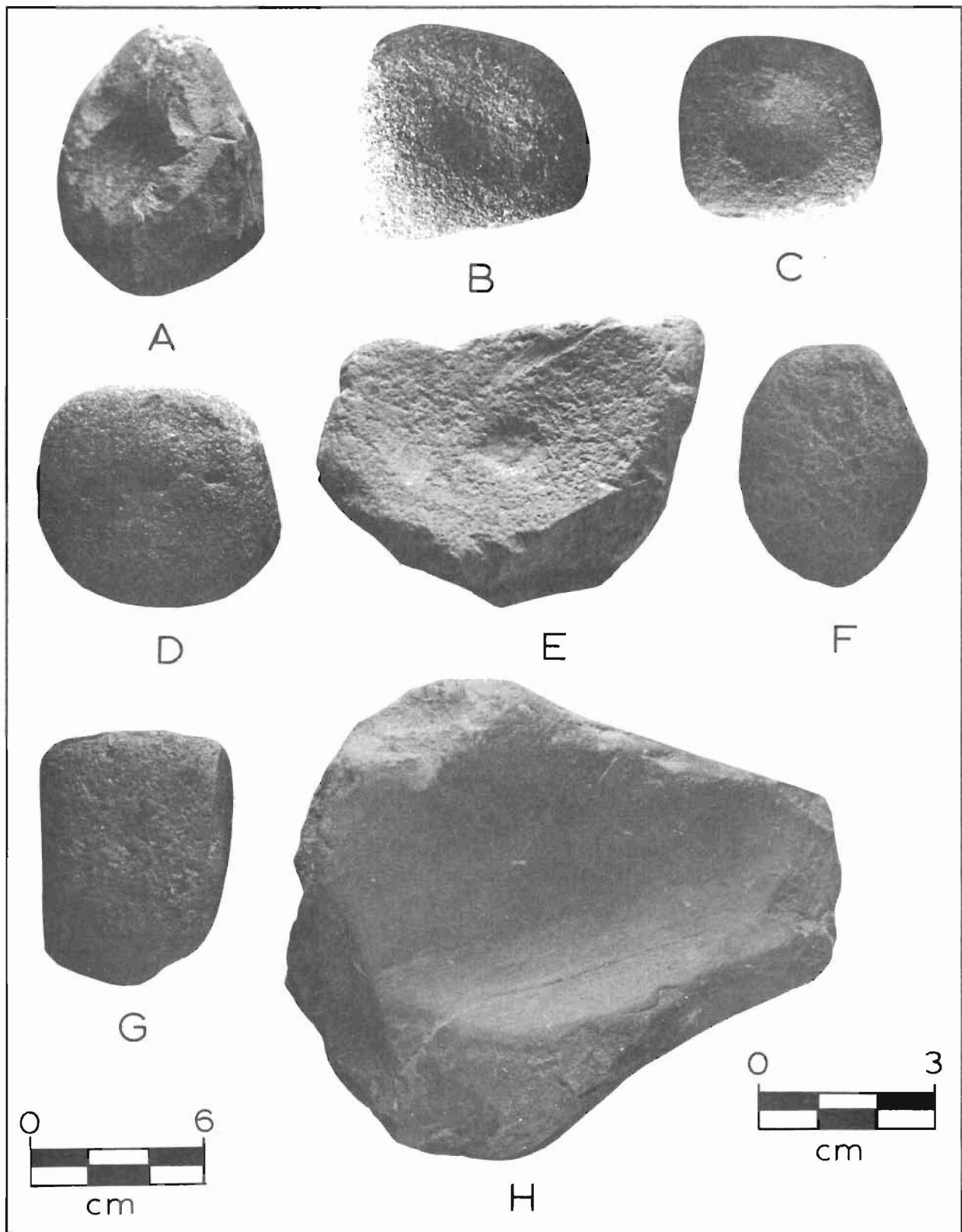


PLATE 29. PECKED STONE TOOLS. A-D, pitted stones, E, large pitted metate; F-G, hammerstones; H, abraded.

Hammerstones

Hammerstones from the surface of the site included four of quartzite and one of chert. All are very large pebbles or small cobbles, probably used in the percussion flaking of various cores and bifaces. Plate 29 F-G shows at half size two examples of quartzite, battered on both faces, edges, and ends. The other three, of quartzite and chert, are battered mostly on the edges and ends. The maximum size ranges for these specimens are: length 75-95 mm, width 48-69 mm, and thickness 40-58 mm.

Abrader

A single limonite abrader was included in the surface collection of Burt Jaeger of Clarksdale. Both faces have a shallow, wide groove and are highly smoothed, with striations running in a longitudinal direction. This specimen is shown full size in Plate 29 H. The grooves are approximately 51 mm wide by 7 mm deep and 60 mm wide by 4 mm deep. The maximum measurements for the specimen are: length 103.0 mm, width 86.8 mm, and thickness 36.9 mm. Because of the softness of the material, the fine grain of the stone, and the smoothness of the grooves, it might be speculated, among other things, that this abrader was used for executing a fine-polish finish in bead manufacture. The curvature of the grooves, especially the deeper one shown in Plate 29, suggests the grinding of a relatively small object in a back and forth motion, rather than the smoothing of a shaft or a wide object. The grooves are slightly deeper in the center than at each end. The shallower one could easily have been used for sharpening and grinding celts.

Denton Lapidary Industry

The lapidary industry at the Denton Site is unusually large and consists of a variety of items, styles, and techniques. Excluding the ground stone artifacts, eighty-eight specimens of worked stone have been categorized as beads, pendants, their preforms, and other associated items. Most of these are from the surface collection; only four were excavated from the midden. The excavated specimens include a drilled pebble (Plate 30 A), which came from a depth of 1.47 feet in square 50N-30E, and a jasper disc bead (Plate 31 C), which came from a depth of 0.98 foot in square 70N-30E. Both of these were found in the 1972 MSU excavation. The third item, a small flake saw (Plate 34 A) from the 1969 MAS excavation by the author, was recorded at a depth of 0.8-1.0 foot in square 0-50E. The fourth item is a pebble preform (Plate 33 M) found in the 0.8-1.3-foot level of square 60N-40E.

Materials used for the manufacture of the lapidary items include sandstone, available in the nearby hills to the east, as well as common and exotic materials that are presently obtainable in Mississippi River gravels. These include red jasper, various colors of chert and quartzite, fine-grained sandstone, and an unidentified soft green stone. Presumably the materials used at Denton were collected off nearby river gravel bars, although a few of the more exotic types may have been imported.

The lapidary items making up the Denton assemblage have been subdivided into five main categories: drilled pebbles, beads, preforms,

possible bead manufacturing tools (saws), and zoomorphic artifacts, including effigy turtles and various styles of zoomorphic effigy beads. These objects will be described individually, along with certain types from similar sites for comparison. The catalog and plate numbers follow each specimen listed.

Drilled Pebbles

Four completely drilled and eleven partially drilled specimens are in this category. All show conical drill holes, which indicate the use of solid drills, as are described on pages 20-24 above. These objects are primarily unmodified flat river pebbles, and a few show slight artificial grinding on the edges. They were presumably pendants.

Specimen A (D-10; Plate 30) is a dull green, almost gray-colored, smooth, flat river pebble, apparently of micro-crystalline sandstone. It is completely perforated by a biconically drilled 7.1-2.0-mm hole with drilling striations. The surface is naturally smoothed, with no artificial grinding. Maximum measurements are: length 38.2 mm, width 29.4 mm, and thickness 7.6 mm. It was recorded during the 1972 MSU excavation in the northeast quarter of square 50N-30E, level 3, at a depth of 1.47 feet, slightly over half a foot below the plow zone. This is the only drilled pebble pendant found in midden context. Its in situ location indicates a Middle Archaic cultural and temporal placement of such artifacts, as suggested by the radiocarbon dates from the midden.

Specimen B (D-9; Plate 30) is a greenish gray, smooth, flat river pebble of the same material as Specimen A. It, too, has a biconically drilled perforation tapering in diameter from 4.8 mm to 1.9 mm on one side and from 5.5 mm to 1.9 mm on the other. It is naturally smoothed, with no artificial grinding. Maximum measurements are: length 27.4 mm, width 20.1 mm, and thickness 3.1 mm. This specimen was found on the surface between the two "mounds."

Specimen C (D-6; Plate 30) is a greenish gray, unground flat pebble of the same material. It is also biconically drilled, the hole perforating the object and tapering from 4.8 mm to 2.1 mm in diameter on both sides. Maximum measurements are: length 28.0 mm, width 20.3 mm, and thickness 4.5 mm. This specimen was found on the surface about midway between the two "mounds."

Specimen D (D-8; Plate 30) is a reddish brown, flat river pebble of very fine-grained sandstone. It shows no artificial surface grinding and has a biconically drilled perforation. The hole tapers from 4.4 mm to 1.3 mm on one face and from 4.0 mm to 1.3 mm on the other. Maximum measurements are: length 17.9 mm, width 15.1 mm, and thickness 4.5 mm. This specimen was found on the surface about 100 feet north of the northernmost "mound."

Specimen E (D-1; Plate 30) is a red, flat, fine-grained sandstone river pebble which is partially drilled on only one face near one end. The conical hole tapers from 5.5 mm in diameter to a depth of 1 mm. The specimen shows slight grinding along the edges. Maximum measurements are: length 56.5 mm, width 34.1 mm, and thickness 8.0 mm. It was a surface find in the vicinity of the two "mounds."

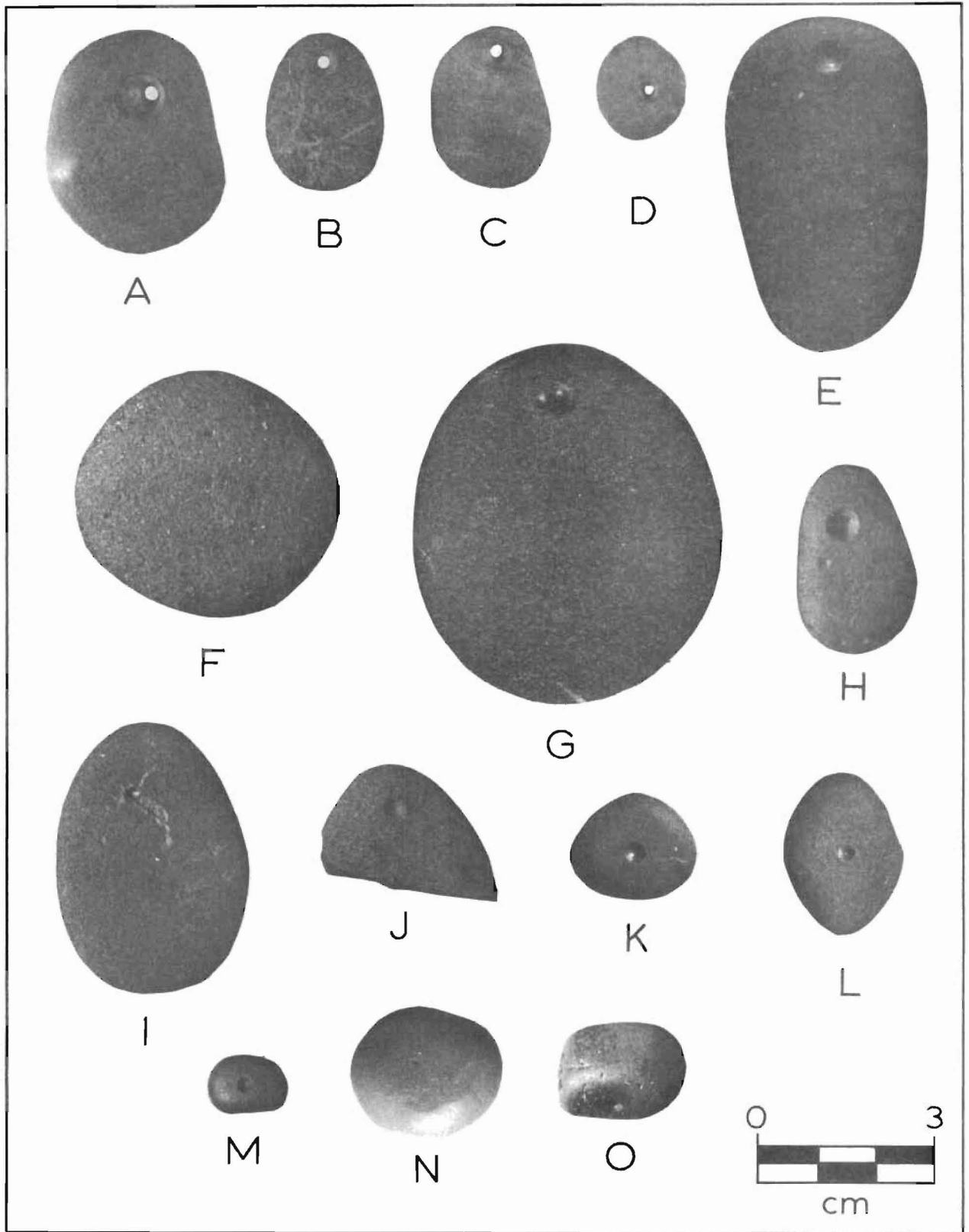


PLATE 30. DRILLED PEBBLES. A-D, completely drilled; E-O, partially drilled.

Specimen F (D-43; Plate 30) is a flat, almost round pebble of gray sandstone with a slightly coarser texture than Specimen E. Slight grinding is evident on one edge. A tiny drill hole on one face, apparently just begun, is about 1 mm in diameter. Maximum measurements are: diameter 45.8 mm and thickness 8.5 mm. This object was found on the surface on the east side of the northernmost "mound."

Specimen G (D-2; Plate 30), is a red, medium-grained sandstone river pebble. It is large, oval, and very flat and thin. There is one conical drill hole on each face near one end, but since these are not aligned, they would not have met if completed. The respective dimensions of the two holes are: diameter 5.7 mm and 5.0 mm; and depth 1.5 mm and 1.0 mm. There is no artificial grinding on this specimen. Maximum measurements are: length 64.2 mm, width 53.1 mm, and thickness 4.6 mm (uniform). It was found on the surface near the road, southeast of the northernmost "mound."

Specimen H (D-4; Plate 30) is a reddish brown, smooth, very fine-grained sandstone river pebble. It is relatively thick and is pitted from erosion. There is some grinding along one edge, but none on either face. It is partially drilled on each face, but the two incomplete conical holes are not aligned, as was the case with Specimen G. The dimensions of the two holes are: diameter 5.5 mm and depth 2.0 mm. Maximum measurements for the object are: length 32.2 mm, width 20.3 mm, and thickness 9.7 mm. It was found on the surface about 100-200 feet north of the northernmost "mound."

Specimen I (D-7; Plate 30) is a greenish gray pebble of the same type of material as Specimens A, B, and C. It is flat and naturally smoothed, with no artificial grinding. The single conical drill hole on one face does not completely perforate the object. This hole is 2.2 mm in diameter by 0.5 mm in depth. Maximum measurements are: length 46.4 mm, width 33.2 mm, and thickness 7.3 mm. It was found on the surface on the south side of the southernmost "mound" about 100 feet from the excavation area.

Specimen J (D-84; Plate 30) is a flat, greenish gray river pebble like Specimen I, except that this one has been broken transversely. It also is naturally smoothed, with no artificial grinding, and the single conical drill hole on one face does not completely perforate the object. The hole is 3.4 mm in diameter by 1.0 mm in depth. The only available measurement for this fragment was the maximum thickness, which is 5.0 mm. The specimen was found in the road on the east side of the southernmost "mound."

Specimen K (D-5; Plate 30), a greenish gray, very fine-grained river pebble of material similar to the preceding specimens, has grinding on two portions of the edge and some slight grinding on one face. On this same face is a single conical drill hole, 3.2 mm in diameter and 1.0 mm deep, which does not completely perforate the specimen. Maximum measurements for the object are: length 21.3 mm, width 18.3 mm, and thickness 8.2 mm. It was found on the surface on the east side of the northernmost "mound."

Specimen L (D-3; Plate 30) is a reddish brown, flat, smooth pebble of similar material. It has slight grinding along two portions of the edge, but none on either face. It is partially drilled on one face, with the conical hole measuring 2.85 mm in diameter and 0.5 mm in depth.

A small chip has been knocked out of one edge, probably by a plow since the break is recent. Maximum measurements are: length 28.8 mm, width 22.0 mm, and thickness 5.2 mm. The specimen was found in the vicinity of the two "mounds."

Specimen M (D-11; Plate 30) is a small, smooth, reddish brown fine-grained quartzite pebble with a single cone drilled in the center of one face. The hole, which does not completely perforate the object, tapers from a maximum 2.1 mm in diameter and is 1 mm deep. There is some edge grinding at one spot, but none elsewhere. Maximum measurements are: length 14.8 mm, width 10.2 mm, and thickness 5.0 mm. This surface specimen was found on the east side of the southernmost "mound" near the excavation.

Specimen N (D-80; Plate 30) is a smooth, reddish brown quartzite river pebble with no artificial grinding. A tiny drill hole, slightly less than 1.0 mm in diameter and no more than 0.25 mm deep, has been started in the center of one face. Maximum measurements for the object are: length 26.5 mm, width 23.2 mm, and thickness 12.0 mm. It was found on the surface in the vicinity of the two "mounds."

Specimen O (D-86; Plate 30) is a thick, smooth, very hard, red jasper river pebble with some slight grinding at one end. Small, conical drill holes have been started on two sides, but not on the broader faces as with all the preceding examples. These two incomplete holes measure 3.8 mm in diameter by 0.8 mm in depth and 1.2 mm in diameter by 0.3 mm in depth. The larger is really three different-sized holes in one, indicating that the drill was worn down and resharpened twice before the rock was discarded. Maximum measurements for the specimen are: length 23.2 mm, width 16.3 mm, and thickness 12.4 mm. It was found on the surface somewhere in the vicinity of the two "mounds."

This completes the inventory of drilled pebbles, although a later section will describe a number of similar objects with grinding but no drilling. Most of the drilled pebbles appear to be pendant blanks, but a few of the smaller ones with central perforations could have been preforms for disc beads. Some of the disc beads technologically began as small, flat river pebbles and apparently were partially or completely drilled before final grinding. None of the pebbles discussed above show evidence of engraving or carving into the various shapes indicative of socio-religious symbolism. The technological style of these objects lacks the artistic skill so evident in the zoomorphic bead assemblage to be discussed. Although the makers may have attached some cultural meaning or symbolism to these objects, determination of any such meaning would only be speculation now. Since Specimen A (Plate 30) was found in situ in the dated midden, it might be postulated on the basis of association that all of these items were connected with the Middle Archaic occupation.

Beads

The second class of lapidary items--beads--are technologically more refined than the drilled pebbles. This group consists of a variety of bead forms, including disc-shaped, barrel-shaped, tubular-shaped, tubes, and individually unique forms. As with the "pendants" discussed above, assigning these objects to culturally functional classifications

would be speculative. Only three specimens (Plate 31 R,S,T) appear to suggest something like zoomorphic representations. This is not to say that these objects had no cultural significance. They, like all the others, probably did have some social meaning, and the variety of forms in this category could be suggestive of any number of socio-cultural functions. The placement of one disc bead (Plate 31 C) in situ in the midden indicates that the other disc types may have had a similar origin. There is little evidence of any later occupations with which these lapidary items could be linked, and it seems reasonable that most, if not all, were associated with the Middle Archaic Denton culture.

Specimen A (D-66; Plate 31) is a small, polished bead of red jasper, ground into a circular or disc shape, with both faces ground flat. It is completely perforated by a central, bifacial, biconical hole. One opening tapers from 4.7 mm to 2.4 mm in diameter and is 3.5 mm deep, while the one opposite tapers from 4.6 mm to 2.4 mm in diameter and is 2.3 mm deep. Maximum measurements for the bead are: diameter 5.6 mm, and thickness 5.8 mm. Exactly where it was found is not recorded, but it was presumably on the surface around the two "mounds."

Specimen B (D-57; Plate 31) is a reddish brown sandstone pebble ground into a circular or disc shape, with a central, biconical perforation. On one face the opening tapers from 7.0 mm to 2.2 mm in diameter and is 4.0 mm deep, while on the opposite face the opening tapers from 4.6 mm to 2.2 mm in diameter and is 2.0 mm deep. The maximum measurements are: diameter 23.8 mm and thickness 6.0 mm. This was also a surface find in the vicinity of the two "mounds."

Specimen C (D-14; Plate 31), of a dark reddish brown jasper, is a disc-shaped bead which is ground and polished over its entire surface. The central, biconical perforation completely penetrates the object. One cone tapers from 6.4 mm to 2.3 mm in diameter and is 2.5 mm deep, while the opposite one tapers from 4.8 mm to 2.3 mm in diameter and is 3.0 mm deep. Maximum measurements for this bead are: diameter 14.0 mm and thickness 6.3 mm. This is the only bead, in addition to the pendant mentioned previously, found in situ in the midden. It was recorded during the 1972 MSU excavation in square 70N-30E at a depth of 0.98 foot, slightly beneath the plow zone termination at about 0.8 foot.

Specimen D (D-13; Plate 31) is a flat, light reddish brown jasper bead, ground smooth over its entire surface. It has a central, biconical perforation. The larger hole tapers from 3.6 mm to 2.5 mm in diameter and is 2.2 mm deep, while the smaller hole only tapers from 2.6 mm to 2.5 mm in diameter and is 1.2 mm deep. Maximum measurements for the specimen are: diameter 14.0 mm and thickness 3.4 mm. Both the diameter and thickness are very uniform throughout. The object was found on the surface midway between the two "mounds."

Specimen E (D-51; Plate 31) is a small, rounded bead of fine-grained quartzite that is gray with tiny white, black, and clear quartz inclusions. Both faces are slightly flattened, and the entire surface is ground smooth. There is a biconically drilled perforation at its center. The larger opening on one face tapers from 3.4 mm to 2.0 mm in diameter and is 4.9 mm deep, while the smaller, opposite opening tapers from 2.4 mm to 2.0 mm in diameter and is 0.75 mm deep. Maximum measurements for the specimen are: diameter 9.15 mm and thickness 5.65 mm. It was found on the surface on the northeast side of the southernmost "mound" near the road.

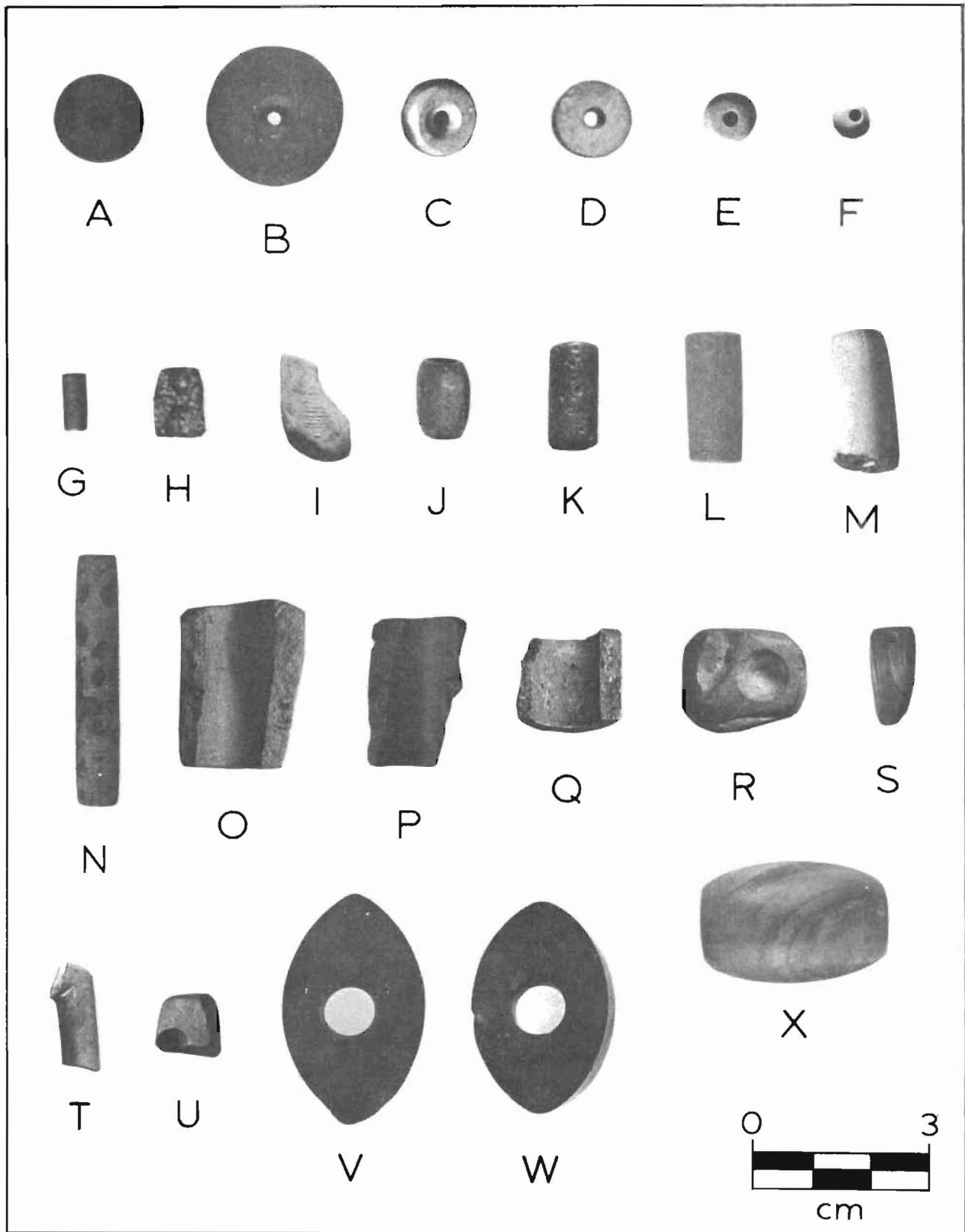


PLATE 31. BEADS. A-D, disc; E-F, round; G-N, tubular; O-Q, tubes; R-U, unique shapes, V-X, from "Denton Site B."

Specimen F (D-42; Plate 31) is a small, round, light green bead of very fine-grained quartzite. It is slightly flattened on both faces and has a completed central, biconical perforation. The larger portion of this hole tapers from 2.9 mm to 1.7 mm in diameter and is 3.0 mm deep, while the opposite one tapers from 1.95 mm to 1.7 mm in diameter and is 1.3 mm deep. Maximum measurements for the bead are: diameter 6.5 mm and thickness 4.3 mm. It was found on the surface on the east side of the northernmost "mound."

Specimen G (D-50; Plate 31) is a tiny tubular bead made of hard, very fine-grained, dark brown quartzite. It is ground smooth, slightly polished, and has an almost squared circumference, the sides being slightly flattened into four main facets with rounded edges. Both ends are flat, and the hole, which goes all the way through, has the cone shape that indicates the use of a very small, solid drill. The larger portion of the hole tapers from 1.85 mm to approximately 1.2 mm in diameter and is 6.8 mm deep. The opposite portion tapers from 1.55 mm to approximately 1.2 mm in diameter and is 3.2 mm deep. Maximum measurements for the object are: length 10.0 mm and diameter 4.2 mm. It was found on the surface on the north side of the southernmost "mound."

Specimen H (D-49; Plate 31), a short, tubular, almost barrel-shaped bead of an unidentified soft red stone, is split longitudinally. The surface is ground smooth and both ends are flattened. The biconical holes at both ends do not completely perforate the object. It is probable that the soft stone was broken during the drilling process. One hole tapers from a maximum 4.6 mm in diameter and is 5.3 mm deep. The other tapers from a maximum of 4.8 mm and is 4.9 mm deep. Measurements for this specimen are: length 12.5 mm and diameter 8.8 mm. The bead was found on the surface on the northwest side of the southernmost "mound."

Specimen I (D-47; Plate 31) is a brick-red, tubular bead fragment which was completely drilled, but split in half longitudinally. The unidentified material is very soft and the specimen is too eroded for accurate measurements of any kind. Striations can be seen in the drill hole. It was found on the surface of the southwest side of the southernmost "mound."

Specimen J (D-15; Plate 31), a barrel-shaped, tubular bead of red jasper, is ground smooth and has a slight polish. Both ends are slightly flattened. In contrast to the previous examples, the hole is drilled completely through from one end. It tapers from 4.7 mm to 4.0 mm in diameter. Maximum measurements for the bead are: length 13.35 mm and diameter 9.8 mm. It was found on the surface of the west side of the southernmost "mound." This and Specimens H and X (Plate 31) are the only barrel-shaped beads from the site.

Specimen K (D-16; Plate 31) is a brown quartzite, fossil crinoid stem section, tubular in shape, with small drill holes started at both ends but not completely perforating it. The surface is smooth and shiny, apparently from natural patina. The hole at one end tapers from a maximum 2.8 mm in diameter and is about 2.0 mm deep. The one at the opposite end tapers from a maximum 2.4 mm in diameter and is about 1.0 mm deep. Maximum measurements for the object are: length 17.5 mm and diameter 8.4 mm. It was found on the surface about 50 feet north of the excavation area on the southernmost "mound."

Specimen L (D-87; Plate 31) is a tubular bead of light reddish quartzite. Both ends are flattened and the object is ground smooth over its entire surface. One side is slightly flattened toward one end, which is a little smaller in diameter than the other. This bead, like Specimen J, is drilled completely through from the larger end. As a result, the opening at the smaller end is somewhat off-center. The drill hole tapers from 3.65 mm to 3.0 mm in diameter. Maximum measurements for the bead are: length 22.5 mm and diameter 9.8 mm. It was found on the surface somewhere in the vicinity of the two "mounds."

Specimen M (D-68; Plate 31) is a fine-grained, soft sandstone, tubular tan object which is smoothed on the surface and broken transversely at the larger end. The stone appears to have a tan cortex on the exterior and inside the drill hole, but the interior of the stone, which can be seen in the broken end, is of a reddish color. This object may have been a tubular bead or a pipestem. The hole is almost uniform, with a slight taper of from 3.80 mm to 3.45 mm at the small end, to a depth of about 6.0 mm. The hole at the broken end measures 3.5 mm in diameter. Maximum measurements for the object are: diameter at broken end 11.4 mm, diameter at the small end 10.0 mm, and length 24.4 mm. It was found in the vicinity of the two "mounds."

Specimen N (D-55; Plate 31) is a long, narrow, tubular bead made of an unidentified hard pastel green stone with dark green splotches. Fine-grained, with a microscopic crystalline structure much like that of local brown chert, it is ground smooth and polished over the entire surface. Both ends are flattened. The longitudinal hole is drilled completely from one end and tapers from 3.3 mm to 1.8 mm in diameter. Maximum measurements for the bead are: length 43.5 mm and diameter 7.6 mm, with both ends tapering to 7.3 mm in diameter. It was found on the surface on the east side of the southernmost "mound."

A fragment of a light reddish brown tubular bead (not pictured) of fine-grained, banded sandstone was found at "Denton Site B." It is 33.3 mm long, probably about half its original length. The diameter tapers from 9.4 mm at the middle to 8.8 mm near the end. It was drilled apparently about three-fourths of its length from the missing end, with a tapering perforation. The hole measures 3.8 mm in diameter at the break. The opposite hole, which meets it about 12.0 mm from the end, is 4.0 mm in diameter.

Specimen O (D-31; Plate 31) is one of three brown tubes of limonite and sandstone found on the site. These items are referred to as tubes because of the large size of the hole in relationship to the diameter of the object, but the designation does not necessarily reflect its function. This object is split longitudinally. The exterior surface is ground smooth and one end is flattened. The other end shows the remnants of a sawing groove where the object was partially sawed and then snapped off. This end was later partially ground. The large hole shows drilling striations and appears to have been cut by a hollow drill, since it is of a uniform diameter of 11.3 mm throughout. Maximum measurements for the tube are: length 29.3 mm and diameter 20.7 mm. It was found on the surface on top of the northernmost "mound."

Specimen P (D-83; Plate 31) is a bright red jasper tube similar in shape to Specimen O, and it, too, is split longitudinally. The

exterior surface is ground very smooth and both ends are flattened. The large perforation appears to have been parallel-sided, cut by a hollow drill, but enough of the sides remain for accurate diameter measurement only at the center, where it is approximately 9.3 mm. Maximum measurements for this tube are: length 25.7 mm and diameter approximately 16.0 mm. The specimen was found on the surface on the west side of the southernmost "mound."

Specimen Q (D-56; Plate 31) is a short tube of an unidentified soft pastel green stone with tiny, clear quartz inclusions. This is the same material from which the MDAH effigy bead #1, the Jaeger #1 effigy bead, and the green turtle effigy, to be discussed, were made. The exterior surface is ground smooth and both ends are flattened. It is split in half longitudinally, possibly because the tube walls are thin and fragile, as is the case with the preceding two specimens. The hole is large, approximately 11.5 mm in diameter, about the same as Specimen O. Its parallel sides indicate use of a hollow drill. Maximum measurements for the specimen are: length 17.0 mm and diameter 18.1 mm. It was found on the surface near the two "mounds."

Such tubes as the three mentioned above could have been part of a shaman's "medicine bag" and used as "sucking tubes" for the removal of certain illness-causing objects or spirits. They do seem rather short for this function, but could have been attached to a longer, hollow cane shaft. This possibility is worth considering, in the light of the hypothesized functions of certain other lapidary items in the Denton assemblage, such as the zoomorphic effigies to be discussed. Other possibilities, of course, might include their use as simple ornamental beads or as holders for braided hair.

Specimen R (D-12; Plate 31) is a red jasper pebble with a bifacially symmetrical carved depression on one edge. It is drilled from both sides, but the two conical holes are not in alignment and do not completely perforate the object. Both holes taper from a maximum 8.4 mm in diameter and are 2.0 mm deep. This apparently incomplete object is ground smooth over most of its surface and grinding facets are visible. Maximum measurements are: length 22.6 mm, width 18.3 mm, and thickness 9.3 mm. It was found on an old tenant house site at the northern periphery of the Denton occupation area, approximately 100 yards north of the "mounds." If the carved edge is placed ventrally, as shown in the photograph, it appears to be the mouth and jaw of some zoomorphic effigy. With the drilled hole considered as an eye, the object resembles a lateral view of the head of a turtle and could possibly be considered a zoomorphic effigy, although this classification is speculative. This aspect of the Denton lapidary assemblage is to be discussed later.

Specimen S (D-35; Plate 31) is a red jasper object which presents the appearance of a human incisor. It is slightly curved and is ground smooth, with a slight polish over its surface. The excurved face has three parallel, longitudinally engraved lines of varying length extending the length of the object. These presumably represent the shallow grooves seen on the front of an incisor. The "bit" end of the "crown" portion is sharpened like the bit of a celt and has a small hole drilled biconically 1.8 mm back from the bit edge. The larger portion of the hole, on the excurved, engraved side, tapers from 2.3 mm to 1.0 mm in diameter and is 2.55 mm deep. The opposite portion

tapers from 1.5 mm to 1.0 mm in diameter and is 0.75 mm deep. Another hole barely started midway on the excurved surface measures 1.5 mm in diameter and is only about 0.2 mm deep. The "root" end of the object is rounded and blunt. Maximum measurements for the specimen are: length 17.0 mm, width 7.6 mm, and thickness 4.5 mm. It was found on the surface of the south side of the southernmost "mound." The object is apparently an effigy incisor tooth and could well be some sort of fetish or charm, perhaps used in healing rituals by a shaman as part of his "dentistry" paraphernalia, or perhaps worn by an individual as a protective amulet-- a sort of aboriginal "tooth fairy"!

Specimen T (D-41; Plate 31) is an unusual object made of reddish brown jasper. Breaks at both ends obliterate its true overall appearance and leave only a puzzling fragment. On one end, the break is made through a biconically drilled hole, the larger portion of which, on the outside curve of the object, tapers from 3.6 mm to 1.7 mm in diameter and is 5.1 mm deep. The smaller portion opposite, on the inside curve, tapers from 1.8 mm to 1.7 mm in diameter and is 1.2 mm deep. The other end of the specimen is transversely broken, with no subsequent grinding. The entire surface, except for the broken ends, is ground smooth, exhibiting a slight polish. The shaft of the object is slightly rounded or cylindrical in shape. Maximum measurements for the specimen are 19.2 mm in length and 6.6 mm in thickness. It was found on the surface of the east side of the northernmost "mound." The original morphology can only be surmised, but it may also have been some form of zoomorphic effigy, considering its peculiar shape. If so, it would be considered among the class of Denton artifacts hypothesized to be "fetishes" or items with some magical or socio-religious connection.

Specimen U (D-48; Plate 31) is a small, red jasper pebble with a biconically drilled hole through which the object was split. There is grinding and some slight polish over most of the surface, as well as grinding on the broken side with the split drill hole. This specimen might have easily been included with the preceding category of drilled pebbles, but it shows more surface preparation than those examples, was evidently being modified into a different shape, and has a more squared appearance. The larger portion of the bisected hole tapers from approximately 5.0 mm to 1.4 mm in diameter and is 4.0 mm deep, while the opposite cone tapers from 4.75 mm to 1.4 mm in diameter and is 2.4 mm deep. Maximum measurements for the object are: 10.2 mm x 10.5 mm and 7.5 mm (thickness). Since two adjoining sides were transversely broken and reground, the width measurements are only for the present morphology of the object. It was found on the surface of the west side of the southernmost "mound."

Specimen V (DB-3; Plate 31) is the larger of two almost identical objects, both made of dark reddish brown jasper. It is similar in appearance to some centrally perforated "tablets" illustrated by Moorehead (1917), but placing it in this category, that of a bead, or some other category is a matter of speculation. Both faces of the object were formed by cutting through a larger stone, probably with a sandstone saw, in such a way that one face is incurved and the other excurved. Sawing striations can be seen on both faces, along with some grinding marks. The preform was apparently a naturally shaped stone since the original exterior surface on the lateral edges of the object shows only

a few scratch marks but no evidence of grinding or smoothing. These edge surfaces have a polish which may be mostly natural patina. The centrally drilled hole is slightly biconical, tapering from 9.3 mm to 8.3 mm in diameter on both sides. Approximately one-third of the central interior of the hole has parallel sides, an indication that it was reamed out after the two holes met. Maximum measurements for the specimen are: length 38.0 mm, width 23.0 mm, and thickness 10.5 mm. It was found on the surface of the small mound to the east of the main site, designated "Denton Site B."

Specimen W (DB-4; Plate 31) is the smaller of the two dark reddish brown jasper objects, obviously cut from the same preform as Specimen V. This object has the same incurvate-excurvate shape, sawing striations, and other aspects described above. The centrally drilled, biconical hole tapers from 10.6 mm to 8.5 mm in diameter on the incurved side and from 8.8 mm to 8.5 mm in diameter on the excurved side. Maximum measurements for this specimen are: length 35.2 mm, width 22.4 mm, and thickness 9.1 mm. It was found along with Specimen V on the surface of the small mound designated "Denton Site B."

Specimen X (DB-2; Plate 31) is a large, barrel-shaped bead of multi-colored quartzite. The bands of colors, varying from orange, yellowish gray, and yellowish white to almost clear, run diagonally around the bead, which is ground smooth and has a slight polish over its surface. Both ends are flattened. A centrally drilled biconical perforation began to run off-center as it approached the opposite end, so a short hole was drilled from that end to meet it. The longer hole tapers from 6.4 mm to 3.4 mm in diameter and is 23.4 mm deep, while the shorter hole tapers from 6.0 mm to 3.4 mm in diameter and is 5.9 mm deep. Maximum measurements for the specimen are: length 29.3 mm and diameter 19.5 mm. It was found on the surface of the small mound designated "Denton Site B."

A wide variety of morphological styles are found in the assemblage, and it is difficult even to speculate about their respective socio-cultural functions. As will be pointed out in a later discussion of zoomorphic beads, it is unlikely that all of these objects, if any, were mere ornaments. Possible social or religious connections range from fetishes, charms, or other magical representations, which do not necessarily have to be zoomorphic, to clan insignia or symbols of any number of social groupings. As with the majority of artifacts from Denton and other early sites in the area, more data are needed for more conclusive evidence of such cultural connotations.

Possible Preforms

Presumed preforms for certain types of beads and pendants include a variety of shapes and materials. They have been subdivided into four general categories: rough sandstone or limonite fragments with ground faces or edges, thick pebbles with smoothed ends, sawed preforms, and undrilled river pebbles with ground edges. Certain associated items--including unworked pebbles and edge-abraded flakes, which are thought to be possible bead preform saws--will also be discussed in this section.

The first category is made up of rough sandstone and limonite fragments which have some grinding, in varying amounts, on their faces or edges. None of these objects are drilled or sawed. They were possibly

being made into some form of disc bead. One finished example of a disc bead (Plate 31 B) is made of the same kind of sandstone as many of these preforms and was evidently ground into shape from a similar fragment. On the other hand, it is possible that some of these specimens with smooth, ground faces were small abraders or grinding stones of some sort and were not even bead preforms at all. Only one of these, Specimen D (Plate 32), appears to be taking on a definitely rounded shape suggestive of a disc bead form. Many have rough, broken edges which have not been ground.

Specimen A (D-75; Plate 32) is a large, slightly curved fragment of medium-grained brown sandstone. All four sides are broken and unground. The incurved face, ground smooth, is suggestive of a hone or grinding stone. Maximum measurements are: length 46.1 mm, width 40.5 mm, and thickness 11.2 mm. The specimen was found on the surface in the vicinity of the two "mounds."

Specimen B (D-73; Plate 32) is a medium-grained brown sandstone fragment with rough breakage scars on the edges and both faces. Grinding around portions of all edges and on small areas of both faces indicates that it was either being used for abrading or being shaped into a preform. The thinnest edge is ground very smooth and shows some polish, suggesting use as a saw. Maximum measurements for this object are: length 45.9 mm, width 38.8 mm, and thickness 11.8 mm. It was found on the surface in the vicinity of the two "mounds."

Specimen C (D-74; Plate 32) is a medium-grained brown sandstone fragment that is ground smooth on both faces and on two opposite edges. The other two edges are broken and rough. Apparently a fragment of a finished object which was broken transversely in two places, this specimen could have been a hone or grinding stone of some sort, or perhaps a bead preform. Maximum measurements are: length 28.1 mm, width 24.5 mm, and thickness 10.0 mm. Its thickness is almost uniform throughout. It was found on the surface in the vicinity of the "mounds."

Specimen D (D-26; Plate 32) is a yellowish brown limonite fragment with grinding along most of the edge and on one face. Evidently a flake struck from a larger core, this small object appears to be in a stage of preform reduction, the intended result perhaps being a disc bead. Maximum measurements are: length 33.3 mm, width 19.7 mm, and thickness 7.0 mm. It was found on the surface around the northernmost "mound."

Specimen E (D-28; Plate 32), also a flake struck from a core, is a yellowish brown limonite fragment with grinding along one edge. Although the material is very soft, this ground edge almost appears to have been used as a saw. Its classification as a preform is questionable. Maximum measurements are: length 43.7 mm, width 36.1 mm, and thickness 10.4 mm. It was found on the surface around the northernmost "mound."

Specimen F (D-71; Plate 32), a yellow and reddish brown limonite fragment, has one highly smoothed face suggestive of some sort of hone. All edges and the opposite face are broken and unground. The item's function as a preform is questionable. Maximum measurements are: length 26.2 mm, width 25.8 mm, and thickness 5.4 mm. It was found on the surface in the vicinity of the "mounds."

Specimen G (D-37; Plate 32) is a fine-grained gray sandstone fragment with shallow abrasion grooves running perpendicular to one edge,

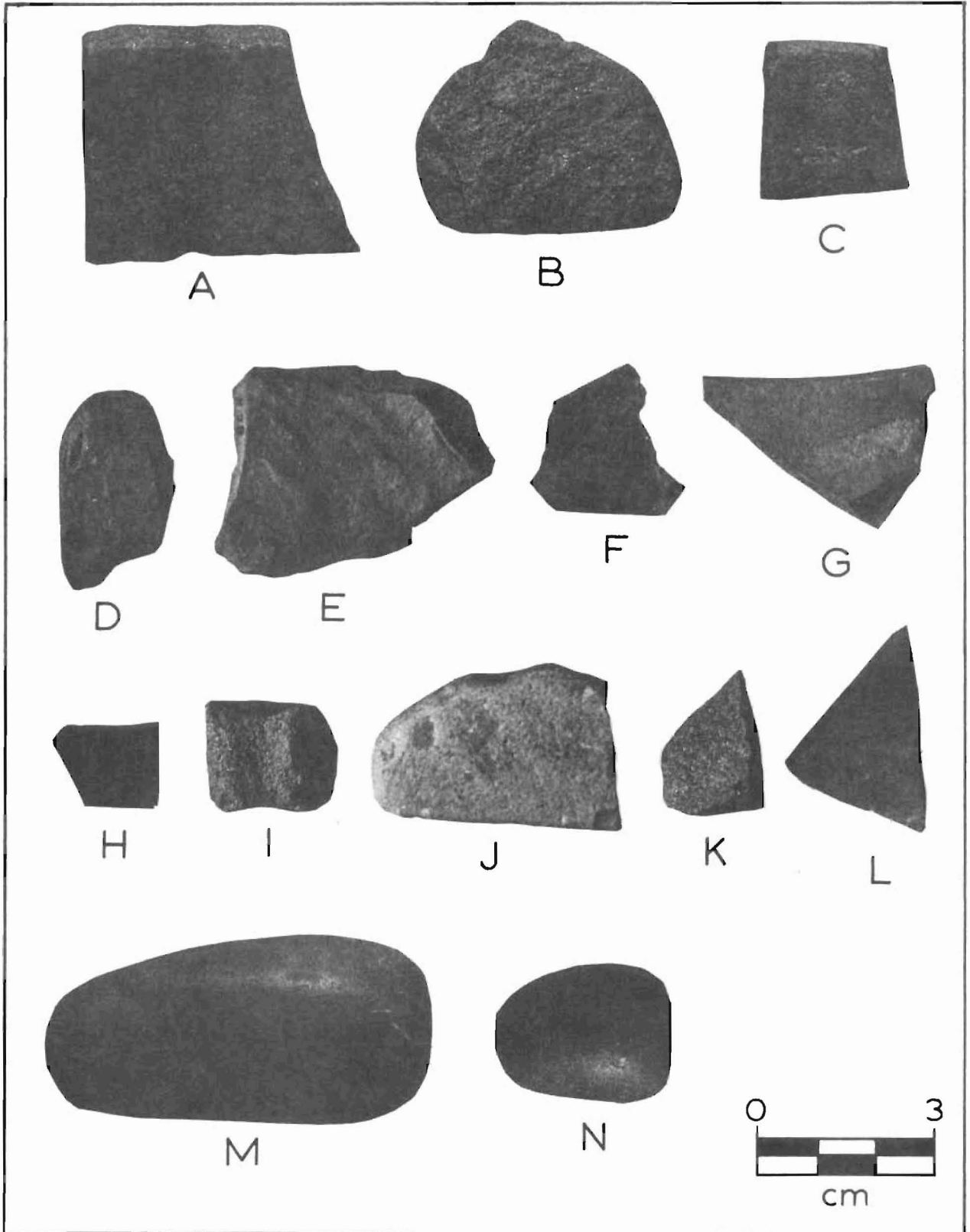


PLATE 32. PREFORMS. A-L, sandstone-limonite fragments; M-N, pebbles with smoothed ends.

which is slightly incurved. The other two edges are broken and unground. The smoothness of both faces appears to be natural. Probably this object was an abrading tool rather than a preform, but the latter possibility cannot be ruled out. Maximum measurements are: length 40.9 mm, width 27.3 mm, and thickness 9.1 mm. It was found on the surface near the road, about halfway between the two "mounds."

Specimen H (D-70; Plate 32) is a small, thin black fragment that looks something like slate, but is actually fine-grained sandstone. Although it is ground smooth on both faces and along one edge, it was probably not used as a saw, since the striations are perpendicular to the edge. Maximum measurements are: length 18.1 mm, width 14.5 mm, and thickness 2.5 mm. The thickness is uniform throughout. It was found on the surface in the vicinity of the "mounds."

Specimen I (D-22; Plate 32) is a medium-grained brown sandstone fragment which appears to have been part of a tubular object--possibly a pipe, tube, or bannerstone. The exterior, excurved surface and one end are ground smooth. The opposite end is broken and rough, as is the interior, incurved surface. The suggested original diameter of the hypothesized tubular object is around 30.0 mm. Maximum measurements of the specimen are: length 18.8 mm, width 23.7 mm, and thickness 11.0 mm. It was found on the surface in the vicinity of the "mounds."

Specimen J (D-29; Plate 32) is a fine-grained greenish gray sandstone pebble which is broken transversely at one end. This broken end shows grinding, while the rest of the pebble surface appears to be naturally shaped and worn by river erosion. Its function as a preform cannot be certain. Maximum measurements are: length 41.2 mm, width 27.0 mm, and thickness 10.5 mm. It was found on the surface of the south side of the southernmost "mound."

Specimen K (D-72; Plate 32) is a small, medium-grained brown sandstone fragment of a honelike object. Ground smooth on one face, it is broken and rough on the other face and the edges. Maximum measurements are: length 24.7 mm, width 18.4 mm, and thickness 11.4 mm. It was found on the surface in the vicinity of the "mounds."

Specimen L (D-76; Plate 32) is a fine-grained dark brown sandstone fragment of what may also have been a hone. It is ground very smooth on one face, which shows a slight polish, and has some grinding on the opposite face. The edges are broken and rough. Maximum measurements are: length 31.6 mm, width 26.1 mm, and thickness 5.0 mm. It was found on the surface in the vicinity of the "mounds."

The second subdivision of the preform group includes two thick pebbles, each of which has a very smooth, polished surface at one end. These could have been preforms for large beads, but appear also like some form of tool. This is especially so with the first specimen.

Specimen M (D-79; Plate 32) is a thick, elongated, greenish gray pebble of very fine-grained sandstone. One end is flattened and very smooth from grinding, and the sides near this end show a few pecking scars. The opposite end is rounded and pitted from pecking. Evidently, either the object was used as a hammerstone as well as being abraded, or it was being pecked and ground into a more desirable preform shape. The sides are naturally smoothed from river erosion. Maximum measurements are: length 65.3 mm, width 29.7 mm, and thickness 26.5 mm. It was found on the surface in the vicinity of the two "mounds."

Specimen N (D-30; Plate 32) is a rounded red jasper pebble with yellow bands. There is some grinding over portions of its entire surface, and one end is ground very smooth and polished. This object thus appears more likely to be a bead preform than does Specimen M. Maximum measurements are: length 30.2 mm and diameter 24.6 mm. It was found on the surface of the south side of the southernmost "mound."

The third subdivision of possible preforms includes five objects which have been sawed, apparently in an attempt to cut them down to a variety of desirable bead preform shapes. None show any evidence of drilling, but some are ground. Apparently, many of the beads were cut and at least roughly shaped before they were drilled.

Specimen A (D-46; Plate 33) is a dark reddish limonite fragment with a sawed groove on one edge of one face. In the center of the opposite face are some shallow scratch marks which appear to be the beginning of another sawing operation. The sawed edge is snapped off along the bottom of the groove, which appears to have been up to 1.6 mm deep and approximately 8.0 mm wide. This width suggests that the groove was cut with a sandstone saw. All four side edges of the object are broken and rough. Maximum measurements are: length 22.0 mm, width 21.5 mm, and thickness 5.0 mm. The specimen was found on the surface of the southwest side of the southernmost "mound."

Specimen B (D-21; Plate 33), a fine-grained brown sandstone fragment, is ground smooth on both faces and along one edge. Narrow sawing grooves appear on one face along the other three unground edges. The grooves, through which the edges are snapped off, appear to have been up to 2.0 mm wide and 1.6 mm deep. Their narrowness indicates that they may have been cut with a chert flake saw. This object was evidently being cut into a square preform in preparation for grinding into a finished bead form. Maximum measurements for the specimen are: length 22.7 mm, width 20.8 mm, and thickness 7.5 mm. It was found on the surface in the vicinity of the two "mounds."

Specimen C (D-38; Plate 33) is a fine-grained red and yellow sandstone fragment with a single sawing groove in the center of each face. One edge is transversely broken, the two adjacent edges are ground, and the opposite edge has a flake scar but appears to have been ground also. Both faces show some grinding. The flake scar and the transverse break may be the result of an aborted attempt to break the object through the sawed grooves, which are opposite each other. These grooves range up to 1.5 mm in width and 0.6 mm in depth and were probably also cut with a chert flake saw. Maximum measurements for the object are: length 21.7 mm, width 18.2 mm, and thickness 8.0 mm. It was found on the surface of the south side of the southernmost "mound."

Specimen D (D-45; Plate 33) is a yellowish brown chert pebble of river-worn gravel with no grinding and a natural patina. Near one end is a groove, measuring up to 1.7 mm wide and 0.8 mm deep, that was probably cut with a chert flake saw. Maximum measurements for the object are: length 31.5 mm, width 20.0 mm, and thickness 10.0 mm. It was found on the surface on top of the southernmost "mound."

Specimen E (D-36; Plate 33) is a dark red limonite and sandstone fragment with sawing striations on one side. No groove remains. The other sides are all broken, apparently by direct percussion. This specimen may have been a waste section cut off the main preform, since

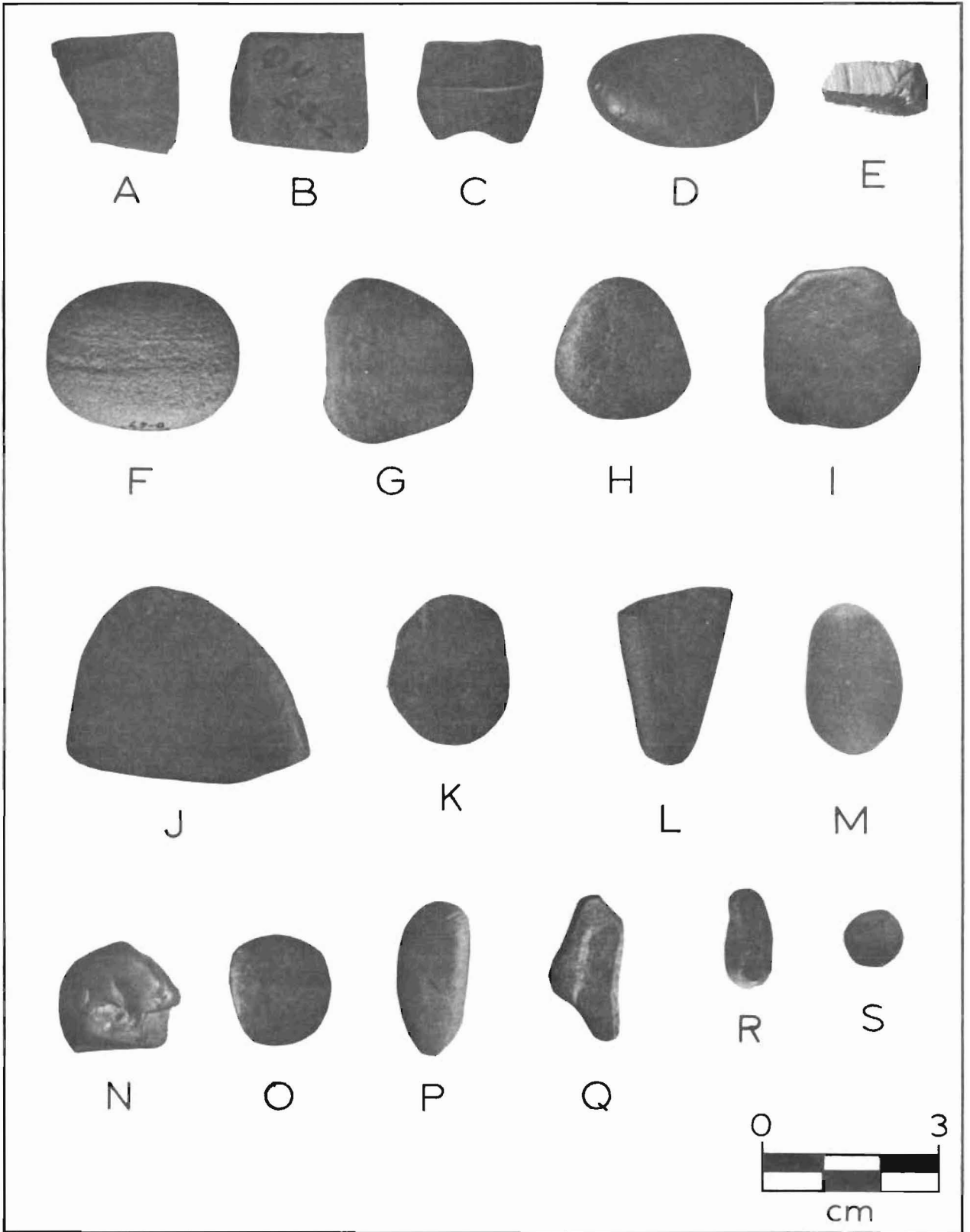


PLATE 33. PREFORMS. A-E, sawed pebbles; F-S, ground, undrilled pebbles.

there is sandstone cortex on one side and no grinding. Maximum measurements are: length 17.6 mm, width 9.9 mm, and thickness 7.8 mm. It was found on the surface on the southwest side of the southernmost "mound."

The fourth subdivision in the preform category consists of naturally smooth river pebbles, mostly flat, with some artificial grinding on the edges. These show no evidence of drilling, but the majority closely resemble the flat, drilled pebbles described previously (Plate 30 A-0) as pendants. Brief descriptions of the fourteen specimens in this group follow.

Specimen F (D-67; Plate 33) is a flat, oblong pebble of reddish brown medium-grained sandstone. The edges at the two ends are heavily ground and somewhat flattened as a result. Maximum measurements are: length 31.4 mm, width 25.3 mm, and thickness 10.0 mm. The specimen was found on the surface in the vicinity of the "mounds."

Specimen G (D-44; Plate 33) is a somewhat triangular, flat pebble of reddish brown fine-grained chert or quartzite. It shows grinding along a 9.0-mm length of one edge. Maximum measurements are: width 27.4 mm and thickness 8.2 mm. It was found on the surface near the southeast side of the northernmost "mound."

Specimen H (D-69; Plate 33) is a flat, triangular pebble of fine-grained reddish brown sandstone. Two short sections of the edge at two of the "corners," each about 8.0 mm long, show grinding. Maximum measurements are: width 23.4 mm and thickness 7.3 mm. It was found on the surface in the vicinity of the "mounds."

Specimen I (D-20; Plate 33) is a flat, fine-grained red quartzite or jasper pebble with grinding along about 25.0 mm of one edge. Maximum measurements are: length 27.9 mm, width 26.3 mm, and thickness 5.8 mm. It was found about 200 feet north of the northernmost "mound."

Specimen J (D-27; Plate 33) is a pebble of fine-grained reddish brown sandstone. It is transversely broken. Heavy grinding shows on the broken edge, and grinding is present along portions of the other edge. Maximum measurements are: length to break 31.4 mm, width 39.5 mm, and thickness 8.2 mm. It was found on the surface around the northernmost "mound."

Specimen K (D-18; Plate 33) is a flat, fine-grained reddish brown sandstone pebble with grinding along most of the edge. Grinding is especially heavy at both ends, where it is also evident on part of one face. Maximum measurements are: length 24.9 mm, width 19.8 mm, and thickness 3.9 mm. It was found on the surface around the southernmost "mound."

Specimen L (D-52; Plate 33) is a thick, transversely broken fine-grained reddish brown sandstone pebble with slight grinding on its broken edge. Maximum measurements are: length 29.7 mm, width 18.6 mm, and thickness 10.6 mm. It was found on the surface around the southernmost "mound."

Specimen M (D-88; Plate 33), a fine-grained reddish brown sandstone pebble, has slight grinding along about 8.0 mm of the edge at one end. Maximum measurements are: length 26.4 mm, width 17.0 mm, and thickness 9.0 mm. Recovered from the excavation, it was located in the 0.8-1.3-foot level in square 60N-40E.

Specimen N (D-17; Plate 33) is a red jasper pebble with grinding on portions of one face and on several corner edges. Maximum measurements

are: length 19.3 mm, width 18.8 mm, and thickness 8.8 mm. It was found on the surface in the vicinity of the "mounds."

Specimen O (D-19; Plate 33) is a pebble of mottled yellowish brown to gray, fine-grained quartzite. Grinding is heavy on the entire edge and slight on one face. Maximum measurements are: length 18.6 mm, width 16.3 mm, and thickness 3.3 mm. It was found on the surface on a low ridge about 200 yards south of the "mounds."

Specimen P (D-25; Plate 33) is a long, narrow pebble of fine-grained reddish brown sandstone. It has grinding along the edges of both sides, but none on the ends or faces. Maximum measurements are: length 25.8 mm, width 11.4 mm, and thickness 6.7 mm. It was found on the surface around the northernmost "mound."

Specimen Q (D-33; Plate 33) is an irregularly shaped pebble of an unidentified light purple fine-grained stone. Light grinding is evident on the edges at both ends and on one face. Maximum measurements are: length 25.3 mm, width 11.7 mm, and thickness 4.2 mm. It was found on the surface in the vicinity of the "mounds."

Specimen R (D-40; Plate 33) is a small, dark red chert or jasper pebble with heavy grinding on both ends and along all edge corners. Maximum measurements are: length 17.0 mm, width 8.4 mm, and thickness 6.0 mm. It was found on the surface on the southwest side of the southernmost "mound."

Specimen S (D-24; Plate 33) is a small, round piece of medium-grained brown sandstone. Its entire surface is ground. Apparently, it was being shaped into a round bead similar in shape and size to Specimen E (Plate 31). Maximum measurements are: diameter 10.1 mm and thickness 6.7 mm. It was found on the surface around the northernmost "mound."

A final group of items are the unworked pebbles and stone fragments similar to the preforms mentioned above. The surface collection included seven almost square, red jasper pebbles ranging in thickness from 9.6 mm to 27.0 mm. There were also thirty-two flat, smooth, rounded pebbles of various materials like the "pendants" previously mentioned. They ranged from 10.5 mm to 46.3 mm in diameter and from 2.8 mm to 14.6 mm in thickness. Presumably, these were collected by the Denton inhabitants to be used as lapidary preforms. The presence on the surface and in the midden of such locally obtainable materials, both in unfinished and finished forms, indicates that most, if not all, of the lapidary items mentioned above were made on the site and not imported.

Bead Manufacturing Tools

Two chert flakes with smooth, abraded edges may be associated with the manufacture of beads. They are thought to have been saws used to cut grooves in pebble preforms such as those illustrated in Plate 33 B, C, and D. The preforms were then snapped off at the groove and ground into shape. One of these possible saws (D-89; Plate 34 A) is a small, yellow tan chert flake with primary cortex. Its one smooth edge has two facets that form a V-shaped cross section, and longitudinal, microscopic striations that indicate a sawing function. An adjacent unworked edge is formed by a transverse break. This flake was found in the excavated

midden in the 0.8-1.0-foot level of square 0-50E. Maximum measurements are: length 17.9 mm, width 16.3 mm, and thickness 3.0 mm.

The second edge-abraded flake (D-39; Plate 34 B) is a heat-treated, primary cortex chert flake with two broken sides. The third side, which forms the working edge, is smooth and rounded, not faceted like the working edge of Specimen A (Plate 34). Use as a saw is indicated by microscopically visible longitudinal striations. A small notch has been chipped, probably accidentally, out of one end of this working edge. Maximum measurements are: length 24.0 mm, width 16.1 mm, and thickness 4.2 mm. The specimen was found on the surface on the south side of the southernmost "mound." Experiments conducted by the author have shown that sawing similar types of stone with chert flakes results in grooves with dimensions similar to those of Specimens B, C, and D (Plate 33).

Beads and Pendants From Other Sites

Brief comparisons should be made between the Denton lapidary objects and a few similar items from other sites in the area, as well as one of interest from Alabama. These objects and their associations will be discussed individually.

Specimen C (Plate 34) is a thick disc bead of red jasper from the Pitchford Site (22-Tu-511) in Tunica County, Mississippi. It has been mentioned in the section on bannerstones. Ground smooth over its entire surface, this bead shows a slight polish or patina. The edge is rounded and both faces are flattened. On one face, the centrally drilled biconical perforation tapers from 4.7 mm to 3.0 mm in diameter and is 6.8 mm deep, while the opposite portion tapers from 4.0 mm to 3.0 mm in diameter and is 3.5 mm deep. Maximum measurements for the bead are: diameter 17.8 mm and thickness 10.5 mm. Although larger, this object is similar in shape and material to Specimen C (Plate 31). It was found on the surface in association with bannerstones and large, stemmed projectile points similar to the crudely made Middle Archaic types from Denton. Similar beads have been found on a number of Middle and Late Archaic sites throughout the Southeast.

Specimen D (Plate 34) is a flat, smooth river pebble of fine-grained dark gray sandstone from the Norman Site (22-Qu-518) in Quitman County, Mississippi. Grinding is evident around the edges of this specimen, which is quite similar to the flat, drilled pebbles mentioned from Denton (see p. 77 ff). It is biconically drilled near one end. On one face, the hole tapers from 7.0 mm to 1.7 mm in diameter and is 4.1 mm deep, while on the opposite side it tapers from 6.8 mm to 1.7 mm in diameter and is 4.5 mm deep. Maximum measurements for this "pendant" are: length 46.0 mm, width 40.6 mm, and thickness 10.6 mm. Considering the lack of a significant Middle Archaic assemblage at Norman, this object seems more likely associated with the large Poverty Point component there. It is the only drilled pebble presently known from this site, and it may indicate an association with some culture other than Poverty Point.

Specimen E (Plate 34) is half of a red jasper disc bead from the Longstreet Site (22-Qu-523) in Quitman County, Mississippi. It is ground smooth and both faces are flattened. The single conical hole, drilled completely through the center, tapers from 4.0 mm to 2.5 mm in diameter. Maximum measurements for the bead are: diameter 11.1 mm and thickness 6.1 mm. This specimen is very similar to Specimens A and C (Plate 31) from Denton.

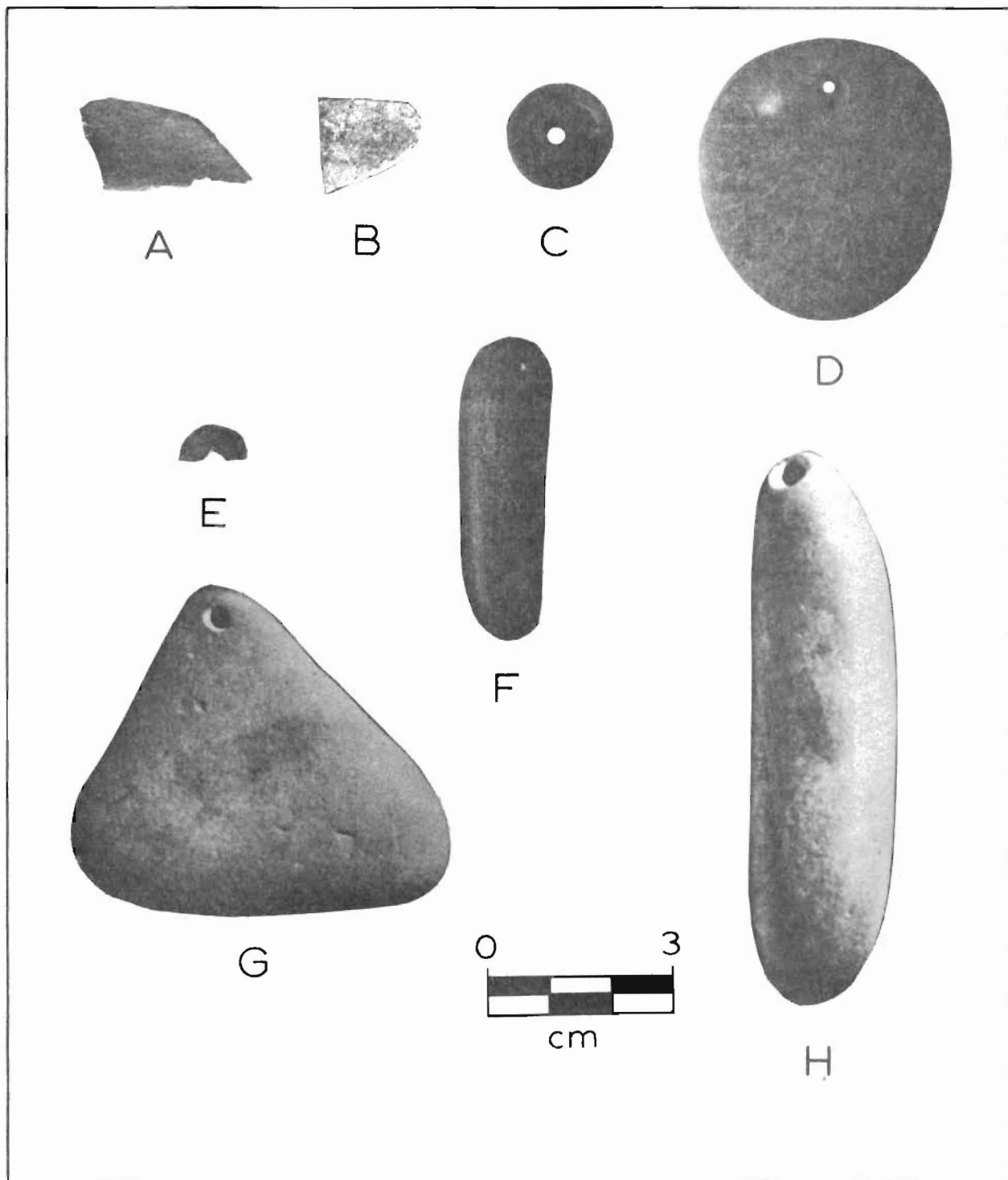


PLATE 34. TOOLS AND BEADS. A-B, bead saws; C, Pitchford Site bead; D, Norman Site pendant; E, Longstreet Site bead; F, Longstreet drilled pebble; G-H, pendants from mound near Mobile Bay, Alabama (photographs G and H courtesy of Nicholas H. Holmes and Thigpen Photography, Mobile, Alabama).

Specimen F (Plate 34) also comes from the Longstreet Site. This elongated, smooth river pebble is unmodified except for the beginning on one face of a small drill hole that tapers from a maximum 2.0 mm in diameter and is about 0.5 mm deep. Maximum measurements for the object are: length 50.1 mm, width 14.2 mm, and thickness 12.9 mm. It resembles the Denton specimens only in that it is a partially drilled river pebble probably intended as some form of pendant, and that it is from a site of about the same age as Denton.

Specimens E and F (Plate 34) are of special interest here because the Longstreet Site is only about 2 miles south-southeast of Denton and has a dated Middle Archaic midden component, which makes it one of the few known sites of that age in the northern Yazoo Basin. Radiocarbon dates from the site, obtained from the University of Georgia Geochronology Lab, are: 3050 \pm 120 B.C. (UGa-337) and 2925 \pm 145 B.C. (UGa-336) (Noakes and Brandau 1974:138; Connaway 1975:1-2). Longstreet has large, stemmed points and amorphous fired clay lumps similar to the Middle Archaic Denton specimens. The apparent near-contemporaneity of the two sites lends further support to the Middle Archaic age assigned certain types of lapidary items at Denton. A number of stone bead types, including disc beads, from various areas of Mississippi are described by Brown (1926:188-93).

The final set of comparative items comes from a small mound on the west side of Mobile Bay, just south of Mobile, Alabama. This site, which according to Trickey and Holmes (1967:24) is Late Archaic, has yielded atlatl weights, drilled pebbles, a drilled stone turtle, and Gary points. The two drilled pebbles from the mound, shown in Plate 34 (G,H), are of brown chert. No specifications are available for either artifact or for their drill holes, but both are shown at full size in the photographs. Both are very similar to the Denton "pendants" described previously. They were found in association with another lapidary trait found at Denton, a stone turtle.

Zoomorphic Artifacts

The most unusual lapidary items in the Denton assemblage are the zoomorphic effigies, represented by effigy turtles and effigy beads. The two turtles from Denton and certain similar specimens, which are of a construction different from that of the beads, will be discussed first. Following this will be descriptions of the twelve Denton Site zoomorphic beads and similar specimens from other sites. Finally, a discussion of various hypotheses concerning the function of these artifacts will be presented.

Effigy Turtles

Specimen A (D-54; Plate 35) is a ground and carved, realistically styled effigy turtle (hereafter referred to as the MDAH turtle). It has been illustrated by Connaway and McGahey (1970:18) and by Webb (1976:7). The unidentified soft pastel green stone has inclusions of a soft, milky-white substance about the consistency of clay, as well as occasional small globular inclusions of milky quartz and of crystalline quartz that appear to the naked eye as small linear streaks of darker green. The green

parent material appears microscopically to have a very fine-grained crystalline structure. This author is not aware of such material found locally in its natural state.

A tube (Plate 31 Z) and three of the effigy beads (Plate 36 G,H,N) were made from this same material. A small celt or gorget preform of the same material was found at the Teoc Creek Site (22-Cr-504), a Poverty Point occupation in Carroll County, Mississippi (Connaway, McGahey, and Webb 1977). Webb (1971b:110) mentions that a "locust" bead from the Claiborne Site (22-Ha-501), a Poverty Point site in Hancock County, Mississippi, is made "of hard claystone or greenstone, pastel green in color with darker green and white speckling." Except for the reference to the stone's hardness, this description fits the Denton turtle well.

Two small holes drilled in the center of the specimen, one dorsally and one ventrally, do not meet. The slight tapering of both indicates the use of a solid drill. The dorsal hole is 3.7 mm in maximum diameter and 8.0 mm deep, while the ventral one is 2.3 mm in maximum diameter and 5.5 mm deep. The object has a smooth finish but no luster. The carapace is smooth, with the front and back edges shown in relief, and the eyes and nose are represented by cutout depressions. Both front feet and the left hind foot have six toes cut in relief, and the right hind foot has five. The underside or plastron is flat and smooth except for very short relief cuts made at the neck and each foot. The appearance of the shell most closely resembles that of the soft-shelled turtle, since it lacks any representation of horny plates found on other species. The maximum dimensions of this specimen are: length from nose tip to tail tip 80.2 mm, width 52.5 mm and thickness 16.6 mm. It was found by Sam McGahey on the surface of the east side of the southernmost "mound," next to the road.

Specimen B (D-77; Plate 35) is an effigy turtle of fine-grained brown sandstone, apparently once a flat river pebble. The head, feet, and tail have been notched out and engraved. Separating the toes are shallow, engraved lines, which curve down over the edge of the feet to form toes, but do not quite reach the ventral surface. The front left foot has five lines, the front right and back left have four each, and the back right has six. The feet are slightly beveled upward on the bottom and downward on the top, as is the tail. An engraved line running across the front, down the right side, and across the rear outlines the carapace. This line does not continue along the left side, an attribute that may indicate grinding subsequent to the engraving of this line. The smooth ventral surface has no engraving, but is beveled upward at the head. On the flat, dorsal side of the head, a short engraved line represents the nose, and the two eyes are cut by abrasion into the edges. The conical hole, drilled completely through from the center of the dorsal surface, tapers from 3.9 mm to 2.2 mm in diameter. Maximum measurements for the object are: length from nose tip to tail tip 58.9 mm, width at front feet 52.0 mm, width at back feet 43.4 mm, width at shoulders 46.3 mm, and thickness 8.0 mm.

Jean Jones Firestone, present owner of the object, reports that her father, H. O. Jones, found it about fifty years ago in the general area of Denton, but the exact location was not recorded. The technique and style are almost identical to that of Specimen A (Plate 35), with

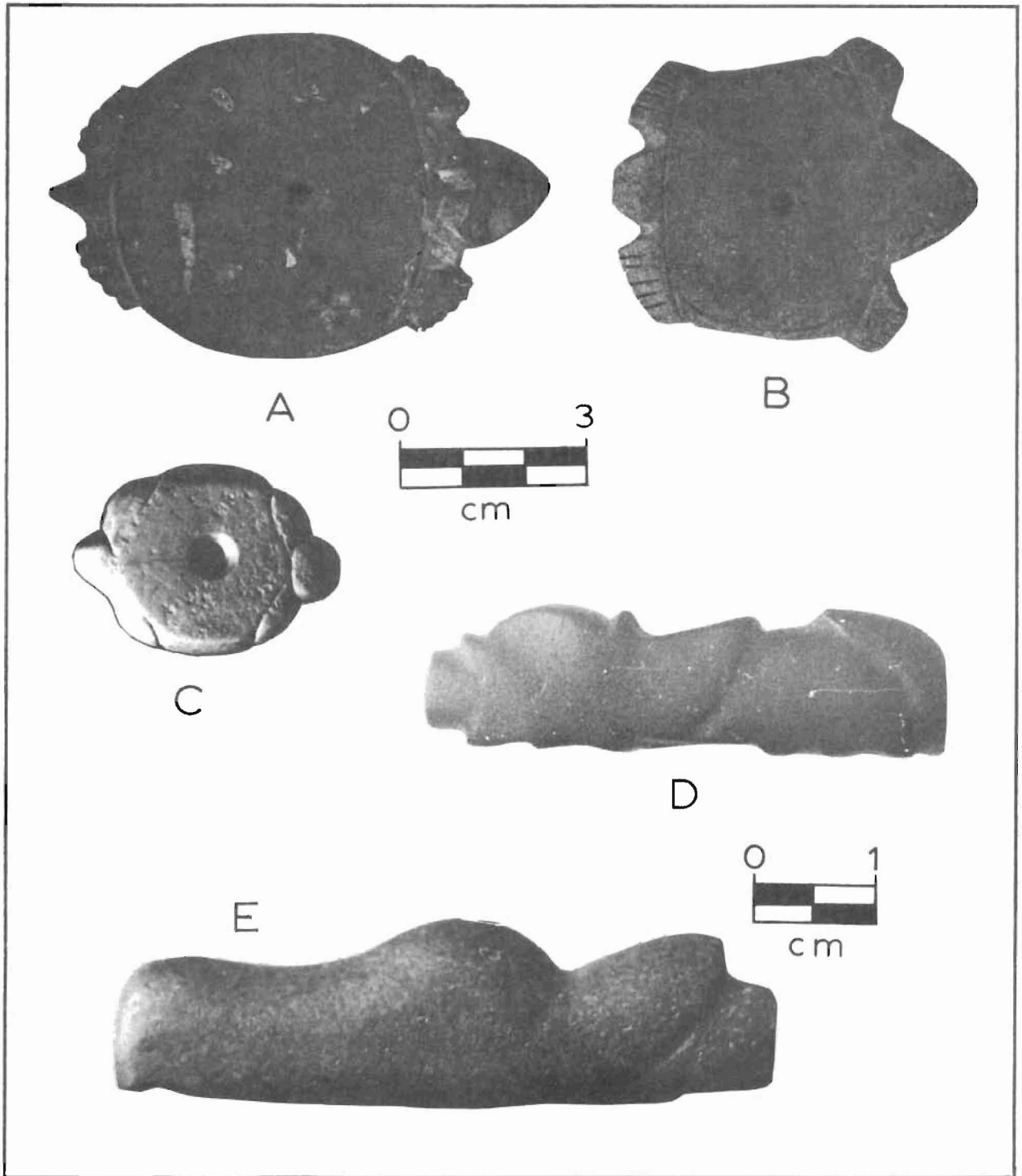


PLATE 35. ZOOMORPHIC EFFIGIES. A, MDAH turtle; B, Jones turtle; C, Alabama turtle (courtesy of Nicholas H. Holmes and Thigpen Photography, Mobile, Alabama); D, Lancaster bead; E, MDAH bead #1.

well-executed symmetry and realism. For this reason, it is highly probable that this artifact originally came from the Denton Site and may have been made by the same artisan.

Very few comparative examples of ground stone turtles have been found on other sites. A similar specimen (Plate 35 C) from a small mound on the west side of Mobile Bay, Alabama, was reported by Trickey and Holmes (1967:24) and illustrated by Webb (1976:7). It is much smaller, measuring approximately 43.0 mm in length by 32.0 mm in width, and is made of red limonite. Like the Denton example, the carapace is smooth and flattened. The central biconical perforation is drilled from both sides. Judging from the photograph, the dorsal hole appears to taper from approximately 8.5 mm to 4.5 mm in diameter. Artifacts found in association include the two previously mentioned drilled pebbles (Plate 34 G-H), a piece of worked limonite, a quartz Gary point, some broken pieces of crude, amorphous baked clay objects, and a few unidentifiable sherds (N. H. Holmes, personal communication). Although no radiocarbon dates were obtained from this site, Trickey and Holmes (1967:24) place the turtle in the Late Archaic Period. The drilled pebbles, the fired clay, and the turtle show very strong resemblances to materials found at Denton. Except for some possible Olmec examples, this is the only turtle effigy known to the author to combine the same basic stylistic designs as the two just described from Denton.

Two examples from La Venta, Tabasco, in the Olmec area of Mexico were reported by Drucker (1952), who stated: "At either end of a string of beads found in 1943 were two small rectangular pendants of jade with rounded corners, flat on one side, and a very low ridge down the axis of the other. A faint channel marking off the border on the ridged side increases the appearance of a turtle carapace. One of these objects has a sizable biconical perforation at the center of one end. The other is said to be perforated also . . ." (1952:163). These examples were not illustrated, so the resemblance to the Denton specimens is questionable, and no cultural connections between the two areas are inferred here.

A number of other stone effigy turtles with various cultural associations are known. Webb (1968:316) pictures a fragment of a brown limonite turtle shell pendant from the Poverty Point Site, Louisiana. Unlike the Denton and Mobile turtles, this one has no head, feet, or tail, and has carved representations of carapace plates. It apparently had two perforations, but only a portion of one conical hole remains. It would have been originally about 60.0 mm in greatest diameter. Webb (1976:6-7) describes a similar limonite turtle shell gorget from the Poverty Point Site. It is an elongated oval shape, with two conical drill holes and engraved carapace plates somewhat like the other one from this site. These two Poverty Point examples show the same stylistic unity with each other that the two Denton specimens share.

Webb (1976:6-7) also illustrates a small chipped stone turtle from the "Edward Fant Site" (Hamson Brake, 22-Co-599) in Coahoma County, Mississippi. This site has been leveled, but surface artifacts include several biconical Poverty Point objects, along with some large, unidentified projectile points. This turtle does not conform to the other styles described and may have originated later in time.

Two intricately carved turtles of "serpentine" reported from the Natchez, Mississippi, area are pictured by Brown (1926:207). Like the two from Poverty Point, the carved carapace plates are very realistic in style. The shape of the carapace and design of the plates closely resemble those of the box tortoise. Like the Denton specimens, these have heads, feet, and tails, but they do not appear to be perforated. One (Brown 1926:Fig. 149) is about 49.0 mm long, while the other (Brown 1926:Fig. 150) is about 38.0 mm long. The head of the larger one appears to be broken off. The smaller one seems to be intact and is the more realistic of the two. The context from which these came is not known.

Zoomorphic Effigy Beads

In a report entitled "Archaic and Poverty Point Zoomorphic Locust Beads," Webb (1971b:105-14) presented a description of fourteen stone effigy beads found on sites in Alabama, Mississippi, Louisiana, and Arkansas. He compared in detail the zoomorphic features of each of the beads with anatomical features of various insect prototypes. Since this article was published, a number of similar beads have been found at Denton and other sites in Mississippi. In accord with Webb's hypothesis, some might be referred to as "locust beads," since they appear to be morphologically similar to that category. Others, however, seem to suggest the forms of certain mammals or birds. To illustrate the similarities and contrasts between these and the beads described by Webb, the following descriptions seem in order. They are shown twice actual size in Plates 35, 36, and 37 in order to illustrate more clearly the morphological details.

Before describing the individual beads, certain morphological characteristics common to a number of them should be pointed out. Webb (1971b:112) has discussed one of the most outstanding features which helps to link the so-called "locust beads" into one concept: the bilateral, midbody disc, a circular area that is either raised in relief or engraved. Webb (1971b:112) thinks that this represents the auditory organs of certain insects, such as the cicada. Only two fragmentary specimens (Plate 36 G,K) presently known from Mississippi have this feature. The two morphological features more common to Mississippi specimens are the "wing" and the "Spanish helmet." The "wing," which has been discussed by Webb (1971b:112) in some detail, is just like the wing of an insect, folded alongside its abdomen. Webb has suggested that on some examples this may represent the folded legs of a grasshopper. It is found on specimens from all four states, including six from Mississippi. On the other hand, the "Spanish helmet," which Webb (1971b:108) refers to as a "central saddle-like effect," seems to be confined to specimens from Mississippi. It appears in varying forms, the most distinct being seen on the Lancaster bead from Denton (Plate 35 E; Webb 1971b:Fig. 1 f-f').

Specimen D (D-58; Plate 35) is from the collection of Jack Lancaster of Sunflower, Mississippi. It was described by Webb (1971b:108), and has been included here with supplementary data for comparison with others found at Denton. Webb states:

"The Denton bead (Fig. 1 f,f'), of jet black chert, is 41.3 mm in length, 12 mm in width and 7 mm in thickness, with a 2 mm longitudinal perforation. It is bifacially symmetrical and has numerous curving surfaces and relief ridges. There is a low anterior dorsal protrusion outlined by a faint ridge, a central saddle-like effect, and curving posterior elevations which enclose a triangular depressed area. The presumed ventral margin has five low protrusions. The bead lacks the elevated midbody disc noted in all previous specimens, but the other features seem adequate to incorporate it into the present group" (1971b:108).

It might be noted here that the central perforation is striated and tapers from 3.4 mm to 2.4 mm in diameter. The hole is drilled completely through from the anterior or tubular end. Webb further describes the bead as having "curves across the midbody that suggest wing curves."

"One could argue whether the additional posterior dorsal projections . . . simulate wings or the bent knees of the large hind legs . . . [The Specimen] . . . has four downward protrusions, which is foreign to the leg count of all of these insects. The Spanish-helmet appearance of the left end and upper margin bears some resemblance to the prothorax of the Sexton beetle . . ." (1971b:111-12).

The "Spanish helmet" is formed by a bilateral, semicircular, raised ridge enclosing a slight dorsal depression. Similar depressed areas are found on several other specimens from Mississippi. This example was found on the surface of the Denton Site on the northeast side of the southernmost "mound."

Specimen E (D-61; Plate 35), found about halfway between the two "mounds" by Sam Brookes, is referred to as "MDAH bead #1." It is made of mottled dark red quartzite, a material common in present-day Mississippi River gravels, which appears microscopically as clear or milky quartzite speckled with bright red flecks of jasper. This smooth, polished object is morphologically similar to the Lancaster bead (Specimen D, Plate 35), but has no semblance of the "Spanish helmet." A distinct "wing" near the posterior end is formed by an upward-curving ridge, raised in relief and projecting dorsally as a raised hump. There is another large dorsal hump at midbody, as well as a slight one at the anterior end. Very shallow, bilaterally cut lines separate the center hump from the dorsal wing projection. The flattened posterior end is tubular in cross section, and an anterior ventral protrusion delineated by a shallow groove suggests the "beak-like mouth part" Webb describes for several specimens (1971b:Fig. 1 a-c). Three more shallow, cut grooves on the posterior half of the ventral surface form two low-relief protrusions similar to those on Specimen D, and perhaps represent legs. The longitudinal perforation, drilled completely through from the posterior end as in Specimen D, tapers from 4.2 mm to 1.8 mm in diameter. Maximum measurements for the bead are: length 52.2 mm, width at midbody

hump 15.8 mm, width at wing hump 14.1 mm, and lateral thickness 9.0 mm. There is a strong resemblance between this bead and one of the red jasper beads from Lamar County, Alabama (Webb 1971b:Fig. 1 l-l'), which exhibits the dorsal humps and wing protrusion. A similar correlation can be seen between the Denton bead and a green stone bead from Lauderdale County, Alabama (Webb 1971b:Fig. 1 j-j'), although the latter specimen has a slightly more squared stylization.

Specimen F (D-59; Plate 36) was found at the Denton Site by the 1972 Mississippi State University excavation crew. It was located at a depth of 1.1 feet in disturbed backfill from a previous excavation unit. This carved object is ground smooth and has a dull polish or patina. Like the Lancaster bead (Specimen D, Plate 35), it is a hard chert or close-grained quartzite, but its color is a solid, dark gray green.

Like Specimens D and E (Plate 35), it is bifacially symmetrical and has pronounced curving of the dorsal surfaces and relief ridges on the lateral and ventral surfaces. Toward the presumably anterior end, two dorsal relief ridges set off a hump or "crown" portion of the "Spanish helmet" motif and form its "brim." The helmet is rounded on top, and lateral constrictions on both sides form slight depressions. Relief ridges completely encircle the bead in front of and behind the helmet area, leaving a distinctly triangular depression between the helmet and the "wing." As is the case with most of the Mississippi beads, this one has no midbody circular disc. Perhaps this feature is being replaced by the helmet.

On Specimen F, as on Specimens D and E, the "wing" is dorsally and laterally raised in relief and has the same basic lateral curvature upward. As on Specimen D, but in contrast to Specimen E, the wing is dorsally flattened. Because Specimen F differs from both D and E in that the wing faces the opposite direction, away from the helmet, it is difficult to decide which end is anterior and which is posterior. The helmet end is usually assumed to be anterior, perhaps representing the prothorax of an insect. This will also be seen as a problem with Specimen K, the Mitchell bead.

On the dorsal surface, on the opposite side of the wing from the helmet, is another rounded hump. There is a slight constriction between this hump and the wingtip. Toward the anterior end of the ventral surface and just beneath the helmet, is a small, rounded, raised "peg" or protrusion, about 1.0 mm in height and 5.0 mm in diameter, which may represent another style of mouth. Such a protrusion is not present on any of the other known beads of this type except Specimen R (Plate 37), which came from a site in the hills approximately 116 miles to the east. Toward the posterior end of Specimen F, just beneath the dorsal hump, a square protrusion is outlined by a single relief ridge on the anterior side and two ridges on the posterior side. Both ends of the specimen are flat, and the anterior end, toward the helmet, is squared in cross section, while the opposite end is tubular.

The bead was completely drilled longitudinally from the posterior end, as were Specimens D and E, and the hole is striated and varies in diameter from 3.3 mm to 2.3 mm. Evidently a solid drill was used, as with the previous specimens. On the anterior end the hole is slightly

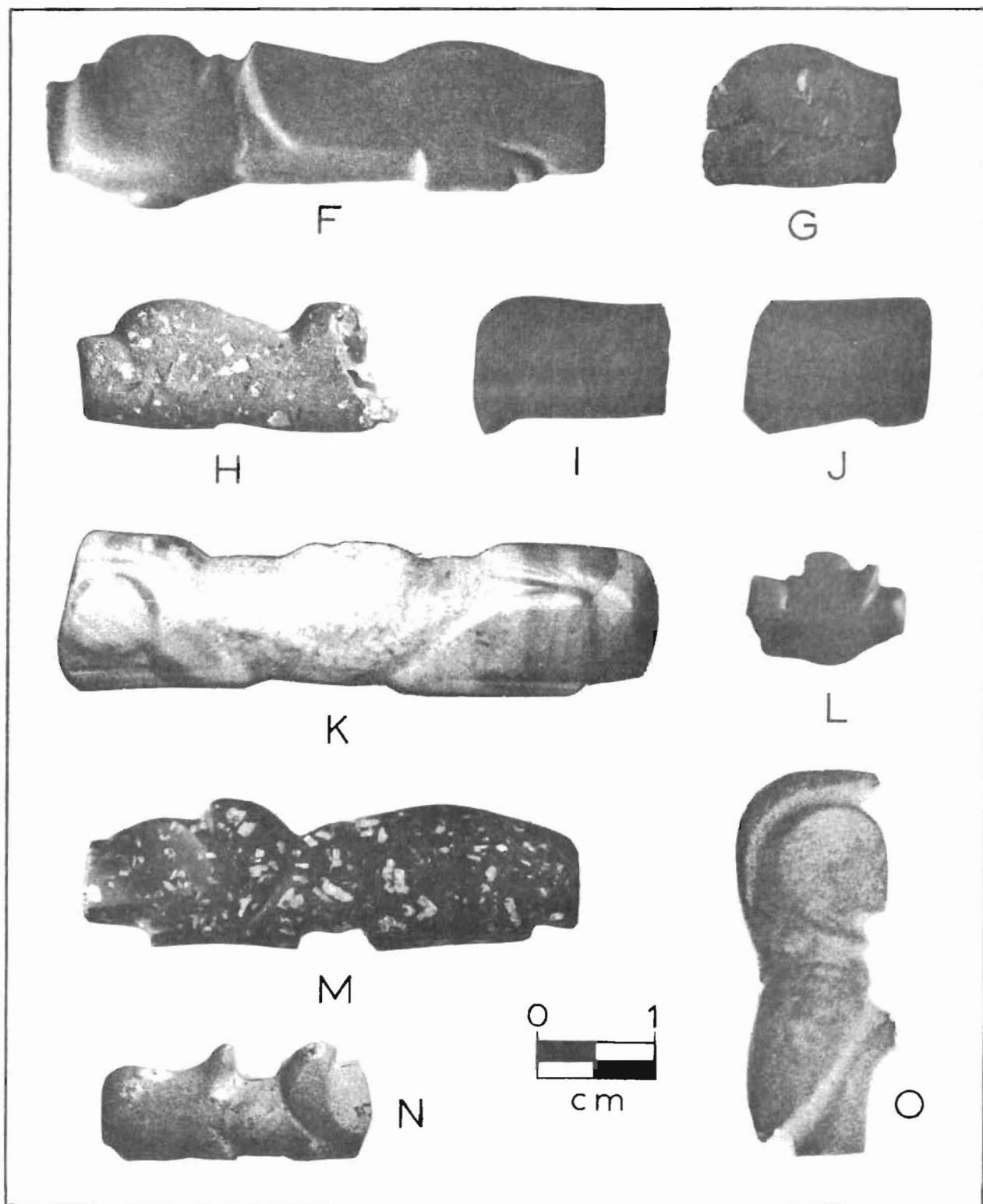


PLATE 36. DENTON ZOOMORPHIC BEADS. F, MSU; G, Jaeger #1; H, MDAH #2; I, Jaeger #2; J, Jaeger #3; K, Mitchell; L, MDAH #4; M, MDAH #3; N, MDAH #5; O, Jones.

ventral, and on the other end it is centrally positioned. Maximum measurements for the bead are: length 46.3 mm, width at helmet 15.0 mm, width at rear hump 13.0 mm, and lateral thickness 9.0 mm. Except for the Spanish helmet design, this specimen has certain similarities to the Lamar County, Alabama, bead previously mentioned (Webb 1971b: Fig. 1 l-1'), primarily in the wing and dorsal humps.

Specimen G (D-65; Plate 36) is a bilaterally symmetrical fragmentary bead made of the soft, green stone described previously in connection with the larger turtle (Plate 35 A). Burt Jaeger of Clarksdale, Mississippi, found it on the surface near the road to the southeast of the northernmost "mound" at Denton. The "Jaeger bead #1" is the midsection of a smoothed bead similar to the ones discussed above, but both ends have recently been broken away from this one, possibly by a plow. On each side of the specimen is an engraved circular line or disc, 8.0 mm in diameter. Three short engraved lines radiate away from each circle, two dorsally and one ventrally. The dorsal lines continue across and connect on top of a pronounced dorsal hump, similar to the ones on Specimens E (Plate 35) and F (Plate 36). Specimen G is the only example known from Mississippi with an engraved midbody circular disc. Specimen K has a similar disc, but it is raised in relief.

Two shallow, cut depressions on the ventral surface outline a low protrusion reminiscent of the ventral designs of Specimens D, E (Plate 35), and F (Plate 36). A longitudinally drilled hole tapers slightly from 3.2 mm to 3.0 mm. Posterior and anterior designations are not possible, but the larger portion of the hole is at the end toward which the ventrally radiating engraved line projects. Maximum measurements for the fragment are: width at hump 12.0 mm and thickness 6.9 mm.

The shape of the hump and ventral protrusion are most like the MDAH bead #1 (Specimen E, Plate 35), and the circular disc is somewhat like that of the red jasper specimen from Lauderdale County, Alabama (Webb 1971b: Fig. 1 i-i'). Several examples pictured by Webb (1971b: Fig. 1 e,g,h) have engraved circles, which apparently are the same representation as the raised midbody disc on other specimens (1971b: Fig. 1 b-d,m; 1971a:39).

Specimen H (D-53; Plate 36), another bead fragment of the same soft, green stone described for Specimens A (Plate 35) and G (Plate 36), was found by Sam McGahey on the surface of the northwest side of the southernmost "mound" at Denton. It will be referred to as MDAH bead #2. About a third of one end is broken away, so the original length can only be estimated at somewhere near 35-40 mm. Like the previous specimens, this bead is bifacially symmetrical, is ground smooth, and has pronounced curving on the dorsal and ventral surfaces. It lacks, however, the lateral relief ridges seen on Specimens D and E (Plate 35) and Specimen F (Plate 36). Like the Lancaster bead (Specimen D), it has a tubular end which exhibits the larger end of the longitudinal perforation. Unlike the other, however, a hole was drilled from each end, and these meet about 2.0 mm from the broken end. The unbroken portion of the perforation tapers from 3.5 mm in diameter at the tubular end to 2.1 mm at the broken end. Made by a solid drill, the hole is striated from drilling abrasion.

Two slight protrusions or relief ridges approximately 12.3 mm apart occur along the ventral margin. The two dorsal humps, both about 4.0 mm high, are rounded, and the broken one is slightly flattened on top. No semblance of a circular disc or Spanish helmet is present. Maximum measurements for the bead are: width at both humps 11.1 mm and thickness 6.0 mm. This specimen resembles the previous ones in the presence of the dorsal humps and ventral protrusions. The lack of lateral relief suggests a styling similar to Specimens E (Plate 35), F, I, and J (Plate 36) and the Alabama bead (Webb 1971b: Fig. 1 1-1').

Specimen I (D-64; Plate 36), another bead fragment from the collection of Burt Jaeger, was found on the surface on the south side of the southernmost "mound" at Denton. Made of the hard, very fine-grained reddish brown sandstone found in present-day Mississippi River gravels, the "Jaeger bead #2" is ground smooth and has a dull gloss or patina. It is almost identical in shape to the anterior portion of the MDAH bead #1 (Specimen E, Plate 35), with the slight dorsal hump and the pronounced ventral protrusion thought to represent an insect's mouth. The dorsal surface is rounded, while the ventral surface is flattened. As on Specimen E, a hole has been drilled longitudinally through the object from the missing, presumably posterior end. It tapers from 3.25 mm in diameter at the broken end to 2.15 mm at the flattened anterior end. Maximum measurements for the object are: width at ventral protrusion 12.0 mm, width at broken end 9.4 mm, and thickness 6.3 mm. The morphological similarities suggest that Specimen I is virtually identical to Specimen E.

Specimen J (D-81; Plate 36), also a fragmentary bead from the Jaeger collection, was found on the surface in the vicinity of the "mounds." The "Jaeger bead #3" is made of a red jasper mottled with black, yellow, and white streaks that is also common in present-day Mississippi River gravels. The broken end has been partially reground. Since the protrusion near the unbroken end appears much like the ventral "mouth part" of Specimens E (Plate 35) and I (Plate 36), it will be assumed that this feature is on the ventral surface at the anterior end, as was the case with Specimen I. Behind the protrusion is a small hump which is ground off to a bevel toward the broken end. As on Specimen I, the dorsal surface is rounded and the ventral surface is flattened. There are no lateral relief ridges or engraved lines. The longitudinally drilled hole, although almost cylindrical, tapers very slightly from 4.75 mm to 4.70 mm in diameter. Like Specimen I, the larger end of the hole is at the broken or posterior end. Maximum measurements for this object are: length 15.15 mm, width at ventral "mouth" protrusion 11.0 mm, width at hump 11.6 mm, and thickness 8.25 mm.

Specimen K (D-60; Plate 36) is an unusual bead from the collection of Tommy Mitchell of Lambert, Mississippi. Since the Mitchell bead was found in the driveway of his home about a mile northeast of the Denton Site, it cannot be definitely associated with any site. However, because it was found near Denton and because it is generally similar in style to the Denton beads, there is a strong possibility that it originated there.

The specimen is made of multicolored quartzite, primarily shades of red and yellow, and has bands at each end of red, yellow, yellowish green,

and reddish yellow. The central portion is mottled with cream, pink, yellow, and red. Some design elements fit the "locust" form described for the specimens above, while others may be more suggestive of mammalian features, an aspect more clearly discernible on the examples to follow.

The specimen is bilaterally symmetrical, carved, ground smooth, polished, and has pronounced dorsal, ventral, and lateral relief ridges and curvatures. The end to the left in Plate 36 appears to have been broken off, but the entire surface is very shiny, possibly a result of weathering patination. On each end of the ventral surface a raised area with a longitudinal line down the center is outlined by an engraved line on each side.

On each side, toward the left end in Plate 36, is a circular disc raised in relief, somewhat like those mentioned by Webb (1971a:39; 1971b:Fig. 1 b-d,m). This end will be referred to as anterior. Toward the opposite or posterior end there is a small, bilateral winglike design, also raised in relief but somewhat reduced in size in comparison with this feature on other beads. A low-relief ridge forms the upper lateral margin of one "wing," and continues across the ventral surface and up the other side, forming the upper lateral margin of the opposite "wing." Another continuous cut forms the raised portion of the dorsal surface directly above this "wing" area and the posterior margin of each "wing."

The design of this specimen could be viewed differently. The "wing" and the engraved ventral lines just beneath them are suggestive of the folded hind legs of a mammal, and the dorsal projection above them could be the tail of the animal folded over its back. A very similar representation can be seen in Specimens D (Plate 35) and N (Plate 36), as well as in one of the red jasper examples from Lamar County, Alabama (Webb 1971b:Fig. 1 k-k'). Also suggestive of the folded legs of a reclining animal are the ventral protrusion and engraved lines toward the opposite end of Specimen K. In this case, the circular discs might represent mammalian ears or eyes. Another raised area on the dorsal surface just above these discs is possibly a head facsimile.

In the midsection on the dorsal surface of the bead is the "Spanish helmet", a raised relief that extends down the sides over one-half the width of the bead. A bilateral depression on the central portion of the helmet gives it the appearance of having been pinched. This pinched appearance is typical of the same element on other beads, such as Specimens D (Plate 35) and F (Plate 36). On Specimen K (Plate 36) the "brim," represented by a very slightly raised ridge in front of and behind the helmet, is hardly noticeable and could not be effectively reproduced. On the other specimens, the "Spanish helmet" is located near one end and a "wing" area toward the other. Thus, until Specimen K was found, it was supposed that the helmet replaced the circular disc. Specimen K and the Frederick bead (Specimen R, Plate 37), are the only zoomorphic beads presently recorded which combine the two motifs.

The bead is drilled longitudinally, and the central perforation is 3.0 mm in diameter. Because the hole is almost perfectly tubular, it is impossible to say from which end it was drilled. The use of a hollow drill and an abrasive may be indicated. Close examination of the bevel at each orifice suggests that drilling started from the broken, anterior end. Maximum measurements for the bead are: length 49.0 mm, width 13.4 mm, and thickness 10.7 mm.

Specimen L (D-63; Plate 36) is a small bead fragment found by Sam Brookes on the surface of the south side of the southernmost "mound" at Denton. The very fine-grained green quartzite or jasper "MDAH bead #4" is smooth, hard, and polished. With the possible exception of the Mitchell bead (Specimen K, Plate 36), all the beads discussed up to this point fall easily into the "locust" insect effigy category proposed by Webb (1971b). Specimen L, however, appears to be somewhat different in style and may be suggestive of either a mammalian or a bird form.

The object seems to be the anterior section of a bead that was broken approximately in half. If the longitudinal hole is held horizontally, as in Plate 36, the object resembles a mammal with two sharp and divided dorsal projections that look like ears (the division between these projections cannot be seen in Plate 36 L). Just behind these is one pronounced beveled dorsal protrusion that is somewhat depressed on both sides like the bit of an axe. These protrusions and the very low relief ridge behind them vaguely resemble a "Spanish helmet," from which the rear portion of the "crown" is cut off vertically.

If, on the other hand, the drill hole is held vertically, the object takes on an owl-like appearance. The two divided dorsal projections become "horns," such as are seen on the Great Horned Owl, and the single projection becomes the beak. Below this, the shoulder or upper portion of the wing is delineated laterally. A similar but even more distinct owl representation can be seen on Specimen O (Plate 36). Although these are somewhat reminiscent of the Poverty Point "owl pendants" (Webb 1975), they lack the drilled eye holes and are perforated longitudinally. Specimen L has no distinct counterpart among the zoomorphic beads pictured by Webb (1971b).

Just posterior to the dorsal protrusions are two bilateral cuts delineating a small segment of a lateral "wing." On the ventral surface, beneath the "ears" or "helmet," is a rounded hump. The anterior end is tubular in cross section. The longitudinal hole tapers from 3.15 mm in diameter at the broken, posterior end to 2.45 mm at the anterior end, indicating that it was drilled completely through from the posterior end with a solid drill. Maximum measurements for the fragment are: width 9.7 mm and thickness 5.05 mm.

Specimen M (D-62; Plate 36) was found by Sam Brookes on the surface of the southwest side of the southernmost "mound" at Denton. An unusual specimen, the "MDAH bead #3" is made of black quartzite speckled with milky quartz inclusions, a material uncommon in present-day local gravels. In general design, the bilaterally symmetrical object is quite different from any other recorded effigy bead, although some of the specific motifs used are similar to several other specimens. It has the overall appearance of a crouching mammal, possibly a rabbit, considering the "ears" and the arched back.

A large dorsal curved hump on the posterior half is rather sharp-ridged toward the end and might be termed "razorbacked." Toward the anterior end, a distinct projection is divided on top by a notch and also delineated in front by a deep notch. These "ears" are similar to the ears on Specimen N (Plate 36; see below). In front of the ears, a "head" is formed by a low, rounded hump defined in front and behind by notches. On each side of the head are shallow depressions similar to

those on the "crown" of the "Spanish helmet," presumably the "eyes" in this case. Behind these eyes, curved lines extending from the divided dorsal projection down to the ventral margin set off the lateral relief ridges of the "ears." On the ventral surface deep notches delineate both ends of two large projections, 5.3 mm apart, which seem to represent the folded legs of the reclining mammal.

The entire object is ground smooth and exhibits a slight polish or patina. Both ends are flattened, the posterior being somewhat triangular and the anterior rectangular in cross section. The hole, drilled completely through the object from the posterior end, tapers from 4.1 mm to 1.75 mm in diameter and is slightly off-center at the anterior end. Maximum measurements for the bead are: length 41.1 mm, width at ears 12.25 mm, width at back 12.2 mm, and thickness 7.4 mm.

Specimen N (D-82; Plate 36) is another bead of apparent mammal form found by Sam Brookes on the surface of the northeast side of the southernmost "mound" at Denton. The "MDAH bead #5" is made of the same soft, green stone as that used for Specimens A (Plate 35), G, and H (Plate 36), and the stone tube (Plate 31 Q). It is smoothed but not polished. The anterior end has been broken off and reground.

This specimen has the same dorsally projecting "ears" separated by a notch, and curved bilateral relief ridges as those described for Specimen M (Plate 36). In front of these ears is a shallow, bilateral depression possibly representing eyes, as on Specimen M. Two low-relief ventral projections, 4.45 mm apart, are delineated on both ends by cut notches, and the line setting off the rear of the posterior projection continues a short distance up the sides. Presumably, as on Specimen M, these represent the folded legs of the animal. Unlike Specimen M, this example has a midbody dorsal projection. If the slight dorsal hump at the posterior end can be imagined as the middle section of a tail and the dorsal protrusion as the tail's tip end, then the object takes on the appearance of a squirrel with tail characteristically arched over its back.

A striking resemblance can be seen between Specimen N and one of the Lamar County, Alabama, specimens (Webb 1971b:Fig. 1 k-k'), with the lateral anterior depression or "eyes," the separated "ears," the folded "legs," and the "tail" arched over the back. The tail of the Alabama specimen is more clearly delineated. The difference between the two is in the curved lateral "wing" representation of the Alabama example, although this outline might also represent large hind legs alongside the body. The resemblances between Specimens k-k' and l-l' from the Alabama site and some of the Denton examples suggest the possibility of culture contact. Another interesting resemblance is between Specimen N and the Crisler bead (Specimen S, Plate 37) from Claiborne County, Mississippi. This bead, though much larger, has distinct mammal ears, eyes, face, tail, and folded legs.

Like many other Denton examples, Specimen N is completely perforated by a longitudinally drilled hole that tapers in diameter from 3.2 mm at the posterior end to 1.65 mm. The posterior end is tubular in cross section, while the anterior end was apparently rectangular or square. Maximum measurements for the object are: length 22.4 mm, width at "ears" 10.0 mm, width at "tail tip" 9.85 mm, and thickness 6.2 mm.

Specimen O (D-78; Plate 36) is another unusual bead form found by H. O. Jones about fifty years ago, according to the present owner, Jean Jones Firestone. Its style and its discovery in the general Denton area suggest that its origin was the Denton Site. Ground smooth and slightly polished, it is made of very fine-grained greenish gray chert or quartzite banded with fine black longitudinal lines. It is bilaterally symmetrical. This bead, viewed in the vertical position shown in Plate 36, resembles an owl sitting on a stump. The depressed area forms the eyes and beak, the ears (as on a Great Horned Owl) are above, and the wings are folded below. This specimen is similar in some respects to a few of the Poverty Point owl pendants described by Webb (1975:7), but the overall design is different.

Considered in this vertical position (but not visible in Plate 36 O), a deep groove on top divides the "ears." Just beneath these projections is a deep, bilateral groove curving downward along the back of the head and connecting in front of the ears. This distinctly sets off the ear projections, as well as forming a semicircular ridge above and behind the "eye and beak" depression. Another groove encircling the object just above the "wings" or shoulder connects in front with a diagonal groove running down both sides and under the wing tip, setting off the "wings" in distinct relief. This diagonal groove joins in front to form the top of the "stump" on which the bird is sitting.

The eyes or face and beak are formed by a depressed area resembling the "crown" of the "Spanish helmet" design. Usually the helmet design is found on the same side as the wing design, but in this case, if the depression is considered a "Spanish helmet" facsimile, they are on opposite sides (one on the ventral and one on the dorsal), unlike other specimens. On the lower front edge of this depression is a deep notch which forms the point of the "beak."

Both ends are flattened and the posterior end is tubular. The object is longitudinally drilled completely through from the posterior end (the "stump" bottom), with the hole perforating the opposite end in the rear portion of the top groove, between the "ears." The hole tapers from 3.4 mm to 1.9 mm in diameter and shows drilling striations. Maximum measurements for the bead are: length 32.0 mm, width at beak 12.5 mm, width at wings 12.4 mm, and thickness 7.1 mm.

Zoomorphic Beads from Other Sites

Among a number of zoomorphic beads from other sites in Mississippi, some resemble the various Denton styles. This group includes six specimens not previously reported, one reported by Brookes and Inmon (1973), and two collections reported by Rau (1878) and Fulton (1898).

Specimen P (Plate 37) is a ground and polished reddish brown jasper or quartzite bead found by Charles Stubblefield of Pontotoc on a site in the Skuna River bottoms of Calhoun County, Mississippi, and last known to be in the collection of Thomas Crawford of Pontotoc. No information has yet been collected about the context of this site. The bilaterally symmetrical bead, with its "wing" and "Spanish helmet" designs, closely resembles the Lancaster bead (Specimen D, Plate 35) in style. A dorsal hump with depressions forms the "Spanish helmet," which is strikingly

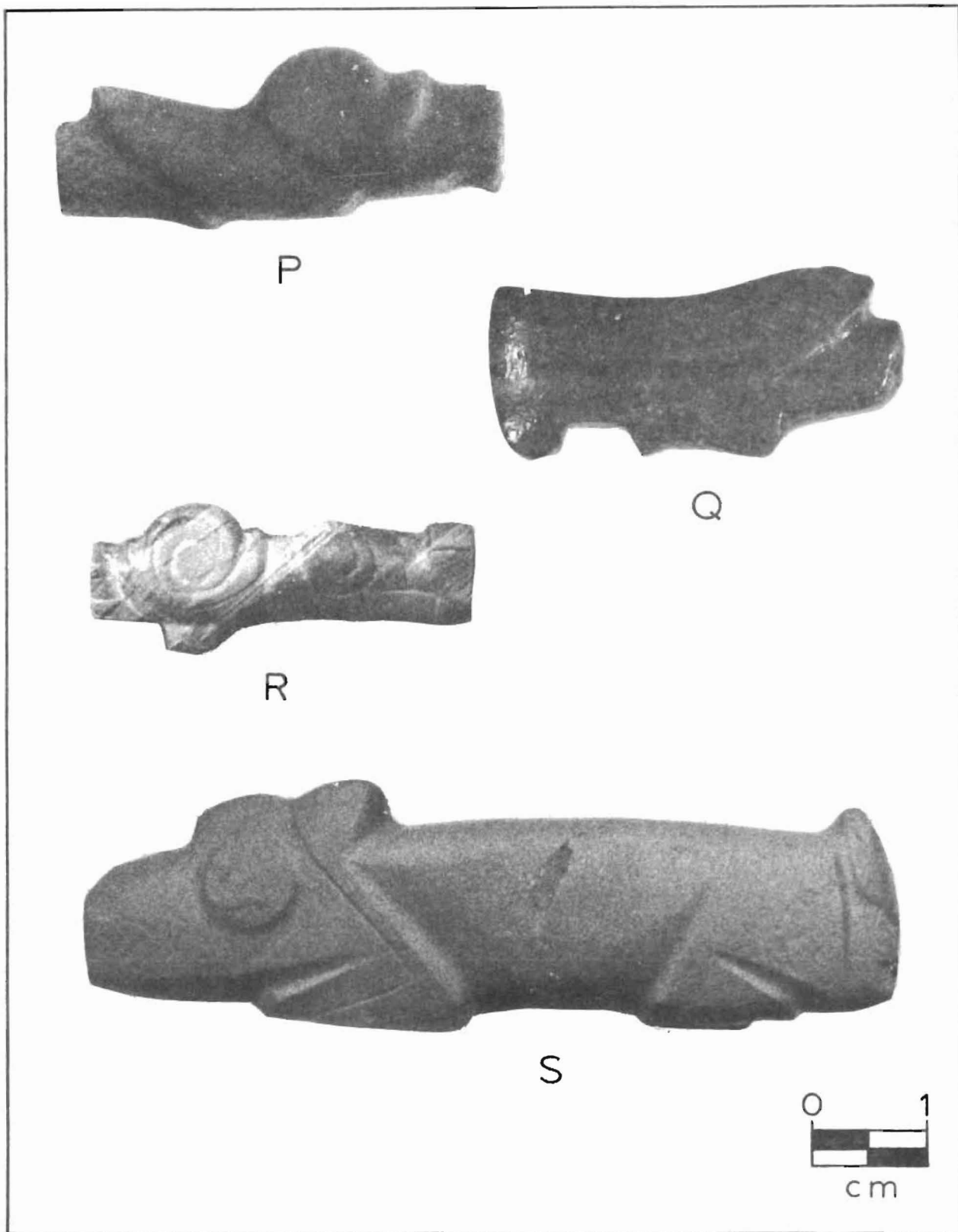


PLATE 37. BEADS FROM OTHER SITES. P, Stubblefield; Q, Carlton; R, Frederick; S, Crisler.

similar to the one on the Lancaster bead. Curving around the lower half of the helmet is a slightly raised ridge that begins as a dorsal protrusion anterior to the "crown" of the helmet. This ridge merges into the dorsal edge of the "wing" behind the helmet. A slight constriction of the wing's dorsal surface results in a narrow ridge along the top, in contrast to the flattened dorsal surface of Specimen D (Plate 35). In the rear, the wing tip appears as a raised dorsal protrusion, and the lower margin of the wing is outlined by a groove.

A distinct downward protrusion on the anterior end of the ventral surface is similar to the presumed "mouth part" of Specimens E (Plate 35), G, I, and J (Plate 36), the Lafayette County, Arkansas, bead (Webb 1971a:39), and the Poverty Point and Monte Sano Mound beads (Webb 1971b: Fig. 1 b-c). Immediately beneath the helmet there is a midbody ventral protrusion that appears continuous with the "wing," and behind this--beneath the "wing"--is another protrusion. These are similar to the "leg" representations on other "locust beads" (Specimens D-H; Webb 1971a:39; Webb 1971b:Fig. 1 a-e).

As on several other examples, the posterior end is flattened and tubular in cross section. The anterior end, also flattened, is more squared. Two longitudinally drilled holes penetrating the object from either end meet about three-fourths of the way from the posterior end, just inside the front of the "Spanish helmet." The shorter, anterior hole is 6.5 mm deep and tapers from 4.1 mm to about 2.0 mm in diameter. Drilling from this end evidently ceased when the hole almost penetrated one side of the helmet. Another hole begun from the posterior end penetrated to a depth of 31.8 mm, where it met the first one slightly off-center. This second perforation tapers from 4.1 mm to about 2.0 mm in diameter. Maximum measurements for the bead are: length 38.3 mm, width at helmet 15.1 mm, and thickness 8.2 mm.

Specimen Q (Plate 37), from the collection of Lonnie Carlton of Jackson, is another bead resembling the "locust" types. It was found on a site (22-Mt-503) of unknown cultural context in Montgomery County, Mississippi. The smoothed and polished Carlton bead is made of quartzite with tiny black and red jasper specks, the same material as that used for Specimen E (Plate 35) from Denton. Although it has no "Spanish helmet" or circular disc, it does have a distinct bilateral "wing" raised in relief along its underside. The wing tip is a pronounced dorsal protrusion. Specimen Q also has the downward protruding ventral "mouth part" common to other beads mentioned in connection with Specimen P. Another ventral midbody protrusion represents "legs" like those mentioned above. The overall design is very much like the MDAH bead #1 (Specimen E, Plate 35).

Both ends are flattened. The anterior end is slightly oval in cross section, and the posterior end is tubular. The flattened dorsal surface on top of the "wing," is similar to that on Specimens D and E (Plate 35). The longitudinal perforation is drilled almost completely through the object from the posterior end, as on several Denton specimens, and a very short hole was drilled at the anterior end to meet it. The larger hole tapers from 3.0 mm to 2.0 mm in diameter. Maximum measurements for the object are: length 35.5 mm, width at "mouth" 15.5 mm, and thickness 9.0 mm.

Specimen R (Plate 37) was found by Richard Frederick of Tremont at the V. L. Falls Site (22-It-551) in Itawamba County, Mississippi. This is apparently an Archaic site with a heavy concentration of heat-treated chert flakes, sandstone, and limonite, the only materials noted by the author on a brief visit there in 1973. Several private collections contain projectile points from the site, but these are not recorded.

The Frederick bead is made of banded gray green slate, the posterior end being the darkest and the midsection having a brownish tone. The anterior dorsal surface exhibits a pronounced rounded hump which composes the "crown" portion of a bilaterally symmetrical "Spanish helmet" motif. As on the Lancaster bead (Specimen D, Plate 35), this depressed area, or "crown," is defined by a semicircular engraved line that ends in a slight protrusion on both dorsal ends of the helmet, thus forming its "brim." Inside the depressed "crown" is an engraved spiral line, unique to this specimen. Beneath the helmet, engraved lines--five on one side and six on the other--run diagonally down toward the ventral surface. Two on each side continue across the ventral surface and meet behind a peg-shaped protrusion, which is directly beneath the helmet. Such a protrusion is known only on this example and on Specimen F (Plate 36) from Denton.

There are three short, engraved longitudinal lines on each side at the anterior end, just in front of the diagonals. Another line completely encircles the object just behind the helmet. On the ventral surface, there are two V-shaped lines toward the anterior end, in front of the "peg." The anterior dorsal surface has a slightly raised projection in front of the helmet.

The posterior half of the bead also exhibits engraved lines. Behind the helmet and separated from it by a notched depression, is what is usually the "wing" area; but in this case it does not resemble a wing. Instead, there is a slight dorsal hump which is marked bilaterally with two engraved concentric circles. The outer circles meet at the top. Just behind the circles, on the dorsal surface, are two short lines which form an X. Two other lateral lines projecting back from the area of the circles join another line which crosses the ventral surface and extends halfway up both sides. The top of a third dorsal projection at the posterior end is engraved with three longitudinal lines.

The posterior end is flattened and squared in cross section, while the anterior end is flattened and circular. The object is drilled longitudinally from both ends, the holes meeting about midway. Both holes taper from a maximum 3.3 mm in diameter down to approximately 1.5 mm inside. Maximum measurements for the bead are: length 31.0 mm, width at helmet 11.4 mm, and thickness 7.6 mm. This specimen and the Mitchell bead (Specimen K, Plate 36) are the only ones that combine the "Spanish helmet" and "circular disc" motifs. Specimen R also displays the ventral "peg" found on the MSU bead (Specimen F, Plate 36). These similarities of stylistic design suggest some cultural connection between the occupants of Denton and the V. L. Falls Site.

Specimen S (Plate 37), a large red jasper bead previously reported by Brookes and Inmon (1973:50, Fig. 16 G), was found near the Mount Laurel Site (22-Cb-576) in Claiborne County, Mississippi. It is from the collection of Edgar Crisler of Port Gibson. Realistic in style, the

Crisler bead is apparently a mammal effigy. It is ground smooth and is bilaterally symmetrical. Two dorsal projections toward the anterior end represent the top of the head and the ears behind. As with some of the Denton specimens, the "ears" are separated by a short groove and are marked by deep notches in front and behind. An engraved line runs diagonally down each side from a point between the head and the ear projections almost to the elbow of the "folded leg," and then extends along the leg to the ventral margin. Continuing across the ventral surface, the line meets its counterpart to form a delineation between the legs and "toes." The anterior pair of "legs" is divided in the center by a longitudinal groove. A very short engraved line on each side of this groove forms two "toes" on each side.

On the sides, the front legs are delineated by one wide, deep, diagonal groove behind the leg and by another shorter one in front, which also forms the "chin" or "mouth" of the animal. Raised in relief on each side is a large, round "eye," very similar to some of the raised circular discs on the "locust beads" (Webb 1971a:39; 1971b:Fig. 1 b-d,m). The nose is slightly tapered at the end on the dorsal surface.

The hind legs are styled in the same manner as the front, but they face in the opposite direction. A wide, diagonal groove on the side outlines the upper leg and knee, while another sets off the rear of the leg. On the ventral surface the "legs" consist of a large protrusion. As on the forward protrusion, grooves and engraved lines set off the paired legs and four toes, again in the reverse direction, toward the rear. A bilateral, vertical groove continues across the dorsal surface in front of a pronounced sharp projection, the "tail."

The anterior and posterior ends are flattened. Completely perforating the object from the posterior end, a drilled hole tapers from 2.95 mm to 1.9 mm in diameter. Maximum measurements for the specimen are: length 68.6 mm, width at ears 21.25 mm, width at midbody 16.95 mm, width at tail 17.6 mm, thickness at eyes 12.1 mm, and thickness at midbody 11.35 mm.

This bead, which is more distinctly a mammal form than the others described, combines three stylistic motifs found on several specimens. The first motif is the circular disc, the "eye" (in this case), or the "auditory organ" (in the case of the "locust beads"). A possible exception to the "auditory organ" designation on locust beads is the red jasper bead from Lauderdale County, Alabama (Webb 1971b:Fig. 1 i-i'; Jolly 1971:Fig. 3), which seems to present a stylized image of the head of a bird of prey. Thus postulated, the circle would represent the eye. The second motif is the ventral protrusions thought to represent folded legs and feet. This feature has been noted on Specimens K, M, and N (Plate 36) and on one of the Lamar County, Alabama, examples (Webb 1971b:Fig. 1 k-k'). The third motif is the separated ears, noted on Specimens L, M, N, and O (Plate 36) and on the Alabama bead (k-k') mentioned immediately above. Two other specimens which resemble the Crisler bead in general outline are Specimens V and W (Fig. 3), both from Lawrence County, Mississippi. The resemblances between examples from various scattered sites may indicate some form of culture contact rather than coincidence.

Specimen T (Fig. 3), a previously unreported bead of unusual shape from the Scales collection in the Cobb Institute Museum at Mississippi State University, is thought to be from the Oktibbeha County, Mississippi,

area. No photograph is available, but the full-size drawings in Figure 3 are Sam McGahey's interpretation of sketches made by Richard Marshall in 1970.

The Scales bead is made of dark red jasper and is ground smooth, with a moderately high polish. It could be a stylized bird form, but when it is suspended by the lateral perforation, it resembles a sleeping bat with wings folded and "head" hanging down. There are two large protrusions, ventral and dorsal, from the head, one of which may have represented a beak. On each side of the head a large disc shape, presumably representing an eye, is raised in relief. One is ovate, the other rectanguloid. These discs are similar in style to the raised circular discs of the "locust beads" (Webb 1971a:39; 1971b:Fig. 1 b-d,m), the Mitchell bead (Specimen K, Plate 36), and the eye of the Crisler bead (Specimen S, Plate 37).

Anterior and posterior dorsal, lateral, and ventral relief ridges define the thick midbody and give it the appearance of a shell with head and tail protruding from each end. At the posterior end is a small tabular projection with three grooves cut across the end, from dorsal to lateral margins. These give the effect of claws or toes. Unlike the previously described specimens, this object is transversely drilled with a biconical hole. Each side of the hole tapers from approximately 6 mm to 2.5 mm in diameter. Maximum measurements are: length 49.6 mm, width at beak 33.2 mm, width at body 19.6 mm, thickness at eyes 12.2 mm, and thickness at body 12.0 mm.

Specimen U (Fig. 3), another unusual bead of light green material from the collection of Jack and Peggy Woods of Port Gibson, was found at the Smithfield Site (22-Cb-536) in Claiborne County, Mississippi. Stone plummets and what is apparently a Coles Creek Period burial mound were also reported there (Brookes and Inmon 1973:22). Like the Scales bead (Specimen T, Fig. 3), this object is transversely perforated near the presumed anterior end with a biconically drilled hole. This hole, which could represent a zoomorphic eye, tapers from approximately 3.5 mm to 2.0 mm in diameter. At midbody is an engraved ovate circle, a motif seen on several of the previously mentioned specimens. The outline of this specimen is unlike the others, but in some respects it is similar to those of the Crisler bead (Specimen S, Plate 37) and the two Lawrence County beads (Specimens V and W, Fig. 3) in its animalistic form. Most of the periphery is flattened. There are two pronounced ventral projections postulated to be legs or feet, a rear projection or tail, and two dorsal projections of questionable representation. Any number of animals could be suggested. There are no available measurements, but the drawings are shown full size in Figure 3.

Specimen V (Fig. 3), made of highly polished red jasper with black bands, duplicates the general style of two other specimens from Mississippi. This bead was found on a site near the Pearl River in Lawrence County, Mississippi, and was last known to be in the collection of Johnny Parkman of Brookhaven. It has no lateral relief ridges or engraved lines. One dorsal protrusion suggests "ears" and another at the posterior end suggests a "tail." Two ventral protrusions are similar to the "legs" of the Crisler bead (Specimen S, Plate 37). This general outline is also seen on Specimen W (Fig. 3). The bead is longitudinally drilled from both ends, but the only hole diameter recorded is at the anterior end,

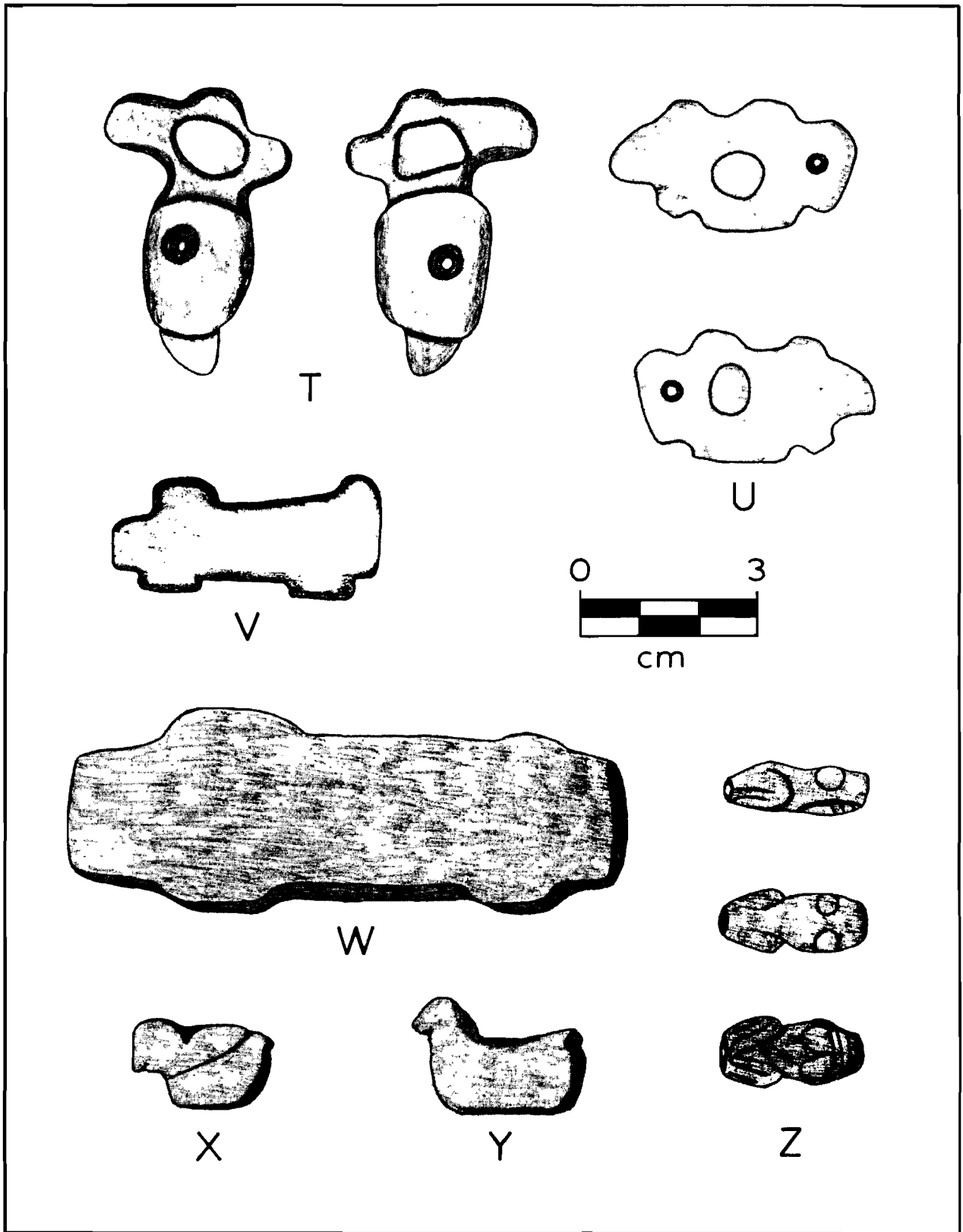


FIGURE 3. ZOOMORPHIC BEADS. T, Scales; U, Woods; V, Parkman; W-Y, Lawrence County objects; Z, Lower Jackson Mound frog.

an approximate 4.0 mm. Approximate maximum measurements for this specimen are: length 44.45 mm, width 21.45 mm, and thickness 7.95 mm.

Specimen W (Fig. 3, after Rau 1878:Fig. 12) is from a collection presented to the Smithsonian Institution in 1876 by T. J. R. Keenan of Brookhaven. This collection of 469 alleged red jasper objects was plowed up in a cache on a farm in Lawrence County, Mississippi, in 1875. It includes unworked pebbles; preforms showing flaking, sawing, drilling, and polishing; partially drilled tubular and disc beads; possible zoomorphic preforms; Specimen W and two undrilled zoomorphic bird representations (Specimens X and Y, Fig. 3). These objects, representing all stages of bead manufacture, were first described by Rau (1878:291-98) and later mentioned by Fulton (1898:91-92).

The particular specimen referred to here is described by Rau as a "large polished ornament of elongated flattish form, with two expansions on each side. The object is irregular in outline, the expansions being larger at one extremity than at the other. It is three-fourths of an inch thick in the middle. A longitudinal perforation was doubtless intended" (1878:296). The similarity to the Parkman bead (Specimen V, Fig. 3), also from Lawrence County, is striking. Both have the raised dorsal and ventral projections in approximately the same positions, a trait they share with the more elaborate Crisler bead (Specimen S, Plate 37). Specimens V and W were found only about 60 miles to the southeast of Specimen S. Specimen W is undrilled, has flattened peripheral margins, has no lateral engraved lines or relief ridges, and is approximately 96 mm long. It is shown full size in Figure 3.

Specimen X (Fig. 3, after Rau 1878:Fig. 13) is a small birdlike effigy from the 1875 Lawrence County cache (Rau 1878:296). Rau describes this as "a small, flattish, bird-shaped object, made of beautiful cherry-red jasper, and well polished. The wings are indicated on both sides by slight grooves" (1878:296). The undrilled object appears in the drawing to be about 24.8 mm long, and is 7.5 mm thick. A slight notch at the upper end of the posterior extremity delineates a small projection or "tail." There is a short "nose" or "beak" projection on the "head."

Specimen Y (Fig. 3, after Rau 1878:Fig. 14) is a red jasper birdlike effigy similar to Specimen X (Fig. 3) and from the same location (Rau 1878:296). It is slightly larger, about 30.5 mm long and 9.0 mm thick, and its head is raised. It has the same "tail" and "beak" projections as Specimen X. No lateral grooves are apparent on Specimen Y.

The Lawrence County cache of bead forms cannot be connected with any particular culture at present. Writing in 1898, Fulton mentioned (p. 91) that "in the field where these objects were found, the outlines of a pre-historic fort could be easily traced until a few years ago." This implies some type of earthwork, or at least the remains of structural patterns.

Although Specimens X and Y have no recorded counterparts among the presently known zoomorphic effigy beads, they are included here as added examples of the variety of styles or forms. One other previously unreported example which has no stylistic counterpart among the other beads discussed here is Specimen Z (Fig. 3), a frog effigy found by Dennis La Batt of Epps, Louisiana, on the Lower Jackson Mound site, 1.5 miles

south of Poverty Point, Louisiana. It is of reddish jasper with a slight orange tint. The drawings in Figure 3 were made by Carolyn Caldwell of the Mississippi Department of Archives and History, who used a plaster cast of the bead as a model.

Two depressed discs form the frog's eyes. An engraved pair of folded front legs on the ventral surface are transected by three engraved lines. Forming the front curvature of the rear legs are bilateral relief ridges, and delineating the lower leg margin on each side is a short, horizontally engraved line. A U-shaped engraved line on the ventral surface forms the lower legs folded underneath. The frog, which has a slightly humped back, is drilled longitudinally, the perforation tapering from 3.5 mm at the posterior end to 1.5 mm at the anterior end. The eye discs are 4.5 mm in diameter. Measurements are: length 24 mm, width at eyes 9.5 mm, width at legs 10.0 mm, thickness at eyes 8.0 mm, thickness at legs 9.0 mm.

A number of other zoomorphic beads have been found in Mississippi, but no pictures or detailed descriptions are available. Fulton (1898:93) mentions an inch-long, "strikingly sculptured deer" of jasper from a site in Lincoln County, Mississippi, about 25 miles west of the 1875 Lawrence County find. This object was among thirty red jasper beads, all longitudinally perforated, in Fulton's collection from the site. Others are also mentioned in this assemblage. "Four are evidently intended for birds, and four others resemble each other and in form are indistinctly bird-like" (Fulton 1898:93). The other Lincoln County beads are tubular or spherical examples of varying sizes.

Discussion

It has been shown that all the zoomorphic beads from Denton with recorded proveniences were found on the southernmost "mound" or its slopes. One might assume, therefore, that this was the locus of bead manufacture on the site. Other types of beads, pendants, and preforms, however, have been found scattered over the entire site in no discernible pattern,* and since all the lapidary items would have presumably been made by the same group of people, it seems unlikely that the manufacture of zoomorphic styles alone would have been restricted to one small area. Since all the bead preforms found at the site seem to be intended as pebble pendants or disc and tubular types rather than zoomorphic types, the question arises whether the zoomorphic items were actually made at the site.

Perhaps a distinction should be made between "manufacturing locus" and "use locus." In other words, the locations at which various beads were found may be more indicative of their functions than of their place of origin. That pebble pendants were being manufactured at the site is indicated by the fact that many were only partially drilled, partially

*The scattering of various other types of beads over the site might be partially explained by agricultural practices, but it does not seem likely that even this would have moved them so far. All the items found at "Denton Site B" were located on the mound itself, which has been plowed for years. None were found in the surrounding field.

ground, or undrilled. The zoomorphic or unusual beads of more exotic materials, on the other hand, are complete, and thus may have come from some distant areas in finished form. In fact, beads of similar styles do occur on sites great distances apart and may be taken as evidence of some form of inter-cultural contact. Intrasite distribution may be associated with social structures at the site and possibly with the site's settlement plan and its various socio-cultural implications.

From the location of the zoomorphic beads on the "mound," one might also hypothesize that these beads were grave goods associated with a burial in that portion of the "mound" spread by the bulldozer. Considering the grave-site provenience of the Lauderdale County, Alabama, beads (Webb 1971b:109; Jolly 1971:134-39), this seems a distinct possibility. At Denton, however, no evidence of burials of any kind was found on the surface or in the midden. The zoomorphic beads show no evidence of being heated, and thus the possibility of cremations is very slight. A single burial equipped with the entire zoomorphic bead assemblage seems unlikely unless the collection comprised the contents of a deceased shaman's medicine bag. But this also seems improbable, considering the variety of styles and the large number of articles which obviously took an extensive amount of time to make.

The questions of distribution and function associated with the Denton lapidary industry will remain until further data are available. Even the problem of temporal placement of various bead types remains. Webb (personal communication) lists four indications that the Denton lapidary industry occurred during the late Middle Archaic Period as reflected by the radiocarbon dates. First, there is excavated evidence of bead and pendant manufacture, although only the disc style and the pebble pendants are stratigraphically linked with the dated midden. Second, the odds favor a major industry, with one or more classes of artifacts found all over the site, being associated with the one major period of occupation. Third, there is no distinct Poverty Point occupation, which is the second period of outstanding interest in polished stone ornaments. Fourth, zoomorphic beads are now known to occur elsewhere on pre-Poverty-Point or non-Poverty-Point Late Archaic or late Middle Archaic sites. Still unresolved is the question of whether the zoomorphic representations are part of this early occupation or intrusions of later inhabitants. Whatever the case, the Denton lapidary assemblage continues to grow and become more puzzling. One aspect of this puzzle, the question of function, can be explored further.

Hypotheses Concerning Zoomorphic Effigies

The foregoing description of the collection of zoomorphic effigy beads and pendants from the Denton Site and other locations has pointed out the need for a socio-cultural analysis of how they were associated with their creators. Webb (1968, 1971) has touched on this subject and Gibson has expanded Webb's considerations with his distribution analysis of the Poverty Point Site (1974). In the following discussion, certain socio-religious concepts will be explored in an attempt to formulate some idea of the function of the zoomorphic objects from Denton and other sites of the Middle and Late Archaic periods. It is hoped that this will present a background from which future studies may be launched, as necessary cultural data appear.

A Middle Archaic group, such as the one postulated for the major Denton occupation, presumably would be a classic hunting-gathering band with an egalitarian social organization.* The Poverty Point culture, on the other hand, which could possibly have been responsible for almost all the zoomorphic beads at Denton and elsewhere, has been characterized by Gibson (1974:97-105), at least at the Poverty Point Site, as a chiefdom. A chiefdom is a society more complex than a band, based on economic redistribution. Gibson believes it to be "an endemic cultural adaptation to the very special kind of riverine environment in the lower Mississippi Valley" (1974:97). Certainly, the majority of sites from which effigy beads and pendants have come fall within such riverine environments or tributary and coastal environments.

Although Denton has shown little evidence of being a satellite Poverty Point settlement, it is possible that some form of Poverty Point encampment was established there. Webb has pointed out that "many satellite [Poverty Point] settlements and activity occupations now seem to be probable, regional chiefdoms and subchiefdoms seem likely, and numerous small mounds suggest a widespread ceremonial-religious concept. Yet it is quite possible that many small settlements had a simple extended family organization, derived from their Archaic predecessors, with only tenuous connections with the great centers" (1970:12).

Webb's suggestion of "small settlements" having only weak connections with the "great centers" appears to be a plausible explanation for any possible Poverty Point occupation of Denton. His theory of "a widespread ceremonial-religious concept" allows for the possibility of a small mound--that portion of the site removed by a bulldozer--containing the remains of an individual or individuals wearing the effigy beads found there. Such an instance of burial association in north Alabama is recorded by Jolly (1971) and Webb (1971b). If Webb's hypothesis is accepted, then it may be proposed that the Denton settlement, certainly occupied intermittently during the Middle Archaic Period, lasted into Poverty Point times, but retained its familial, egalitarian social structure and had contact with Poverty Point culture only to the extent that certain types or styles of tools and other manufactured items, as well as certain religious concepts, began to be accepted on a limited basis.

Using the Natchez Indians as an ethnohistoric example, Gibson (1974: 100-102) has theorized that the zoomorphic beads and pendants at the Poverty Point Site are indicative of social rank. This association would be out of place in an egalitarian society such as the presumed one at Denton. Considering this, as well as the nature of the cultural assemblage at Denton and the discovery of other effigy beads at apparently non-Poverty-Point loci, it might be hypothesized that the socio-religious concepts responsible for the manufacture of the zoomorphic items at Denton began toward the latter part of the Middle Archaic or early Late Archaic Period as merely totemic or fetishistic beliefs represented by charms worn by certain people and dictated by whatever doctrine was in vogue.

*The use by hunter-gathering groups of charms, amulets, talismans, fetishes, totems, or whatever they might be called, in the form of zoomorphic stone effigy beads or pendants, is not extensively documented. Hence, comparisons with Archaic cultures are speculative, especially since the social organization of these groups is unclear.

With the relatively rapid development of Poverty Point chiefdoms and their related socio-political structure, such charms took on a somewhat more expanded meaning and came to be reserved for the exclusive use of individuals of elevated social or religious rank. In essence, what may be indicated is a gradual transformation of the intrinsic meaning of zoomorphic effigy objects from merely fetishes, representations of personal tutelary spirits, or totemic emblems to status symbols associated with social, religious, or lineal positions of high rank. This hypothesis could generally account for the apparently early temporal placement of the Denton lapidary industry, as well as for Gibson's social rank theory, which he based on his distributional analysis of Poverty Point Site lapidary items (1974:100-102). It also implies a culturally and possibly a socially inherited, specialized craft skill, and the presence in the later culture of artisans trained in the manufacture of a certain kind of lapidary item.

Consideration should be given here to Hodge's discussion of "problematical objects," which might seem to discredit a developmental hypothesis. Hodge says that these objects cannot "owe their origin to the play of fancy merely, for individual selections of talismans and tutelary deities are made at random and do not constitute or develop into groups of objects of well-established and wide-spread types with numerous variants. Such established types must be the outgrowth of customs of wide extent and affecting a large body of people" (1910:308). Zoomorphic effigies of the type discussed in this report, however, are widespread only in limited numbers and within an apparently culturally definable area and time span. Although they at first appear to fall into a broad stylistic category--the "locust" form described by Webb (1971b)--closer observation reveals that they vary greatly in detail, even within a single unit collection such as that from Denton. This variance does not connote "well-established" types or groups, but rather individually selected styles, presumably chosen according to some "supernatural" specification, not merely according to a "play of fancy."

It would also seem that the general morphological style and the somewhat limited geographical distribution of such beads* would indicate a much more confined temporal span of manufacture than the 1,000 or 2,500 years' difference between the various sites where they are found. A tradition carried on for that length of time and reaching out over an area the size of four or five states seemingly would have produced many more specimens than the few that are recorded. Manufacture of the zoomorphic beads, therefore, would appear to be a more localized custom, with some form of inter-societal, socio-political, or socio-religious relationship forming the vehicle of diffusion.

In some ways this idea would seem to take credibility from Gibson's concept of social status insignia, at least with regard to the so-called "zoomorphic locust beads," since the manufacture of insignia would have been carried out by specialized artisans solely for that purpose. This is not inconceivable at the Poverty Point Site itself, and the ideas presented here are not intended to refute Gibson's hypothesis as it

*This does not contradict the statement above that the zoomorphic effigies are "widespread." They are widespread over a "limited" geographical area consisting of Arkansas, Louisiana, Mississippi, and Alabama.

relates to that site. But it would seem that status insignia would take on a more uniform morphology than the "locust beads," although several artisans might translate a single concept into varying forms. Such uniformity can be seen clearly among certain other classes of ornaments at the Poverty Point Site, such as the owl effigies discussed by Webb (1975:7-8) and other more generalized styles. Because of the cultural affiliations, the small numbers, the stylistic variations, and the wide spatial distribution of the "locust beads," however, the concept of localized fetishism seems more plausible in their case. Again, the temporal context is still in question, and the possibility of a temporal, sequential development of the ideology connected with zoomorphic items cannot be overlooked.

It may be helpful to make a somewhat theoretical distinction between the concepts involved in Gibson's social rank hypothesis (1974) and the hypothesis of fetishism. Binford (1972:23-25) divides archaeological artifacts into three classes: technomic, sociotechnic, and ideotechnic. The latter two are of concern here. Sociotechnic artifacts are the objects whose primary function is within the social subsystems of a total cultural system. These subsystems function to bring individuals together into cohesive groups whose members are capable of living and working together efficiently (Binford 1972:24). The various Poverty Point Site beads and pendants described by Gibson as social rank or status indicators would belong to this category. Gibson attempts to establish correlations, as Binford states, "between types of social structure classified on the basis of behavioral attributes and structural types of material elements" (1972:24).

Artifacts in Binford's third class are called ideotechnic and "have their primary functional context in the ideological component of the social system. These are the items which signify and symbolize the ideological rationalizations for the social system and further provide the symbolic milieu in which individuals are enculturated, a necessity if they are to take their place as functional participants in the social system. Such items as figures of deities, clan symbols, symbols of natural agencies, etc., fall into this category" (1972:24-25). Into this class fall the zoomorphic objects proposed in this report to be fetishes. The present discussion is an attempt to hypothesize, as Binford states, "correlations between generic classes of the ideological system and the structure of the material symbolism" (1972:25).

A change in the intrinsic meaning of the zoomorphic items over a period of time has been suggested. To use Binford's terms, it was proposed that objects of an ideotechnic nature developed into objects of a sociotechnic nature. Regarding such changes, Binford says that "the explanation of the basic form and structure" of the sociotechnic artifacts lies in "the nature and structure of the social system" which they represent, and that "observable differences and changes" in the sociotechnic objects "must be explained with reference to structural changes in the social system and in terms of processes of social change and evolution" (1972:24). If there were social changes from an earlier egalitarian band to a later Poverty Point chiefdom, they could well account for changes in the cultural value and meaning of certain types of artifacts. Binford goes on to say, "Formal diversity in

the structural complexity and in functional classes" of ideotechnic artifacts "must generally be related to changes in the structure of the society" (1972:25). Specifically, this concept may allow little leeway for social nonconformity of artists or for the stability of certain ideological concepts and ideotechnic objects. Social change from band to chiefdom is quite evident in the Middle Archaic and Poverty Point cultures in this area, but whether the function of an object of ideological importance could or did change to one of social importance in the manner conceived here is as yet unclear. This seems possible, since religious and ideological concepts and objects are known to have been secularized in historic times. At present, however, the hypothesis lacks sufficient supportive data to reach anything more than a tentative conclusion.

Binford has proposed that "there is a direct relationship between the nature of the system of status grading within a society and the quantity, form, and structure of sociotechnic components of its archaeological assemblage" (1972:28). Suppose that in some way zoomorphic items were forms of status symbols in both Middle Archaic and Poverty Point societies. Binford further proposes that among the earlier egalitarian societies "status symbols are symbolic of the technological activities for which outstanding performance is rewarded by increased status" (1972:28). They could thus be in the form of specially made, perhaps very decorative technomic items which function in a sociotechnic manner. This would not appear to include such items as zoomorphic beads.

On the other hand, Binford proposes that "among societies where status grading tends to be of a nonegalitarian type, the status symbols should be more esoteric in form. Their form would normally be dictated by the ideological symbolism which rationalizes and emphasizes the particular internal ranking system or the means of partitioning the society" (1972:29). This proposal leads to confusion about whether such objects are sociotechnic or ideotechnic in nature. It does appear more in keeping with Gibson's social rank hypothesis in regard to the Poverty Point Site and his analysis of intrasite bead distribution there, but it does not explain the presence of similar zoomorphic objects on sites of an apparently earlier, egalitarian nature. Very few of the so-called "zoomorphic locust beads" come from sites with artifact assemblages indicative of a higher order of nonegalitarian social structure.

In the Poverty Point culture at the Poverty Point Site, certain items apparently could have served either a sociotechnic or an ideotechnic function, although Gibson prefers the former. The possibility of zoomorphic sociotechnic artifacts cannot be completely ruled out, then, but the classification of zoomorphic items as ideotechnic artifacts seems to fit their sociocultural situation better, at least in the earlier cultures, in which they may have possessed more the nature of a fetish.

To return to the idea of localized fetishism, an attempt will be made to clarify the concept in relation to the proposed "band" society of the Middle Archaic Denton occupation by defining fetishism from an ethnological point of view. According to Hodge, among the American Indian a fetish was:

"an object, large or small, natural or artificial, regarded as possessing consciousness, volition and immortal life

and especially . . . magic power, the essential characteristic, which enables the object to accomplish, in addition to those that are usual, abnormal results in a mysterious manner. Apparently in any specific case the distinctive function and sphere of action of the fetish depends largely on the nature of the object which is supposed to contain it. It is the imagined possession of this potent mysterious power that causes an object to be regarded as indispensable to the welfare of its possessor.

In the belief of the Indians, all things are animate and incarnate--men, beasts, lands, waters, rocks, plants, trees, stars, winds, clouds, and night--and all possess volition and immortal life; yet many of these are held in perpetual bondage by weird spells of some mighty enchantment" (1907:456-57).

Thus, such things are:

"verily the living tombs of diverse beings and spirits. Of such is the kingdom of the fetish, for even the least of these may be chosen. Moreover, a fetish is an object which may also represent a vision, a dream, a thought, or an action" (1907:457).

In this respect the fetish becomes somewhat like a representation of a personal totem or tutelary spirit. Hodge goes on to say, however, that:

"The fetish is clearly segregated from the group of beings called tutelars, or guardian spirits, since it may be bought or sold, loaned, or inherited, while so far as known, the tutelary is never sold, loaned, or, with the Iroquois, inherited. Among the Santee and the Muskhogean and Iroquoian tribes the personal tutelary, having a different origin, is scrupulously discriminated from all those objects and beings which may be called fetishes. The tutelary has a particular name as a class of beings.

Some fetishes are inherited from kindred, while others are bought from neighboring tribes at a great price, thus constituting a valuable article of intertribal commerce. It is also acquired by choice for multifarious reasons" (1907:457-58).

This last statement could explain the postulated manufacture by a single lapidary of several zoomorphic bead styles or forms as fetishes for use by members of the band or for trade elsewhere. This may be the case for the 1877 Lawrence County find (Rau 1878; Fulton 1898). Beads produced for clan totems, on the other hand, would have probably been identical in representative morphological form.

Concerning the purpose and usefulness of the fetish, Hodge explains:

"A fetish is acquired by a person, a family, or a people for the purpose of promoting welfare. In return, the fetish

requires from its owner worship in the form of prayer, sacrifice, feasts, or protection, and from its votaries it receives ill or good treatment in accordance with the character of its behavior toward them. Some fetishes are regarded as more efficacious than others. The fetish which loses its repute as a promoter of welfare gradually becomes useless and may degenerate into a sacred object--a charm, an amulet, or a talisman--and finally into a mere ornament. Then other fetishes are acquired, to be subjected to the same severe test of efficiency in promoting the well-being of their possessors" (1907:457).

Winick (1975:109) distinguishes between "a charm which carries good fortune," or a talisman, and "a charm which has a protective function," or an amulet. He further describes an amulet as "an object, often decorative, worn to ward off various difficulties and potential dangers." The amulet "may have been the earliest type of ornament worn by prehistoric man." In addition to their protective function, "amulets were often also expected to provide strength, wealth, and good fortune" (Winick 1975:22). In this respect they seem to have been much the same as the fetish described by Hodge, but each had its own particular meaning and degree of effectiveness. According to Hodge, these charms are a lower, degenerative form of the fetish.

Concerning fetishes, Hodge goes on to say:

"A fetish is not a product of a definite phase of religious activity, much less is it the particular prerogative of any plane of human culture; for along with the adoration of the fetish goes the worship of the sun, moon, earth, life, trees, rivers, mountains, and storms as the embodiment of as many personalities. It is therefore erroneous to assign the fetish to the artificial stage of religion sometimes called hecastotheism" (1907:458).

Webster's New International Dictionary (1934) defines hecastotheism as a "stage of primitive religion investing every sort of object with supernatural powers."

Hodge continues:

"Mooney says, in describing the fetish, that it may be . . . anything, in fact, which the owner's medicine dream or imagination might suggest, no matter how uncouth or unaccountable, provided it be easily portable and attachable. The fetish might be the inspiration of a dream or the gift of a medicine man, or even a trophy taken from a slain enemy, or a bird, animal, or reptile; but however insignificant in itself, it had always, in the owner's mind at least, some symbolic connection with occult power The Pueblo tribes have numerous war and hunting fetishes of stone, small figurines cut to resemble various predatory animals The protective amulet sometimes took the form of a small figurine of a bird or other animal swift in flight, as the

hawk; silent in movement, as the owl; or expert in dodging, as the dragonfly. In all tribes the nature and mysterious origin of the personal fetish or 'medicine' were the secret of the individual owner or of the maker, who, as a rule, revealed it only to one formally chosen as heir to the mystic possession and pledged in turn to the same secrecy'" (1970:458).

The zoomorphic representations seen among the various effigy beads and pendants, such as the locust or cicada, rabbit, owl, squirrel, birds, dog or wolf, or perhaps bear, all could easily impart the idea of hunting prowess, which was undoubtedly of great importance to the individual in Middle and Late Archaic times. A few examples of zoomorphic fetishes of some southwest Indian and Eskimo groups are pictured by Miles (1963:154-58), and some Tsimshian charms and Haida amulets are pictured by Snow (1976:198-99).

Another aspect of the fetish should be considered. Hodge says that "the name fetish is also applied to most of the articles found in the medicine sack of the shaman" (1907:458). The perforation of the Denton zoomorphic items, however, suggests that they were probably worn suspended on a cord rather than packed in a bag, whether by a shaman or someone else. On the other hand, they could have been strung on a cord for holding in the hand during certain rituals and kept in the medicine bag when not in use. Regardless of how the beads were suspended, the evidence points to the fetish hypothesis.

Several other concepts previously mentioned seem less probable explanations of the effigies, but because they are also closely related to socio-religious beliefs among American Indians, they cannot be entirely without consequence. One of these is the totem, which may be personal in nature or associated with a clan. A clan totem is the patron spirit or animal traditionally connected with the clan's formation in the remote past. As Hodge (1910:787-94) puts it, members of totemic clans believe themselves to be descended from a totemic animal and are thus consanguineously related to certain earthly animals. Since this concept has been discussed extensively elsewhere, further elaboration will not be attempted here. One example of the employment of personal totems or the carved emblem of a personal totem, sometimes represented by terrestrial fauna, may be seen among the Iroquois. In the rites designed to obtain a personal tutelary for a boy, the father's clan received and interpreted the boy's vision of the tutelary and made of wood, stone, or other material a representation of the object, which was then given to the boy to keep (Hodge 1910:793). It might appear that the zoomorphic items could have been similar personal tutelary representations or even clan totems.

However, two very different effigy bead stylizations were found with what seems to be a single burial in Lauderdale County, Alabama (Webb 1971b; Jolly 1971), and it seems unlikely that one person would be wearing two separate clan emblems. Further, the cache of objects from Lawrence County, Mississippi, found in 1877 (Rau 1878; Fulton 1898), appears to be the work of a single artisan who was manufacturing a variety of zoomorphic forms. The Denton collection, with its obvious zoomorphic variations, was found entirely within a defined area around the southernmost "mound," a location indicating the possibility of burial associations.

Thus, as with the Alabama burial (Jolly 1971), it is possible that multiple forms were being worn by a single person. Although a person might have "one or many fetishes" (Hodge 1907:458) and, likewise, many charms, amulets, talismans, or ornaments, he would hardly have more than one totem or personal tutelary. Thus, it appears unlikely that such zoomorphic effigies as are being discussed here could have been clan totem representations.

Also improbable is the theory that the effigy beads were merely artistic ornaments worn for personal pleasure and adornment. This, in fact, is the least likely of all the proposals. As Service (1966:77) points out:

"Art-making, apparently of any kind, is an aspect of primitive man's attempt to control nature and society by supernatural means, and it is as ritualized as any of the other supernatural means. This is, of course, in strong contrast to what modern man usually thinks of art and of the role of the artist. But there is no 'Art for Art's Sake' in primitive societies, nor art that exists solely to satisfy an individual's feelings and emotions--whether of the artist himself or of the beholder. This is not to say that there are no personal satisfactions at all in primitive art-making, for presumably there are, but only that art has not become detached from its religious function to become a self-sufficient, specialized and institutionalized end in itself.

The functional context of art in band societies is religious ritual; the forms of art are limited in kind, and the aim is control (rather than to give 'aesthetic pleasure')."

Service goes on to say that "the essence of art is that the idea, feeling, or emotion is expressed indirectly" (1966:65). According to Hoebel, "The term style means a departure from absolute naturalism" (1958:258). Whallon says that if the attributes of archaeological materials selected for analysis--in this case the zoomorphic objects--"exhibit systematic patterns of behavior which can be related to the influence of social, cultural, or individual factors rather than to factors of function or of the physical environment, both the attributes and their behavior are considered 'stylistic'" (1968:224). The zoomorphic representations described here show not only enough naturalistic form to be recognized as zoomorphic, but also, in some cases, a degree of abstract stylization that is probably very symbolic. Most of them obviously took much labor, time, and skill. At the level of social organization postulated for the group living at the Denton Site, it seems very unlikely that such objects could have been created for mere ornamentation. Socio-religious connections are almost certain.

The spatial distribution of the zoomorphic effigies presents another problem. Although these items have been found at widely scattered locations, the strong stylistic resemblances among a number of them suggest that certain specimens could have actually been made by one person. Since

the zoomorphic beads were not a lasting tradition--if they were a tradition at all--Webb (personal communication) has suggested that, if not made by one person, perhaps they were made over a comparatively short period of time by a single "school" composed of an artisan and his pupils (sons?). An example of strong resemblances in style may be seen in the details of the MDAH bead #5 from Denton (Specimen N, Plate 36) and one of the Lamar County, Alabama, specimens (Webb 1971b:Fig. 1 k-k'). Another comparison may be made between the Lafayette County, Arkansas, specimen (Webb 1971a:39), the Stubblefield bead from Calhoun County, Mississippi (Specimen P, Plate 37), the bead from the Monte Sano Mound in Louisiana (Webb 1971b:Fig. 1 c-c'), and the one from the Johnny Ford Site in Lafayette County, Arkansas (Webb 1971b:Fig. 1 e-e'). These all have wing and midbody disc representations. Still other specimens are similar in the presence of the wing. Another comparison might be made between the Crisler bead (Specimen S, Plate 37) from Claiborne County, Mississippi (Brookes and Inmon 1973:69), the Parkman bead (Specimen V, Fig. 3) from Lawrence County, Mississippi, and the specimen (Specimen W, Fig. 3) reported in 1877 from Lawrence County, Mississippi (Rau 1878: 296-97, Fig. 12). These are all very similar in outline. A rough resemblance may also be seen between these latter beads and the Woods bead, also from Claiborne County, Mississippi (Specimen U, Fig. 3).

Other stylistic comparisons can be made upon close examination of the entire bead inventory, but the few mentioned thus far are sufficient to illustrate the hypothesis that individual artisans may have produced beads which were at some time dispersed over a large area. This theory again points to fetishes, which could be traded, sold, or inherited, as opposed to totems or tutelaries, which were personally held and retained. The theory does not rule out the possibility of clan exogamy and the resulting intergroup association. It seems quite reasonable that intermarriage among groups scattered over a wide territory could easily have become a vehicle for the movement of certain artifacts and ideas.

Webb (1971a:40; 1971b:113) has indicated that the dispersion of zoomorphic objects resulted from the "spread of a basic concept, rather than of manufactured objects," and that it thus indicated a "tenuous kind of interaction" (1971b:113). The hypotheses presented in this work have shown that Webb's idea is possible, but not necessarily true. The interaction could be much more than "tenuous" and still be "in keeping with the premise that a magical attribute is involved" (Webb 1971b:113). The hypotheses of fetishism and other similar beliefs presented here do agree with Webb's evaluation that a "single concept" related all these objects and that this concept was "probably magical" (1971b:113). The vehicle of spatial dispersal, however, is another question.

Certainly there must have been social and religious interaction among groups living adjacent to each other and thus the opportunity for the dissemination of socio-religious concepts, if not actual objects of related significance. Group exogamy has already been mentioned. Certain other intergroup associations have been referred to as "sodalities," some forms of which may have been present during the time in question. Service (1966:43-44) states:

"Sodalities are social forms that have been created purposefully in order to accomplish something. A group of men, for example, might form an organization in order to conduct certain kinds of magical ceremonies.

Inasmuch as such associations are not true residential groups, being only infrequently agglomerated at best, they are not such natural-seeming, visible units as are the family, extended family, or even the band itself. They therefore need some signs that will denote membership and make it more meaningful. These are ordinarily kinds of insignia . . . and so on.

Since sodalities are not residential units, their membership will tend to intersect the membership of residential groups.

It would seem . . . that any band society that is widely scattered most of the time--that is, when the residential factor in the association of families is weak--would therefore be more likely to add sodality-like characteristics to their society."

This presents another possibility which appears more in line with Gibson's idea of status symbols at the Poverty Point Site (1974:100-2). Perhaps the zoomorphs are the insignia of the "sodality" of certain classes in the socio-political structure. It would seem, however, that if this were the case they would be more uniform in style like the owl effigies described by Webb (1975:8-9). Service's "sodalities" could also refer to groups which gathered for certain magical rites in the early band society. These rites could be closely related to totemic rituals and other ceremonies, somewhat reminiscent of those carried on at certain times of the year by the present-day aboriginal bands of Australia. But, again, the variation of styles among the zoomorphic items would seem to negate the idea of uniform clan or sodality insignia. Once again, the concept of fetishism emerges clearly as the most probable interpretation of the zoomorphic effigy beads. Inter-group or inter-territory movement of this concept could have been carried out by any of several means.

In summary, a number of explanations for the presence of zoomorphic beads and pendants have been explored. It has been postulated that the group inhabiting the Denton Site during its major occupation was a Middle Archaic Period hunting-gathering band, a relatively small, family-oriented society with religious or supernatural concepts typical of such a social system. This is in contrast to what is believed to have been a chiefdom at the Poverty Point Site at a later time, along with the social system peculiar to it. The relationship between the postulated Denton band and the presence of zoomorphic stone effigies at the site is as yet somewhat speculative, since none of these artifacts have been found in the Middle Archaic midden context. Since most such objects have been associated in the past with Late Archaic-Poverty Point components at other sites, it might be speculated that the Denton specimens were intrusive from a later Poverty Point associated occupation. Little other artifactual evidence of such occupation has turned up at Denton, however, and thus it is probable that the beads were actually associated with the earlier culture.

In either case, the function of these effigies is hypothesized to be socio-religious in nature, the most likely form appearing to be the fetish. Fetishism would seem to explain many of the circumstances in which other zoomorphic effigies have been found, as well as the widespread spatial dispersal of what appear to be very similar stylistic forms. The foregoing discussion and the tentative conclusions or hypotheses presented here may serve as a basis for further studies associated with in situ discoveries of such objects on Archaic sites.

Clay

Ceramics

A total of 168 ceramic sherds were recovered from the Denton Site. A small number of these were excavated from the plow zone in square 470N-120W and therefore will be considered part of the surface collection. Considering the large area covered by the Denton Site and the many hours expended in surface collecting under ideal collecting conditions, it must be concluded that ceramics, along with all the other artifacts mentioned herein which belonged to post-Archaic components, at no time played a major technological role there. The few sherds recovered are probably remnants of small camps set up for brief periods of time and do not represent any lengthy occupations. For this reason only a brief listing of the various ceramic types will be presented here. For each type, the suggested chronological placement follows the number of items collected.

Baytown Plain, var. Thomas (Phillips 1970:54-55). 24 sherds. Marksville Period or possibly later. The sherds in this group, which included four plain rims, all had a fine, sandy texture.

Baytown Plain, var. Reed (Phillips 1970:52-53). 4 sherds. Late Marksville and Baytown periods. This type is clay tempered and has a hard, smooth texture.

Baytown Plain, var. Marksville (Phillips 1970:50-51). 82 sherds. Early Marksville Period. The sherds of this type, including six plain rims, are clay tempered and have a soft, chalky texture.

Mulberry Creek Cord-marked, var. Blue Lake (Phillips 1970:136-37). Plate 38 A, B. 6 sherds. Marksville and Baytown periods. This type has a sandy paste similar to the Baytown Plain, var. Thomas mentioned above.

Mulberry Creek Cord-marked, var. Edwards (Phillips 1970:137). Plate 38 C-E. 8 sherds. Baytown Period. A hard paste similar to the Baytown Plain, var. Reed mentioned above characterizes this type.

Mulberry Creek Cord-marked, var. Porter Bayou (Phillips 1970:138). Plate 38 F-H. 16 sherds. Early Marksville Period. This type has the soft, chalky texture of the Baytown Plain, var. Marksville mentioned above.

Withers Fabric-Marked, var. Withers (Phillips 1970:174-75). Plate 38 I, J. 9 sherds. Tchula and Early Marksville periods. These specimens have a soft, chalky paste similar to the Baytown Plain, var. Marksville above.

Withers Fabric-Marked, var. unspecified. Plate 38 K. 1 sherd. This specimen could probably be included in the var. Withers category,

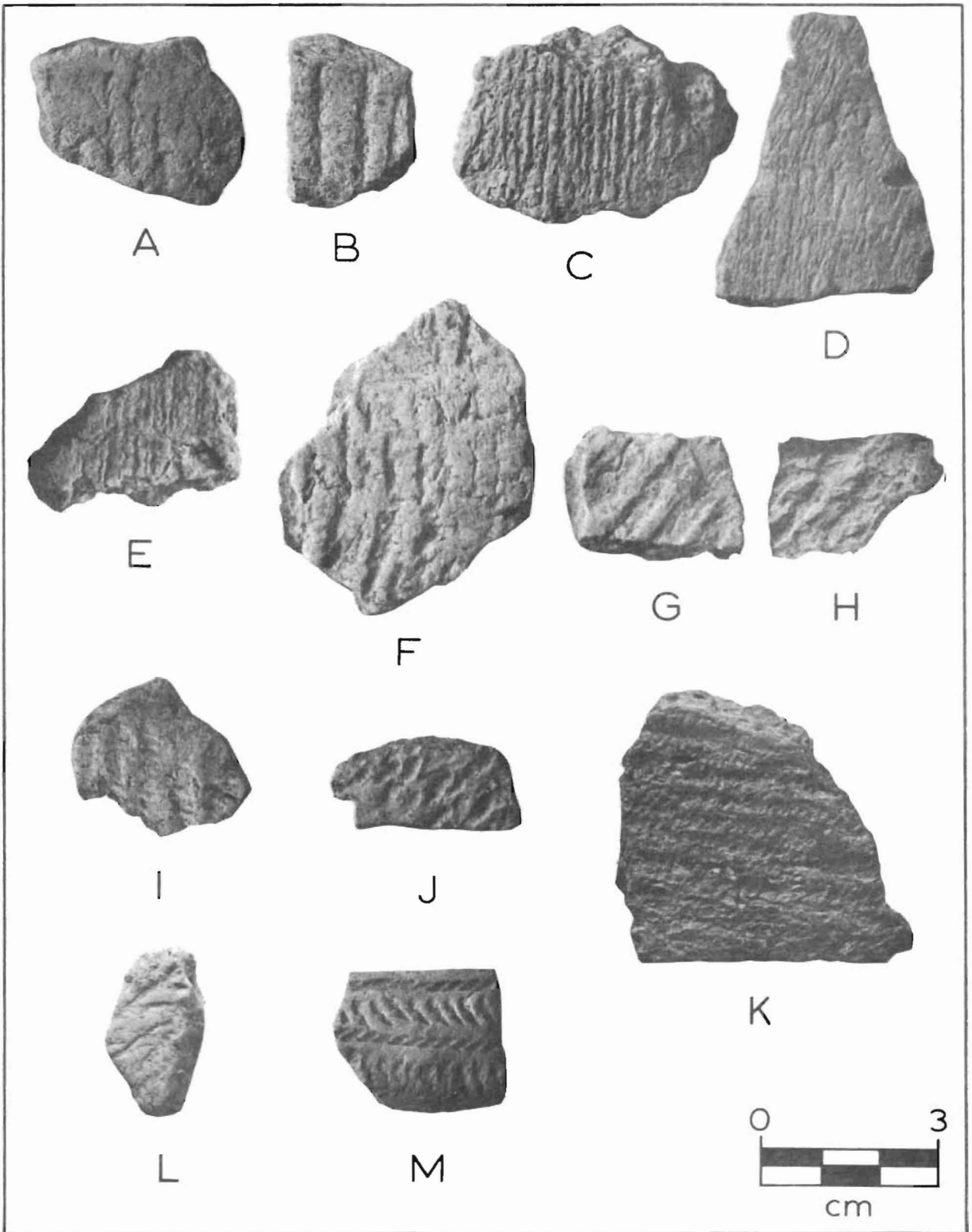


PLATE 38. CERAMICS.

but its paste is harder than that of the other specimens, somewhat like the Baytown Plain, var. Reed above. It also has fabric marking on both exterior and interior surfaces.

Mississippi Plain, var. Neeley's Ferry (Phillips 1970:133-34).
11 sherds. Late Mississippi Period. This group included one plain rim.
Indian Bay Stamped, var. Indian Bay (Phillips 1970:91). Plate 38 L.
1 sherd. Marksville Period.

Cormorant Cord-Imprinted, var. Cormorant (Phillips 1970:77).
Plate 38 M. 1 rim sherd. Tchula Period. This specimen shows two rows of short punctationlike cord impressions separated by straight cord-impressed lines just beneath the rim.

Twin Lakes Punctated, var. Twin Lakes (Phillips 1970:166).
Plate 39 A, B. 2 rim sherds. Early Marksville Period. These examples show the typical herringbone punctations beneath the rim.

Marksville Incised, var. Marksville (Phillips 1970:111-12).
Plate 39 C, D. 2 sherds. Early Marksville Period. These sherds show incised, U-shaped lines.

Marksville cross-hatched rim (Toth 1974:130). Plate 39 E. 1 rim sherd. Early Marksville Period.

Fiber-tempered plain ware (Phillips 1970:82). Plate 39 F. 2 sherds. Late Poverty Point or Late Archaic Period. This type is sometimes called Wheeler Plain.

A number of sherds could not be identified and thus could not be placed chronologically. These include: one incised with notched rim (Plate 39 G); three punctated rim sherds (Plate 39 H-J); two plain, folded rims (Plate 39 K and L); and two punctated sherds with incised zoning lines (Plate 39 M and N). One of these, Specimen N, might be called Churupa Punctated, var. Boyd (Connaway and McGahey 1971:24-25), but the Twin-Lakes-like herringbone design of the punctations is unusual for that type.

Fired Clay Objects

The outstanding characteristic of the dark midden in squares 60N-40E and 0-50E was the tremendous quantity of fired clay lumps haphazardly scattered throughout. The midden here was almost solid with them, but only what was considered an adequate representative sample was collected. Very small fragments were not saved. Fired clay lumps were also noted, in fewer numbers, in the shallow occupation zones of squares 120N-20W and 470N-120W. All of these primarily amorphous lumps of clay fall into three general categories: (1) naturally formed fragments of sedimentary clay presumably washed out of their original context by erosion, (2) amorphous lumps which appear to have been carelessly wadded up by hand, and (3) lumps of both types which have been flattened on one or both sides, either by hand pressure, smoothing, or pressing against woven cane matting.

None of this material contains wattle, although an occasional piece may exhibit a few grass, stick, or cane impressions on the surface. The vast majority of samples were various shades of reddish brown in color, but six were white and were apparently naturally formed lumps. Much of

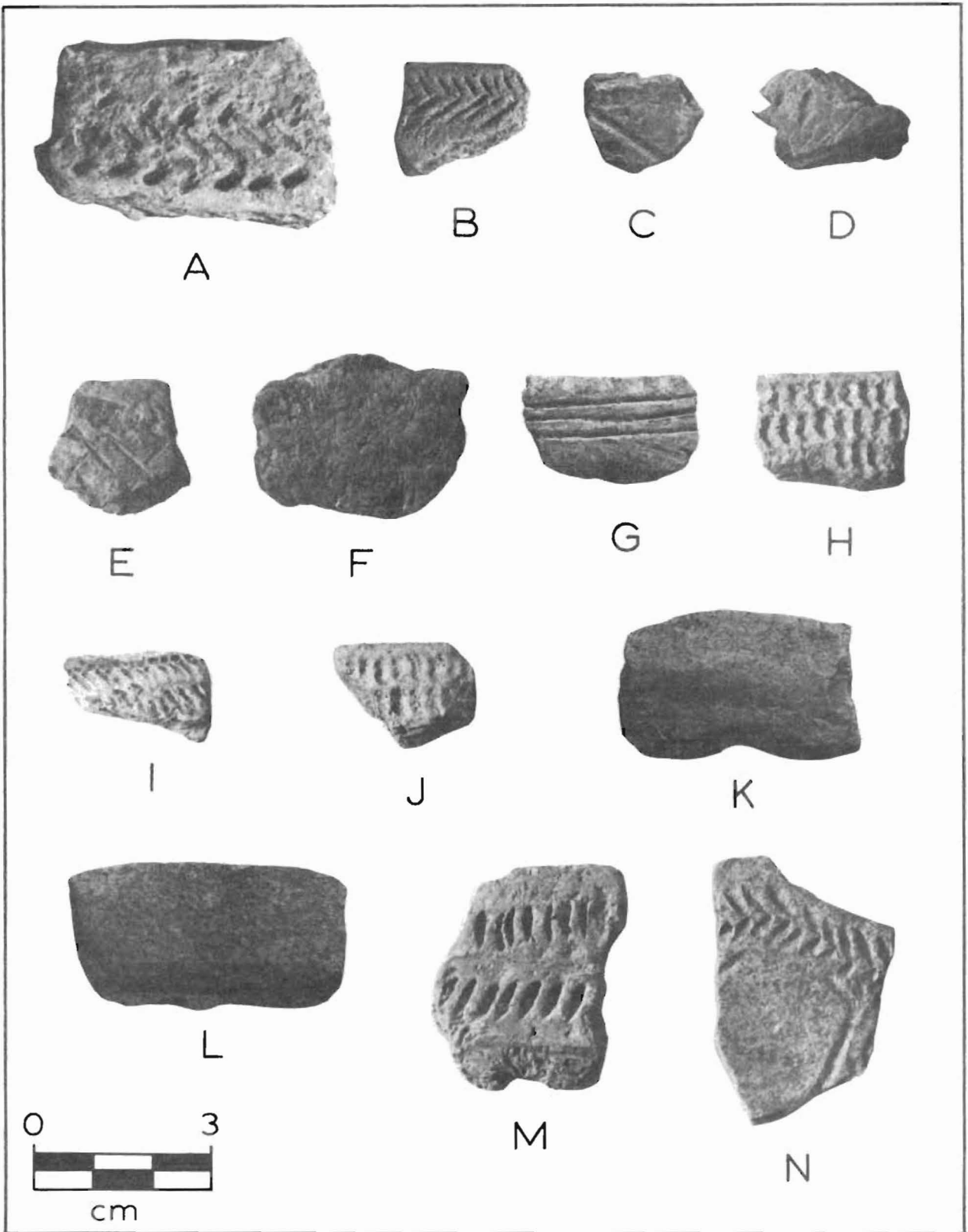


PLATE 39. CERAMICS.

the material appears broken, as if it were part of some larger construction. Of the 1,943 samples retained from the excavation, 1,666 are amorphous and relatively unaltered. Many appear to belong in the second category mentioned above. Two hundred seventeen are flattened on one side, eight are flattened on two sides, two have small holes punched into the flattened side, eleven show finger impressions, twenty-four have cane or stick impressions, one has been flattened with the palm of a hand, one has a small ridged imprint on it resembling the tread of a modern boot, one resembles half of a cylindrical grooved Poverty Point object, and thirteen exhibit woven cane basketry or mat impressions. Because of their unusual nature, these basketry-impressed objects will be described individually.

All thirteen examples of basketry-impressed objects are made of a reddish brown, untempered, fired clay which is fairly soft and rubs off easily onto the fingers. The baskets or mats used were constructed in a common, plaited weave out of flat strips of a fibrous material, presumably cane. The imprints clearly show striations common to such plant material. If split cane was used, the outer, smooth layer was evidently stripped away and the remainder was flattened. With the exception of Specimen 13, these splits were no more than 1.5 mm thick. In most cases, the weft strands are pushed tightly together and the warp strands are separated, probably because of the rigidity of the material used. Unfortunately, since most of the specimens are eroded, many of the weave pattern details have been obliterated. Generally, single strips of cane fiber were used for both warp and weft, although a few instances of the use of double strands are apparent. Two styles of weave were noted: style 1, where the warp is perpendicular to the weft, and style 2, where the warp is slightly diagonal to the weft. Style 2 could easily have resulted from pulling the top and bottom of a style 1 woven mat in opposite directions.

Specimen A (Plate 40), recovered from the plow zone in square 60N-40E, is small in size, measuring 40 mm x 35 mm wide and 19 mm thick. The only side with basketry impressions is slightly excurvate, indicating that it could have been part of a cylinder about 140 mm in diameter. The underside is amorphous and rough. The weave is style 1, and the impressions are slightly eroded. The warp appears to consist of double and possibly triple strands of cane measuring 3.0 mm, 5.1 mm, and 4.6 mm in width. The weft strands, which may have also been double, range from 4.2 mm to 4.5 mm in width. The small size of this specimen makes it difficult to see the weaving pattern well, but it appears to be some sort of twill plaiting with a variation in the sequence of interwoven elements.

Specimen B (Plate 40) came from a depth of 1.3-1.6 feet (0.5-0.8 foot below plow zone) in square 60N-40E and measures 40 mm x 50 mm in width and 25.4 mm thick. The single basketry-impressed surface is flat, slightly irregular, and eroded. The other surfaces of the object are rough and amorphous. The weave in this specimen appears to be of style 2, with a small angle of 66°. The weft seems to consist of double strands each measuring up to 8.5 mm in width. The warp strands are not clear, but may have been about the same width and appear to have been single.

Specimen C (Plate 40) was found at a depth of 1.3-1.6 feet in square 60N-40E. Somewhat larger than most of the other specimens, it measures 50 mm x 50 mm in width and 33.7 mm thick. This object has

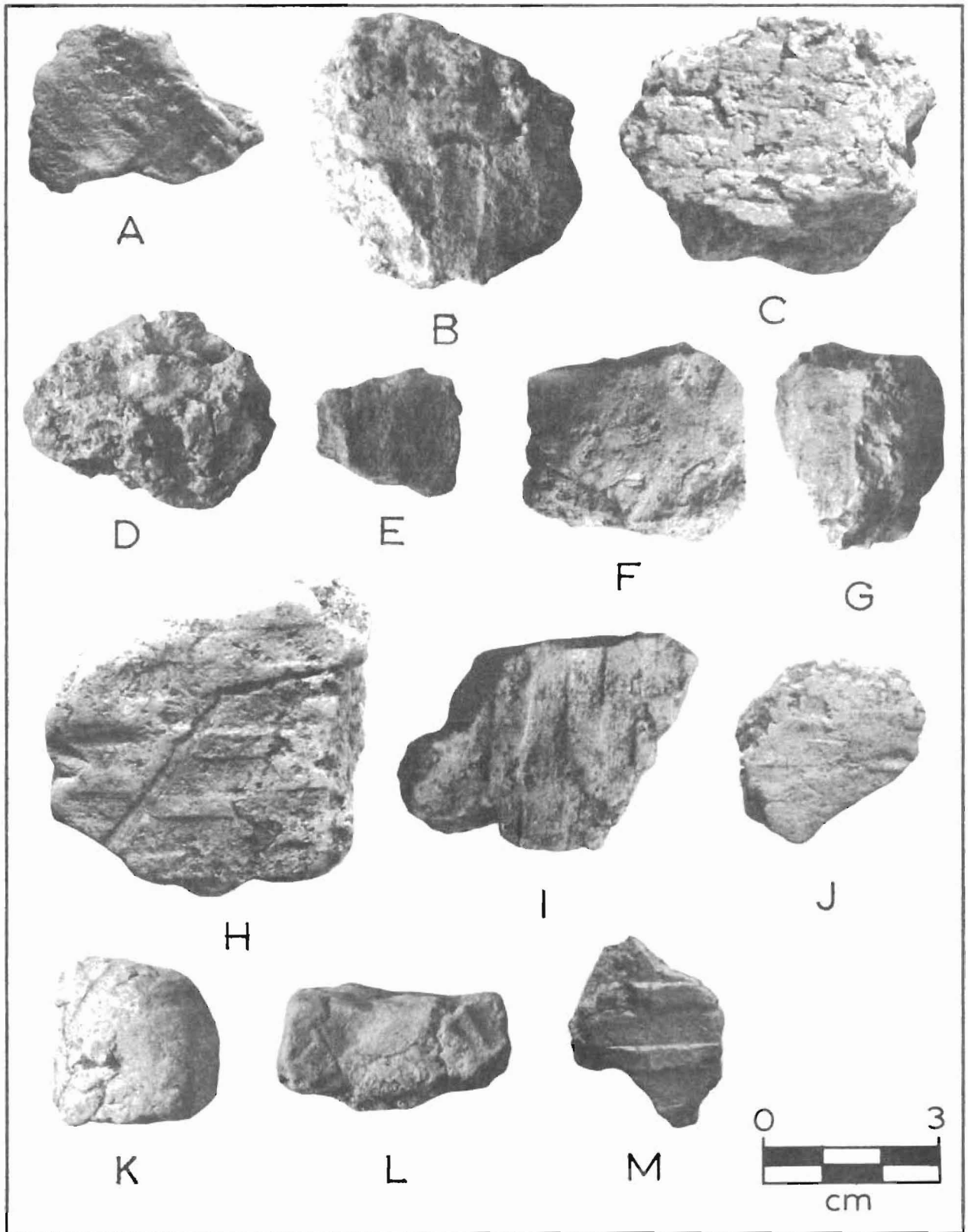


PLATE 40. BASKETRY-IMPRESSED CLAY OBJECTS.

two flat basketry-impressed surfaces on opposite sides, both of which are slightly eroded. The weave on one side is of style 2, with a small angle of 80°. The weft appears to have been double strands, measuring about 5.3 mm wide. The warp is eroded, but is about the same width and appears to have been single strands. The other side is very eroded, but seems to have a style 1 weave with double weft strands measuring about the same width as those on the first side.

Specimen D (Plate 40) came from a depth of 1.3-1.6 feet in square 60N-40E and measures 40 mm x 50 mm wide and 30 mm thick. A small area with basketry impressions on one side is too eroded to permit recognition of weave style or the number of strands used. The opposite side is amorphous and rough. The warp is 5.5 mm wide, and the weft measures about the same.

Specimen E (Plate 40) was recovered at a depth of 1.3-1.6 feet in square 60N-40E and measures 25 mm x 20 mm wide and 16.2 mm thick. The basketry impressions, of weave style 1, are found on only one side. Because that side is eroded, the number of strands used in the warp and weft could not be ascertained. The weft strands are about 4.5 mm wide. Those of the warp appear to be as much as 6 mm wide.

Specimen F (Plate 40) came from a depth of 1.6-1.8 feet (0.8-1.0 foot below plow zone) in square 60N-40E and is 35 mm x 40 mm wide and 23.5 mm thick. The eroded basketry impressions on one side exhibit single warp and weft strands in a style 1 weave. The weft strands range from 3.4 mm to 5.5 mm wide. The eroded warp strands measure about the same.

Specimen G (Plate 40), found at a depth of 1.6-1.8 feet in square 60N-40E, measures 30 mm x 35 mm in width and 24.3 mm in thickness. The eroded basketry impressions, in a style 1 weave, are on one side of the specimen, which is otherwise amorphous and rough. The weft strands, measuring 5.4 mm wide, may be double, while those of the warp measure about the same and may be single.

Specimen H (Plate 40) was located at a depth of 1.8-2.0 feet (1-1.2 feet below plow zone) in square 60N-40E. It measures 50 mm x 55 mm wide and 32.2 mm thick. Both sides of this object exhibit basketry impressions in a style 2 weave having a small angle of about 65° and single warp and weft strands. The warp could not be measured on either side, one of which is badly eroded. The weft strands are alternately narrow and wide, measuring approximately 3.7 mm and from 6.2 mm to 6.9 mm respectively. Grass and stick impressions may also be seen on both sides.

Specimen I (Plate 40), from a depth of 1.8-2.0 feet in square 60N-40E, measures 35 mm x 50 mm wide and 20.3 mm thick. The basketry impressions on one side exhibit a style 1 weave with single warp and weft strands. The weft strands range in width from 5.4 mm to 6.2 mm, and the eroded warp strands are apparently about the same. The rest of the object is rough and amorphous.

Specimen J (Plate 40) is from a depth of 1.8-2.0 feet in square 60N-40E and is 30 mm x 30 mm in width and 15 mm thick. The basketry impressions, on one side only, show a style 1 weave with double weft strands 4.1 mm wide, and apparently single warp strands 3.3 mm wide. The rest of the object is rough and amorphous.

Specimen K (Plate 40) was found at a depth of 1.8-2.0 feet in square 60N-40E. It measures 30 mm x 30 mm wide and 19.6 mm thick. Basketry impressions cover all sides but one of this rounded object.

Because of surface erosion, the weave style, the number of warp strands used, and the width of the warp strands could not be determined. One side of the object is flattened and rough, while the rest is rounded and unevenly smoothed. The weft consists of single strands about 2.5 mm wide.

Specimen L (Plate 40) came from a depth of 1.0-1.2 feet in square 0-50E and measures 20 mm x 40 mm in width and 22 mm in thickness. The eroded basketry impressions are on one side only. The weave style and the number of warp strands could not be determined. The weft strands appear to be double and are 4.4 mm wide. The warp strands are about the same. The rest of the object is rough and amorphous.

Specimen M (Plate 40) was found on the surface of the west slope of the south knoll. It measure 26 mm x 36 mm in width and 24.5 mm in thickness. On the one flat face, basketry impressions exhibit the style 2 weave at a small angle of 84°. The opposite side is smoothed, but irregular. The single warp strands, about 6 mm wide, are at least 10 mm apart. Weft strands are alternately 6.4 mm, 4.2 mm, 6.4 mm, and 4.0 mm wide. The warp is very slightly incurved, indicating the use of cane.

Comparative data about basketry-impressed objects from sites contemporary to Denton are lacking. The Denton artifacts are similar in some respects to those found at the Teoc Creek Site, a Poverty Point Period settlement in Carroll County, Mississippi. A full description of the Teoc Creek specimens, from which the following data are drawn, has been presented by Connaway, McGahey, and Webb (1977). The Denton examples differ in that they are flattened and are softer in texture, while those at Teoc Creek are hard, rounded portions of conical or cylindrical objects with holes punched through their centers, implying a different function altogether. Also, the Teoc Creek items were evidently pressed into small baskets, while those from Denton appear to have been impressed by flat mats.

The main similarity is in the woven mat or basketry impressions on the exterior surfaces. The weave is the same, and the material used for impressing appears the same, with the outer layer of the cane stripped away to produce flat, pliable strands. At Teoc Creek, only one specimen out of the fifty recovered showed the use of double strands in the warp, while at Denton, of the measurable specimens, one definitely showed double warp strands and six showed double weft strands. In width, the weft on the Teoc Creek examples ranges from 3.0 mm to 7.0 mm, with an average of 4.34 mm, while those from Denton range from 2.5 mm to 8.5 mm, with an average of 5.08 mm.

The objects from Teoc Creek, like those from Denton, exhibited both styles of weave, the perpendicular and the diagonal. Again, the latter may have been the result of twisting the basket after it was woven. The Teoc Creek examples, however, show a greater degree of twisting, with the small angle between warp and weft ranging from 7° to 26° on thirteen measurable objects. At Denton, four of the thirteen specimens showed an angle ranging from 65° to 84°.

Since there are morphological and apparently functional differences between the Denton and Poverty Point Period objects, the Denton examples are not thought to be in any way associated with a Poverty Point cultural component. Because all but one of the Denton objects were found in dated midden context, it is reasonable to assume they are of the same Middle Archaic origin as the midden.

RADIOCARBON DATES

Throughout the excavation, no large specimens of charcoal or other carbonized remains were encountered. In fact, very few of those observed were any larger than the head of a match. Thus, the short time allotted for the initial excavation did not permit the collection of large enough samples for radiocarbon dating. A brief excavation at a later date for the express purpose of obtaining sufficient samples resulted in the two small pits shown in Figure 1.

Both pits were located in the area of darkest midden, presumed to be the most likely place to find carbonized material. In Pit 1, about a foot south of square 0-50E, the midden extended to a surface depth of 18 inches. Small particles of charcoal were extracted from this midden between 13 inches and 18 inches below surface, well beneath the plow and subsoiler zones. In Pit 2, which was 34.5 feet to the north about halfway between squares 0-50E and 60N-40E, the midden reached a surface depth of 2 feet. The same method of extracting small particles of charcoal and combining them into one large sample was used here between 18 inches and 2 feet beneath the surface. The two samples recovered were processed by the University of Georgia Geochronology Lab and yielded the following radiocarbon dates based on the 5,568-year half life.

Sample 1 (Pit 1, 13"-18") 3280 ± 125 B.C. (UGa-212) (corrected to 3436 B.C.) (Brandau and Noakes 1972:493)
Sample 2 (Pit 2, 18"-24") 3125 ± 130 B.C. (UGa-284) (corrected to 3277 B.C.) (Noakes and Brandau 1974:138)

The corrected dates given are calculated with the 5,730-year half-life by multiplying the B.P. dates by 1.030, as described by Ralph, Michael, and Han (1973).

It would appear from this analysis that the later date came from the deeper portion of the midden and that the dates are stratigraphically reversed. However, it must be taken into consideration that the two pits were 34.5 feet apart and that the original land surface upon which the midden rests is 0.16 foot higher in Pit 2 than in Pit 1. It can be surmised, then, that either the sections of midden from which the dates came were deposited at nearly the same time, or the midden in Pit 2, at

a slightly higher elevation, was deposited somewhat later than that in Pit 1. This could possibly explain the later date from Pit 2 and place the two in proper stratigraphic sequence. It is equally possible, however, that the 155-year difference between the two averages and the 100-year overlap in 1-sigma ranges, which in themselves constitute good correspondence, could be accounted for as the result of the sample collection method. Since the collection zone in Pit 2 extended upward from the sterile subsurface about an inch higher than in Pit 1, and the depths at which samples were found in each zone varied, a certain amount of later deposited charcoal may have been recovered from Pit 2. Thus, it is just as likely as not, based on present evidence, that the midden was originally begun in both places at the same time. It would be impossible to assign an accurate rate of midden accumulation on the basis of only two dates from separate areas. A sequence of dates from various levels of one area would be needed for this.

The primary value of the two dates, at present, lies in their relationship with the midden in general and the few specific artifact types found in it. In placing the Denton Site occupation in the chronological sequence of Yazoo Basin prehistory, the dates tend to complement each other and lend credence to their accuracy by the simple fact of their being so close in time. They also help to support recent theories that land surfaces and associated occupation sites, much older than previously thought, are actually exposed in some areas of the basin.

CONCLUSIONS

This paper consists primarily of an assessment of the lithic technology at Denton, although other groups of artifacts have also been described. Except in the case of the lapidary industry, no major theoretical issues have been discussed. Rather, it is proposed that this paper serve as a beginning data base for the assessment of Middle Archaic assemblages from the northern Yazoo Basin and possible future subdivisions of Brain's generalized "Still Gin Phase" (1971:30) in this area.

Brain (1971:29-33) has somewhat nebulously lumped all artifacts in his "Period II" (5000-3000 B.C.) of the "Meso-Indian Era" into one category for the entire Yazoo Basin. This he calls the "Still Gin Phase," after the Still Gin Site in Washington County, Mississippi (1971:30). These typically Middle Archaic artifacts include large, crudely flaked, square-stemmed, corner-notched points, such as Denton; atlatl weights or bannerstones; and pecked and ground stone artifacts--all of which have been described from the Denton Site. One other characteristic of this period, according to Brain, is a stage of maximum adaptation to the natural environment referred to by Caldwell as "primary forest efficiency" (1958, 1965).

Very little direct evidence of subsistence patterns was found at Denton, and the extent to which the inhabitant had attained "primary forest efficiency" is uncertain. It is surmised that the site was occupied intermittently for a long period of time, but whether this was seasonal or year-round is not known. The Denton radiocarbon dates indicate occupation around the end of Brain's "Period II," and the deep, stratified succession of middens found in the Mississippi State University excavation of 1972 suggests earlier, intermittent occupations. Brain's "Period III" (1971:34), lasting between 3000 B.C. and 2000 B.C., initiates what he calls "maximum riverine efficiency," indicating a change in subsistence patterns. The situation of the Denton settlement on an actively building natural levee and the presence of a large percentage of local gravel in the artifact assemblage suggest a degree of riverine exploitation at the site, but there is no apparent evidence of a change from a forest economy to a riverine economy or maximum utilization of either. Rather, the subsistence pattern at the site, with respect to the artifact assemblage, includes aspects of both.

It is difficult to reach any specific conclusions about the Denton culture from the very limited excavation carried out at the site. In the section on excavation, several initial objectives were outlined. Some of these remain undetermined. The first, to determine the extent of the midden, was reached in 1969 with the 2.6-foot depth of dark midden in square 60N-40E. In 1972, the digging of a deep trench with a backhoe on the southernmost "mound" exposed a succession of shallow middens, interspersed with layers of sterile sand, to an undetermined maximum depth. The deepest midden encountered contained a Denton point. More detailed information on the 1972 excavation has been unavailable.

The second objective, to determine the age of the midden, was partially reached in the two radiocarbon dates discussed. Indirect evidence of a Middle Archaic or early Late Archaic age was supplied by the majority of artifacts from the surface collection. The third objective, to relate surface and midden remains, has been primarily unfulfilled. Very few specific artifact types were found in the midden. Most of these types, described in the text, are from the surface collection. The fourth objective, to obtain cultural data by stratigraphic levels, has for the same reason been largely unreached. As with the specific artifact types, very few features indicating specific activities were found. Some of the former could have even been intrusive.

The fifth objective, to obtain insight into community economic patterns, is partially unreached. Projectile points and their various wear patterns indicate hunting and butchering activities, as do the bannerstones, assuming they are atlatl weights. The presence of large amounts of fired clay in the midden suggests cooking activities, although no intact hearths were located. Grinding stones and pitted stones suggest the processing of vegetable foods, although some of the smoothed sandstone rocks may have been hones for various tool-sharpening activities. Unfortunately, no refuse was found in amounts significant enough to determine any subsistence activities. Indications are that this was a typical hunting-gathering band society.

Attainment of the sixth objective, to gather cultural data for comparisons with contemporary sites, has already been mentioned in the first paragraph of this section. Data accumulated from the excavation and from analysis of the surface assemblage have been presented as a base for future comparisons. Few comparisons have been given in detail here because of a lack of information from other sites. One unusual aspect of the Denton Site, the large lapidary industry, does not seem to have any counterparts in the Yazoo Basin. Similar finds were reported from various parts of the hill sections of the state and from other states, however, where a few comparisons can be made. More data on other aspects of these sites are needed for a better understanding of their interrelationships.

REFERENCES CITED

Baerreis, David A.

1949 The George C. Davis site, Cherokee County, Texas, by H. Perry Newell and Alex D. Krieger. Book review, American Antiquity 15:259-60.

1954 The Huffaker site, Delaware County, Oklahoma. Oklahoma Anthropological Society, Bulletin 2:35-48.

Bell, Robert E.

1958 Guide to the identification of certain American Indian projectile points. Oklahoma Anthropological Society, Special Bulletin 1.

1960 Guide to the identification of certain American Indian projectile points. Oklahoma Anthropological Society, Special Bulletin 2.

Binford, Lewis R.

1972 An archaeological perspective. Seminar Press, New York.

Brain, Jeffrey P.

1970 Early Archaic in the Lower Mississippi Alluvial Valley. American Antiquity 35:104-6.

1971 The Lower Mississippi Valley in North American prehistory. Manuscript on file. Southeastern Region, National Park Service, Tallahassee, Florida.

Brandau, Betty Lee and John E. Noakes

1972 University of Georgia radiocarbon dates II. Radiocarbon, Vol. 14, No. 2.

Brookes, Samuel O.

n.d. The Hester site. Mississippi Department of Archives and History, Jackson. Forthcoming.

Brookes, Samuel O. and Byron Inmon

1973 Archaeological survey of Claiborne County, Mississippi. Mississippi Department of Archives and History, Mississippi Archaeological Survey, Report 3.

- Brookes, Samuel O., Bruce J. Gray, Byron Inmon, and Angela Rodrigue
 1974 Greenbriar projectile points: a discussion of form and function. Mississippi Archaeology, Vol. 9, No. 8.
- Brown, Calvin S.
 1926 Archaeology of Mississippi. Mississippi Geological Survey, University, Mississippi.
- Caldwell, Joseph
 1958 Trend and tradition in the prehistory of the eastern United States. American Anthropological Association, Memoirs 88.
 1965 Primary forest efficiency. Southeastern Archaeological Conference, Bulletin 3:66-69.
- Cambron, James W. and David C. Hulse
 1960 The transitional Paleo-Indian. Journal of Alabama Archaeology, Vol. 6, No. 1.
 1964 Handbook of Alabama Archaeology. Part 1: Point types, edited by David DeJarnette. Archaeological Research Association of Alabama, University, Alabama.
- Connaway, John M.
 1975 A last look at the Longstreet site (22-Qu-523). Mississippi Archaeology, Vol. 10, No. 2.
- Connaway, John M. and Samuel O. McGahey
 1970 Archaeological survey and salvage in the Yazoo-Mississippi Delta and in Hinds County, 1968-1969. Mississippi Department of Archives and History, Mississippi Archaeological Survey, Preliminary Report 1.
 1971 Archaeological excavation at the Boyd site, Tunica County, Mississippi. Mississippi Department of Archives and History, Technical Report 1.
- Connaway, John, M., Samuel O. McGahey, and Clarence H. Webb
 1977 Teoc Creek: A Poverty Point site in Carroll County, Mississippi. Mississippi Department of Archives and History, Archaeological Report 3.
- Crook, Wilson W., Jr. and R. K. Harris
 1954 Traits of the Trinity Aspect Archaic: Carrollton and Elam foci. The Record (Dallas Archaeological Society), Vol. 12, No. 1, pp. 2-13.
- Cutler, Hugh C. and Leonard W. Blake
 1973 Plants from archaeological sites east of the Rockies. Missouri Botanical Garden, St. Louis.

- DeJarnette, David L., Edward Kurjack, and James W. Cambron
 1962 Stanfield-Worley bluff shelter excavations. Journal of Alabama Archaeology, Vol. 3, Nos. 1, 2.
- Drucker, Philip
 1952 La Venta, Tabasco: a study of Olmec ceramics and art. Bureau of American Ethnology, Bulletin 153.
- Ford, James A.
 1969 A comparison of formative cultures in the Americas: diffusion or the psychic unity of man. Smithsonian Contributions to Anthropology, Vol. 2. Smithsonian Institution Press, Washington, D.C.
- Ford, James A., Philip Phillips, and William G. Haag
 1955 The Jaketown site in west-central Mississippi. American Museum of Natural History, Anthropological Papers 45.
- Ford, James A. and Clarence H. Webb
 1956 Poverty Point, a Late Archaic site in Louisiana. American Museum of Natural History, Anthropological Papers 46.
- Fowells, H. A.
 1965 Silvics of forest trees of the United States. United States Department of Agriculture, Forest Service, Agriculture Handbook 27.
- Fulton, R. B.
 1898 Prehistoric jasper ornaments in Mississippi. Publications of the Mississippi Historical Society 1:91-95.
- Gibson, Jon L.
 1974 Poverty Point, the first North American chiefdom. Archaeology, Vol. 27, No. 2, pp. 97-105.
- Goodyear, Albert C.
 1973 Archaic hafted spokeshaves with graver spurs from the Southeast. The Florida Anthropologist, Vol. 26, No. 1, pp. 39-44.
 1974 The Brand site. Arkansas Archeological Survey. Research Series 7.
- Hodge, Frederick Webb (Editor)
 1907 Handbook of American Indians north of Mexico. Bureau of American Ethnology, Bulletin 30, Part 1.
 1910 Handbook of American Indians north of Mexico. Bureau of American Ethnology, Bulletin 30, Part 2.
- Hoebel, E. A.
 1958 Man in the primitive world. McGraw-Hill Book Co., New York.

House, John H.

- 1975 A functional typology for Cache project surface collections. The Cache River Archeological Project, Arkansas Archeological Survey, Research Series 8.

House, John H. and James W. Smith

- 1975 Experiments in replication of fire-cracked rock. The Cache River Archeological Project, Arkansas Archeological Survey, Research Series 8.

Jolly, Fletcher III

- 1971 Poverty Point zoomorphic beads from the Pickwick Basin in NW Alabama. Journal of Alabama Archaeology, Vol. 17, No. 2.

Kelley, J. Charles

- 1947 The cultural affiliations and chronological position of the Clear Fork focus. American Antiquity 13:97-108.

Kneberg, Madeline

- 1956 Some important projectile point types found in the Tennessee area. Tennessee Archaeologist 12:17-28.

Knoblock, Byron W.

- 1939 Bannerstones of the North American Indians. Published by the author, La Grange, Illinois.

Lewis, Thomas M. N. and Madeline Kneberg

- 1958 The Nuckolls site. Tennessee Archaeologist 14:61-79.

Lively, Matthew, A. G. Long, Jr., and Daniel W. Josselyn

- 1965 The Lively complex. Privately published, Birmingham, Alabama.

Miles, Charles

- 1963 Indian and Eskimo artifacts of North America. Bonanza Books, New York.

Moorehead, Warren K.

- 1917 Stone ornaments of the American Indian. Andover Press, Andover, Massachusetts.

Morse, Dan

- 1971 The Hawkins cache: a significant Dalton find in northeast Arkansas. The Arkansas Archeologist, Arkansas Archeological Society, Bulletin, Vol. 12, No. 1, pp. 9-20.

Noakes, John E. and Betty Lee Brandau

- 1974 University of Georgia radiocarbon dates III. Radiocarbon, Vol. 16, No. 1.

Phillips, Philip

- 1970 Archaeological survey in the Lower Yazoo Basin, Mississippi 1949-1955. Harvard University, Peabody Museum, Papers 60.

- Phillips, Philip, James A. Ford, and James B. Griffin
 1951 Archaeological survey of the Lower Mississippi Alluvial Valley, 1940-1947. Peabody Museum of American Archaeology and Ethnology, Papers 25.
- Potts, Thomas D.
 1976 Archaeological survey in the Richland Creek watershed, Mississippi. Unpublished manuscript. Mississippi Department of Archives and History, Jackson.
- Purdy, Barbara A.
 1975 Fractures for the archaeologist. In Lithic Technology Making and Using Stone Tools. Mouton Publishers, The Hague, Paris.
- Ralph, E. K., H. N. Michael, and M. C. Han
 1973 Radiocarbon dates and reality. University of Pennsylvania, University Museum, Museums Applied Science Center for Archaeology, Newsletter, Vol. 9, No. 1.
- Rau, Charles
 1878 The stock-in-trade of an aboriginal lapidary. Smithsonian Institution, Annual Report, 1877.
- Rucker, Marc D.
 1974 Archaeological survey and test excavations in the upper-central Tombigbee River Valley: Aliceville-Columbus lock and dam and impoundment areas, Alabama and Mississippi. Mississippi State University, Department of Anthropology, Final Report.
- Scully, E. G.
 1951 Some central Mississippi Valley projectile point types. Mimeographed. University of Michigan, Museum of Anthropology, Ann Arbor.
- Service, Elman R.
 1966 The hunters. Prentice-Hall, Inc., Englewood Cliffs, New Jersey.
- Snow, Dean
 1976 The archaeology of North America. Viking Press, New York.
- Suhm, Dee Ann and Alex Krieger
 1954 An introductory handbook of Texas archaeology. Texas Archaeological Society, Bulletin 25.
- Toth, Alan
 1974 Archaeology and ceramics at the Marksville site. University of Michigan, Museum of Anthropology, Anthropological Papers 56.
- Trickey, E. Bruce and N. H. Holmes
 1967 The Mobile Bay chronology. Proceedings of the 23rd Southeastern Archaeological Conference, Bulletin 6.

- United States. Department of Agriculture.
1958 Soil Conservation Service. Soil Survey: Quitman County.
- Webb, Clarence H.
1968 The extent and content of Poverty Point culture. American Antiquity 33:297-321.
1970 Settlement patterns in the Poverty Point cultural complex. In The Poverty Point Culture. Southeastern Archaeological Conference, Bulletin 12.
1971a Another zoomorphic locust stone bead from Lafayette County, Arkansas. The Arkansas Archeologist, Arkansas Archeological Society, Bulletin, Vol. 12, No. 2.
1971b Archaic and Poverty Point zoomorphic locust beads. American Antiquity 36:105-114.
1975 Owl pendants of red jasper. Louisiana Archaeological Society, Newsletter, Vol. 2, No. 2.
1976 Stone turtles. Louisiana Archaeological Society, Newsletter, Vol. 3, No. 1, pp. 6-7.
- Webb, Clarence H., James A. Ford, and Sherwood M. Gagliano
1970 Poverty Point culture and the American formative. Unpublished manuscript, Clarence H. Webb, Shreveport, Louisiana.
- Webb, William S.
1946 Indian knoll. University of Kentucky, Reports in Anthropology and Archaeology, Vol. 4, No. 3, Pt. 1.
- Whallon, Robert, Jr.
1968 Investigations of late prehistoric social organization in New York state. In New perspectives in archaeology, edited by Sally R. Binford and Lewis R. Binford. Aldine Publishing Co., Chicago.
- Winick, Charles
1975 Dictionary of anthropology. Littlefield, Adams & Co., Totowa, New Jersey.